Asian crisis, stock-market bubble, subprimes crisis... Is globalised finance, at the origin of these successive eruptions, a dormant volcano to be protected against or rather a force which, if tamed, could be placed at the service of economic progress? The question deserves to be posed, since the strength of world growth seen during much of the 2000s is due, in part at least, to the mechanisms by which globalised finance has enabled the savings generated in one place on the planet to be used in another. These mechanisms are not the result solely of greater freedom of capital movements. They are also the product of a wave of innovation that has everywhere transformed the ways in which capital circulates and the risks attendant on its investment are borne. Financial globalisation has provided the world economy with arrangements of astonishing power, but also great vulnerability. This study throws light on the functioning of these new arrangements and on the sequence of events leading to the collapse of globalised finance.
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Globalised finance and its collapse
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Introduction

No more than 10 years separate the crisis which shook the Asian economies at the end of the 1990s from that which, at the end of the 2000s, has plunged the developed world into a deep recession. In addition, between these two crises, there was the bursting of a stock-market bubble of a size comparable to that of 1929! Is globalised finance, at the origin of these successive eruptions, a dormant volcano to be protected against at all costs? Or is it a force which, if tamed, could be placed durably at the service of economic progress? The question deserves to be posed, since these same 10 years saw a doubling of world income, with growth in the emerging economies in all continents stronger than ever.

The relationship between finance and the real economy is less remote than is sometimes thought. In a world where savings are abundant, the role of finance is even crucial, with the use made of these savings – deciding tomorrow’s growth – and the level of activity – today’s growth – depending on it. The mechanisms by which globalised finance has enabled the savings generated in one place on the planet to be used in another explains, in part at least, the strength of growth seen during most of the 2000s. These mechanisms are not the result solely of the liberalisation of capital movements launched several decades ago. They are also the product of a wave of innovation, made possible by the deregulation of the various financial activities, which has everywhere transformed the ways in which capital circulates and risks related to its investment are borne. Financial globalisation has thus provided the world economy with tools of astonishing power – to judge by the mass of savings it has put into movement – but also great vulnerability – to judge by the mass of risk it managed to concentrate. It is on the functioning of these new arrangements and on the sequence of events that have led to the first crisis of globalised finance that this book aims to shed light.
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Chapter 1 describes these arrangements, focusing on the way lending circulates. By transforming loans into tradable securities, securitisation, in combination with the increasing intervention of “risk-takers”, has permitted the introduction of risk-taking chains, capable, like banks, of acting as intermediaries between lenders and borrowers. With the passage of time, a genuine alternative banking system has been developed. Its importance in certain economies has even become comparable to that of the traditional banking sector. It was not until the beginning of the 2000s, however, that these new tools revealed their full potential. Before then, despite the liberalisation of capital movements, international transfers of savings had remained on a modest scale. Since the beginning of the 2000s, their intensity has steadily grown, at the same time as growth in the emerging economies was accelerating strongly (Chapter 2). By combating the chronic overvaluation of their currencies, many of these economies, especially in Asia, have managed to export savings that would otherwise have asphyxiated their growth. They did this with the help of the infrastructure of globalised finance. For the most part, these countries in fact placed their surpluses in relatively risk-free forms (Chapter 3). Like the oil countries, they were able to export their savings because others were there to bear the risks related to their investment.

During the 2000s, the developed countries, the United States in particular, have not only imported savings but also taken on the risks attached to the lending that these savings financed. The burden of this was mainly borne by the risk-taking chains in the alternative banking system (Chapter 4). The risk-takers’ “leverage” – the ratio between the risks they took on and the equity capital at their disposal for doing so – then rose appreciably, weakening the solidity of the chains in which they are links. Their behaviour from the mid-2000s on can only be explained by an ever more complaisant attitude to risk. The “subprimes shock” has abruptly called this attitude into question. Chapter 5 analyses the origins of this shock and shows how its propagation finally, in the last months of 2008, led to a paralysis of the system. The authorities were unable to prevent it, because they did not relieve private agents soon enough of the risks they were no longer able to bear. To see this crisis merely as a fresh illustration of the excesses of finance would be to miss the essential point. This crisis has revealed the shortcomings of an ideology which prompted the authorities to neglect their functions of regulation and surveillance. It has also shown the dangers of globalisation if unaccompanied by the necessary international co-operation. Placing globalised finance at the service of growth requires on the part of governments, as will be seen in Chapter 6, a form of co-responsibility that goes far beyond mere prudential surveillance.
Chapter 1
The infrastructure of globalised finance

The deregulation launched at the end of the 1970s has brought about a far-reaching transformation of Western financial systems. The circulation of savings and of the risks associated with the investment of those savings had long remained closely linked. This was obviously the case for direct finance operations on the traditional markets for equities and bonds, where the exchange of capital for the securities issued by a firm or a government was inseparable from the taking of the risks involved in the investment. But it was also true of traditional bank intermediation, where the institutions taking in savings on deposit were also those that assessed, took on and held the risks involved in the loans financed by these savings. Financial globalisation has shattered these traditional operating structures. By basing itself on new markets, new products and new players, it has enabled loans to be removed from the balance sheets of the banks distributing them while at the same time it gradually eliminated the link between the supply of savings and the taking of the risks related to the lending made with those savings. The globalised form of finance that then developed facilitated an expansion of lending to agents not having access to the financial markets, households in particular. At the same time it broadened the range of investments accessible to savings-collectors other than banks (pension funds, mutual funds and life insurers in particular). Helped on by liberalisation of capital movements, these evolutions were accompanied by an intensification of international financial integration.

This chapter briefly sets out the main features of the mechanisms set in place in recent decades – most often on the initiative of private operators – focusing more particularly on the credit markets, whose evolution has been most spectacular. After initially seeing how progress with securitisation and recourse to derivatives have modified the way in which loans are financed, but also the way in which the associated risks are
borne, it will be shown how this evolution has permitted the creation of
a genuine alternative banking system, based on players each of whom
takes on one or more of the risks related to these loans without collecting
the savings needed to finance them. Increasingly complex risk-taking
chains have accordingly come into existence and now embrace the whole
planet. Until the beginning of the 2000s, this increased international
financial interpenetration above all permitted wider circulation of finan-
cial risks, with transfers of savings between nations remaining relatively
limited, as we shall see.

The shattering of the traditional bank intermediation
framework

Securitisation has played a central role in the globalisation of finance.
In order to understand the way in which it has transformed the function-
ing of the credit system, let us return to the implications of the granting
of a traditional bank loan. By putting at a borrower’s disposal a certain
amount of means of payment, in this case by crediting his account in its
books, the bank provides financing. At the same time, it agrees to take on
several types of risk:

• a credit risk: if the borrower falls behind in paying the interest or,
  worse still, defaults, this will mean a loss for the bank;
• an interest-rate risk: if the loan granted is at a fixed interest rate and
  if the bank remunerates its deposits at a variable rate, a rise in the latter
  will reduce its interest-rate margin;
• a liquidity risk: if its deposits decline unexpectedly before the loan
  matures, it will have to mobilise liquidity to cope with the problem and
  this can be costly.

Securitisation offers the bank the possibility of having to finance the loan
only provisionally and of relieving itself of all or part of the above risks. To do
this, all that is necessary is for it to sell the loans it has already granted, to
an entity that finances their acquisition through the issue of securities that
are tradable on a market, bonds in this case. In practice, the loans are
acquired by an “originator” (often an investment bank) which assembles
“bundles” of loans of a given type (mortgages, consumer credit, business
loans, etc.) while trying to diversify their origins with the purpose of
reducing the overall risk. He then places these bundles on the balance
sheet of a legal entity created for the purpose – often described as “a finan-
cial vehicle” – which becomes the owner. The vehicle then issues securities
backed by this set of loans (Diagram 1). As the original loan contracts are
unaffected by the operation, the flow of payments to which they give rise
will finance the flow promised to the holders of the securities issued. Once
the operation has been completed, the financing of the loans will have
The infrastructure of globalised finance

been ensured by the issue of these securities and the purchasers of these securities will bear the risks. The attraction for the bank is clear: by selling the loans distributed for slightly more than they cost, it realises a definite margin, while leaving others to finance them and to carry the risks involved, in the hope, of course, of making a profit. This form of securitisation is notably that of most of the bonds backed by consumer credit or loans to businesses (i.e., Asset Backed Securities or ABS). A financial institution may nevertheless become involved to relieve the issued securities of part of their risk: for example, the credit risk in the case of most of the mortgage loans distributed in the United States is taken on by certain Government Sponsored Enterprises (GSEs) – the best-known being Fannie Mae and Freddie Mac. The bonds backed by this guaranteed lending are known as Mortgage Backed Securities (MBS).

Diagram 1. Securitisation through loan sales

The modalities of securitisation can be fairly diverse, depending on the financial systems concerned. In Europe, for example, securitisation takes place mainly through the issue of "covered bonds". These enable the banks to unload only part of the risks listed above. In Germany, for instance, the Pfandbriefe are bonds backed by loans, usually mortgage loans or loans to the local authority sector, issued and guaranteed by authorised banks. Unlike the securitisation outlined in Diagram 1, the bank retains the loans on its balance sheet and hence also the credit risk. However, the bank does not provide the financing and is therefore relieved of the liquidity and interest-rate risks to the extent that the bonds issued have a maturity close to that of the loans guaranteeing them. As there is no transfer of ownership to an ad hoc vehicle, the risk for the purchaser of the security depends in the first place on the solidity of the issuing bank but also on the prudential norms imposed. In the case of the
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Pfandbriefe, the value of the securities issued cannot exceed 60% of the backing loans and the buyer, in the event of default by the bank, enjoys the rights of a first-rank creditor on these loans. The French “obligations foncières” and the Spanish “cedulas” operate according to a similar logic.

There is nothing new about securitisation. In the United States, the first such issues go back to the early 1970s, when they involved mortgage loans securitised by public bodies (Ginnie Mae or Freddie Mac and later, at the beginning of the 1980s, Fannie Mae). The use of securitisation gathered pace from the mid-1980s on: car loans were securitised for the first time in 1984 and credit card lending in 1986. The activity of so-called finance companies – major players particularly in the consumer credit field – has contributed to this development of securitisation inasmuch as it, too, involves substituting financing through issues of securities for financing via bank deposits (these firms in fact make loans financing themselves on the bond market). Graph 1 shows, for each category of loan, the proportion financed in the United States by issues of securities. After growing steadily from the early 1970s on, by the mid-1990s the proportion of mortgage lending financed by securitisation exceeded 50%. The securitisation of consumer credit rose constantly from the end of the 1980s, while that of other types of loans – including in particular those made to businesses – accelerated starting in 1998. In all, more than half the outstanding volume of loans in the United States is today securitised, compared with barely 10% at the end of the 1960s. The consequence of this rise in securitisation for the balance sheets of the deposit institutions is quite clear: in mid-2008 these institutions had on their balance sheets little more than one-third of total mortgage debt, compared with roughly three-quarters in the mid-1970s.

Graph 1. Share of loans financed by issues of securities in the United States, 1952-2008 (%)

Sources: Federal Reserve, authors’ calculations
In Europe, the issuance of securitised claims was for a long time the hallmark of Denmark (realkreditobligationer) and especially Germany. In the mid-1950s, Pfandbriefe accounted for the bulk (more than 70%) of German bond capitalisation. The growth of this market was particularly rapid during the 1990s as a result of the rise in the indebtedness of public authorities and later, starting in 1995, as a result of the introduction of the more liquid Jumbo Pfandbriefe (today, issues for an amount of more than €1 billion). In the 2000s, however, the reduction in public debt and the slackness of the construction sector brought growth in this market to a halt. Spain, France and Ireland took up the running, however. At the end of 2007 the European stock of such bonds exceeded €2,100 billion and the share of Pfandbriefe in this stock had fallen from 80% in 2001 to barely more than 40%.

Alongside these “traditional” forms of securitisation, “structured” financing, whose introduction goes back to the early 1980s, has developed rapidly in the past decade. This financial technique is a special form of securitisation that introduces subordination among the securities issued: some will have priority over others for the receipt of payments emanating from the pool of debts providing the backing for the securities. It therefore makes it possible to modulate the “risk content” of the various bond tranches issued, with the risks of the senior (most protected) tranches shifted onto the junior (most exposed) tranches. Most ABS are structured in this way.

The products most emblematic of structured finance are nevertheless the CDOs (Collateralized Debt Obligations). The first issue of these products was made in 1987 by the Drexel Burnham Lambert investment bank, but it was not until the 2000s that they began to expand substantially. Between 2001 and 2007, issues rose from less than $200 billion to over $1,200 billion. With almost $800 billion issued in 2007, the American market has been the most important. Unlike the securitisation operations involving homogeneous portfolios (consumer credit, car loans, mortgages, etc.), the CDOs are generally backed by financial assets of different kinds in order to introduce additional de-correlation of risks (for instance, bank loans, bonds, Asset Backed Securities and other claims can...
be bundled together). They can also be backed by credit derivatives. They are “structured” in tranches carrying varying degrees of risk: the “equity” tranche, carrying the highest return, is also the one involving most risk (it is the first to absorb any losses); the “super senior” tranche, by contrast, carries distinctly smaller return and risk.

In total, the share of securitised loans in total bond issues has risen substantially in recent decades. In the United States, the outstanding volume of bonds derived from securitisation now substantially exceeds the $12,600 billion accounted for by “traditional” securities, being made up at the end of 2007 of Treasury debt (4,900 billion), debt owed by States and local authorities (2,600 billion) and debts owed by private firms (5,100 billion, excluding finance companies). According to the Securities Industry and Financial Markets Association (SIFMA), at this same date the outstanding amount of securitised debt was $11,500 billion (including 2,500 billion in the form of ABS and 9,000 billion in the form of MBS), in addition to which there was 2,900 billion in the form of securities issued by the GSEs and more than 800 billion issued by the finance companies. For the year 2007 alone, the gross issuance of securitised debt in the United States amounted to nearly $2,500 billion. In Europe in the same year, the corresponding issue volume (essentially in the form of mortgage debt) exceeded $650 billion, which was distinctly more than the volume of corporate debt and as much as that of public debt.

Securitisation is not the only mechanism for the transfer of risk whose expansion has accelerated in recent years. The markets for derivative products have posted an equally spectacular surge. Unlike bonds derived from securitisation, these other products are purely supports for the transfer of risk and play no financing role. Buying or selling a contract on a derivatives market in fact involves no transfer of capital of an amount comparable to the amount of risk transferred. For this reason, positions taken on these markets do not appear in the balance sheets of economic agents, being by their nature “off-balance-sheet”. The nominal sums appearing in the contracts are strictly “notional” for the purpose of defining the quantity of risk transferred. Contracts for these derivatives are traded either on organised exchanges – in which case the contracts are standardised and there is a clearing house – or on “over-the-counter” (OTC) markets, in which case the contracts are “made to measure” and negotiated directly between the counterparties.

The risks transferred on these markets are essentially interest-rate, exchange-rate and, in the past 10 years or so, credit. Interest-rate contracts, which make it possible to transfer risks related to variations in interest rates, predominate. It was seen earlier that a bank granting a loan
financed out of deposits runs the risk of seeing a variation in the rate at which these deposits are remunerated. It can, for the duration of the loan (say, 5 years), hedge against this risk by using an interest-rate swap. Diagram 2 illustrates the exchanges of interest-rate flows to which this operation gives rise. During five years, the bank will pay an interest charge calculated at a fixed rate – that of the 5-year swap – on the notional amount of the contract (in this case, that of the loan); in return, it will receive from its counterparty a variable flow of interest calculated on the same amount but depending on the prevailing short rates. After making this swap, the bank is no longer exposed to the risk of a rise in short rates – it is as if it now pays interest calculated at the fixed rate of the 5-year swap. Its interest-rate margin – the difference between the rate on the loan and the swap rate – has now become definite.

Diagram 2. A bank unloads its interest-rate risk exposure by means of an interest-rate swap

For each agent, an arrow going from the left to the central line indicates a flow of interest received and an arrow going from the central line to the right represents a flow of interest paid. The interest flows relating to short rates are indicated by dotted arrows.

While interest-rate-swap contracts are by far the most important on the OTC markets, credit-risk swaps (better known as Credit Default Swaps or CDS) have in recent years grown particularly rapidly. Less standardised than the interest-rate swaps, they permit institutions to relieve themselves of the credit risk of a claim while retaining it in their balance sheets. These contracts are akin to those of traditional insurance, with the purchaser buying protection against the possibility of default on the part of the borrower. In exchange for a periodical payment to the insurer (the protection seller), the insured party (the protection buyer) will receive a compensatory payment should a “credit event” occur – default on the part of the borrower, for example, or simply non-payment of interest due. As in the case of securitisation, these instruments make it
possible in theory for banks to relieve themselves of the credit risk on loans made, or simply to diversify their exposure.

How large are these markets today? An idea in the case of the organised markets is given by the “open” position – the sum of the notional amounts underlying the contracts in place. In the middle of 2008, according to the Bank for International Settlements (BIS), this amounted to some $84,000 billion, compared with $14,800 billion 10 years earlier. The development of OTC markets has been more rapid still: in mid-2008 the notional underlying amount for the totality of these contracts was close to $700,000 billion, almost 10 times what it had been in 1998. Comparison between the respective sizes of these two types of market is deceptive, however. On the OTC markets the absence of standardised contracts and of a clearing house means that it is only possible to unwind a position prior to maturity by taking the reverse position. The initial contract remains in place and a new one is added to it, the result being a corresponding increase in the mass of contracts outstanding. The notional amount of an OTC market therefore resembles the volume of transactions on an organised market more than its open position. The gross market value of outstanding contracts (i.e., their replacement cost at a given date) gives a more exact – and more modest – idea of the size of these OTC markets: in mid-2008, it was “only” $20,000 billion.

**The development of an “alternative banking system”**

In less than two decades, securitisation and derivatives have profoundly transformed the way in which loans granted by banks are financed, just as they have the way in which their risks are borne. These transformations have led to the development of a genuine “alternative banking system”. Loans granted by banks can now be financed by savings that are no longer collected by deposit institutions alone and the risks attached to these loans can be borne by “risk-takers” who collect no savings. The intervention of these risk-takers can take two forms. Some will take on, in one way or another, part of the risks attached to bonds produced by the securitisation industry before they are acquired by the savings-collectors (banks, money market funds, pension funds, life insurance companies). Others will borrow from the collectors of savings the sums needed for the acquisition of claims whose risks they will bear.

The “credit-enhancers” work according to the first of these modalities. In the United States, since the beginning of the 1970s, specialised financial institutions – consequently known as “monolines” – guarantee, against payment of a premium, the bonds issued by municipalities. Relieved of their credit risk, these bonds enjoy a higher rating, i.e. that of the mono-
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line (until 2007, they were always rated AAA). This facilitates their placement with collectors of savings – mutual funds in particular. With the development of securitisation, the monolines have also begun taking on the credit risk of structured products.

Fannie Mae and Freddie Mac – two of the GSEs referred to earlier – work according to both the modalities mentioned. On the one hand, they guarantee bonds backed by the loans they securitise (hence relieving them of their credit risk). On the other, they issue bonds to finance mortgage loans which they keep on their balance sheets. For these loans, they bear, in addition to the credit risk, two additional risks: an interest-rate risk and a risk related to the prepayment option attached to American mortgage loans. They handle these two latter risks by issuing bonds of longer or shorter maturities – some of which themselves carry a prepayment clause – and by massive recourse to the interest-rate derivatives market (on which they are a major player).

Most of the other risk-takers take part in the process mainly by financing out of borrowing the acquisition of a portfolio of risky assets. Their debt leverage – the relationship between their assets and their equity capital – gives in their case a certain notion of the risks borne. Diagram 3 summarises the operations undertaken by a risk-taker borrowing short term to buy a corporate bond. The risk-taker assumes the same risks as a bank lending to a company: a credit risk (he holds the bond and will suffer a loss if the company defaults), an interest-rate risk (because he borrows on the money market at the short-term rate), and a liquidity risk (if some time in the future no one is prepared to lend to him, he will have to sell the security acquired in order to repay his short-term borrowing).

In exchange for this risk-taking, he receives, throughout the period during which he maintains his position, the difference between the interest rate on the bond and the prevailing (variable) short rates. Note that he may possibly wish to keep only the credit risk. In that case, an interest-rate swap could relieve him of the interest-rate risk and a credit line guaranteed by a bank could relieve him of the liquidity risk.

Diagram 3. **Risk-taking chains: a risk-taker borrows to finance the acquisition of a corporate bond**

<table>
<thead>
<tr>
<th>Final borrower (firm)</th>
<th>Credit and interest-rate risk-taker</th>
<th>Money market mutual fund</th>
<th>Final lender (household)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond issuance</td>
<td>Bond purchase</td>
<td>Short-term loan on the money market</td>
<td>Purchase of money market fund shares</td>
</tr>
<tr>
<td>Bond rate</td>
<td>Bond rate</td>
<td>Short rate</td>
<td>Short rate</td>
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<td>Bond rate</td>
<td>Bond rate</td>
<td>Short rate</td>
<td>Short rate</td>
</tr>
</tbody>
</table>
Since the end of the 1990s, in both the United States and in Europe, three main types of risk-takers have been playing a central role: the investment banks (also known as "brokers and dealers"), the hedge funds and the off-balance-sheet vehicles.

The investment banks are not strictly new and are not, in origin, genuine risk-takers: they are in the first place intermediaries. They facilitate the issuance and circulation of securities (taking a commission on the way) and thus ensure market liquidity. They find their finance either through short-term borrowing against securities or using the deposits of their clients or through bank loans. In recent years, they have expanded rapidly: in the space of 10 years, the size of the balance sheets of American investment banks has almost quadrupled, exceeding $3,000 billion at the end of 2007. This growth is explained in part by their active role in the issuance of ABS and CDOs. In addition, these banks play a central role on the OTC derivatives markets. In their capacity as dealers acting as counterparties to the transactions, they do not in principle retain the risks acquired. Once a transaction has been carried out with a client, the dealer in fact in most cases looks for another counterparty prepared to take on the reverse position so as to cancel out his initial exposure. If he is unable to find a client ready to take on this risk, he will have recourse to the "inter-dealer market". Being at the centre of the circulation of risks, these operators have by no means remained simple intermediaries: between 1987 and 2007 the portfolio of claims and securities held for their own account by American investment banks rose from less than $40 billion to more than $800 billion [O’Quinn, 2008]. Taking into account their high leverage – at the end of 2007, the figure for the five principal American investment banks was close to 30 on average – these institutions look less and less like simple intermediaries and more and more like risk-takers. Note that alongside the investment banks, the "proprietary accounts" of banks and other financial institutions are also the location for risk-taking: their traders are constantly taking positions on markets with a view to making a profit. Their activities in many cases differ from that of the hedge funds only in that they take place within the regulatory framework of the institution to which they belong.

