Systemic risk: how to deal with it

Abstract

This paper analyses systemic risk and considers appropriate policies to reduce it. It examines systemic risk as a
negative externality in two dimensions: the cross-sectional and the time dimension. Policies to reduce externalities in the cross-sectional dimension seek to limit the damage that can arise from interlinkages and common exposures. Policies to address procyclicality in the time dimension seek to build up capital and liquidity.
margins of safety during the upswing that can be drawn upon in the downturn. The paper further argues that financial regulatory policies are not enough to address systemic risk. Other policies - especially monetary and fiscal policy - also have a role to play. It also argues that policy
coordination is essential, nationally among monetary, fiscal and macro- and microprudential policies, as well as internationally. Already, the Basel Committee on Banking Supervision, working with the Financial Stability Board, has made great progress in addressing the regulatory shortcomings highlighted by the financial crisis.

**Full paper**
The international financial
crisis has made us all think much harder - not only about what systemic risk means, but also about what it means for policy. Systemic risk was underestimated across the board before this crisis. We were faced with the unthinkable when a number of very large institutions failed, despite
their previous reputation for balance sheet strength and leadership in risk management. Coming to grips with systemic risk is vital because the aggregate risk facing the system is much higher than the simple sum of the individual risks attending financial institutions, products and markets.
the IMF, FSB and BIS for the G20, systemic risk can be defined as "a risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy."
If a bank loses money from a risky investment, that is not systemic. But institutional failure, market seizure, infrastructure breakdown or even a sharp rise in the cost of financial services can have serious adverse implications for many other market participants. In these cases, there is a systemic dimension.
It is such negative externalities and the significant spillovers to the real economy that are the essence of systemic risk and which make a case for policy intervention.

Translating this general insight into practical policies is of course very difficult. What I would like to do is to
outline some of the thinking at the BIS and suggest what this might mean for policy. First, from a conceptual point of view, systemic risk has two dimensions, ie a cross-sectional dimension and a time dimension. In the cross-sectional dimension, the structure of the financial system influences
how it responds to, and possibly amplifies, shocks. Such spillover effects can arise, for instance, from common exposures across institutions or from network interconnections. The policy problem is how to address such common exposures and interlinkages among financial institutions. In the time dimension, the build-up of risk over
time interacts with the macroeconomic cycle; the associated policy problem is how to address the procyclicality of the financial system.

Second, and from a policy point of view, financial regulatory policies are an essential part of the solution, but they alone will not suffice to address systemic risk.
in all its complexity. Other policies—especially monetary and fiscal policy—also have a