The hedge funds are, by their nature, pure risk-takers (being often in fact identified with speculators). They are able to take positions on the most volatile markets using sometimes very high debt leverage. In order to limit their liquidity risk, they generally ban their clients from withdrawing their capital during a certain period. As they often operate offshore in order to escape domestic regulations, there are no official statistics concerning them. The estimates available suggest that their growth has been particularly rapid in the past two decades: according to
Hedge Fund Research, the capital entrusted to these funds rose from less than $40 billion in 1990 to $1,900 billion at the end of 2007. This sum may appear small by comparison with the $85,000 billion of assets held in 2007 by banks throughout the world. However, the sums entrusted to the hedge funds constitute "equity capital". The comparison therefore has to be made, not with the assets, but with the equity capital of these same banks. The ratio arrived at in this way – roughly one-half at end-2005 [Papademos, 2007] – probably gives a more realistic idea of the importance of these funds in the taking of financial risks. Note that, on average, they nevertheless have smaller leverage than the banks. A survey by Merrill Lynch has shown that at the beginning of 2008 the average leverage of the respondent funds was of the order of 1.4. The risks borne by these agents nevertheless differ widely from one fund to another: some of them use no debt leverage, while others have debt levels more than 10 times their equity. The largest hedge funds often show even higher figures. At the beginning of 1998, LTCM had leverage of 25 and at the beginning of 2008 Carlyle Capital (bankrupt since early in 2008) had leverage of over 30. However, these figures say nothing about the quantity of risk actually borne by these funds. The capital of LTCM – $4.8 billion – might appear to be low in relation to the size of its balance sheet ($120 billion), but it was even smaller in relation to its off-balance-sheet position. LTCM had in fact signed derivatives contracts involving a notional amount of as much as $1,300 billion [Eichengreen and Mathieson, 1999].

Alongside the hedge funds, the role of the off-balance-sheet vehicles has also expanded rapidly in the 2000s. Created by banks in order to derive tax or regulatory advantage\footnote{In particular, under the Basel I regulation, if a bank buys ABS, it has to allocate for the purpose an amount of equity capital regardless of the risk actually associated with these securities. However, if these ABS are held by a vehicle in which the bank is shareholder, it will receive the difference between the return on the ABS and the financing cost of the vehicle without having to allocate equity capital to do so.}, these vehicles have enabled them to remove from their balance sheets the drafts, loans or securities for which they no longer in principle had to bear the risks or ensure the financing. These vehicles have taken the form either of "conduits" or of Structured Investment Vehicles (SIVs). The former normally hold types of asset that are simpler – but not always tradable (generally loans or drafts) – than those held by the latter. They find their financing through the issuance of commercial paper backed by the assets of the fund (hence their name of Asset Backed Commercial Paper – ABCP – "conduits"). The financing of SIVs, for their part, is carried out only partly by the issuance of commercial paper. These vehicles in fact also issue longer-term debt securities...
and have their own equity capital. The assets on their balance sheets include securitised claims but also debt securities of financial institutions or CDOs. Although small in the 1990s, at their peak in July 2007 the SIVs had assets of roughly $400 billion, compared with $1,400 billion for the “conduits”.

Because of the special nature of their activity, it is difficult to obtain a precise measure of the importance of the totality of these risk-takers in the functioning of the financial system. Box 1 nevertheless provides for the United States an evaluation focusing on the taking of the credit risk only. Crude though it may be, the evaluation proposed shows that in mid-2007 the size of the alternative banking system in which these risk-takers participated was, in the United States at least, comparable to that of the traditional banking system (Graph 2). This conclusion is all the more important in that, unlike the deposit institutions, these risk-takers were subject to little or no regulation (with the exception of the GSEs, which were subject – in principle – to specific surveillance by the US administration).

Graph 2. Size and components of the US “alternative banking system*”, 1990-2007

An intensification of international financial integration

In parallel with the shattering of the framework of traditional banking intermediation, recent decades have been marked by the gradual disappearance of the frontiers between national financial systems. One after the other, the Western countries, followed by numerous emerging countries, have lifted the barriers to international capital movements. The infrastructure of both traditional and globalised finance then provided
Box 1. A measure of the size of the American “alternative banking system”

The objective is to evaluate the importance of the alternative system in the taking of financial risks and to compare it with that of the traditional banking system. The sources used are mainly the Federal Reserve’s flow-of-funds statistics and Hedge Funds Research. The approach adopted concentrates on the credit risk. The other risks are therefore ignored, as is the credit risk taken through transactions in derivatives (as a substantial proportion of these transactions is carried out between risk-takers, the resulting bias is reduced correspondingly). In addition, given the sources used, the “credit-risk load” relating to the assets taken into account is unknown: a billion dollars’ worth of the equity tranche of CDOs is equivalent to a billion dollars’ worth of the senior tranche. Despite its imperfections, the estimate nevertheless suggests that the development of the “alternative banking system” has been spectacular.

The amounts of credit-risk-bearing assets – financial assets excluding bank deposits, Treasury securities and GSE securities – held by the various risk-takers were as follows at mid-2007:

– $1,900 billion for the finance companies
– $3,000 billion for the investment banks
– $2,500 billion for the hedge funds (applying an average debt lever of 1.5 to all the capital entrusted to them, without separating out the American funds).
– The GSEs’ worth of risky assets on their balance sheets was $1,300 billion. However, this figure does not provide a measure of their total risk-taking. These institutions also take on the credit risk of the bonds issued by the GSE pools to which they have sold the largest part of the loans they have bought. In total, the worth of loans these GSEs were carrying the credit risk for roughly amounted to $5,400 billion.
– The case of the off-balance-sheet vehicles is more complicated. On the basis of estimates provided by the IMF [2008] and the evolution of the stock of American ABCPs, the assets held by the American vehicles can be estimated to be some $1,400 billion.

Adding together the amounts obtained for these various categories of risk-takers, one arrives at a total of almost $14,200 billion in mid-2007. By comparison, the amount of risky financial assets held by American deposit institutions (commercial banks, “savings and loans” and credit unions) was somewhat smaller at the same date, amounting to around $11,300 billion (of which 9,200 billion on the balance sheets of the commercial banks alone).

(1) The calculation also ignores the risk taken by the credit-enhancers (or monolines).
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The platform for the progress of international financial integration, the only major difference being the emergence of a new risk, namely the exchange risk. This integration in fact brings into contact different monetary spaces. If non-financial agents do not wish to take any exchange risk, capital can circulate between these spaces only if some financial operators agree to take on the risk involved. In the chains described earlier, financial integration will then be reflected in the appearance of an additional link in the form of an exchange-risk-taker.

Diagram 4. An American firm borrows dollars from a European saver

<table>
<thead>
<tr>
<th>Final borrower (American firm)</th>
<th>Credit and interest-rate risk-taker</th>
<th>Foreign exchange risk-taker</th>
<th>Final lender (European household)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond issuance in $</td>
<td>Bond purchase in $</td>
<td>Short-term borrowing in $</td>
<td>Short-term lending in $</td>
</tr>
<tr>
<td>$R</td>
<td>$S</td>
<td>$ short rate</td>
<td>$ short rate</td>
</tr>
<tr>
<td>Short-term borrowing on the $S</td>
<td>$S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bond issuance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of money market fund shares in €</td>
<td></td>
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</tr>
</tbody>
</table>

To understand this, let us take Diagram 3, but let us suppose that the firm is now American and the supplier of savings European. Since neither the firm nor the household wishes to take on the exchange risk, the European savings can only be mobilised if someone is prepared to take this risk. The introduction of an additional link in the chain – a taker of this exchange risk – makes it possible to leave the rest of the chain intact (Diagram 4). As previously, the firm, which has no reason to know where the savings it is borrowing come from, issues a dollar-denominated bond at interest rate \( r \). Again as previously, the risk-taker buys this asset and finances the purchase through a loan remunerated at the prevailing (variable) short dollar rate. He therefore takes on a credit risk, an interest-rate risk and a liquidity risk. For these operations to have taken place, however, it was necessary for each party to find a counterparty. One player was obliged to borrow euros (i.e. mobilise European savings) and exchange them for dollars in order to be able to lend them to the risk-taker buying the bond. This player receives, for a set period, the dollar short rate and pays the euro short rate. This means that he is a taker of the exchange risk. Such an operation will be neutral for him only if, over this same period, the fluctuation in the exchange rate has been precisely equivalent to the difference in short-term interest rates. As the short-term dollar rate is assumed in this case to be higher than the short-term...
The infrastructure of globalised finance

euro rate, our operator will suffer a loss if the dollar depreciation percentage exceeds the interest-rate difference; he will make a profit if the movement is smaller or, a fortiori, if the dollar has appreciated.

The extension of the risk-taking chains made possible by globalised finance can therefore be placed at the service of international transfers of savings. The operations depicted in Diagram 4 show how savings obtained in Europe can finance investment by an American firm. But these chains can also serve merely to circulate risks and permit improved diversification of both assets and liabilities without any international transfer of savings taking place. For example, an American firm that had already issued substantial amounts in dollars could possibly pay a smaller risk premium by issuing on the European market, especially if, on this latter market, the “supply” of high-quality credit risk is low in relation to the demand. Box 2 shows how this firm can take advantage of its “European” risk premium while still not having to take on the exchange risk. This it can do, it should be noted, regardless of the origin of the savings it borrows. Where the savings come from in fact depends, not on microeconomic decisions, but on the macroeconomic behaviour and policies that govern for each country the balance between savings and investment. The development of the infrastructure of globalised finance facilitates the financing of possible current-account imbalances, but it cannot provoke them.

Box 2. **Origin of savings and the exchange-rate risk**

The diagram below shows how the risk-taking chain set out in Diagram 4 is modified if, with the savings financing the American firm still European in origin, the bond issue is this time made in euros to enable the firm to benefit from its “European” risk premium.

An American firm borrows euros from a European saver

The euro money market does not appear in the diagram. For simplicity, it has been assumed that the European risk-taker borrowed the savings directly from the European household.
The taker of the credit and interest-rate risks is now operating in euros. He buys the bond issued in euros (receiving the fixed interest rate $r\text{€}$) and borrows short term the euros needed for the transaction (therefore paying the variable short-term euro rate). As the firm still wishes to borrow in its own currency (the dollar), it will, just after the bond issue, proceed to a currency swap (to be more precise, a “cross-currency basis swap” or CCBS). This enables it to exchange, for the duration of the bond issue, capital in euros for capital in dollars and hence the related flows of interest. When this swap operation has been completed, the firm therefore pays a fixed interest rate in dollars ($\text{swap } $) and receives a fixed interest rate in euros ($\text{swap } €$). At maturity, it will repay the dollars borrowed and will be repaid the euros lent, thus in the end enabling it to repay its initial borrowing. During the duration of the transaction everything is as if the final borrower had borrowed dollars on the American bond market – paying the swap rate in dollars – but paying its “European” risk premium ($r\text{€} – \text{swap } €$), which is, by hypothesis, lower than the “American” risk premium ($r\text{$} – \text{swap } $). Finally, there must be an exchange-risk-taker to act as counterparty to the firm’s currency swap. Placing dollars at the disposal of the borrower, whereas the final lender has a deposit in euros, necessarily generates an exchange risk! As previously, this operator receives an interest rate in dollars (in this case at fixed rate) and pays a fixed interest rate in euros.

Note that the benefit derived by the American firm (the payment of a lower risk premium on the European market) does not necessarily imply that the savings lent are European. The diagram below in fact shows that the firm can benefit from the same advantage even if the supplier of the savings is American.

An American firm borrows in euros, the savings being American

(1) For simplicity, the counterparty risk related to the swap operations is ignored here.
For a long time, financial integration has in fact been characterised not so much by international transfers of savings as by an expansion of transfers of risk. Between the early 1970s and the Asian crisis of 1997-98, transfers of savings – measured by the world current-account imbalance – barely increased, fluctuating around 1.2% of world GDP. Over the same period, however, international financial flows rose from 1% of world GDP to more than 8% (Graph 3).

Graph 3. World current-account imbalance and capital flows, 1970-2007

The world current-account imbalance is the half-sum of the absolute values of the deficits or surpluses (for the 181 countries in the IMF database). Similarly, world capital flows are the half-sum of the absolute values of capital inflows and outflows.

Sources: Thomson Datastream, IMF
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With the passage of time, the expansion of these international financial flows has led to an increase in the assets and liabilities of each of the developed economies vis-à-vis the rest of the world. Whether they accumulated current-account surpluses or deficits, these economies now have international financial balance sheets whose scale – measured by the half-sum of their transfrontier assets and liabilities – has now in many cases become much larger than their GDPs. In the mid-2000s, for example, the international balance sheet of the euro zone was therefore close in amount to that of the United States. And for these two same economies, the gross positions vis-à-vis the rest of the world for major types of transaction – direct investment, portfolio investment and other transactions – were of comparable orders of magnitude (Table 1). The liberalisation of capital movements has contributed, not so much to the transfer of savings among Western countries, as to making it possible for residents of these countries to improve the diversification of their risks. If Americans buy European equities and Europeans buy American equities, capital flows will be observed in both directions without there necessarily having been significant transfers of savings between the two economies.

| Table 1. International balance sheet of the United States and the euro zone at end-2006 |
|------------------------------------------|------------------|------------------|
|                                        | United States    | Euro area        |
| (billion dollars)                       | Assets           | Liabilities      |
| Direct investment                       | 4,455            | 4,149            |
| Portfolio investment                    | 5,904            | 5,788            |
| - Equities                              | 4,329            | 3,213            |
| - Debt securities                       | 1,276            | 3,587            |
| Other investment                        | 4,310            | 4,976            |
| Reserves                                | 292              | 2,555            |
| Total                                   | 14,661           | 16,225           |
| Net investment position                 | -1,909           | -1,919           |

Source: Bureau of Economic Analysis, European Central Bank

Financial liberalisation has also been accompanied by an intensification of the “international division of financial risk-taking” in which the emerging regions have participated [Brender and Pisani, 2002]. The financial systems of the developed countries, regarded as being better managed and supervised than those of the emerging countries, in fact normally attract capital seeking security – and sometimes also anonymity – on the major Western financial centres. At the same time, since the residents in the developed regions tend to be richer and able to bear risks that those of the emerging countries cannot, capital will flow to the latter, for example in the form of direct or portfolio investment (net inflows of
direct investment to the emerging countries have amounted annually since the mid-1990s to around 0.6 of a point of world GDP, compared with 0.1 of a point during the 1980s). Here too, for a long time these financial flows moving in both directions resulted in no lasting transfer of savings between emerging and developed regions.

The end of the 1990s marked a turning point, however. International capital movements have admittedly continued to intensify, but they are no longer this time merely a vehicle for transfers of risk. They also permit important transfers of savings. Graph 3 gives a measure of the scale of this change: between 1998 and 2007, the world current-account imbalance rose from 1% of world GDP to more than 3%. International financial integration has therefore changed its nature at the same time as the interpenetration of the developed and emerging economies was being strengthened. The following chapter will show the way in which this new progress with globalisation has facilitated the development of the emerging economies.
Since the end of the 1990s, the increase in transfrontier capital movements has led to almost a doubling of the ratio of all countries’ external balance sheets to world GDP. The emerging regions have participated in this evolution. Between 1998 and 2007, the average size of their international balance sheets rose from roughly 60% of their GDPs to more than 80%. In parallel with this progress of their integration in the global financial system, their economic growth has accelerated in spectacular fashion. This acceleration, far from being confined to a few exemplary economies, 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. To what extent and by what channels has financial globalisation contributed to this evolution?

The partisans of financial liberalism have long had their own answer to this question. For them, greater financial openness brings to the emerging regions the capital and the know-how they lack for their development. By enabling these regions to import savings and production techniques from the more advanced regions, this greater openness improves their supply-side conditions and increases their labour productivity. The acceleration in the emerging regions’ growth seen at the same time as an increase in the intensity of international transfers of savings was taking place seems to confirm this view (Graph 4).

It would be wrong, obviously, to see in this evolution proof of the validity of the free-market standpoint. While world transfers of savings have indeed risen sharply just when the growth of the emerging regions
Globalised finance and its collapse

Graph 4. *International transfers of savings and growth of emerging regions, 1980-2007*

The world current-account imbalance is the half-sum of the absolute values of the current-account surpluses or deficits of 181 countries.

Sources: IMF, authors’ calculations

was accelerating and while they have indeed taken place mainly between them and the developed regions, the direction taken by these transfers is known to have been the exact opposite of that expected. Far from being North-South, they have in fact been South-North! Globalisation has nevertheless played a decisive role in the acceleration seen in growth. To be convinced on this point, it is necessary merely to note the correlation existing, taking this time just the emerging regions, between growth and the current-account balance. The acceleration in their growth starting at the end of the 1990s is indeed very closely associated with an improvement in their current-account balance (see Graph 5). It was by permitting these regions to export and not import savings that globalisation has contributed to this acceleration.

Graph 5. *Current accounts and growth, 1980-2007*

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
After examining in more detail the link between exports of savings and the macroeconomic performance of the emerging regions, this chapter will take a brief look at the way in which financial globalisation has contributed to their development, before finally analysing the role played by foreign exchange policies in these evolutions.

**Development and transfers of savings**

In order to assess the link between the macroeconomic performances of the emerging economies and transfers of savings, it is useful to have a measure of performance that is less crude than GDP growth. A growth rate of 5% a year can be remarkable for a relatively developed country but mediocre for one that is less so (especially if the population of the latter is rising more rapidly than that of the former). To mitigate this difficulty, a “frontier” has been defined that gives the growth in GDP per head that an economy at a given level of development, properly managed and having access to all the necessary savings, can hope to sustain over the medium term.

**Box 3. Definition of a “frontier” in terms of GDP growth per head**

This frontier has been constructed empirically on the basis of observations for the years 1980-2007 and for the 181 economies in the IMF database. Each point on the graph below corresponds:

- in its abscissa, to the GDP per head, measured on a PPP basis and in constant 2000 dollars (using the United States GDP deflator), for a given country and a given year;
- in its ordinate, to the country’s growth in GDP per head, calculated using national data in local currency and in real terms, on an annual average basis for the following five years.

To draw the frontier, the points were first ranked in increasing order of GDP per head. They were then regrouped, respecting this order, by “buckets”, after which a search was made within each bucket for the maximum growth of GDP per head above which only a small percentage of the points in the bucket remain. This growth rate then defines the “observation” associated with the bucket. The curve of the graph was then estimated on the basis of this set of observations. Given the wide dispersion of points for very low GDPs per head, the first two buckets comprise 1,400 and 700 points respectively and the maximum growth rate taken, in both cases, is such that only 1% of the growth rates in the bucket exceed it. The following buckets consist of 70 points and the growth rate taken is such that only 5% of the growth rates in the bucket exceed it. Given the low density of observations for high GDPs per head, the final bucket (GDP per head greater than
$30,000) is excluded. The equation of the frontier, estimated on the basis of
the 23 observations obtained in this way, is as follows:

\[ 5\text{-year growth of GDP per head} = -3.36 \log (\text{GDP per head}) + 37.84 \]

Altering in reasonable proportions the size of the buckets or the accepted
percentages for above-limit growth rates modifies only slightly the result of
the estimate and never affects the conclusions commented on in the text.

In order to illustrate the functioning of this frontier, the right-hand graph
shows evolutions for certain individual countries. For example, it will be
seen that India is clearly just at the start of a long road. Its very low GDP
per head has grown only moderately, at a rate of only close to 5% until the
mid-2000s. China, for its part, has succeeded in considerably accelerating
its productivity gains – between 1980 and 2007, the rise in China’s GDP
per head was twice as fast as India’s – and its level of development has
progressed appreciably. In coming years, if China manages to remain close
to the frontier, its productivity growth will slow down to the rates seen in
Korea in the early 1990s. Korea, for its part, in the mid-2000s reached
where Spain was a decade earlier, and Spain is now where the United
States was in 1985.

The shape of this frontier (see Box 3) reflects a widely held intuitive
view, namely that the less developed a country is, the greater its potential
for growth. By investing in a sustained manner, it can increase the
available capital per worker. Since its initial stock of capital is low, the
marginal productivity of this investment will be high. At the same
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For a country that is “emerging”, sticking close to this frontier is not easy, however. This is clearly shown by the point cloud in Box 3. While, by construction, virtually all these points are located below the frontier, in many cases the distance from it is substantial, many points in fact even being situated below the horizontal axis, in other words corresponding to periods during which, averaged over five years, output per head has decreased. This can be seen to be the case especially for countries at low levels of development. For a country whose GDP per head is less than $10,000, there is a real risk of experiencing a lasting downward trend in its standard of living and for a country whose GDP is less than $1,000 the likelihood is greater still, as indeed is the extent of the decline threatening it.

This “frontier” will now be used as a yardstick to measure the recent “performance” of various developing countries or regions. For each one, the performance over a given five-year period will be regarded as better, the closer the growth rate of its GDP per head has been to the “frontier” rate. In other words, the gap between the observed and the “frontier” rate will constitute the measure of its performance. As illustration, a country that like China manages to maintain high productivity gains, period after period, even though its GDP per head is rising rapidly, will see its distance from the frontier narrow and its “performance” improve. What is the link between the performance defined in this way and the transfers of savings made possible by globalisation? If one compares the performance of the Chinese economy with the evolution in its current-account balance (see Graph 6), the initial observation concerning the role of transfers of savings is clearly confirmed: the Chinese economy has steadily approached the frontier since it became an exporter of savings and its distance from the frontier has even been close to zero since its current-account balance has exceeded five GDP points.
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Graph 6. **Growth, distance to the frontier and current account for China, 1985-2007**

On the right-hand graph, the distance from the frontier is measured by the difference (multiplied by 100) between the "frontier" rate defined in Box 3 and the observed five-year average growth rate of GDP per head. The current-account balance is the average for the same five years.

Sources: IMF, authors' calculations

This case is spectacular, but there is nothing exceptional about it. Graph 7 confirms that the link between international transfers of savings and economic performance takes the same direction for the whole of the emerging economies. Looking at the evolutions on an unweighted average basis for 154 emerging countries, one sees that their average distance from the frontier has narrowed continuously since the end of the 1990s – i.e. productivity gains have come close to the highest achieved in the past by countries at the same level of development – at the same time as the average intensity of the imports of savings was declining. A similar relationship can be seen for all the main developing regions with the exception of countries in Central and Eastern Europe. Since the end of the 1990s, these countries have also come closer to the frontier but with a significant worsening of their current-account balances, in other words in this case they were importing savings.

**The unexpected contribution from financial globalisation**

While financial globalisation has indeed contributed to the development of the emerging countries, the nature of this contribution has not been the one commonly expected. In most cases, the recent improvement in their performance has been accompanied by a reduction in their imports of savings [Prasad et al., 2007]. In fact, with one exception, each of the major emerging regions taken as a whole has become a net exporter of savings. How can this apparent paradox be explained?

The history of the initial phases of the current globalisation gives part of the explanation [Kose et al., 2006]. On at least two occasions, at the end of the 1970s and in the mid-1990s, emerging countries imported significant quantities of savings. On both occasions, their growth accelerated for a few
The weighting used is that of the country in the zone’s GDP measured in current dollars (using PPP dollars gives very similar results). The distance from the frontier is measured by the difference (multiplied by 100) between the “frontier” rate defined in Box 3 and the observed five-year average growth rate of GDP per head. The current-account balance is the average for the same five years.

Sources: IMF, authors’ calculations
years until a crisis brought this arrival of foreign savings to a sudden halt and forced them, in order to repay the accumulated debt or pay the interest on it, to reduce their domestic demand sharply, at the cost of a far-reaching destabilisation of their activity. These “sudden stops” had a substantial economic and social cost [Calvo and Reinhart, 2000]. Graph 7 illustrates the point in the case of the Asian countries that bore the full brunt of the more recent of these two crises. In the mid-1990s they approached the frontier at the same time as their current-account deficit was widening and they subsequently had to move sharply away from it at the end of the decade, to enable their current-account balance to improve substantially.

In part, these repeated crises stem from the tenacious a priori ideological beliefs of the promoters of liberalisation of capital movements. For them, this liberalisation is bound on its own to enable the “invisible hand” of the market to ensure improved allocation of savings at world level. Hence the conviction that the development of countries where the return on capital is still relatively low may be encouraged by their mere integration into the globalised financial system. This purely abstract vision of the mechanisms that allocate savings at world level ignores the imperfect, even crude, character of the practical arrangements through which the risks related to the operations involved are assessed, taken on and managed. This imperfection has been particularly marked in the case of international transfers of savings towards the countries of the South. It was as if on each occasion the guiding “invisible hand” found the associated risk invisible as well.

At the time of each of the crises, this blindness was manifested by both lenders and borrowers. For example, at the end of the 1970s those who lent to the Latin American countries made no effort to assess the risks attached to their repayment capacity. All eyes were entirely focused on maintaining shares of a rapidly expanding “market” and no one showed any concern for the size of the total debt that was building up. As for the borrowers, they preferred to avert their gaze from the dangers of a situation in which, borrowing in dollars and mainly at variable rate, they were combining exchange risk and interest-rate risk, a combination that was all the more dangerous in that the rise in American interest rates launched by Paul Volcker in 1979 was simultaneously adding to their debt burden and reducing their capacity to service it by limiting their export receipts! Some 15 years later, at the time of the Asian crisis, the Western banks had learnt the lessons – for themselves, at least – of this dramatic episode. For the most part, they lent short term, thus shifting onto the borrowers an additional risk, namely that of liquidity. They did so all the more easily in that no public surveillance system existed to limit the risks taken by the borrowers, i.e. the local banks. When the crisis
broke out, only a harsh contraction of domestic demand combined with a steep decline in the exchange rate made it possible to generate in the space of a few months the current-account surpluses needed for the repayment of the borrowing.

After this second crisis, a certain number of countries, notably China, tried to base their development on a substantial degree of financial autonomy. Rather than import savings for the purpose of more rapid development of their productivity, they preferred "self-reliance", generating these savings for themselves. In this, they were helped by their strategy of insertion into the international division of labour. Along the lines of the strategy adopted a few years earlier by the Asian "Tigers", this consisted of exploiting their low manpower costs to position themselves massively on the assembly stages of the various manufacturing chains (apparel in the case of textiles, for example). These more labour-intensive stages are the ones where the maximum competitive advantage can be derived from low wage costs. Countries adopting this strategy then serve as "workshops" for the rest of the world, the inputs needed for these exports being imported, initially at least. The resources they derive to finance their development therefore correspond only to the national value added contained in their exports. If they want to become financially independent – if they do not want to import savings – this value added has to be sufficient to finance the purchases of equipment and raw materials they need.

In order to maintain firm growth and remain close to the frontier, countries will then need to keep exports rising rapidly as their development progresses. For this purpose they have to remain competitive as workshops. This they will only succeed in doing if, year after year, their wage costs remain relatively low, with wage rates not growing faster than productivity. This moderation in wage growth (and hence in household expenditure) is needed to maintain competitiveness but also to ensure countries' financial autonomy: if they export large amounts but at the same time their consumption rises rapidly, they will not be able without external savings to finance the investment needed, at their stage of development, to remain close to the frontier.

For countries managing to achieve this level of savings, the rapid growth in exports makes it possible to purchase from abroad, without borrowing, the goods and services needed for their development and for the functioning of economies that are growing rapidly in size. Quite soon, however, if the countries' growth potential increases appreciably, the role of exports may change: stimulating their expansion now becomes a means of bolstering the demand for the products of domestic firms whose productive capacities are expanding rapidly. This need may
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make itself felt if domestic agents’ savings remain substantial to the point of exceeding what can usefully be invested in the economy. Out of force of habit, concern for the future or absence of a social welfare system, but also owing to the impossibility of borrowing for lack of a developed financial system, households may keep their savings ratio relatively high [Chamon and Prasad, 2008]. If, moreover, the distribution of income has remained tilted too far in favour of the corporate sector, domestic savings will fairly rapidly show a surplus. Keeping the installed capacity fully utilised and absorbing the new arrivals on the labour market will then only be possible if this savings surplus can be exported. At this stage, the contribution of financial globalisation becomes essential.

At the beginning of the 2000s, China’s current-account surplus soared. This explosion resulted from the contrast between the rapid evolution in its industrial structure and the much slower changes in the spending behaviour and in the allocation of national income. China’s industrial development in fact accelerated. As the Asian “Tigers” had done some years earlier, China began to make for itself an increasingly large share of the inputs contained in its exports. Not only did the latter continue to grow rapidly but they contained an increasing proportion of national value added. China’s share of world income increased as a result, but this increase was not matched by growth in domestic spending, especially because profits as a share of GDP were constantly increasing. The fact that China was able nevertheless to remain close to the frontier and to fully mobilise a rapidly-growing production potential was because it was then able to export its savings surplus and enable its firms to find abroad the demand that was lacking domestically.

The acceleration in the growth of the heavily-populated Asian regions had one unexpected consequence, namely a reversal of the long-term downward trend in commodity prices. In the space of a few years, demand for primary products became so large as to create tensions on the various markets. One after another, raw materials saw their prices rise: oil, in the first place, followed by industrial commodities and finally foodstuffs. Given that, for most of these products, both supply and demand are, in the short term at least, relatively price-inelastic, these rises were steep and brutal. Here again, one result was a substantial change in the allocation of world income. In particular, the rise in the oil price was a source of massive transfers of income towards the exporting countries, which saw their current-account surpluses soar. Like the Asian countries, these oil-exporters, most of them emerging countries, became exporters of savings at the same time as their growth was accelerating.
The mechanisms operating at this point are nevertheless simpler. In part they relate to the desire of many producing countries, with bitter memories of past experience, to put into reserve at least part of their additional earnings. By their nature, prices of raw materials are particularly volatile and the 1980s revealed the income declines brought about in the oil-exporting countries by the drop in the price. In the mid-2000s, the speed of the rise, especially for oil, was such that, even if they had not wanted to build up their reserves, the exporting countries would not have been able to spend the totality of their earnings. The fact that the inertia of import spending was greater than that of export earnings automatically led, given the steady rise in prices until the summer of 2008, to a rise in the exporting countries’ current-account surpluses. Their investment, their productivity gains and their growth rates admittedly rose rapidly as well but their spending continued to lag behind their incomes, so that they became exporters of savings on a massive scale. It was financial globalisation that enabled them to do so. In its absence, this accumulation of financial surpluses would have been impossible.

In the end, the European emerging countries are the only ones for which globalisation seems recently to have played the role expected by the advocates of greater financial openness. Since the end of the 1990s, their distance from the frontier has steadily narrowed at a time when their external deficits were widening. This evolution is reminiscent of what happened in an earlier period in Latin America and Asia and necessitates questioning the way in which the risks related to these transfers of savings were taken and borne. In the meantime, these countries provided an outlet for the savings surpluses of the other emerging regions. Their contribution in this respect was nevertheless modest. In total, they imported in 2007 only one-seventh of the $850 billion of surpluses achieved in that year by the other emerging regions.

The role of exchange-rate policies

Exchange-rate policies played an essential role in the evolutions described here, especially for the emerging countries that are exporters of manufactures. The exchange rate is a relative price that is determined on a market. However, in the case of a country just starting its development, this market is particularly crude, with private supply and demand for currencies depending almost entirely on the country’s trade flows. Left to itself, the currency market will balance the supply of foreign currencies from national exporters, on the one hand, and the demand emanating mainly from importers, on the other. Exporting savings in these conditions is extremely difficult. For such exports to take place, the value of exports of goods and services must exceed that of imports. However,
when such a situation starts to take shape, equilibrium on the currency markets implies a rise in the exchange rate. Such a rise, by reducing exporters’ earnings in national currency, immediately reduces the country’s income while at the same time making it less competitive. Left to itself, the currency market is therefore the source of a powerful force opposing the formation of a savings surplus, a force that will be all the more powerful in that the emerging country’s take-off is highly likely to attract foreign capital and this, combined with exporters’ demands for national currency, will further increase the upward pressure on the exchange rate. For an emerging country to be able to export savings on a large scale, it is therefore necessary that action be taken by a public authority to counter this upward pressure, in part at least. By acting as counterparty to the private net sales of foreign currencies against its own, this authority accumulates foreign exchange reserves. Since the beginning of the 2000s, the Asian countries and also the Middle Eastern countries have intervened on the markets for their currencies on a massive scale. These foreign exchange policies have played a decisive role in the evolution of their current accounts described above. The countries that have actually succeeded in influencing their currencies’ exchange rates are also those which, as we are about to see, have generated current-account surpluses; conversely, those whose exchange rates have appreciated too rapidly saw their deficits widen.

In order to judge the extent of over- or undervaluation of a country’s currency, one can compare its current exchange rate with its purchasing power parity rate (both expressed in units of national currency per dollar). For the sake of simplicity, let us call the price ratio obtained in this way the country’s “real” exchange rate, adopting the terminology used by Cheung et al. [2006]. According to this measure, most emerging countries’ currencies are substantially undervalued. However, this measure ignores the link between the country’s exchange rate and its relative development. Box 4 provides a reminder of the existence of a relationship between a country’s level of development and its “real” exchange rate: the less developed the country, the more its real exchange rate appears to be undervalued. For a correct assessment of the over- or undervaluation of an emerging country’s currency, it is therefore necessary to have a yardstick that takes into account its level of development. This yardstick is defined in Box 4 by a regression line – estimated using the point cloud of available observations – relating the real exchange rate to the relative level of development.

1. For most of the products they export, the emerging countries are in fact in the situation of “price-takers”, with their prices depending on those of the rest of the world.
Box 4. Development, exchange rates and the current-account balance

For reasons widely identified in the literature (existence of transaction costs, non-tradable goods and services, etc.) there is no reason to expect absolute purchasing power parity to exist between countries with significantly different levels of development. The graph below, using purchasing power parity (PPP) data taken from the World Bank’s International Comparison Program (ICP) for 2005, shows the link between the relative level of development (ratio of the country’s GDP per head for a given year to that of the United States for the same year) and the “real” foreign exchange rate (ratio of the PPP exchange rate to the current exchange rate): on average, the less developed a country is, the more its current exchange rate appears to be underestimated compared with the PPP rate.

Exchange-rate norms and relative development

Exchange rates are expressed in national units per dollar. When the variable log (PPP exchange rate / current exchange rate) is greater than 0, the current exchange rate is lower than the PPP rate and the country’s currency is overvalued.

Sources: IMF, authors’ calculations

To define the relationship between level of development and undervaluation of the exchange rate we estimated, using panel data, the following equation for the period 1980-2007 or shorter periods:

$$\log(\text{PPP rate}/\text{current rate}) = a + b \log(\text{relative per capita GDP}) + f_t + u_{it}$$  (1)

The panel comprises 111 emerging countries out of a sample of 146 countries (only the 12 largest African countries, accounting for more than three-quarters of the zone’s GDP valued at PPP, and with each one representing at least 2%, were included). The coefficient $b$ is significant. The time fixed effects ($f_t$) are also significant, even though their introduction makes little change to the value of the coefficient $b$. The “quality” of the regression improves appreciably from the early 1990s on. Moreover, the
Globalised finance and its collapse

coefficient $b$ is stable (close to 0.24) starting from this time. The estimate is also robust to modifications in the sample: the estimate of the coefficient $b$ remains similar if one removes from the sample all the countries whose share of the PPP GDP of each zone is below 2%, as well as all the commodity-exporters (leaving 40 countries out of the original 111). The estimate was carried out using new PPP data (from the 2005 ICP). In the literature, the estimated value of the coefficient $b$ is a little higher, generally ranging between 0.25 and 0.35 (see in particular Cheung et al. [2006]). The new data modify in particular the assessment concerning the Chinese currency: whereas the old PPP data indicated a marked undervaluation of the yuan (of about thirty per cent as from 1994), this undervaluation disappears when the new data are used (see graph below). For Korea, on the other hand, the two estimates are closer: the won appears overvalued prior to the Asian crisis of 1997-98, then approaches its "equilibrium level" in 1998, before deviating from it again as from 2002 and especially 2005.

Exchange-rate norm and relative development level:
the cases of China and South Korea, 1980-2007

Equation (1) obtained above makes it possible to calculate a variable of relative over- or undervaluation of the various countries’ exchange rates:

$$
\log(\text{under/overval}) = \log(\text{PPP rate}/\text{current rate}) - (\hat{a} + \hat{b}\log(\text{relative per capita GDP}) + \hat{f})
$$

Note that this variable is, in its underlying principle, the same as that used in Rodrik [2007]. Rodrik, however, goes on to test the influence of this variable on emerging countries’ growth, whereas we test its effect on their current-account balances.
Graph 8 shows, for countries in two emerging regions, the evolutions since 1998 in their real exchange rates in relation to the above yardstick. The contrast between the Asian and European countries comes out clearly. As their development has progressed, most Asian countries have succeeded either in maintaining a relative undervaluation of their exchange rate or, in the case of those countries whose currencies were overvalued, in reducing this overvaluation. The cases of Bangladesh and Hong Kong are particularly clear-cut: between 1998 and 2007 the relative overvaluation of their currencies (measured by the distance from the estimated regression line) fell from some 50% to 15% and 3%, respectively. The evolutions in the Chinese currency are also noteworthy: in relation to the yardstick, the yuan does not seem undervalued today, at least on the basis of the latest PPP data. Above all, since 1980 China has succeeded, at the same time as its economy was developing and being

For this purpose, we estimate, still using panel data, the following equation:

$$CA_i = \alpha + \beta \log(\text{under_overval}_{it}) + f'_i + f'_t + u_{it} \quad (3),$$

where $CA_i$ is the ratio of the current-account balance of country $i$ to its GDP, $f'_i$ the time fixed effects and $f'_t$ the country fixed effects.

Over the period 1980-2007, the coefficient $\beta$ is not significant if one estimates the equation on the original universe of 146 countries (including the commodity-exporting countries). It becomes significant, however, if the sample is reduced to the 105 non-commodity-exporting countries. Keeping only the “largest” of them (those whose share of their zone’s PPP GDP exceeds 2%), leaving 40 countries in the sample, improves the results still further. The estimated value of coefficient $\beta$ increases appreciably – from -4.2 to -9.6 (columns 2 and 5 of the table) – if the estimation period is reduced to the years 1995-2007.

The following table recapitulates the results obtained:

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>log(under_overval)</td>
<td>-1.52*\text{ (3.8)}</td>
<td>-4.20*\text{ (7.16)}</td>
<td>-5.00*\text{ (9.73)}</td>
<td>-5.04*\text{ (7.45)}</td>
<td>-9.61*\text{ (11.02)}</td>
<td>-10.04*\text{ (10.39)}</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.59*\text{ (3.08)}</td>
<td>-2.15*\text{ (3.15)}</td>
<td>-1.53*\text{ (4.08)}</td>
<td>-2.05*\text{ (4.20)}</td>
<td>-1.65*\text{ (4.72)}</td>
<td>-1.65*\text{ (4.72)}</td>
</tr>
<tr>
<td>Country fixed effects</td>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Time fixed effects</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Number of observations</td>
<td>2,542</td>
<td>924</td>
<td>626</td>
<td>1,349</td>
<td>512</td>
<td>359</td>
</tr>
</tbody>
</table>

* Significant at the 1 percent level

The list of commodity-exporting countries is that adopted by the IMF (World Economic Outlook, April 2008, p. 237). The sample of 28 countries is obtained by keeping, out of the 40 countries, only those of Latin America, Asia and Central and Eastern Europe.
Globalised finance and its collapse opened up, in reducing the overvaluation of its exchange rate from more than 150% in 1980 to around 5% in 2007. Over the same period, the exchange rates of the Eastern European countries were tending to follow the opposite path, rising at the same time as their GDP per head. For example, whereas Turkey’s relative GDP per head rose rapidly from 2001 on, the Turkish lira went from a relative undervaluation of 20% to an overvaluation of more than 35% in 2007. A similar movement can be seen for most of the other emerging European countries.

Graph 8. Real exchange rate and development, 1998-2007

When the variable log (PPP exchange rate / current exchange rate) is greater than 0, the country’s currency is overvalued. The regression line shown on the graphs is that estimated in Box 4.

Sources: IMF, authors’ calculations

What effects have these evolutions in real exchange rates had on the current-account balances of the various countries? Graph 9 gives an illustration of this in the case of the totality of the emerging countries other than the commodity-exporters (105 countries out of a total of 146). Between 1980 and 2007, at the same time as the relative overvaluation of their currencies was being reduced (from more than 60% to around 17%), the current-account balance of this group of countries improved substantially, from a deficit of 3 GDP points to a surplus of 2 points. A second observation, taking major regions and again excluding commodity-exporters, once more shows the contrast between the Asian and Latin American countries and those of Central and Eastern Europe. The former followed the same path as the emerging countries taken as a group (reduction in the overvaluation of the exchange rate and accumulation of current-account surpluses). The latter, by contrast, saw, on average, an appreciation in their exchange rate between 1996 and 2007 and a deterioration in their current-account balances. A more
refined analysis, using panel data, confirms the impression given by
Graph 9. For the sample of 105 non-commodity-exporting countries
there is a clear relationship between the current-account balance and
the under- or overvaluation of the currency. If one applies a filter to the
sample so as to retain only the “largest” non-commodity-exporting
countries, the relationship, from 1995 on, becomes even more distinct
(Box 4).


By controlling the appreciation of their exchange rates, the manufac-
tures-producing emerging regions succeeded in exporting substantial
quantities of savings. For a time at least, globalisation enabled them, by
bolstering demand for the products of domestic firms, to take full advan-
tage of their growth potential, despite too slow an evolution in their
institutions. At the same time, globalisation enabled the commodity-pro-
ducing countries to benefit from a sharp rise in prices by accumulating
current-account surpluses. The next chapter will describe the monetary
policies and financial strategies of these regions. It will be seen, in partic-
ular, that these countries are far from having taken on the totality of the
risks associated with their export of savings.

2. The introduction of commodity-exporting countries into the sample obviously affects the results: the
link between exchange rates and current accounts disappears, with the oil-exporters posting substantial
surpluses in 1980 and then again starting in 2002, as a result of the evolution in the oil price and inde-
dependently of movements in their exchange rates.
Chapter 3
Monetary policies and financial strategies of the surplus emerging countries

In the middle of the 2000s the flow of savings made available by the emerging regions to the rest of the world amounted to more than 1.5% of world GDP\(^1\) (Graph 10). What is even more exceptional than the size of this flow is its share of the savings of the surplus regions. On average, in the middle of the 2000s these regions exported practically one-fifth of their savings. The infrastructure of globalised finance played a decisive role in this respect, making it possible for them to transfer savings on a massive scale even though their financial systems were still very crude and the investments made by their savers took relatively risk-free forms. Their integration in the globalised financial system took place, as we shall see first, essentially through increases in the foreign currency reserves of their monetary authorities, without the countries having to take on other risks than the exchange risk. Given the size of the amounts involved, however, this integration, as we shall see later, required them to adjust the conduct of their monetary and fiscal policies. It will then be shown how these countries could try to improve the return from this savings surplus placed at the disposal of the rest of the world by gradually taking on, through their sovereign wealth funds, additional financial risks.

\(^1\) This figure is the grand total of the current-account balances of the three surplus emerging regions and not, as in Chapters 1 and 2, only of the surplus countries in these regions. In 2007, the current account of the surplus Asian countries amounted to 0.9% of world GDP, that of the Middle Eastern countries to 0.5% and that of the countries making up the CIS to 0.2%, giving a total of 1.6% of world GDP. The remainder was accounted for by the developed countries (notably Germany and Japan), accounting for roughly 1.4% of world GDP.
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(*) A negative figure indicates a positive accumulation of exchange reserves.
Sources: IMF, authors' calculations

Current-account surpluses and accumulation of reserves

Graph 10 shows the past evolution of the balance of payments of developing regions, distinguishing between those which have been in surplus since the end of the 1990s from those which have not. As the data are expressed as percentages of world GDP, it is easy to see that the transactions of the deficit regions, especially on current account, do not carry much weight. Only a very small portion of the savings surpluses of the emerging countries has served to finance the requirements of the other emerging regions. If one now examines the counterparts of the current-account surpluses of the surplus regions, one striking point emerges, namely that practically all their surplus is reflected in an increase in their currency reserves. It is tempting to explain this by the obstacles that many of these countries place on outflows of private capital. When these outflows are impossible, a current-account surplus will necessarily lead to an increase in reserves of the same amount (assuming net official movements to be zero). The incomplete liberalisation of movements of private capital thus explains, in part at least, why the savings of the emerging regions were not exported through private channels. Given the amount of capital needing to be recycled by these regions and given their financial underdevelopment, the experience of the developed countries nevertheless suggests that even total liberalisation would not have been sufficient to avoid a substantial accumulation of reserves.

The size of the current-account surpluses of the emerging regions, relative to that of their economies, is in fact extremely high, amounting in 2007 to close to 10 GDP points for China and 20 points for the Middle Eastern countries. It has to be remembered that, in an emerging economy,
only a small minority of private non-bank agents has access to the know-how needed to make financial investments abroad. This means that it is difficult, however wealthy this minority may be, for it to be, year after year, the source of capital outflows on a sufficient scale to exceed by several GDP points the private capital that flows into these regions once they start to develop. In order to put things in perspective, portfolio investment abroad by American agents has represented on average since the beginning of the 1990s, only 1.5 GDP points. Bank loans could obviously serve as vehicles for the export of the surpluses of the emerging countries, as is the case, for example, in Germany. In 2007, that country’s current-account surplus exceeded 7 GDP points. As the central bank was not accumulating reserves, the totality of this surplus was reflected in outflows of private capital, mainly via banking flows. The Japanese case in some respects resembles that of Germany. Since 1998, Japan has registered an annual current-account surplus of around 3 GDP points. As in Germany, the outflows of long-term capital – taking the form of direct rather than portfolio investment – accounted on average for only a small portion of this surplus. And, again as in Germany, the current-account surplus has, since the mid-2000s at least, been exported largely through outflows of banking capital. This way of recycling current-account surpluses implies, however, a financial system that is developed and internationally integrated, something that the emerging regions, by definition, do not yet enjoy. In their case, therefore, it is difficult for private capital outflows, even if unhampered, to be adequate in relation to the surpluses to be recycled. Initially, most of the recycling can only take place in the form of an increase in the foreign exchange reserves of the public authorities. This does not necessarily mean that exported savings are always public. Their exact origin differs, as we shall see, depending on whether the countries are exporters of manufactures or of raw materials.

China, which on its own accounts for almost half the current-account surplus of the emerging regions, is a good illustration. Households play an essential role in the formation of the country’s saving surplus (Graph 11). For almost a quarter of a century now, the difference between what households earn and what they spend has amounted to at least 10% of GDP. However, this does not explain the recent growth seen in Chinese current-account surpluses. The evolution in the corporate borrowing requirement has played a key role here: since the beginning of the 2000s, this requirement, which had previously absorbed almost the total lending capacity of households, has steadily declined at the same

2. Unlike the German authorities, the Japanese authorities accumulated reserves for a few months around the end of 2003, in order to limit the rise in the yen.
time as the current-account surplus was increasing. It was as if, with firms no longer needing the savings that Chinese households were placing at their disposal, these savings were exported to the rest of the world.

Graph 11. Financial savings of Chinese agents and composition of their acquisition of financial assets, 1993-2004*

This change of outlet for a substantial portion of Chinese households’ savings took place without any change in the nature of the vehicles used. In the mid-2000s, more than two-thirds of their financial investment – as indeed in the case of firms – took the form of bank deposits (see Graph 11). For the most part, therefore, Chinese savings are held in non-risky form. One can see this as an almost automatic consequence of the country’s financial underdevelopment. For lack of other savings vehicles, Chinese agents can only hold notes or deposits. This aspect of financial behaviour is, however, to be found also in much more developed economies, those where financial wealth is distributed in fairly egalitarian fashion. When a substantial portion of the wealth is held by relatively less well-off, concern for security wins out and relatively risk-free investments predominate. This is the case for Japan and Korea but also, to a certain extent, for Germany. When, on the contrary, a small number of individuals hold a large proportion of the wealth, their capacity to take financial risks is high and the relatively risk-free and low-yield investments – bank deposits – tend to take a smaller proportion. This is the case, in particular, for the United States. Graph 12 shows, for the twenty or so countries for which data are available, an inverse correlation between the concentration of financial wealth and the share of deposits in total investments. In China, the high proportion of relatively risk-free and low-yield investments seems to be consistent with the relatively egalitarian distribution of wealth prevailing in the early part of the 2000s.

(*) The flow-of-funds data are available only up to 2004. On the left-hand graph, the figures for 2005 to 2007 are estimates.

Sources: National Bureau of Statistics of China, authors’ calculations
Monetary policies and financial strategies

Graph 12. Wealth concentration and share of “non-risky” investments

The data are taken from the UNU-WIDER project and relate to the early 2000s.

Sources: Davies et al. [2006], OECD

The counterpart of the substantial build-up of China’s reserves is therefore to be found in that of savings by Chinese households, mostly invested in very liquid forms with the local banking system. Before examining the implications of this situation for the manner of conducting monetary policy, it remains to be seen in what way it resembles that seen in the commodity-exporting emerging regions. Here too, for lack of comprehensive data, the observation will be restricted to two cases: Saudi Arabia and Russia.

Saudi Arabia by itself accounts for almost one-quarter of the surpluses of the commodity-exporting countries in the mid-2000s. Unlike China, in this case the exported savings are public. The Saudi government receives directly part of the oil revenues that constitute its main budgetary resource. These sums are credited to its account with the monetary authority – the Saudi Arabian Monetary Agency (SAMA). Budget expenditure is then debited to this account and the unspent portion – the budget surplus – appears on the liability side of the authority’s balance sheet. It is therefore by deciding the amount it spends that the Saudi government fixes the amount of savings exported. It does so in a concern to permit steady growth in domestic demand, regardless of fluctuations in the oil price. Graph 13 shows the broadly parallel evolutions in the country’s current-account balance, public surplus and increase in foreign exchange reserves. The Russian case differs from the Saudi case only to the extent that the oil levy represents a less overwhelming portion of the country’s budget resources, Russia having a more developed non-oil sector and also because the rouble exchange rate is managed flexibly in relation to the dollar and the euro, whereas the Saudi riyal is pegged to the dollar. The principle is the same, however: the budget revenue is
Globalised finance and its collapse
deposited with the Bank of Russia and the public surplus to a large extent explains the current-account surplus and the variations in the exchange reserves (although part of the current-account surplus has also in this case been used to repay the country’s external debt). As in the case of Saudi Arabia, these public savings are held mainly in liquid form with the central bank. *The liquid nature of the domestic counterpart of the accumulated reserves is a feature common to most of the emerging regions.*

Graph 13. **Current account, public balance and foreign exchange reserves in Saudi Arabia and Russia, 1990-2007**

Accumulation of reserves and monetary policy

The exchange-rate policies implemented by the surplus emerging countries heavily influence the conduct of their monetary policies. Those that have liberalised their capital account and, like Saudi Arabia have a target based on pegging to a foreign currency, in this case the dollar, have to track the changes in the interest rates of the foreign central bank concerned, in this case the Federal Reserve. Otherwise, the flows of short-term capital, driven by differences in interest rates, would exert pressure on the country’s exchange rate. To a large extent, the tuning of the economy is then based less on monetary policy than on the fiscal policy decisions mentioned earlier.

The constraints exerted by the exchange-rate policies implemented by countries like China that have not liberalised a substantial proportion of capital movements are just as real, but of a different nature. When the central bank of an emerging country intervenes on the currency market to curb the rise in its currency by buying that of another country, it is issuing money. The amount issued can be huge, because it is often close to that of the country’s current-account balance. The continuous accumulation of foreign exchange reserves therefore poses a very concrete problem for monetary policy: how can the evolution in activity and domestic prices be
controlled if, with the banks awash with “central bank money”, there is nothing to curb their distribution of lending? In order to solve this problem, the Chinese authorities have put in place, in highly pragmatic fashion, a series of arrangements which in combination have made it possible to avoid, taking good years with bad, any slippage in inflation related to excessive issue of money on the part of the central bank.

The first of these arrangements, consisting of control of bank lending, is the most traditional. It directly puts a limit on the increase in the outstanding loans of the various banks. Such controls are a very crude instrument for regulating the expansion of lending and can only be really effective in one direction (curbing) while at the same time introducing numerous distortions into the allocation of resources [Aglietta and Landry, 2007]. However, since the Chinese surpluses began their sharp rise, the central bank has introduced other arrangements aimed at regulating the expansion of lending by more indirect means, via the liquidity of the banking system. Since the central bank’s objective is to manage the exchange rate of the yuan, the size of its interventions, and hence its injection of liquidity, are defined by the imbalance on the foreign exchange markets which is itself the reflection of the country’s current-account surpluses. Being unable to decide the amount of money creation linked to these interventions, the central bank has to try to ensure that the liquidity of the banks does not enable them to lend more than is needed to keep the economy close to full employment (Box 5). This it does by “mopping up”, i.e. sterilising, any excess liquidity resulting from its interventions on the currency markets.

Two instruments have been used for this purpose. In 2003, the Chinese central bank started to issue “sterilisation bonds”. These are relatively costly instruments, since the remuneration has to be sufficiently attractive for the banks to take them up. Starting in the middle of the 2000s, at a time when the Chinese current-account surplus was growing strongly, the central bank introduced a less costly instrument, namely the regular adjustments of the ratio of compulsory reserves that financial institutions have now to hold with it. These reserves are proportional to the deposits received by the institutions. By managing in this way the liquid resources of the deposit institutions, the central bank can regulate the amount they lend. However, as in the case of the credit controls, regulating the ratio of compulsory reserves is more effective in limiting supply than in stimulating

3. It is indeed the excess liquidity that has to be sterilised and not necessarily the totality of the counter-part of the exchange-rate interventions. For example, part of the money supply issue is “naturally” absorbed by the steady growth in demand for notes – which account for a substantial portion of the liabilities of the central bank.
Globalised finance and its collapse

The Chinese central bank also sets the interest rates for the remuneration by the banks of their deposits and the interest rates on their lending, meaning that it sets their intermediation margins. This gives it an additional lever not only for curbing the distribution of lending but also possibly encouraging it.

**Box 5. Accumulation of reserves and monetary policy: the Chinese case**

How can a monetary policy aimed at regulating the level of domestic lending be conducted when the bulk of the issue of currency by the central bank is the counterpart of interventions on the foreign exchange market? Examination of the Chinese case is particularly relevant here: at the end of August 2008, the asset side of the central bank’s balance sheet consisted as to more than three-quarters of claims on the rest of the world (primarily foreign exchange reserves, counterpart of the current-account surplus). On the liability side, in addition to the bonds – often called “sterilisation bonds” – issued by the central bank for the purpose of mopping up the surplus liquidity (21% of the liabilities), there are the currency in circulation (17%) and, especially, the reserves of the financial institutions (42%). It is primarily by adjusting the reserve requirement of these financial institutions that the Chinese central bank manages to control the amount of loans distributed.

**Central-bank balance sheet**

(100 million yuan, end of August 2008)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign assets 154</td>
<td>Currency 34</td>
</tr>
<tr>
<td>Claims on financial 20</td>
<td>Deposits of financial 64</td>
</tr>
<tr>
<td></td>
<td>Bonds 46</td>
</tr>
<tr>
<td>Claims on government 16</td>
<td>Deposits of government 28</td>
</tr>
<tr>
<td>Other assets 8</td>
<td>Other liabilities 10</td>
</tr>
<tr>
<td>Total 198</td>
<td>Total 198</td>
</tr>
</tbody>
</table>

Let us suppose, for simplicity, that the net external assets (EA) are the only asset item in the central bank’s balance sheet, with, on the liability side, the currency in circulation (CUR) and the reserves of the financial institutions (RES). These same reserves appear on the asset side of the balance sheet of the financial institutions alongside their other domestic assets (DA), essentially...
loans; on the liability side of these balance sheets figure the deposits (DEP).

The balance sheets of the central bank and the financial institutions are then as follows:

<table>
<thead>
<tr>
<th>Central bank balance sheet</th>
<th>Financial corporations' balance sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities</td>
</tr>
<tr>
<td>EA</td>
<td>CUR</td>
</tr>
<tr>
<td></td>
<td>RES</td>
</tr>
<tr>
<td></td>
<td>DA</td>
</tr>
<tr>
<td></td>
<td>(1 – ρ)γY</td>
</tr>
<tr>
<td></td>
<td>RES</td>
</tr>
<tr>
<td></td>
<td>DEP</td>
</tr>
</tbody>
</table>

If the currency in circulation represents a fixed share α of Chinese GDP (denoted by Y) and if deposits represent a share γ, this gives $\text{CUR} = \alpha Y$ and $\text{DEP} = \gamma Y$. Let us denote by ρ the compulsory reserve ratio ($\text{RES} = \rho \text{DEP}$). The assets and liabilities in the balance sheets of the financial institutions being equal, $\text{DA} = \text{DEP} - \text{RES}$, i.e.:

$$\text{DA} = (1 - \rho)\gamma Y$$  \hspace{1cm} (1)

In the same way, one deduces from the balance sheet of the central bank:

$$\text{EA} = (\alpha + \rho \gamma)Y$$  \hspace{1cm} (2)

Equations (1) and (2) make it possible to write:

$$\text{DA} = \frac{(1 - \rho)}{(\rho + \frac{\alpha}{\gamma})} \text{EA}$$  \hspace{1cm} (3)

Equation (3) establishes a relationship between the accumulation of net external assets by the central bank and the domestic assets of the financial institutions (the lending to the economy): α and γ being given, the central bank can, by modifying the compulsory reserve ratio ρ, control the quantity of lending that the financial institutions can make to domestic agents. All other things remaining equal, by increasing the compulsory reserve ratio, the central bank reduces the possible quantity of lending. Now let $\text{EA}$ be the accumulation of net external assets. The compulsory reserve ratio will have to be such that the domestic lending permits the economy to operate at full employment. The level $\overline{DA}$ of domestic lending required is such that, increased by the savings transferred to the rest of the world, it equals the domestic saving that is “desired” at full employment, that is to say $\alpha \overline{F} + \gamma \overline{F}$. The compulsory reserve ratio $\overline{\rho}$ is therefore:

$$\overline{\rho} = \frac{1}{\gamma} \left( \frac{\text{EA}}{F} - \alpha \right)$$
Globalised finance and its collapse

In Saudi Arabia, the SAMA has recourse to monetary policy instruments that are similar to those used by the Chinese central bank (Box 6). For example, in response to the inflationary pressures that began to build up in the summer of 2007, it mopped up excess liquidity by issuing Treasury bonds, by raising the compulsory reserves ratio from 7% in October 2007 to 13% in May 2008 and raising from 2% to 4% the reserves ratio on savings and term deposits. It also maintained measures for controlling consumer credit. In Russia, for a long time the interventions of the central bank remained largely unsterilised, leading to an accumulation of excess reserves on the part of the banks. Faced with the rise in inflation from 7.5% at the beginning of 2007 to over 15% in the spring of 2008, the Bank of Russia raised its interest rates and its compulsory reserves ratio, but not sufficiently to bring the then very rapid growth in lending to a halt.
Monetary policies and financial strategies

Box 6. Monetary policy instruments used by the Saudi Arabian Monetary Authority

For a long time, Saudi Arabia had neither banking system nor formal monetary system. The only currency in circulation was foreign, and, notably because of the Koranic laws, the role of the banks was limited to a few elementary functions, in particular that of foreign exchange broker for the pilgrims visiting Mecca. The discovery of oil deposits in 1939 profoundly modified the operation of the Saudi economy: the public coffers filled, government expenditure rose strongly and foreign banks arrived on the scene. These transformations hastened the creation of a central bank and a genuine monetary and banking system.

The SAMA was set up in October 1952, with the technical assistance of the United States. Its main mission is to ensure the stability of the external value of the currency (today the rate of exchange of the riyal versus the dollar). This objective must enable it to achieve price and financial stability. Since May 1981 and the abandonment of the SDR as reference, the riyal has been effectively “pegged” to the dollar. The last devaluation of the riyal goes back to 1986, when the rate of exchange changed to one dollar for 3.75 riyals from the previous 3.65. To counter the downward speculative pressures on the currency, the central bank has raised its interest rates several times and even intervened on the forward currency market on two occasions (in 1993 – when oil prices fell very low in the wake of the first Gulf War – and in 1998 at the time of the Asian crisis).

The pegging of the exchange rate and the liberalisation of capital movements obviously limit the capacity of the SAMA to implement an autonomous monetary policy (its role is in fact secondary in economic matters). The central bank is not, even so, deprived of means of action to control the liquidity of the system. The Banking Control Law subjects the commercial banks to reserve constraints requiring them to set aside a minimum proportion of liquid assets (statutory liquidity ratio) – set at 20% of their sight and term deposits. They must also maintain a minimum cash reserve of unre-munerated deposits (cash reserve ratio) – proportional to the size of the deposits of their clients. This last instrument is used both for prudential purposes (the banks must have sufficient liquidity to face possible withdrawals), and as a tool of monetary policy. In practice, this tool has been little used, with the ratio remaining fixed at 7% throughout the period between February 1980 and November 2000. The SAMA has only used this lever more recently, raising the ratio from 7% to 13% in May 2008 to curb the slippage in observed inflation, and then lowering it to 7% in November 2008 in response to the financial turbulence and the fall in the oil price. To control banking liquidity, the SAMA had recourse in particular to repo operations (to inject liquidity) or reverse repo operations (to withdraw liquidity). For lack of an extended bond market, it intervened until the end of the 1980s by means of a Bankers’ Security Deposit Account (bonds issued by the central
Accumulation of reserves and financial strategy

How did emerging countries invest these accumulated reserves? The available data, albeit sparse, indicate that they invested the largest part in liquid assets carrying very low credit risk. Table 2 shows the breakdown of total world foreign exchange reserves. In June 2007, they totalled almost $6,000 billion, 90% of this being accounted for by the emerging countries and Japan (since 2002, virtually the entire rise in the stock of reserves is due to these countries). A little less than 30% consists of deposits with banks or with the Bank for International Settlements (BIS). The bulk (72% in mid-2007, equivalent to more than $4,300 billion) was nevertheless invested in securities. IMF data (Securities Held as Foreign Exchange Reserves or SEFER) provide an indication of the nature of these securities. The largest portion (76% in 2006) was in bonds – in fact, mainly public or semi-public securities (Box 7) – 22% in money market securities and less than 2% in...


4. These data are non-exhaustive and cover roughly two-thirds of the world reserves held in the form of securities at the end of 2006. They nevertheless somewhat overestimate the amount of reserves held in this form since they include, in addition to securities held by the monetary authorities, those held by the international organisations.
Monetary policies and financial strategies

This shows that the reserves continue to be massively invested in liquid assets carrying no credit risk. To a large extent, therefore, the export of savings by the emerging countries is carried out without their taking any risk other than an exchange risk. The return on the savings exported in this way will then depend solely on the evolution in exchange rates and the relative levels of interest rates in the country and abroad. Given that the currencies of these countries would normally tend to appreciate steadily in line with their level of development and that their interest rates are generally higher than those of the developed countries, there is only a low probability that this return would be positive.

Table 2. Data on the composition of world foreign exchange reserves

<table>
<thead>
<tr>
<th>As of June 2007</th>
<th>billion dollars</th>
<th>% of total reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>World reserves (IMF)</td>
<td>5,774</td>
<td></td>
</tr>
<tr>
<td>SAMA reserves*</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>Total foreign exchange reserves</td>
<td>5,930</td>
<td></td>
</tr>
<tr>
<td>of which</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency countries</td>
<td>4,900</td>
<td>76</td>
</tr>
<tr>
<td>Japan</td>
<td>898</td>
<td>15</td>
</tr>
<tr>
<td>of which</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td>1,358</td>
<td></td>
</tr>
<tr>
<td>Adjusted deposits**</td>
<td>1,046</td>
<td>28</td>
</tr>
<tr>
<td>Securities</td>
<td>4,294</td>
<td>72</td>
</tr>
<tr>
<td>Securities held as reserve assets (SEFER survey, December 2006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Money market securities</td>
<td>960</td>
<td>22</td>
</tr>
<tr>
<td>Bonds</td>
<td>1,911</td>
<td>70</td>
</tr>
<tr>
<td>Equities</td>
<td>43</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>2,518</td>
<td>100</td>
</tr>
</tbody>
</table>

(*) Saudi Arabia’s official exchange reserves amounted to only $24 billion in mid-2007, but were close to $180 billion including SAMA’s $156 billion of investment in overseas securities or deposits not attributed in its balance sheet to the “quasi-sovereign funds”.

(**) The figure for bank investments carried out by the monetary authorities understates the size of deposits, notably because the definition of monetary authorities applied by the BIS is “narrow”, excluding the Japanese Ministry of Finance and the Chinese State Administration of Foreign Exchange. When adjusted by applying the ratio calculated by Wooldridge [2006], the reserves placed on deposit are estimated to have been close to $1,650 billion in mid-2007.

Sources: BIS, Thomson Datastream, IMF

Box 7. Some information on the nature of the securities held in foreign exchange reserves

The SEFER data referred to in the text provide little detail concerning the nature of the debt securities held by the monetary authorities. The United States data (Treasury International Capital System or TIC) make it possible, in part, to make up for these shortcomings. They give more information on the nature, but also on the maturity, of the securities held by the official sector. The coverage of the TIC survey is different from that of the IMF, however, in that it includes only the American securities held in the reserves and especially in that the “official sector” includes the sovereign wealth funds. Even so, these data provide certain useful indications.
Globalised finance and its collapse

Of the $2,800 billion of American securities held by the foreign official sector in 2007, 87% were public or semi-public (those of the GSEs) and less than 4% were private bonds. The survey therefore confirms that the bulk of the securities held by the official sector carry no credit risk. Admittedly, the share taken by corporate bonds has risen slightly since the beginning of the 2000s – from 1.5% in 2000 to 3.5% in 2007 – but it remains low. The proportion of equities is larger than in the SEFER survey (the difference being explained notably by the inclusion of the assets of the sovereign wealth funds). At close to 10%, this share has nevertheless remained stable since the mid-1990s. To sum up, while the official authorities’ appetite for credit risk has increased slightly in recent years, it remains modest.

It would seem, on the other hand, that the official authorities have since 2000 agreed to take on more interest-rate risk than previously. Admittedly, more than half their portfolio of debt securities is still composed of securities with maturities of less than three years (and 66% with maturities of less than 5 years). The average maturity of their portfolio has nevertheless tended to rise recently, from 3.6 years in 2004 to more than 6 years in 2007. This increase is mainly explained by purchases of GSE securities with substantial residual maturity (28% have a maturity of more than 25 years). As these securities often carry prepayment options, however, this residual maturity overestimates their actual maturity.

There is no reason, however, why these accumulated excess savings should remain permanently and in totality in liquid form. Since the beginning of the decade, the amount of reserves held substantially exceeds that of transaction cash balances and of the precautionary balances that a country is likely to aim to hold if it is to avoid being financially vulnerable. In order to handle without strain the dis-adjustments occurring between the moment when the export receipts are received and the moment when the payment for the imports takes place, a country needs cash holdings in foreign currencies generally estimated to amount to 3 months’ imports. This need for transaction cash balances is not the only one an emerging country may wish to satisfy by its holding of reserves. The experience of recent decades has shown the reality of the liquidity risk related to the ever-possible non-renewal of short-term international loans. To guard against this, the “Greenspan-Guidotti rule” recommends that emerging countries hold reserves equal to the amount of their short-term external debt [Jeanne and Rancière, 2006]. Adding in the needs related to these two motives (transactions and precaution) gives an order of magnitude of the amount of foreign currency a prudent country may wish to hold in liquid form. When this amount
is subtracted from the total reserves actually accumulated by the surplus countries, one obtains an estimate of their surplus liquidity in foreign currency. In 2007, this was close to $2,200 billion (Graph 14). The same graph also shows the results of other “reasonable” estimates for excess liquidity, in the range between $1,500 and $3,000 billion. By investing these excess reserves in less liquid assets, the countries in question can hope to derive, over the long term at least, a better return but at the cost of taking increased risk [Rybinski and Sowa, 2007]. This implies the drawing up and implementation of a financial strategy by each of them.

Graph 14. Three measures of excess reserves* for Asian countries, the Middle East and Russia, 2000-2007

(*) The excess liquidity in foreign currencies is calculated by subtracting from the surplus countries’ foreign exchange reserves a calculated amount of “required” reserves. These calculations take three forms: one based on maintaining the ratio of reserves to imports at the observed 2000 level (7.2 months’ imports); one assuming that the required reserves are equal to 3 months’ imports plus the external short-term debt; and one assuming them to be equal only to 3 months’ imports.

Sources: IMF, Thomson Datastream, authors’ calculations

In the case of countries that exploit non-renewable deposits of raw materials, this concern is only one component of an approach aimed at deriving the greatest possible benefit, over the long term, from their mineral resources. Taking into account the size of their endowments, their current and prospective demographic situations, the expected evolutions in the demand for and prices of the raw materials they export, they have to decide the rate of extraction of these resources and the way in which they use the resulting income. The government has to take into account not only the interests of the present population but also, to a certain extent at least, those of future generations. This is all the more necessary if the country does not have the benefit of a diversified range of activities. If all its mineral wealth is used today solely for the benefit of the present generation, future generations will be condemned to a wretched exist-
ence. The government has a key role to play here in ensuring that part of the proceeds from the exploitation of the country’s resources actually serves the interest of future generations, either by investing in the economy for the purpose of diversifying activity and increasing productivity, or in investing abroad to provide a future source of income. This role is generally entrusted to specialised public agencies, namely the sovereign funds. Many commodity-producing countries have such agencies, many of them for several decades.

A good example is the organisation set up by Kuwait. As in the case of Saudi Arabia, the Emirate’s budget service – in this case the General Reserve Fund – receives all the tax revenue (and in particular the revenue derived from oil production), decides expenditure and holds all the public assets. In 1976, a second fund – the Future Generations Fund – was created, with half the assets of the first fund transferred to it. Since then, the second fund receives each year 10% of total tax revenue and any drawing down of its assets requires specific legislation. These two funds operate according to two clearly distinct logics: the first acts as a short-term stabiliser aiming to tune the economy while at the same time smoothing out the volatility of oil revenues; the second aims to ensure an inter-generational transfer. The assets of both funds have since 1982 been managed by the Kuwaiti sovereign fund known by its acronym KIA (Kuwait Investment Authority), having as its objective a satisfactory return. In 2008, the KIA’s assets under management exceeded $200 billion, with the Future Generations Fund accounting for 80% of this total.

By no means all the commodity-producing countries have set up organisations as explicit as this. For example, in Saudi Arabia, it is SAMA that acts as both central bank and sovereign fund. The totality of the Kingdom’s assets are held on its balance sheet and the liability side simply distinguishes between various public accounts: the government’s own account, those of the pension fund, the development fund, etc. In the case of Russia, a stabilisation fund was set up in 2004 with the aim of short-term smoothing of the income derived from oil and gas. In early 2008, this was divided into two in order to hive off a National Prosperity Fund intended to receive the share of oil income exceeding a predetermined threshold (due to fall from 6.1% of GDP in 2008 to 3.7% from 2010 on). The sums received in this way will be invested for the longer term in forms that are riskier than those adopted hitherto. The fact that this decision was taken in 2008, when Russia had already built up reserves amounting to almost $500 billion, highlights one particular point: the increase in the revenue of commodity-exporters in the mid-2000s was so rapid that they were unable to put in place immediately a strategy for the investment of the “excess” portion of their reserves.
Much the same was true of China, but for different reasons. Here too, it was not until the accumulated reserves exceeded $1,400 billion that a sovereign fund was created in September 2007. This was the China Investment Corporation (CIC). Its financing is based on mechanisms radically different from those adopted by the commodity-producers. The government has issued bonds in yuan for a total of roughly $200 billion and with the proceeds it has bought currencies (and also long-term shareholdings) from the central bank and these have been allotted to the CIC. The aim is to generate a return higher than that on government bonds. At a later stage, once its initial endowment has been fully invested, the resources of this sovereign fund may be increased, at the government’s discretion, using the same mechanism.

In 2008, according to Morgan Stanley, the total assets of emerging-countries’ sovereign funds exceeded $2,500 billion (for comparison, their exchange reserves were around $5,500 billion). Information concerning the allocation of these funds is sparse. Seven of them, handling half the total assets of the sovereign funds, publish no information on the breakdown of their portfolios. Even so, it is reasonable to think that most of these funds hold a substantial proportion of risky assets, notably foreign. Between the beginning of 2007 and 2008, most of the investments “dislosed” by the sovereign funds in fact consisted of shares of financial institutions. The asset allocation of these funds therefore differs appreciably from that of the exchange reserves and is more akin to that of pension funds or mutual funds. In general, unlisted firms (private equity), real estate or investment in other emerging countries account for a substantial portion of their portfolios. For example, the data available concerning the Singapore fund Temasek (one of the more transparent) show that in March 2008 35% of its portfolio was invested in domestic assets, 41% in Asian countries and 23% in OECD countries (excluding Korea). In terms of sectoral allocation, financial services predominate (with 40%) ahead of telecoms (24%) transport (10%) and real estate (7%). At the same time, 21% of the portfolio’s assets consisted of shares in unlisted companies.

As collectors of long-term savings, the sovereign wealth funds are, by their nature, investors with a long time-horizon whose stabilising role for the financial markets can be considerable. The data set out above show that their build-up, until 2008 at least, was relatively slow by comparison with the growth in the national exchange reserves. With the increasing tendency for the emerging countries’ “excess” reserves to be directed towards these funds, the “bias” in favour of liquidity seen in the allocation of their financial investments will diminish. They are however in most cases designed to take risks essentially through the purchase of listed or unlisted shares and property investments and are little inclined
to take credit risk (they buy hardly any private claims). As will be seen in
the following chapter, the saving surpluses of emerging regions have
largely found their counterpart in issues of private debt by the Western
countries. This means, not only that the emerging countries have taken
relatively little financial risk, but that their preferences fail to coincide
with the nature of the risks to be taken. The rise in international current-
account imbalances in the 2000s was then bound to be accompanied by
an ever-increasing need for credit-risk-takers.
Financial globalisation has enabled the emerging regions to build up substantial savings but without bearing all the risks involved. This would not have taken place if the economies in the rest of the world had not, in one way or another, made it possible. Indeed, how could the surplus regions have spent less than they earned if others had not spent more? The emerging regions’ savings surplus could not have been built up if there had not been a counterpart in the form of an increased financing requirement in the developed countries. However, it was not sufficient for the latter to import these savings. Since the emerging regions’ surplus was for the most part invested risk-free, it was also necessary that the developed regions take on the risks that the emerging regions did not. In order that savings invested risk-free should finance investments that are risky by nature, someone somewhere has to take on the associated risks. This has probably been the most original, and the least emphasised, contribution of globalisation. By considerably facilitating the circulation of financial risks, it has enabled the developed world to relieve the emerging countries of a significant part of those related to the investing of their savings surplus – at the cost, obviously, of an accumulation of risks in the globalised financial system.

This chapter will first examine the mechanisms that have led the Western economies to absorb the emerging regions’ savings before going on to show how the risks related to the lending of the savings have, in large part, been taken on by the alternative banking system described in Chapter 1. This will be followed by an examination of the forces prompting this system to take on ever more risk.
Globalised finance and its collapse

The forces behind international transfers of savings

What are the mechanisms by which the developed regions have been led to import the savings that the emerging regions have been exporting since the end of the 1990s? Is the rise in their indebtedness the automatic consequence of forces emanating solely from the emerging regions? Or is the explanation to be found also in the policies implemented in the Western countries in reaction to these forces or others? A variety of replies to these questions have been put forward.

At the beginning of the present decade, a first series of analyses [Dooley et al., 2003], noted that the recent interpenetration of the financial balance sheets of the developed and emerging regions resembled in some respects what had been seen at the time of the system of fixed exchange rates introduced by the Bretton Woods agreements. The United States dollar being at the time the reserve currency, the rest of the world – Europe and Japan, principally – accumulated in dollars the reserves they needed to cope with the rapid expansion of international commerce in much the same way as the emerging countries are doing today. The counterpart of this accumulation, like today, was a deficit in the American balance of payments. The financial complementarity set up in this way between the United States and the rest of the world explains why the American deficit, over long years, has not been accompanied by downward pressure on the dollar. The fact that the current situation resembles this earlier one is, from this standpoint, reassuring. However, the resemblance cannot throw light on the mechanisms that have, for a decade now, led the United States to build up current-account deficits. During the 1960s, the formation of foreign exchange reserves on the part of the rest of the world was in fact financed more by outflows of private capital than by a deficit on the United States current account. The transfer of savings towards the United States has remained on a modest scale. It would therefore be vain to seek in the evolutions of this period an explanation of the mechanisms that have recently led the United States, and certain other developed countries, to import savings on a massive scale.

A series of empirical studies [Warnock and Warnock, 2005] have attempted, starting from the same observation as Dooley et al., to show how the accumulation of foreign exchange reserves by the emerging regions could have induced a current-account deficit in the developed regions, the United States in particular. The reasoning is seductive: by buying hundreds of billions of dollars’ worth of US Treasury securities, the monetary authorities in the emerging countries push up their prices and hence push interest rates down. This decline increases the wealth of American agents and at the same time stimulates their borrowing. The resulting rise in the propensity to spend automatically leads to a widen-
International transfers of savings and globalisation of risk-taking

By buying Treasury securities, the emerging countries therefore directly force the United States to import the savings they export! This analysis has the advantage of simplicity. However, its theoretical and empirical underpinnings are less solid [Wu, 2008] than the multitude of studies that apparently confirm it would suggest. In particular, it provides, at best, only part of the explanation being sought. The United States current-account deficit in fact began to widen in 1998, at the time of the outbreak of the Asian crisis, when the dollar reserves of the rest of the world were not increasing. Long rates nevertheless fell sharply, leading to additional spending that tended to stabilise the American economic situation. The steep decline in United States exports, linked to the collapse in Asian countries’ demand and in their exchange rates, was then offset by a substantial rise in American residential investment. The resulting increase in the American current-account deficit then enabled the crisis-ridden Asian countries to accumulate the current-account surpluses needed to repay their debts.

Caballero et al. [2006], in order to throw light on this particular episode, have shown the mechanisms by which, in a globalised financial system, savings flows can be set in movement from the developing to the developed regions. Their analysis introduces forces that are quite different from the previous ones, with the authorities’ desire to control the evolution in their exchange rates by accumulating reserves playing no role. The authors adopt the framework of a general equilibrium model with two financially open regions, one emerging and the other developed. The quality of the savings vehicles available in each region which is at the heart of their reasoning, is summarised by the share of national income that the institutions in the respective regions permit to be committed to those holding these savings vehicles. This share will normally be higher, the more reliable the legal and accounting frameworks, as well as the rules of corporate governance. These institutional characteristics being given, this portion is assumed to be fixed. Any increase in the demand for financial assets – i.e. savings vehicles – issued in the region will therefore lead, assuming unchanged prospects for income growth, to a rise in the prices of these assets and a decline in their yield, identified in this case as being the interest rate. In attempting to account for the evolutions seen following the Asian crisis, the authors then show how, starting from a situation of equilibrium, a sudden deterioration in the quality of the financial assets of the emerging region in the model leads it to export savings at the same time as it leads the developed region to import savings. This deterioration is in fact reflected in a decline in the share of the emerging region’s national income that is committed to the remuneration of these assets. The return on them accordingly falls and, with the
help of globalisation, a decline in world interest rates follows. This in turn pushes up the value of the developed region’s assets and its agents, having become wealthier, save less. The shock therefore produces a lasting current-account deficit for the developed region financed by the “export” of savings vehicles (i.e. inflows of capital). Now that the value of its financial assets has suddenly fallen, the emerging region, for its part, needs to “import” savings vehicles. In order to acquire those “made available” by the developed region it will save more and achieve a current-account surplus. Since the analysis is carried out in a general-equilibrium framework, macroeconomic policies, by construction play no role. The growth potentials and the quality of the savings vehicles of the different regions are sufficient to create financial complementarity between them.

This analysis is based on reasoning that is specific to a long-term equilibrium model. As the share of national income committed to the remuneration of financial assets is assumed to be given, shocks related to increased demand for savings vehicles can only be absorbed through variations in the prices of these assets. In practice however, the developed economies have at their disposal mechanisms that make it possible, in the short term at least, to meet increased demand for savings vehicles by new issues. In an economy threatened with under-employment, monetary policy can, for example, stimulate private borrowing or the government can itself borrow to bolster activity. There is nothing automatic about this, however. The maintenance of full employment results from the policies implemented and the way in which the economies respond. It is impossible to understand the continuous widening of the American current-account deficit since the end of the 1990s without taking into account the strength of the economic stabilisation mechanisms with which this economy is endowed and the determination with which policies to keep it close to full employment are applied. The financial complementarity between emerging and developed regions is based not so much on the superiority of the financial assets issued by the latter as on that of their system of macroeconomic regulation. When China, faced with the very rapid progress in its production potential, curbs the appreciation of its currency in order to avoid the deflationary shock that would otherwise result from the inertia of its agents’ spending behaviour, it “exports” its fine-tuning problem to the rest of the world. The latter is in fact able to “import” it because it can, through additional borrowing, cope with a possible shortfall in demand [Brender and Pisani, 2007].

Since the end of the 1990s, therefore, a rise in borrowing in the developed regions has enabled the world economy to absorb a series of deflationary shocks or pressures. Faced with the continuous pressure from the emerging Asian countries and with the recessionary consequences after
International transfers of savings and globalisation of risk-taking

2000 of the bursting of the stock-market bubble, faced also, in many cases, with slower growth in household incomes, many Western countries adopted accommodating monetary policies that encouraged borrowing. United States monetary policy, in particular, led to a massive issuance of debt. In the mid-2000s the flow of borrowing by American households reached 10 GDP points, more than twice the average flow in previous decades. And while the surge in energy prices that provoked two world recessions in the 1970s has not led to a third, this was mainly because this time the rise in the oil bill could be financed entirely on credit. Over the years, the Western economies, and especially the American economy, have helped to keep the world close to full employment. By allowing their liabilities vis-à-vis the rest of the world to increase, they provided the counterpart for the latter’s asset accumulation.

The globalisation of the risk-taking chains

This financial complementarity between the emerging and developed regions could not have taken shape if the risks involved in the massive issue of debt in the Western economies had not been taken in charge by the globalised financial system. Because the risks related to any financing operation could now be broken down into individual elements, this process was considerably facilitated, with the emerging countries able to export their savings using the infrastructures of globalised finance. This meant that their financial under-development was not a problem from this point of view. They merely had to “plug into” the Western risk-taking chains.

To illustrate the point, let us use the example of Chinese savings – a deposit by a household – counterpart to some American borrowing – a loan taken out by a household in order to buy a house. When an American bank makes a mortgage loan, it creates a deposit in dollars and acquires in exchange a claim on a household. The latter uses the deposit to pay for its property purchase, thus putting the deposit into circulation in the American economy. Since the latter is in deficit vis-à-vis the rest of the world, the deposit – or another deposit indistinguishable from it – will leave the economy as payment to a Chinese exporter, who will exchange these dollars with his central bank for yuans that he will use to pay his workers. These workers are none other than our Chinese savers, who will place the sums in question on their bank accounts. The loan

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1. Note that a side effect of this policy was to prompt companies as well to borrow, although not so much to invest as to buy back their shares. Taking advantage of low interest rates to restructure their balance sheets, they substituted debt securities for equities that were devalued as a result of the loss of confidence connected with the bursting of the stock-market bubble.
made in the United States will therefore permit the formation of their savings – or those of other Chinese savers. Loans always make deposits, even if the loan is American and the deposit is Chinese.

By itself, an accommodating American monetary policy stance aimed at keeping the economy close to full employment will never be sufficient to enable an American household to obtain a loan. For this to happen, someone has to take on the risks involved. If no one is prepared to do so, the loan will not be made and the savings that would be the counterpart will not be formed. However, as we have seen, globalisation enables a “chain” of operators to take on these risks. Diagram 5 depicts one of many possible such chains. This chain acts as a substitute for the intervention of an (improbable) single intermediary who would transform short-term deposits in yuans into fixed-rate dollar-denominated mortgage loans.

Diagram 5. A “global” chain of risk-takers

The American mortgage loan constitutes the start of the chain. One can assume that it has been bought by a risk-taker who receives the interest paid by the borrower. By definition, the risk-taker did not have the wherewithal to buy the mortgage claim with his own resources. He therefore borrowed short term (say, for three months) the sum needed from an American bank. In making this transaction, he takes on several of the types of risk referred to here: in the first place, an interest-rate risk, since he is borrowing short term at a rate that can vary, but receiving a fixed rate; second, a credit risk, since a payment delay, and, even more, a payment default, will mean that he makes a loss; lastly, a liquidity risk, in that if for one reason or another the bank does not roll over his three-month loan – and if he finds no one in replacement – he will be obliged to sell his claim and possibly suffer a loss. Note that he can unload this risk by asking a bank to guarantee him a line of credit, but obviously at a cost that will reduce his profit margin.

It now remains to be seen where the money lent to our risk-taker comes from. For the answer, we have to look this time at the Chinese
part of the chain. In exchange for yuan, the central bank has bought the dollars from the Chinese exporter and invested them at three months with an American commercial bank. This investment is the counterpart of the loan granted to the risk-taker by this same commercial bank. The deposit by the Chinese central bank completes the dollar part of the chain, with the American commercial bank taking the risk of lending at three months to the risk-taker and being remunerated by the spread between the interest on this loan and the interest rate it pays to the Chinese central bank for a deposit of the same maturity. It still remains to complete the yuan part of the chain. To finance its acquisition of dollars, the central bank has issued debt in yuan, say in the form of a three-month bill. This bill has been purchased by the Chinese commercial bank, with household deposits constituting the counterpart. In this chain, the Chinese commercial bank takes no risk – if the Chinese savers have opted to invest their savings at three months – and its margin is certain.

The Chinese central bank is an essential link in the chain. It buys dollars in exchange for yuan, receives a three-month dollar interest rate and pays a three-month yuan rate. Its role is then that of the exchange-risk-taker referred to in Chapter 1. It is its policy of not allowing the exchange rate to appreciate too much under the impact of the Chinese current-account surplus that prompts it to play this role. Its intervention binds together the various links in the chain. The particular 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 commercial 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.

The above example has been deliberately oversimplified. In order to make the illustration more concrete, a single operation has been isolated. In reality, the credit-risk-taker will never lend directly to a household, but will buy a bond backed by the mortgage claims produced by the securitisation industry. The reasoning obviously remains unchanged and the precise form and length of the chain also leave it unaffected. Let us suppose that the Chinese central bank, instead of making a deposit with a commercial bank, buys 5-year bonds issued by Fannie Mae. This institution, as we have seen, has a portfolio of mortgage loans that it finances by issuing bonds, thus playing the role of risk-taker in the above diagram. By issuing a 5-year bond, however, it reduces its interest-rate risk and its liquidity risk; by buying the bond, the Chinese central bank takes on the risks that Fannie Mae wanted to unload. This considerably shortens the risk-taking chain. For a time at least, the intervention of the American commercial bank is no longer necessary.
This illustrates the wide variety of possible chains. In fact, there is nothing to prevent the commercial bank mentioned earlier that receives the deposit from the Chinese central bank from taking on all the other risks related to the mortgage – liquidity risk, interest-rate risk and credit risk. This will be the case if, after granting the loan, it simply keeps it on its books. It can, however, arrive at a similar result – taking on, against remuneration, the risks mentioned – without having to have them on its balance sheet. For this purpose, all it has to do is create an ad hoc financial vehicle – a so-called "conduit" – in which it is the main shareholder. This vehicle will buy mortgage loans, financing itself by borrowing short term and merely benefiting from a line of credit from the bank. As credit-risk- and interest-rate-risk-taker, the vehicle will generate a margin, but without being subjected to the same prudential constraints as the bank.

This raises a key question, namely the robustness of the risk-taking chains that ensure the financial interpenetration of the developed and emerging regions. To assess this, it is necessary to examine the solidity of their individual links and this will depend on the capacity of each risk-taker to assess, monitor and manage the risks he takes on. Even if he is extremely lucid and vigilant – a highly theoretical assumption – he will still suffer losses from time to time. The solidity of the link will depend on his capacity to face up to these losses without defaulting. For each risk-taker, this capacity is a function of the ratio between the quantity of risk taken on and the volume of equity capital, in other words, the solidity of the various links in the chains will depend on this "leverage ratio". Inasmuch as Western risk-takers have taken on a large part of the risks involved in the investment of emerging-country savings, financial globalisation has led to a significant rise in the "leverage" of the system, a rise that could only increase the latter's fragility.

A rise in the "leverage" of the risk-takers

The preceding analysis was aimed at explaining how the globalised financial system was able to relieve the emerging regions of the risks associated with the loans financed by their surpluses. This taking on of risk is not a new function: the system already performed it for the savings of its residents that were invested "risk-free". With the advent of globalisation, it also did so for part of the savings of the rest of the world. It is the forces prompting it to do so that we wish to identify here.

For this, let us take as our starting point a balance sheet of the financial system. Let us assume that non-financial agents make all their financial investments through this system (for example, by subscribing to mutual
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funds). The entirety of their investments constitute the liabilities of this financial system and its assets consist of the liabilities of all the non-financial agents (Diagram 6). These assets are made up of highly diverse and more or less risky elements: shares in non-financial companies (listed or not), claims on public or private agents (tradable or not), with more or less distant maturity dates. In the following analysis, only the credit risk is taken into account and, for the sake of simplicity, the existence of assets bearing no credit risk issued by non-financial agents (government securities) is ignored. The risky assets here consist solely of private debt of the same kind and carrying the same risk. The average expected return on these assets is given and their total amount is equal to that of the liabilities of the financial system.

Diagram 6. Balance sheet of the developed world financial system

The liabilities of the financial system consist of “risk-free” investments – banknotes, deposits with banks or money market funds – and risky investments. Among the latter, it is possible to distinguish between those that carry unleveraged risks and those that carry leveraged risks. The former are “ordinary” risky investments: for example, a corporate bond is a risky, but unleveraged, financial investment. The latter are investments that provide equity capital to the risk-takers in the financial system: a holding of shares in hedge funds, for example is a risky investment.

2. The existence of risk-free assets complicates the analysis without modifying the conclusions (see Box 8).
investment, but this time leveraged. Thanks to this equity capital, the risk-takers in the system – operators in the banks or in the alternative system – can indeed take on leveraged risk while at the same time exposing the holders of the equity to the risks taken.

Let us now assume, still for the sake of simplicity, that the risky financial investments are homogeneous and that they all involve leveraged risk. Since all the existing risks have to be borne somewhere, these investments necessarily carry the risks of which the “risk-free” investments are relieved. The leverage of the system is the ratio between the “risk-free” and risky investments. Ex post, it is as if all the holders of risky investments had borrowed capital invested risk-free to purchase risky assets. The consequences of the current-account surpluses of the emerging countries are then clear. If these surpluses are invested without taking on any other risk than the exchange risk, the risk-free investments with the globalised financial system are increased by the amount of these surpluses: the mass of risk to be “absorbed” by this system is increased correspondingly (Diagram 7). If the size of the Western financial “risk-taking” wealth – the share of risky investments – remains unchanged, the leverage of the system is increased in the same proportion. This leverage is not just an accounting magnitude, however, observed ex post, but also the variable that summarises the behaviour of the risk-takers. The forces needing to be identified are therefore those which, in the early 2000s, were able to prompt these agents to increase their leverage.

Diagram 7. Interpenetration of the balance sheets of the financial systems
One such force may have stemmed from the rise in the return on risky investments. The premium they receive—over and above the risk-free interest rate—is a function, on the one hand, of the gap between the returns on risky and risk-free assets and, on the other, of the leverage. Because no risk is involved, risk-free investments are remunerated at a lower rate although they are the counterpart of risky assets carrying a larger return. The income forgone by the holders of the capital taking no risk makes it possible to pay an increased return to those who take the risk in their place. The higher the ratio of the former to the latter—the leverage—the higher the additional remuneration. Everything else remaining equal, the rise in leverage involved in the formation of the surpluses of the emerging regions has therefore gone hand in hand with a rise in the premium paid to the risk-taking capital. On its own, however, this induced rise in the premium could not have sufficed to justify the rise in the leverage. The latter admittedly increases the return on risky investments but also, and in the same proportion, the risk taken on (see Box 8). If the attitude to risk of the risk-taking wealth-holders remains unchanged, the rise in their return merely compensates for this additional risk. This means that the explanation for the rise in leverage seen in the early 2000s has to be sought elsewhere.

Box 8. Determination of the risk-taking leverage of the globalised financial system

The framework is that defined in the text. Let us denote by λ the quantity of “risk-free” financial investments, by \((1 - \alpha)\) the quantity of financial investments taking unleveraged risk and by \(\alpha\) the quantity taking leveraged risk. All the amounts are expressed taking as norm the amount of risky financial investment and the size of the balance sheet of the financial system is \((1 + \lambda)\).

The ratio \(\lambda\) of the wealth invested “risk-free” to the wealth taking risk measures the leverage of the system. Now let us denote by \(r\) the average return on the “risk-free” assets, by \(\rho\) the average return on the risky assets held without leverage and by \((r + \pi)\) the return on the financial investments taking risk with leverage. The existence of risk-free assets (i.e. public securities)\(^1\) is again ignored and it is recalled that the only risk taken into account is the credit risk.

The left-hand part of the diagram below depicts this balance sheet of the financial system before the transfers of savings from the emerging regions; the right-hand part the balance sheet after these transfers of savings. The emergent areas having taken the exchange-rate risk associated with their surpluses, everything proceeds as if in return for an additional issue of risky assets, the Western financial system had received an addition of deposits. The leverage of the system thus rose from \(\lambda\) to \(\lambda'\). To understand why this rise could take place, it is necessary to analyze the behaviour of the “risk-takers” in the system.
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For this purpose, let us take as starting point the left-hand diagram. The additional return $\pi$ obtained by the leveraged risk-takers is derived from the statement that all the incomes from the risky assets held by the financial system are used to remunerate the capital invested with it. One then has:

$$(1 + \lambda \rho) = \alpha (\rho + \pi) + (1 - \alpha) \rho + \lambda \rho$$

from which can be deduced that:

$$\pi = (\rho - r) \left(1 + \frac{\lambda}{\alpha}\right)$$  \hspace{1cm} (1)

It will be seen that the return $\pi$ on the leveraged risk-taking increases with the value $\lambda$ of this leverage (and decreases when, everything remaining equal, the share $\alpha$ of the wealth invested with leverage increases).

Let $\sigma_\pi$ be the standard deviation of the return on the risky assets. The standard deviation of the return on the investments taking leveraged risk $\sigma_\pi$ can then easily be calculated from (1). We have:

$$\sigma_\pi = \left(1 + \frac{\lambda}{\alpha}\right) \sigma_\rho$$  \hspace{1cm} (2)

It can be seen that the return/risk ratio of the investments taking leveraged risk is independent of the leverage. We in fact have:

$$\frac{\pi}{\sigma_\pi} = \frac{\rho - r}{\sigma_\rho}$$

An increase in the leverage thus generates an additional return, but the risk – measured here by the standard deviation of this return – increases in the same proportion.

How then, in these circumstances, will the holders of these leveraged investments decide their risk-taking behaviour? It is assumed that the share $\alpha$ of wealth taking risk with leverage is given and that the holders have a “standard” utility function that increases with $\pi$, but decreases with $\sigma_\pi$. This function can be written:

$$U(\lambda) = \pi(\lambda) - a \sigma_\pi(\lambda)$$
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If the risk-takers’ attitude remains unchanged, only an increase in the return on risky investments greater than that implied simply by the increase in the risk taken can induce them to increase their leverage. The cuts in policy rates made by the major central banks, and especially the Federal Reserve, in the early 2000s operated in this direction, by reducing the cost to the risk-takers of the borrowing to finance their holding of risky assets – their “carry cost”. Indeed, inasmuch as the return on risky assets falls by much less than this carry cost, the taking of a given quantity of risk becomes better remunerated. Throughout the first half of the 2000s, carrying a 30-year mortgage using financing at three months left the holder each year a margin of close to 500 basis points (see Graph 15). The easing of key rates therefore explains, in part at least, the increase in leverage that was then seen. However, it fails to explain the high levels of risk-taking seen until 2007. From 2004 on, central banks launched a tightening of lending conditions that reduced the remuneration of risk-

The parameter \( a \) measures these agents’ aversion to risk. The desired leverage is then obtained by maximizing this utility function. Replacing \( \pi \) and \( \sigma_\pi \) by (1) and (2) and differentiating with respect to \( \lambda \), one obtains:

\[
\lambda^* = a \left( \frac{\rho - r}{2\alpha \sigma_\rho} - 1 \right) \quad (3)
\]

The leverage taken by our agents will thus depend on their aversion to risk (parameter \( a \)). The lower it is, the higher will be the desired leverage. The same will apply if the agents underestimate the risk \( \sigma_\rho \). An increase in the difference in return (\( \rho - r \)) between risky assets and risk-free investments will also encourage the agents to take more risk and the desired leverage will rise. Note, finally, that, all the other parameters being fixed, the leverage of the system could be higher, the larger the amount \( \alpha \) of wealth held with leverage: when this share increases, the risk taken is “spread” over a larger amount of risky investment. Each one of these factors, at one moment or another of the years 2000, seems to have contributed to the rise in leverage of the system from \( \lambda \) to \( \lambda^* \).

(1) The public securities make it possible to satisfy a demand for risk-free financial investments without the intervention of risk-takers. Taking them into account does not, however, modify the leverage on which the reasoning here is based. This leverage is in fact defined by the risk which the risk-takers must take to enable the demand for risk-free investment to be satisfied. It is thus a function of the demand for risk-free investments net of the supply of risk-free assets. If the emerging regions, instead of placing their reserves in deposits, buy risk-free assets – Treasury bills – this net demand is not modified.
taking, with the returns on risky assets rising substantially less than the key rates. Even so, the risk-taking leverage remained sufficiently high to enable the system to absorb the risks related to the investment of the surpluses of the oil-exporting countries, which then arrived on top of those of the Asian countries (see Box 9). This being so, there is every likelihood that another evolution – one that was less easily observable – gradually took up the running. This was the evolution in the attitude to risk. Indeed, only such an evolution can explain how leverage could remain unchanged – or, a fortiori, increased – at a time when the spread between the returns on risky and riskless assets was narrowing. Graph 15 confirms this hypothesis, with the Goldman Sachs “risk appetite” indicator rising from the end of 2003 on and remaining until 2006 at a level much higher than that seen in the 10 previous years (the Bank of England’s liquidity indicator, which provides another measure of aversion to risk, leads to a similar conclusion).

Graph 15. Carry margins and risk appetite, 1996-2007

The two horizontal straight lines correspond to the average values for the period 1996-2000.
Sources: Thomson Datastream, Bank of England, Goldman Sachs

This attitude to risk is the resultant of two magnitudes that are easier to distinguish in theory than in practice, but which evolve in the same direction and have the same effect on the behaviour of the risk-takers. These are the aversion to risk and the perception of risk. The fact that a reduction in aversion to risk took place starting in the mid-2000s is hardly surprising given the pro-cyclical nature of this variable, which has in fact a tendency to fluctuate with the economic cycle: high at the bottom of the cycle, when things are going badly, much
less so when activity returns to firm growth and things go better. The return to strong growth starting in 2004 therefore contributed to a reduction in aversion to risk. This reduction was all the more lasting in that the episode seemed to confirm the view of “Great Moderation”. The reduced volatility of growth and the fact that inflation continued to remain well in hand from the mid-1990s on gradually helped to give credence to the idea that a series of structural changes had made macroeconomic evolutions more regular and less uncertain. By the middle of the decade, the economic environment had turned favourable again and, in appearance, become less volatile, so that financial agents gradually adopted a less cautious attitude. This evolution helped to keep risk-taking leverage high despite the continual rise in short rates.

Box 9. A measure of the rise in the leverage of the globalised financial system: the American case

Both macroeconomic analysis and microeconomic observation suggest that in recent years the “leverage” of the Western financial system has risen significantly. As national accounts data have not been designed to capture masses of risks, measuring this rise is far from easy. It has nevertheless been attempted here, taking only the United States economy, in order to provide some indication, using the flow-of-funds data from the Federal Reserve. This means that entire groups of risk-taking vehicles – those based on derivatives – thus fall outside our evaluation.

Let us first estimate the quantity of risk that American agents have taken on behalf of the rest of the world since the mid-1980s. The diagram below gives the summary financial “balance sheet” of the United States vis-à-vis the rest of the world, distinguishing the risky positions from the rest. The focus here, as in Chapter 1, is on the credit-risk dimension, with deposits, Treasury securities and GSE securities regarded as “risk-free”. In reality, these investments are of course far from being free from all risk: for example, the foreign investors who buy Treasury securities normally take no credit risk, but nevertheless bear, in addition to the exchange risk, an interest-rate risk. Note that the statistics available do not make it possible, over the long period, to isolate symmetrically the purchases, by Americans, of foreign public securities (some of which could, on the lines of those of the American Treasury, be regarded as “risk-free”). By default, it has been considered here that deposits are the only risk-free asset held by the United States on the rest of the world. This calculation underestimates the recent increase in risk-taking by the United States: at the end of 2007, three-quarters of the stock of foreign debt securities held by the United States consisted of private-sector bonds, compared with only a quarter in 1994 [US Treasury, 2008].
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The “risk-free” assets and liabilities being thus defined, the risky assets and liabilities are arrived at by difference. The amount of risk “transferred” by the rest of the world to the United States is equal to the net “risk-free” liabilities of the US economy. It is also equal to the sum of the net external investment position of the United States increased by the net risky assets held on the rest of the world, making a total of $4,300 billion at the end of 2007. This figure gives a rough idea of the risk that the United States has taken on for the rest of the world.

How has this amount evolved during recent years? The graph below shows that it increased appreciably after the middle of the 1980s and especially from the beginning of the 2000s. Its progress is not unrelated to the accumulation of exchange reserves in the emerging regions. These reserves are in fact the counterpart of the accumulated current-account surpluses of these regions, plus their cumulative net capital inflows (in the form of direct investment, purchases of shares or bonds, or bank loans). The two curves in the graph would merge into one if the world consisted only of the United States and the emerging regions. In reality, there was no reason why the risks “transferred” by the rest of the world should have been borne by the United States alone; in net terms, however, this seems to have been in large part true.

One can now calculate the total demand for risk-free financial investments satisfied by the US system by adding the demand of domestic origin to that coming from the rest of the world. American non-financial agents’ demand for what they regard as “risk-free” investments is assumed here to be equal to their deposits plus their holdings of securities issued by the Treasury, the GSEs or local authorities. The total demand for risk-free investments calculated in this way overestimates the risks actually absorbed by the American financial system. This is because of the existence of a domestic supply of...
In reality, this risk-taking was much more concentrated than had hitherto been supposed. The reasoning applied earlier was on the assumption that all financial investments involving the taking of risk do so with leverage. This is clearly far from being the case. First of all, the majority of risky investments, if they are indeed risk-bearing, do so without taking leverage. The portion taking leverage consists solely of the equity of banks, insurers, hedge funds and the various off-balance-sheet vehicles mentioned earlier. And within these investments used to take risk with

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**Foreign exchange reserves and risk to be “absorbed” by the US financial system, 1985-2007**

![Graph]

Sources: IMF, Federal Reserve, authors’ calculations

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(1) On this point, see note 1 in Box 8.
leverage, the risk-taking itself was far from homogeneous. The commercial banks have since the introduction of the Basel I regulation been subject to explicit prudential constraints that set a minimum ratio between equity capital and the risks held on the balance sheets. Moreover, going further than is required by the regulations is regarded as a sign of seriousness and solidity. The balance sheet leverage of many commercial banks has in fact been appreciably reduced in recent years, as indicated in the case of American banks by the evolution in the ratio between their assets and their equity. The evolution in the attitude to risk of investment banks, hedge funds, insurers and other takers of risk with leverage must therefore have been even more marked than the rise in the average leverage would imply. Adrian and Shin [2008] have confirmed, in particular, the highly pro-cyclical nature of the evolution in the leverage of American investment banks: when their assets appreciate, they increase their risk-taking through borrowing. It is here that the principal difference compared with past evolutions lies. Between the beginning of the 1960s and the middle of the 1980s, the American financial system had already absorbed a rapidly-growing mass of risk. This it had done mainly through a rise in the leverage of its deposit institutions and the episode ended with the failure of a substantial number of these, in particular the “savings and loans”. Since the end of the 1990s it has again absorbed a rapidly-growing mass of risk, but this time much of the absorption took place off the commercial banks’ balance sheets (Graph 16). The rise in leverage was mainly concentrated in the alternative banking system.

Graph 16. Evolution of the risk to be “absorbed” by the US financial system and commercial banks’ leverage, 1959-2007

This observation highlights a final point. The financial system’s attitude to risk since the beginning of the 2000s cannot be explained solely by an aggregation of individual attitudes. The behaviour of the institutions
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around which the system is organised is also important. For example, the behaviour of the banks subjected to prudential regulation depends on the vigilance with which the authorities ensure that this is respected, in letter and in spirit. At the beginning of the 2000s, for example, commercial banks set up “off-balance-sheet” risk-taking vehicles, without any reaction from the authorities responsible for their surveillance. This passivity helps to explain the apparent reduction in the risk perceived by the system and the rise in its leverage. Similarly, the perception of the risk involved in structured products was based not so much on the diligence of individual risk-takers as on the assessment made by a small number of specialised rating agencies. From 2007 on, it became apparent how much many of their assessments had been affected by a systematic favourable bias, under the influence of a mixture of deal-making and laxity. By leading the system to underestimate the risk to which it was exposing itself, this bias, too, contributed to an increase in leverage.

Throughout the 2000s, the leverage of the Western financial system has continually risen. This rise has permitted the “transformation” of some $5,000 billion of emerging-countries savings, invested largely risk-free, into loans to Western households and firms, risky by nature. This laid the ground for an unprecedented financial crisis, in that if the leverage of the system were to fall abruptly and substantially, a considerable mass of risk would have to be expelled.
Chapter 5
Globalised finance in crisis

The alternative banking system has taken in charge a substantial part of the risks involved in the accumulation of debt that has taken place in the Western countries, and in particular in the United States, since the end of the 1990s. As these debts were mainly owed by private agents, an ever greater mass of credit risk had to be borne. Since the savings that were the counterpart of this borrowing were mainly placed short term, the liquidity risk rose in parallel. This high level of risk-taking required the aversion to risk to remain low and from the spring of 2007 on, this was no longer the case. The re-evaluation of the risk of a particular category of loans to American households – the subprime loans – led to a general and continuous rise in mistrust of financial agents and products. Under the impact of this shock, the interweaving of positions became unravelled, the result being a crisis of the credit system, which, after smouldering for a long time, flared up in September 2008, with the paralysis of the interbank markets. This chapter, after examining the immediate causes of this crisis, will analyse the mechanisms by which it was propagated and the efforts made – in vain – by the authorities to stem it.

The subprimes shock and the reversal of attitude to risk

The revelation at the end of 2006 of a spectacular rise in payment incidents on American subprime mortgage loans marked the beginning of a crisis that would shake the very foundations of the Western financial system. For several months, the talk was in fact of the “subprimes crisis”. These loans are known as “subprimes” because they fail to meet the standards set by Fannie Mae and Freddie Mac for the “prime” loans guaranteed by these institutions. The distribution of subprime loans grew rapidly from the mid-2000s on. Many households had then taken advantage of the low mortgage rates prevailing at the beginning of the decade.
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to borrow, in most cases at fixed rate, for the purpose of buying a house. At the beginning of 2005, American households’ capacity for mortgage borrowing was virtually saturated. The ratio between their debt service and their income, at around 13.5%, far exceeded the peak figures for the 1980s and only the fact that the unemployment rate was much lower than 20 years previously explains why payment incidents remained as low as they did [Brender and Pisani, 2005]. Households would nevertheless continue to go into debt – and spend – at a steady rate. To the surprise of many, this would enable American growth, and with it world growth, to withstand the steep rise in commodity prices, of oil in particular. Instead of reducing their non-energy spending to pay for the extra oil bill, American households used credit.

The expansion of subprime loans – the stock of which reached $1,300 billion in 2006, compared with only around $100 billion in 1998 – meant that access to mortgage lending was extended to a new layer of borrowers whose creditworthiness was shakier. This development was facilitated, from the mid-2000s on, by a continuous relaxation of the prudential standards applied by those distributing these loans. Month by month, the requirements in terms of personal down-payments were reduced and the proportion of loans made without any proof of income increased, as did lending at artificially attractive interest rates that were to be revised upwards by several hundred basis points after two or three years. This steady deterioration in the quality of the subprime loans would soon be reflected in the performances of loans of different vintages. The frequency of payment incidents after one year on loans granted in 2006 was roughly four times as high as on those made in 2003 and even twice as high as on those made in 2001, when the economy was in recession. The announcement by HSBC at the beginning of March 2007 of substantial losses on claims backed by subprime loans held by investment funds managed by the bank was the trigger for the initial bout of fever on the financial markets.

Nearly two-thirds of these loans have in fact been securitised. Unlike the bonds backed by prime loans, guaranteed by Fannie Mae and Freddie Mac, those backed by subprime loans are issued by private securitisers and carry no particular guarantee, leaving their purchasers to carry all the risks. In the mid-2000s, however, demand for high-yield investments was so great that these securities were placed without difficulty. On average, the interest rates on subprime loans are two to three hundred basis points higher than those on prime loans. In addition, structuration makes it possible to transform almost 60% of the value of a pool of subprime loans into bonds awarded an AAA grade by the rating agencies. No alchemy is required. The risk on the loans in the pool backing the bonds
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is carried first by the “junior” tranches, which are less well rated. As long as losses do not exceed, on average, 40% of the amount of the loans granted, the AAA tranches will not be affected. The junior tranches thus relieve the AAA tranches of part of their credit risk. Those who subscribe to these tranches, because they are taking more risk, are remunerated by an additional return. However, the ratings attributed to the various tranches and the allocation of returns between them are based on calculations with fragile underpinnings. Given the deterioration in lending standards, the probabilities of default and the recovery rates on these subprime loans are much more difficult to predict than those on prime loans. For example, the frequent absence of a down-payment means that the beneficiary of a subprime loan, from a purely financial point of view, has nothing to lose in failing to meet his repayment commitments if house prices decline shortly after purchase. The default and recovery rates on these loans are heavily dependent on the evolution of house prices. The fact that no checks have been made on the reality of the incomes declared by a substantial portion of borrowers did nothing to improve the situation.

The ratings awarded by the agencies have played an important role in the way in which the credit risk on the subprime loans was taken on. Prudential regulations in fact refer to these ratings in order to define the investments to which certain types of institutional investor can have access. American money market funds – like pension funds, incidentally – can only hold highly-rated securities. Furthermore, the capital requirements imposed on banks by the Basel II agreement which was then coming into force, are differentiated according to the rating of claims: the higher the rating, the less the equity required to hold it.

Working in collaboration with the rating agencies to which it pays fees, the securitisation industry then produced large quantities of securities carrying attractive yields. Even the “residues” of a first round of securitisation can be brought into the system. Using junior tranches backed by various pools of subprime loans, CDO tranches with an AAA rating have been manufactured – involving, if required, insurance bought from a credit-enhancer – with an initial yield higher than that of a corporate bond carrying the same rating. The placing of securities backed by sub-prime loans then posed no problem. Being inattentive to risk, investors were attracted by the additional return payable on securities of a given rating. The demand from these investors explains much of the relaxation of lending standards. Since the supply of the underlying “raw material”

1. In the United States, in most of the States repossession of the property used as collateral is the only possible recourse for a mortgage lender faced with default on the part of his debtor.
failed to keep pace, there has even been creation of synthetic CDOs based on CDS, taking as reference the subprime bond indices [Crouhy et al., 2008].

This demand for relatively remunerative securities also stimulated the production, using the same techniques, of bonds backed by other relatively dubious claims. At the beginning of 2007, almost $800 billion of “Alt A” loans – not as well documented as the prime loans, but less risky, in principle, than the subprime loans – had been distributed and in large part securitised. At the same date securitisation had been applied to almost half the $550 billion of American firms’ leveraged loans, used notably to finance M&A operations. For these too, however, given the strong demand, the quality of these claims, measured by the debt burden of the borrowing firms or by the number of contractual constraints imposed to protect the lenders – in covenants – declined steadily from the mid-2000s on.

Permitting the securitisation of loans whose quality was continually deteriorating fed risk-taking chains with securities that would turn out to be all the more “toxic” in that the purchasers were in many cases also takers of a liquidity risk. Institutional investors, collectors of savings, were in fact not alone in being attracted by the higher returns on such securities. The risk-takers in the alternative banking system – investment banks, hedge funds, banks’ proprietary accounts – were even more so. These latter institutions borrowed by one means or another in order to purchase securities on which they wanted to carry the credit risk. Until 2007 they were able to do so without great difficulty: the financial system was awash with what for a long time was described as an “abundance of liquidity”. This abundance was nothing other than the consequence of the way in which the savings emanating from the emerging regions were “delivered” to the Western financial system to be “transformed”. By borrowing short term to finance the acquisition of securitised mortgage loans or tranches of CDOs, the risk-takers participated in this “transformation” of liquid investments into long-term investments. In so doing, they took on one of the risks to be taken for accumulation of savings by the emerging countries to take place, namely the liquidity risk (and along with it, in many cases, the interest-rate risk linked to the fact that short-term borrowing was being used for long-term lending).

The risk attached to the subprime loans was therefore, as in the case of other securitised claims, to a great extent borne by risk-takers that were links in the chains described earlier. The SIVs accordingly financed their holding of subprime securities (or of CDOs created using these securities), notably by issuing commercial paper. While taking the credit risk
and the interest-rate risk, they nevertheless left the liquidity risk to the bank that had guaranteed them a line of credit. The investment banks, the banks’ proprietary accounts and the hedge funds, for their part, generally also took on this latter risk, often with relatively small amounts of equity. The American investment banks in particular, taking advantage of what had become extremely permissive regulation (in 2004, the Securities and Exchange Commission, at their request, had eased their capital adequacy constraints) raised their leverage to very high levels (see Chapter 1). The stability of the system therefore depended on an extremely lenient attitude to risk that was to be radically changed in the space of a few weeks by the subprimes shock. The perception of the risk on the securities held, like the aversion to risk on the part of all the links in the risk-taking chains, rose steeply and abruptly, forcing down the leverage of the system. By this route, the subprimes shock spread rapidly to the whole of the Western financial system.

Reduction in risk-taking leverage and propagation of the shock

With the general attitude to risk suddenly becoming more prudent, the risk-takers that were links in the chains described above immediately reduced their positions. They did so either on their own initiative or because those who had lent to them forced them to do so by reducing the finance made available. A shockwave then spread through the globalised financial system. In order to understand the mechanism of this propagation, let us take the extreme case in which the system has only two components, the risk-takers, the only ones to take the risk of holding securities by borrowing short term for the purpose, and the deposit banks, which will take only the risk of lending to them, with the securities purchased as collateral. At the time of the shock – say, early 2007, when the consequences of the poor quality of the loans made became evident – the leverage of the system was at the maximum level compatible with the equity of the various operators and a complaisant attitude to risk. A sudden change in this attitude means that leverage has to fall. This initial shock is sufficient to engage a vicious circle difficult to break without external intervention. The risk-takers will in fact try to reduce their positions by selling some of the securities acquired. Everything else remaining equal, given that the system was already at the limit of its risk-taking capacity, no one is able to find buyers for these securities at their original price, but only at much lower prices. If the desired decline in leverage involves a reduction in the value of securities held amounting to $100 billion, the value of the stock of securities held must, in one way or another, fall by this same amount. Such a fall will, however, lead to loss
for the holders of these securities, with their equity also being reduced by $100 billion. The total value of the assets held will therefore have to fall again and this time, the leverage ratio being higher than one, the size of the fall will be more than $100 billion. This triggers a fresh cycle of losses, a further amputation of equity and the need to reduce yet again the value of the stock of assets held, by an amount that is again greater than in the previous round. If nothing occurs to stem this process, the downward price spiral and the destruction of equity will only come to a halt when the risk-takers are wiped out.

In reality, of course, things are not so simple. The commercial banks, in particular, have not only lent to the risk-takers against collateral, they have also and in different ways themselves been risk-takers. However, the fundamental logic of the mechanism at work at the level of each of the links in the risk-taking chains is indeed that of the downward spiral just described, with the operation of the liquidity risk even taking on an unexpected amplitude. The subprimes shock in fact began to mutate into a financial crisis when, at the beginning of August 2007, a particular category of risk-takers, namely the SIVs and more generally the “conduits” that had issued commercial paper to finance their holding of securities, found themselves faced with mistrust towards their issues. It became apparent that some of the securities in their balance sheets were in fact backed by subprime loans and some days earlier BNP Paribas had suspended withdrawals from three investment funds holding these claims because they were unable to put a value on them. Finding it difficult to roll over their debts, these vehicles activated the existing credit lines. In order to meet their commitments, many banks were then forced to mobilise liquidity in order to lend to vehicles whose equity was starting to be eroded. Some of them, however, like the German bank IKB, guaranteed credit lines that were out of all proportion to their own size and very soon found themselves incapable of meeting their commitments. Fears regarding the value of subprime securities were then compounded by fears regarding the solidity of the banks and the functioning of the interbank market crucial to the circulation of liquidity. The crisis then took on the awesome shape described by R. Rajan [2005] in a premonitory article.

Normally, when banks have excess liquidity – assets held with the central bank that exceed the amount of reserves they are obliged to maintain there – they lend it to those that are short of liquidity. In this way, the interbank market plays a key role in the management of liquidity risk. A bank will not hesitate to lend to others if it knows that at some future date, if its own deposit base becomes insufficient, it can borrow the reserves it is short of without any particular difficulty because other
banks will be in surplus. Starting in August 2007, however, this fluidity of the interbank market was called into question, with each bank not only worried about the others’ exposure to the subprimes crisis but also wondering how easily it would be able to borrow in the future in case of need. While at macroeconomic level the situation of “abundance of liquidity” is unchanged, at microeconomic level the circulation of liquidity is hobbled by the rise in aversion to risk. For each individual financial institution, having the liquidity needed for its day-to-day settlements has become a major concern. When a bank has too large a volume of deposits in relation to its needs, it now prefers to invest the surplus in Treasury bills or leave it with the central bank rather than lending it, even for a few weeks, on the money market. The spread between the LIBOR interbank rate and the return on Treasury bills has become one of the thermometers of a fever set to remain present, albeit dormant, during long months, punctuated by particularly violent bouts (Graph 17).

Graph 17. Tensions on the US money market, 2007-2008

In response to these developments, aversion to risk has continued to rise, inducing an even greater reduction in the leverage of the system. SIVs were in fact “programmed” to be liquidated when their equity fell beneath the threshold judged to be necessary for the protection of their creditors. The downward pressure on prices of debt securities was accordingly intensified as a result and the risk-takers’ losses amplified. Very soon the decline in the prices of securities backed by subprime loans substantially exceeded any reasonable estimate of the losses that would actually be suffered by those holding them to maturity [Bank of England, 2008]. As for the CDOs manufactured from these securities, their value collapsed, causing considerable damage to the investment
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banks that, like Merrill Lynch, did not have time to unload their stocks. Contrary to what the rating agencies had postulated, the prices of the various securities on the balance sheets of these structured products have turned out to be closely correlated so that the aversion to them has become total – especially as the capacity of the credit-enhancers (the “monolines”) to guarantee the risk on the best tranches of these CDOs soon came to be called into question. As a result, the prices of the municipal bonds that these monolines traditionally guarantee have fallen as well.

The subprimes shock has thus led in the space of a few months to a crisis affecting all credit markets. By depriving the risk-takers of their sources of finance, the rise in aversion to risk has forced them, in order to meet their commitments, to sell “good” debt securities, since the “bad” securities – those linked to the subprimes or suspected of being so – rapidly became unsaleable. The phenomenon has been accentuated by investors’ withdrawals from the hedge funds – another demonstration of the increase in aversion to risk – thus reducing the equity of these risk-takers. One after another, the prices of all debt securities have been affected (Graph 18). Their continuous decline reflects not so much an upward revision in the losses expected at maturity as the effect of forced sales in a market where, for lack of operators with the necessary liquidity (or prepared to use the liquidity they had), buyers were scarce. In March 2008, for example, the threat of failure of one major risk-taker – the Bear Stearns investment bank – brought about a sharp rise in all risk premiums, to such an extent that the premium for a private European investment-grade borrower exceeded by more than 80 basis points its November 2007 level.

Graph 18. Credit market risk premiums, June 2007-December 2008

Source: Thomson Datastream
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Until the summer of 2008, the downward pressure on prices of debt securities – and the rise in losses measured at market prices – resulted above all from the dynamics of the financial system itself. The American economy continued to grow and the contraction in activity expected for the first part of the year failed to materialise, despite a very steep rise in energy prices. During the summer, however, when the effects of the tax stimulus package introduced in April began to fade, signs reappeared that activity was running out of steam. The same was true in Europe, where the rise in inflation and the strength of the euro finally snuffed out growth. The rise in credit risk premiums was then intensified still further by the cyclical behaviour described in the previous chapter, with the deterioration in the economic situation increasing aversion to risk while at the same time prompting an increase in the perception of risk – all the more so as the American housing market, on which the fate of a large proportion of the issued debt depends, showed no signs of stabilising. The continuous rise in the risk premiums of Fannie Mae and Freddie Mac was such that mortgage rates failed to track the decline in rates on government bonds. On the contrary, between January and June 2008, they rose without interruption (Graph 19). This tendency has a certain logic. Out of a concern to reduce the cost of mortgages and to make them more easily available, the authorities had pressured these two institutions into taking more risk while at the same time reducing the capital adequacy requirements that they had themselves, through prudence, imposed on them a few years earlier. As their leverage was already particularly high and with their status as private firms “sponsored” by the government ensuring them only an implicit guarantee, market worries regarding their capacity to meet their commitments were bound to increase. The stabilisation of the residential property sector was jeopardised as a result. Since the end of 2007, in fact, the financing of mortgage loans has been based on securitisation provided solely by the GSEs. When the borrower quality of these institutions deteriorates, their financing cost, and consequently the cost of mortgage lending, rises.

2. Fannie Mae and Freddie Mac are obliged by the regulations to maintain a minimum amount of equity capital equal to 2.5% of the assets in their balance sheets and another 0.45% of their off-balance-sheet commitments. In 2004, the OFHEO had demanded 30% surplus capital, before reducing the figure to 20% at the beginning of 2008.
The authorities, aware of the danger, obtained from Congress in July 2008 the right to intervene, if necessary, in support of Fannie Mae and Freddie Mac. Their risk premiums nevertheless continued to rise and mortgage rates followed suit. By the end of August, the interest rate on a 30-year loan exceeded 6.5%. The impact of the decision by Congress on the share prices of the two institutions was unfortunate. Since the takeover, with the assistance of the Federal Reserve, of Bear Stearns by JP Morgan, the markets have come to understand that the shareholders are the first to pay the price of a government bailout. The prospect of a rescue operation for the two GSEs therefore tended to push the price of their shares rapidly down to nothing. Any hope of a private re-capitalisation having vanished, the risk premiums of these two firms, already high, climbed further still. In order to avoid the collapse of the most important segment of the American bond market, the authorities soon found they no longer had any option and at the beginning of September placed the two GSEs under conservatorship. Using the “bazooka” that Henry Paulson, Secretary to the Treasury, had asked for some weeks previously “so as not to have to use it”, the government announced that it might enter the share capital of each institution for a sum of $100 billion. In the space of a few days, the cost of mortgage lending fell by more than 40 basis points.

The relief was short-lived, however. As the months went by, the downward spiral involving asset prices and the erosion of equity continuously gathered pace and pressure on the risk-takers was strengthened. Being exposed to the credit and liquidity risks, the investment banks were particularly vulnerable, in that the erosion of their capital base led to doubts regarding their solvency while at the same time the loans they

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Graph 19. **Fannie Mae risk premium and US mortgage rates, January 2006-November 2008**

![Graph showing Fannie Mae risk premium and US mortgage rates from January 2006 to November 2008.](image)

Sources: JPMorgan, Bloomberg
needed to hold onto their positions were not renewed. For lack of liquidity, they were threatened with being forced to file for bankruptcy. Following Bear Stearns in March, Lehman Brothers found itself precisely in this situation in mid-September. This time, the authorities allowed the institution to go bankrupt. Having a central place in the interwoven positions of the alternative banking system, it had very numerous counterparts: banks or money market funds that had lent money, hedge funds to which it had lent or for which it acted as depositary, traders involved in transactions on derivatives. All these counterparties were immediately affected. Aversion to risk soared. The money markets became totally paralysed. The prospect of a prolonged credit shortage sent stock markets and commodity prices plunging. What had previously been a smouldering crisis suddenly became a conflagration. With liquidity no longer circulating, the positions of many risk-takers suddenly fell apart, forcing up risk premiums on all segments of the credit market still further. At the beginning of November, those of the best-rated firms far exceeded the levels that would have been justified by losses corresponding to those actually observed even in the time of the Great Depression (Graph 20). The dislocation of the alternative financial system continued, exposing the ineffectiveness of the efforts made until then to stem the crisis.

Graph 20. Risk premiums on US investment-grade corporate bonds*

(* The premiums for November 2008 are observed data. The others, calculated by Citigroup, are those that should theoretically have remunerated bondholders on the eve of the three episodes mentioned, taking into account the effective default rates seen during these episodes.

Source: Citigroup

The policies applied by the authorities

In the period up to the stock-market collapse of October 2008, the authorities’ strategy had consisted mainly of dealing with the symptoms
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of the crisis – the pressures on liquidity – without ever tackling its cause, namely, the incapacity of the system to bear the totality of the risks accumulated during the period when its attitude to risk had been complaisant. Between the middle of 2007 and the last quarter of 2008, the spiral triggered by the expulsion of this excess of risk operated virtually unimpeded, pushing down the prices of all debts. The losses of the financial system steadily increased. At the end of October 2008, the Bank of England estimated that the deterioration since April in the prices of bonds issued by investment-grade firms in both Europe and the United States amounted on its own to an additional loss of $1,000 billion, or at least twice the market value of the losses related to the subprimes [Bank of England, 2008]. However, this deterioration was by now no longer due solely to the spiral engaged through the reduction in leverage: like the stock-market collapse, it was linked also to the prospect of the recession which the sudden breakdown of the credit system and the accompanying confidence shock had made inevitable. By their sheer size, these new losses had further weakened the system and, by postponing the moment when it could once again function normally, had darkened the economic outlook still further. In order to try to break this vicious circle, the authorities finally revised their strategy. Instead of intervening only to preserve the liquidity of the system, they started to help it bear the risks with which it was burdened.

Since August 2007, the dysfunctioning of the money markets has placed Western central banks in a state of high alert. Their interventions follow a simple logic: since the banks prefer to place their excess liquidity in Treasury paper or with the monetary authorities rather than lend it to other banks, the authorities have been constantly obliged to inject into the system the reserves that would otherwise be lacking. The particular organisation of each of the individual money markets leads them to take different types of measure, but in all cases the role of the central banks would be the same, namely to act as intermediaries between private institutions that are now hesitant about lending directly to each other. Very soon, the Federal Reserve became aware of the limitations of its intervention arrangements, with those of the ECB turning out to be more suitable (Box 10). In the United States, only some 20 institutions are normally able to borrow from the central bank. This means that, with liquidity not circulating freely, the reserves injected through these entry points could not reach the whole of the money market as they usually do. Over the months, the Fed has opened new “windows” to respond as directly as possible to the needs of the various operators. For example, the PDCF (Primary Dealer
Credit Facility) enables investment banks to obtain loans from the central bank, while swaps with foreign central banks – operations through which the Fed provides other central banks with dollars in exchange for their currencies – make it possible to delegate to these other banks lending operations in dollars to the institutions that come under their remit. To help the risk-takers finance their positions, a specific programme for lending Treasury bills was also put in place. With many private lenders no longer prepared to accept as collateral securities backed by mortgage debt, the risk-takers are in fact having increasing difficulty in renewing the finance they need in order to hold onto these securities. The Fed has opened a new window – the Term Securities Lending Facility (TSLF) – in order to lend, in exchange for these securities and for a period of one month, Treasury securities, which are universally accepted as collateral. In this way it is facilitating the borrowing of the liquidity needed to finance existing positions. Unlike the other programmes, this one does not inject liquidity into the system but improves the possibilities for the circulation of existing liquidity.

Box 10. Interventions of the European Central Bank on the money market

From August 2007 to September 2008, the ECB, like the Federal Reserve, tried to reduce strains on the money market without modifying the overall liquidity of the system. Better equipped originally than its opposite number – its normal interface with the financial system being much broader – the ECB did not have to open new “windows” as a matter of urgency. It simply modified the calendar for its supply of liquidity during the period of constitution of reserves and lengthened the maturity of its refinancing operations (see graph below).

Since the summer of 2007, the share of the longer-term refinancing operations (for three or even six months) in total refinancing thus rose from approximately 25% between January 1999 and June 2007 to more than 60% between September 2007 and September 2008. In parallel, the calendar for the supply of liquidity was modified, the injections being stepped up at the beginning of each period of constitution of reserves and later reduced. Between August 2007 and January 2008 the daily surplus of reserves observed, compared with the monthly average, exceeded €20 billion at the beginning of each period of constitution of reserves (28 to 24 days before the end of the period) and was transformed into a deficit of €40 billion a few days before the end of the period (between December 2004 and August 2007 this daily surplus was almost systematically nil).
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Lengthening of refinancing operations’ maturity and frontloading of the provision of liquidity

On the left-hand graph, the “other operations” item consists of net fine tuning operations, term deposits and the net lending facility (the lending facility minus the deposit facility). As from October 2008, the surplus liquidity observed was reabsorbed especially by means of the marginal deposit facility. The vertical shaded lines on the right-hand graph indicate the initial and final dates of the periods of constitution of reserves.

Sources: Thomson Datastream, ECB

In order to understand the logic behind this front-loading of liquidity, it should be recalled that the compulsory reserves provision of the Eurosystem allows the establishments subjected to it to constitute their reserves taking an average: over one period of constitution, the compulsory reserves requirement must be met by the average of the end-of-day balances. Let us now reason on the assumption that there are two banks (A and B) and a reserves period consisting of two days (1 and 2). Each bank must have on average €100 million of reserves deposited with the central bank. To meet their need for refinancing, the central bank provides, in normal circumstances, €200 million each day. Let us suppose that at the end of the day, bank A has on its account with the central bank the totality of these €200 million. Half this sum then provides €100 million of its need for compulsory reserves and it lends the remaining €100 million to bank B, which can in its turn satisfy its own need for reserves (case 1 in the table below).

Mechanics of the liquidity frontloading

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<th>Case 1</th>
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<th>Case 2</th>
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<td></td>
<td>Day 1</td>
<td>Day 2</td>
<td>Day 1</td>
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<tr>
<td>Credit institutions’ current accounts</td>
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<tr>
<td>Bank A</td>
<td>100</td>
<td>100</td>
<td>200</td>
<td>0</td>
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<tr>
<td>Bank B</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Total</td>
<td>200</td>
<td>200</td>
<td>300</td>
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<tr>
<td>Required reserves</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Excess reserves</td>
<td>0</td>
<td>0</td>
<td>100</td>
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Case 1: Bank A has on its account with the central bank the totality of these €200 million. Half this sum then provides €100 million of its need for compulsory reserves and it lends the remaining €100 million to bank B, which can in its turn satisfy its own need for reserves.
Let us now suppose (case 2) that the rise in aversion to risk leads the banks to hesitate before releasing their liquidity. If the situation at the end of day 1 is the same as previously, bank A no longer lends liquidity to bank B, but satisfies, as of the first day, the totality of its reserve obligations. If the central bank wants to enable bank B to build up its reserves, it must inject more liquidity than usual on the first day. If it injects an additional €100 million, this will enable bank B to satisfy its reserves obligation. On day 2, however, it will inject only €100 million: as bank A has already constituted its reserves, this 100 million will make it possible for bank B to constitute its reserves. On average over the two days, the quantity of liquidity injected by the central bank is unchanged, but the calendar of the injections has been modified, leading to a surplus of compulsory reserves compared to the daily average on day 1 (amounting to €100 million) and to a deficit on day 2 (also amounting to 100 million).

Between the summer of 2007 and the summer of 2008, this frontloading, combined with the modification of the maturity structure of the refinancing operations, was sufficient to restore almost normal conditions for the very short-term operations on the money market. Following the Lehman Brothers bankruptcy, however, the disturbances were such that the ECB had to take a series of additional measures, widening its swap arrangement with the Federal Reserve in order to increase the US dollar provision, further adding to the frontloading of the market and extending the list of securities accepted as collateral for its refinancing operations. It also decided that as from October 2008, the refinancing operations would be carried out by a fixed-rate tender procedure, with full allotment. The size of the refinancing operations thus rose appreciably, from €450 billion in September 2008 to more than €600 billion in December. Over this period, the surplus liquidity was withdrawn, mainly via the deposit facility. The surplus reserves which are placed in this facility are remunerated, but at a rate lower than the policy rate. In January 2009, this remuneration fell to 1%, 100 basis points below the principal refinancing rate.

Graph 21 shows how, over the months, the size of the loans made by the Fed have steadily increased before soaring in mid-September 2008 following the failure of Lehman Brothers. Not only did strains on liquidity then become more intense, as at the time of the Bear Stearns episode, but this time they extended to segments of the market that had not

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(1) Prior to the crisis and unlike the United States banks, a broad range of credit institutions in the euro zone had direct access to the central bank. Moreover, the range of paper accepted as collateral by the ECB being already very broad, there was no need to widen it immediately.

(2) As of December 2007, the ECB and the Federal Reserve had set up such swap agreements, but for limited amounts; as from October 2008, these amounts become unlimited.
previously been affected. Like many financial institutions, Lehman Brothers had been issuing short-term debt that was held by the money market funds. When it went under, this meant losses for a certain number of these funds and led to a sudden rise in aversion vis-à-vis all those investing in private securities. Substantial sums then flowed out of these funds to be placed as bank deposits or in funds investing only in Treasury paper. In order to help the funds affected cope with these withdrawals without having to sell at a loss the paper held, the Fed was obliged immediately to put in place a new intervention window, named the Asset Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), which enables banks to obtain from the central bank the resources needed to buy the paper sold by the mutual funds. These increasingly massive interventions by the Fed merely put back into circulation the liquidity which, in a concern for security, institutions want only to place with it or in Treasury paper. Until the failure of Lehman Brothers, however, the size of the Fed’s balance sheet remained unchanged, since it sold Treasury bills on the asset side of its balance sheet for an amount corresponding exactly to the injection of reserves over and above what was needed to cover the compulsory reserve requirements. By September 2008, the stock of lending by the various facilities that had been opened had therefore risen substantially, while that of the Treasury securities on its balance sheet had been halved, falling below $500 billion (part of this amount, being lent in the framework of the TSLF, was in fact unavailable). Faced with the explosion of strains on liquidity, the Fed now had to accept a rise in the size of its balance sheet. In order to keep control over the amount of available reserves and to prevent a collapse in the Fed funds rate, it asked the Treasury to issue and deposit with it the proceeds from these issues, for an amount equivalent to the excess reserves injected. Very soon, this temporary expedient was supplemented by a more durable arrangement. The central bank obtained from Congress the right to remunerate the excess reserves, and the rate of this remuneration would in normal circumstances put a floor on the Fed funds rate.

Among the various “facilities” opened following the collapse of Lehman Brothers, the CPFF (Commercial Paper Funding Facility) has introduced a major innovation. Withdrawals from money market funds investing in private paper had placed in jeopardy numerous firms that had been regularly issuing commercial paper, for example to finance their inventories. As a result, the financial turmoil threatened to directly affect the functioning of the real economy. In order to limit this risk, an ad hoc vehicle financed by the Fed was introduced to buy newly-issued commercial paper. In so doing, the Fed was no longer content to supply liquidity
but also took on the credit risk, admittedly at short term and on the best borrowers. It therefore began to advance along a path that the American authorities, loath to risk “taxpayers’ money”, had previously refused to go down.

The size of the financial conflagration was such that the American authorities, like those of the other countries affected, were obliged to go further. The FDIC has become guarantor not only, as previously, for deposits but also for the new debts of the banks it insures. The Treasury, for its part, using $50 billion from the Exchange Stabilisation Fund, now temporarily insures investments by money market funds that so wish, on payment of a premium. These measures do not really relieve the system of the excess risk it is carrying. They simply aim to re-establish the “risk-free” nature of investments that were habitually regarded as such. In the following weeks, having great trouble in keeping up with events, the Treasury used up three-quarters of the $350 billion first tranche of the Troubled Assets Relief Program (TARP) in re-capitalising American banks and preventing AIG, the world’s largest insurer and counterparty to numerous risk-transfer operations, from going under. This programme, voted by Congress on 3 October 2008 and known as the “Paulson plan”, was intended to purchase illiquid securities. By diverting it from its initial aim, the US Treasury was following the path taken at the time by most Western governments, namely providing equity to the banks. It was not until the end of November that the Fed decided to make use of “non-conventional” instruments of monetary policy and announced a massive programme – $600 billion – for the purchase of securities issued or guaranteed by GSEs. The aim was to ensure the availability of mortgage credit

Graph 21. Federal Reserve on- or off-balance-sheet items, 2007-2008

(*) Primary Discount Lending Facility
(**) Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility
Sources: Thomson Datastream, Federal Reserve
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and reduce its cost. At the same time, the Fed put in place an additional facility known as the Term Asset-Backed Securities Loan Facility (TALF) in order to bolster, to the tune of $200 billion, the market for securities backed by consumer credit or by loans to small businesses. This time, the American authorities were taking on part of the risks that the financial operators – in particular, the risk-takers in the alternative banking system – were no longer in a position to bear.

These measures, like the repeated cuts in policy rates made by the major Western central banks, came too late, however. Having been content for several months to inject liquidity into a financial system caught up in the destructive spiral triggered by the brutal reversal of attitude to risk, the Western monetary and financial authorities allowed the first crisis in the history of globalised finance to take on huge proportions and in the end plunge the Western economies into a deep recession.
Following the conflagration in the autumn of 2008, it is legitimate to call into question the contribution of financial globalisation. If a few years’ accelerated development of the emerging regions is at the cost of a dramatic slowdown in the world economy, is the game worth the candle? Simplistic though it may be, this “cost-benefit” analysis nevertheless sums up fairly well the events of the 2000s. But does this mean reopening the question of the liberalisation of capital movements and trying to confine finance again to the balance sheets of the banks? We do not believe so. The financial globalisation crisis is due less to globalisation itself than to the policies that accompanied it, or, to be more precise, the policies that failed to accompany it. The ideology of the promoters of globalisation has obscured the fact that finance left to its own devices regularly leads to disaster. This latest catastrophe merely confirms the fact. To rely on “market discipline” to ensure financial stability, as the American authorities in particular have done, is illusory. The quality of the prudential regulations imposed and the vigilance with which their observance is scrutinised are essential elements. However, contrary to a generally-held view, the need for public intervention is not limited to regulation of financial activities. It also extends to the definition of the frontiers, and the architecture, of the globalised system, which cannot safely be reduced to a juxtaposition of heterogeneous national systems. A sufficient development in each economy of infrastructures for financing and risk-taking, together with the establishment of public agencies capable of relieving private agents of certain of the risks that they cannot reasonably be expected to take, are necessary to enable savings to circulate smoothly in the world economy. The international co-operation needed for financial globalisation in fact goes further than the installation of more complete and more solid “plumbing”. It also extends to the policies that, by influencing the formation of savings and investment decisions, regulate the “pressure” of what circulates in the
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pipes. Whatever the efforts made to consolidate the infrastructures of
globalised finance, their capacity to ensure the circulation of world savings
will remain limited and governments will have to accept the constraints
that this limitation imposes on their policies. The financial crisis of the late
2000s stems also from the willingness of many of them to ignore these
constraints and to act as if globalisation merely extended their margins for
manoeuvre, without demanding anything in return on their part.

This final chapter is intended to draw conclusions from this crisis and
show how financial globalisation can once more be placed at the service
of world growth. It will deal successively with the three levels mentioned
above: microeconomic regulation, the architecture of the financial system
and macroeconomic surveillance.

Microeconomic regulation

The crisis of the late 2000s marks the failure of a conception of finan-
cial regulation of which Alan Greenspan has been the most notorious
advocate [Greenspan, 2007]. For its proponents, the intervention of the
public regulator must be as light-handed as possible and practically lim-
ited to providing a framework for the behaviour of just the deposit insti-
tutions (the money they “produce” being a public good). Admittedly,
light-handed regulation will from time to time lead to accidents, but, little
by little, if allowed to do so, finance will learn how to “self-regulate”.
According to this ultra-liberal conception, financial stability is based
essentially on the unhampered interplay of private interests and not on
public intervention. There is an underlying postulate, namely that private
agents behave rationally and pay constant attention to gathering the
information that past experience places at their disposal. The subprimes
debacle has shown, yet again, how this postulate is contradicted by the
facts. Prompted by self-interest, the private counterparties to a financial
operator should normally keep a closer eye on him than a public author-
ity would. However, for this to be true, a number of conditions must
come together in a way they rarely do. Moreover, the vigilance of these
counterparties must not be blinded by greed. The ease with which secu-
rities were sold that were backed by mortgages that should never have
been granted is a powerful reminder of these realities. The acute embar-
rassment of the former Chairman of the Federal Reserve when called on
to testify to Congress in the autumn of 2008 was edifying on this point1.

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1. To the question of Representative Henry A. Waxman “You had the authority to prevent irresponsible
lending practices that led to the subprime mortgage crisis. You were advised to do so by many others. Do you
feel that your ideology pushed you to make decisions that you wish you had not made?”, Alan Greenspan
answered “Yes, I’ve found a flaw. I don’t know how significant or permanent it is. But I’ve been very dis-
The authorities have to learn the lessons but without depriving the economy of the benefit of financial innovation. Being able to transfer financing and the attendant risks more easily is still advantageous for growth and it would be unfortunate if, for example, the crisis that has arisen were to lead to wholesale condemnation of securitisation. The problem that private surveillance was unable to solve on its own may be dealt with, for instance, through the introduction of a norm whose respect is guaranteed by a public authority. This is already the case for the German Pfandbriefe, for example, and, indeed, for the prime mortgage loan securities distributed in the United States. Fannie Mae and Freddie Mac have long “normalised” the quality of the loans they buy in for securitisation. A prime loan, by definition, meets certain precise requirements: its amount must not exceed a given proportion of the value of the house purchased and the borrower must demonstrate income that is compatible with his debt service burden. Only loans that meet precise norms should be allowed to be sold by a bank. This does not mean banning “non-conforming” loans, merely obliging those making such loans to keep them on their balance sheets. Clearly, respect for norms cannot guarantee the repayment of the loans granted, but it makes the risks involved easier to assess.

However, the mass of information to be processed in order to arrive at a correct assessment of the risk involved in claims that are securitised in this way, and possibly structured, is liable to exceed the analytical capacities of many investors, who will continue mainly to base their decisions on the ratings awarded by the specialised agencies. This means that surveillance of the quality of the information used, and of the calculations carried out, by the rating agencies is the responsibility of the authorities. It may lead them to suspend the rating of securities created from loans for which the past does not provide adequate information. In the middle of the 2000s, there was not sufficient recorded experience of defaults in the case of subprime loans: no rating agency should have agreed to rate them. Public surveillance of rating agencies is all the more necessary in that prudential regulation will continue, as now, to refer to the grades they issue [Rochet, 2008]. It would be paradoxical if these accessories to prudential regulation were not subjected to any surveillance.

Normalising the way in which risk is perceived is not sufficient by itself, however. It is necessary also to compensate for the pro-cyclical character of financial agents’ behaviour. There is now virtual consensus on this point. The aim must be to curb risk-taking when things are going well and, conversely, facilitate it when things get worse. Recourse to the accounting rules known as “dynamic provisioning”, on the lines of what has been done in Spain, is one way of moving in this direction. These
rules require financial institutions to provision continuously (and not merely when there is a threat of loss) for the risks they take. Any increase in risk then automatically leads to an increase in provisions. This reduces profit growth and hence also growth in shareholders’ equity and in the capacity for risk-taking. One problem obviously is how to calibrate these rules, including how to set the provisioning coefficient to be applied to each type of risk. Another is the need to ensure that these rules apply to all the risks taken, whether on or off the balance sheet, so as not to leave open the possibility of what is euphemistically known as “regulatory arbitrage” [Aglietta, 2008].

The operation of such arrangements nevertheless raises a question concerning the role of market prices in the evaluation of the assets held by financial institutions. Fluctuations in these prices are themselves pro-cyclical and merely further reinforce the tendency of the system to move into an upward (or downward) spiral. At the peak of the cycle, asset prices tend to be excessively high, producing capital gains that increase the equity of the financial institutions and hence their capacity for risk-taking, just when their attitude to risk is tending to make them less prudent. This does not mean, however, that the use of market values should not remain central for accounting purposes. The introduction of dynamic provisioning, insofar as it will affect also the loans made by financial institutions to the risk-takers, should already moderate the cyclical nature of the evolution in asset prices. In addition, application of market values can be made less stark by introducing an average of historic and observed prices [Plantin et al., 2008]. Whatever the accounting rules applied, however, the prices that are formed on the markets cannot be ignored by operators and will inevitably continue to influence the behaviour of many of them, notably the risk-takers. It is then up to the authorities, when the evolution of the markets becomes extreme – and the past decade has shown that this can regularly occur – to assume their responsibilities. If market prices become excessive for one major asset class or another, the authorities can intervene by reasoned warnings and then by measures – of a tax nature, for example – that make the acquisition of the assets in question more expensive. If, on the contrary, it is evident that prices are too depressed, the authorities can support them by intervening on the markets. The existence today of derivative products gives them a simple means of doing so. When, for example, the risk premiums on lending to investment-grade firms become excessive, as in 2008, the authorities can reduce them – without having to express a view on the credit risk of any particular firm – by massive auction selling of protection on the CDS index of a basket of corporate debt.
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Such interventions give an increased role to the authorities in the functioning of financial systems that runs counter to the hitherto dominant ideology. However, it would be vain to think that it can be avoided, while at the same time hoping that globalisation can serve the cause of growth. *The authorities have to choose between becoming involved in more thorough surveillance and regulation of the system, on the one hand, and, on the other, exposing themselves to the risk of recurrent catastrophes.* One of the lessons of the 2008 crisis is in fact that the stability properties of globalised finance are similar to those of many other complex systems: as long as the shocks to which the systems are subjected do not exceed a certain amplitude, they rapidly return to equilibrium. If the amplitude is too great, however, such a return becomes impossible. The evolution in aversion to risk following the collapse of Lehman Brothers is a perfect example. This dramatic event led to nothing less than a breakdown of the financial system. For lack of being able to provide a rapid remedy, as they had hoped, by recapitalising the banks, the authorities had hardly any choice. In order to avoid progressive suffocation of the real economy they were obliged themselves to provide the indispensable financing and to take on some of the risk that the private system was no longer able to bear. In the end, their interventions would have been slimmer, less dramatic and probably less costly if they had aimed at preventing this breakdown rather than at cushioning the consequences.

Lessons also have to be drawn for monetary policy. Since a breakdown in the financial system has catastrophic consequences, the threat of such a breakdown has to be avoided at all costs. When such a threat emerges, reducing it has to become the sole priority of the central bank. Not cutting rates fast enough in the summer of 2007 because of worries over a slippage in inflation – at a time when the dangers of the sub-primes crisis to financial stability were becoming evident, or intimating, as was the case after the failure of Bear Stearns, that the next movement in rates would probably be a rise – were errors on the part of the Federal Reserve (see Box 11). From this point of view, just as Alan Greenspan’s ideology was harmful for the solidity of the financial system, his highly pragmatic reaction to the threat of financial crisis was salutary. By cutting rates rapidly each time, the Fed under his chairmanship implemented a policy of insuring against potentially catastrophic events [Greenspan, 2004] – at the cost, some will say, of persuading financial operators that the central bank would always come to the rescue. That may be so, but putting financial stability in jeopardy in order to teach those who have been imprudent a lesson is a dangerous and fairly sterile game. Financial history has amply shown that punishment inflicted on today’s mismanagers rarely serves as a lesson for those who come after
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Reinforcing financial stability is not so much a matter of this illusory education of operators, dear to the theoreticians of moral hazard, as of establishing a solid prudential framework combined with attentive surveillance.

Box 11. The ambiguities of the Federal Reserve’s policy from mid-2007 to end-2008

Following the arrival in 2006 of Ben Bernanke to head the Federal Reserve, several operational changes were made: the duration of FOMC meetings was lengthened, the frequency of the published economic forecasts was increased and the power of the President reduced in favour of that of the Committee. The crisis that began in the summer of 2007 has shown that, behind these rearrangements, the way in which monetary policy is conducted has also changed.

Fed funds rate and expected short-term rates during two episodes

The graphs show, for each crisis, the change in rates from their level six months before the date of the first monetary easing.

Source: Thomson Datastream

The above graph re-traces the evolution of policy rates at the time of two crisis episodes: the bursting of the stock-market bubble in 2000 and the financial crisis of 2007. If one takes the NBER’s dates for entry in recession, the Fed can be seen to have begun to lower its rates approximately three months before the beginning of the recession in both 2000 and 2007. However, the change observed between September and December 2007 was distinctly slower than in the early part of 2001: between mid-September 2007 and mid-January 2008, the policy rate was cut by 100 basis points, compared with a fall of 200 points between the beginning of January and the end of April 2001. As early as the summer of 2007 however, Frederic S. Mishkin, then a member of the Monetary Policy Committee, had stressed that, faced
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with the bursting of a real estate bubble, monetary policy is all the more effective in that it acts quickly and powerfully\(^2\). However, not only was the monetary easing slower until January 2008 than in 2000, but the message sent out by the Fed remained confused: at no time did the central bank adopt a downward bias (signalling a probable continuation of the rate cuts) and the official statements published at the conclusion of the Committee meetings of September and December 2007 even referred to the persistence of a “certain inflationary risk”. By comparison, the Fed under Alan Greenspan had opted, as of January 2001, for a downward bias and had maintained this throughout the year. This woolly communication on the part of the Fed had visible effects on the financial markets’ short-rate expectations: in 2000 (as in 1998, in fact), expectations concerning short rates had started to decline approximately a month and a half \textit{before} the first actual fall in the Fed funds rate (at the end of September 1998 and at the beginning of January 2001, respectively). In 2007, they did not start to decrease until one month \textit{after} the first fall in the policy rate. At the beginning of January 2001, even before the Fed cut its rates, the change in short-rate expectations had pushed long rates down by 100 basis points; in September 2007, on the other hand, 10-year rates were at the same level as six months before. A decline in these rates, bringing with it a decline in mortgage rates, was all the more important however, in that the largest part of the domestic transmission of American monetary policy is through residential investment (and, accessorially, the consumption of durable goods). Until the end of 2007, the Fed deprived itself of this lever.

January 2008 was to mark a turning point: in just two weeks, the central bank cut its rates by 125 basis points. By mid-April, the monetary easing had become comparable to that seen in 2001, as had the change in short-rate expectations. By adopting a downward bias between January 2008 and the beginning of April, the Fed sent out a clear message and exploited expectations: in mid-year, 10-year interest rates were more than 150 basis points lower than in June 2007 and the 30-year mortgage rate had fallen below the symbolic 6% level (70 basis points less than in the summer of 2007).

In Q2, despite a first dramatic financial episode – the last-minute rescue of Bear Stearns – ambiguity returned: at the end of April, the Fed lowered its rates to 2%, but its downward bias disappeared and two members – Richard Fisher and Charles Plosser – marked their dissension, preferring rates to be left on hold. In the following weeks, the Fed even pushed interest-rate expectations up. At the beginning of June, Ben Bernanke highlighted the resistance shown by the economy and stressed the inflationary risk. In mid-June 2008, 10-year rates were 100 basis points higher than three months earlier and, while the fall in real estate prices continued to accelerate, 30-year mortgage interest rates \textit{were higher than at the beginning of the crisis}. At the end of June, the Fed decided to mark a pause, keeping its policy rate at 2%
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– and adopting an upward bias! How can this change of course be explained? Inflation was showing signs of getting out of control and the central bank was afraid that interest-rate expectations would follow suit. The change of orientation of its policy was nevertheless surprising. The rise in inflation stemmed primarily from the surge in energy prices and, as in 2001, there was no upward drift in core inflation. Above all, the financial and real estate crises had not been stemmed, far from it.

In the months that followed, the Fed’s message remained confusing. Having opted for neutrality in August, it cut its rates at the beginning of October following the turmoil caused by the failure of Lehman Brothers. However, it restored its downward bias only at the end of October. Finally, in mid-December it made a statement concerning the orientation of its monetary policy going beyond the next few weeks. By indicating that the Fed funds rate would remain low “for some time”, it again made use of the lever of market expectations, but only after much hesitation.

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The frontiers and architecture of the globalised system

Globalisation has created a financial space in which capital and risks can circulate freely. Its promoters nevertheless tried to avert their gaze from the consequences of the interdependence established in this way. This de facto solidarity makes governments jointly responsible for the stability of the global system. Instead of assuming this responsibility, however, they have continued to act as if the stability of the system could be ensured without any loss of sovereignty. As the locus for contagion and contamination, the globalised financial space should nevertheless logically be subjected to prudential regulations and norms that are homogeneous and internationally approved and controlled. The sub-primes crisis has now dramatically illustrated the dangers related to the development of a “low prudence” zone at the very heart of this space. The fact that nothing has hampered its development shows that this principle of joint responsibility, and hence of joint surveillance, is far from being accepted. The increase in the number of forums, sometimes at the highest level, where financial stability is discussed must not be allowed to conceal the reality, namely that there is no authority effectively responsible for the stability of the globalised financial system.

This vacuum is flagrant when it comes to setting the limits of the system. The concern for homogeneity of regulations should lead to the exclusion of financial operators or products from zones not subjected to the norms. Remember that the Asian crisis stemmed from the incorporation in the globalised system of banks – those of developing Asian countries – that were subject to extremely lax prudential regulation. After serving as bridgeheads for a massive flow of short-term capital, these banks were caught up in a monetary and financial whirlwind. Their collapse triggered a hurricane that the LTCM affair showed could have caused considerable damage. Setting the limits of the globalised financial system with the aim of preserving its stability has to be the responsibility of an international authority able to impose on those operating in the system and on the products circulating in it a common set of rules and norms and also able to monitor their effective application. This authority will, in particular, have to assess the extent to which the practices of the various offshore centres are in conformity with the general level of prudence required.

It will also verify the solidity of the system’s infrastructures, both public and private. The 2008 crisis, for example, has shown that the existence of OTC markets is a source of fragility. The counterparty risk on these markets is much greater than on organised exchanges. This turmoil seen in the autumn of 2008 has confirmed the reality of the dangers resulting
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from the absence of a clearing institution, for the CDS market in particular. The major role played on this market by the AIG insurance company explains in large part the “crash” support – amounting to some hundred billion dollars – that the American government was obliged to provide. Given AIG’s role as counterparty in a huge number of contracts, its failure would otherwise have placed its co-contractors in serious difficulty. The vulnerability resulting from the mode of organisation of the CDS market had been widely denounced, but as the responsibility for this pillar of the system continued to lie only with private interests, these warnings went unheeded.

The stability of the globalised financial space is not simply a matter of prudence and solidity. It depends also on the architecture of the system. In this space, loans and with them savings can circulate freely. However, the very special mechanics of bank credit mean that this circulation obeys a logic that may seem surprising. What to a large extent decides the allocation of world savings is the location and capacity of the loan distribution channels in the globalised system. If a region has very numerous distribution channels and a large throughput, it will easily capture a large proportion of world savings and the distribution of credit in that region may be excessive, with the granted loans financing agents whose creditworthiness soon becomes dubious. In order to avoid in future a wastage of savings similar to that seen at the end of the 2000s, the architecture of the globalised financial system must be made to evolve in such a way as to achieve a more even distribution of the channels through which the loans are made.

Unfortunately, to achieve this it is not sufficient merely to open more lending windows. It is also necessary to put in place the risk-taking chains that will make it possible to distribute lending in ways that respect the prudential norms that have been set. If too much risk is left to the borrower – through a loan at variable rate, for a short term, in a currency other than his own – few loans will be granted, unless borrowers and lenders forget prudence. If, on the other hand, little risk is left to the borrower – borrowing in his own currency, for a long period, at fixed rate – the flow through the channel can be greater. For this in fact to be the case, it will nevertheless be necessary, as long as a substantial portion of world savings continues to be placed “risk-free”, that there should be risk-takers prepared to take on the risks that are taken by neither the borrowers nor the savers. Putting in place channels for the distribution of loans implies also putting in place the necessary risk-taking chains. It would be a mistake to draw the conclusion from the 2008 crisis that the infrastructures of globalised finance have to be demolished. On the contrary, they must be consolidated and supplemented. Alongside
the better-supervised private risk-takers, it is indispensable to have the intervention of public risk-takers, these being the only ones capable of taking the risks that private agents have every reason not to be able to assess correctly and hence, again unless they are to be imprudent, not to take.

This is true in particular of the risks related to transfers of savings towards the emerging regions. We saw earlier that these transfers carry an exchange risk. Private agents in the rest of the world rarely wish to lend in the currencies of the deficit emerging countries, so that these transfers when they take place do so in the lenders’ currencies. This carries an obvious danger, namely that the mere threat of devaluation rapidly leads to a currency and financial crisis. Following the Latin American and Asian countries, in 2008 it was the turn of emerging Europe to undergo this painful experience. The intervention of an international public agency to take on the exchange risk of part of the flow of capital to emerging regions could make it possible in the future to reduce the likelihood of such crises [Brender and Pisani, 2002].

Similarly, the introduction in the emerging countries, either in deficit or in surplus, of new mechanisms for financing house purchase and of loans to small firms or local authorities can permit a better allocation of world savings. Frequently, the distribution of these loans is held back by the multitude of legal, political and economic uncertainties specific to these countries, making the creditworthiness of the borrowers impossible to assess. Here again, the introduction of public credit-risk-takers, on the lines of what took place in the United States several decades ago in the case of mortgage loans, could encourage the granting and securitisation of such credits. The emerging countries could in this way capture a larger proportion of the world savings potential. These channels would make it possible, in particular, to recycle part of the savings of the countries now in surplus within these countries themselves.

This intervention of public risk-takers in the distribution of lending is not only needed for the development of new financing channels. It can also provide additional instruments for the authorities to regulate the flow through the different channels, out of concern for macroeconomic equilibrium. For example, a mechanism that would transfer, to an international authority, part of the exchange risks involved in the import of savings by deficit emerging countries could set the amount of protection sold on the currencies of each country as a function of the prospects for its economy, but also of the equilibrium between savings and investment at world level. The public risk-taker would thus introduce into the globalised financial system information that no currency market could gather.
Macroeconomic surveillance

Whatever the efforts made to improve the regulation and architecture of the system, its capacity to ensure transfers of savings between nations will remain limited, as will the amount of savings that the borrowing countries can invest usefully and prudently. This the savings-exporting countries can no longer ignore. They have to accept the need, as and when necessary, to attenuate the pressure exerted by their surpluses on world macroeconomic equilibrium.

While savings are virtuous at microeconomic level, their macroeconomic role is more ambiguous. In an economy where investment opportunities are numerous, savings are the fuel for sustained growth but they act as a brake when these opportunities run out. With financial globalisation, this ambiguity is now expressed at the level of the world economy and no longer that of each economy taken in isolation. It still exists, nevertheless. Behind each of the international financial crises in recent decades one finds a rise in the financing capacities of certain regions that would have been impossible in the absence of imprudence on the part of the global financial system and of those to whom it lent. To illustrate the point, in the mid-2000s, the surpluses of the oil-exporters, and indeed of China or Germany, could not have been as large if the borrowing by American, British or Spanish households had not surpassed reasonable levels. Similarly, in the mid-1990s, the European countries would not have been able simultaneously to reduce their budget deficits (to meet the criteria for joining the EMU) if the savings freed in this way had not been absorbed by the Asian countries. If financial globalisation enables countries to save a portion of their income, it would be logical that these countries, in return, take into account the limits of the rest of the world’s capacity to use their savings surpluses.

Financial globalisation and stability cannot be made compatible if the surplus countries refuse to adjust their policies when these limits are approached. The fact that it was not until the autumn of 2008, when the financial crisis led to a collapse in world demand, that China and Germany decided – timidly in the latter case – to bolster their domestic demand, shows how great is the distance still to be covered. The oil price, inasmuch as it plays a decisive role in the formation of world savings, poses a problem of the same kind, even though strictly speaking it does not form part of the policy of any government. Its steady rise from the summer of 2008 on could only lead to a suffocation of world growth. With oil at $150 a barrel, growth could only be maintained at the price of an increase in borrowing amounting to several hundred billion dollars in the developed countries. At a time when the distribution of lending was
drying up, such an increase was impossible. Co-operation between oil-producers and -consumers to avoid over-rapid rises in the oil price is all the more necessary in that the market for oil may again be tense over the next decade. There is a non-negligible risk of fresh sharp rises in the price.

The crisis affecting globalised finance therefore teaches, at macroeconomic level, the same lessons as at microeconomic level: accepted surveillance is necessary for the maintenance of financial stability. By easing the constraints imposed by the current-account balance, globalisation gives all the world’s economies additional margins for growth. But they will not be able to benefit from it unless the largest of them, at least, are prepared to cooperate. It is up to them to adjust their economic policies to prevent the shocks and attenuate the pressures which otherwise will regularly come to plague the globalised financial system.
Conclusion

The final months of 2008 witnessed a breakdown in growth, stretching from one end of the planet to the other, while in the most developed regions activity contracted sharply. These dramatic circumstances have forced governments to become aware of the interdependence that financial globalisation has created between their economies. Will they now be prepared to take on the responsibilities this implies? Will they be capable of organising themselves in such a way as to be able to do so? The evolution of the world economy in coming years is at stake here. The future of financial globalisation is now the affair of governments. It would be vain to hope that finance and financiers can be transformed in such a way as to be at the service of growth and financial stability – just as it would be vain to think that capitalism can be transformed in order to place it at the service of social progress. For almost two centuries, capitalism has been able to act as a driving force for social progress because governments organised themselves in such a way as to oblige it to take this direction. By setting up, each in its own way, institutions to regulate it and laws to provide a framework for it, by carrying out policies to fine-tune the pace of activity, governments have, to some extent at least, succeeded in taming the force it represents. The same necessarily applies to finance, which is at the very core of capitalism. The deregulation launched during the 1970s, followed by the liberalisation of international capital movements, has opened up the field for financial innovations that have profoundly transformed the ways in which capital and risk circulate. These innovations provide all countries with margins for further growth, but on the condition that governments pay attention to attenuating the excesses of finance and to channelling its development. The series of crises that have occurred show the lag taken by attempts at supervision and containment, as well as the inadequacy of the coopera-
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tive efforts undertaken. Placing financial globalisation at the service of economic development requires not so much a reform of finance or capitalism as a redefinition of the role of government in the functioning of finance – and of capitalism.
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Asian crisis, stock-market bubble, subprimes crisis... Is globalised finance, at the origin of these successive eruptions, a dormant volcano to be protected against or rather a force which, if tamed, could be placed at the service of economic progress? The question deserves to be posed, since the strength of world growth seen during much of the 2000s is due, in part at least, to the mechanisms by which globalised finance has enabled the savings generated in one place on the planet to be used in another. These mechanisms are not the result solely of greater freedom of capital movements. They are also the product of a wave of innovation that has everywhere transformed the ways in which capital circulates and the risks attendant on its investment are borne. Financial globalisation has provided the world economy with arrangements of astonishing power, but also great vulnerability. This study throws light on the functioning of these new arrangements and on the sequence of events leading to the collapse of globalised finance.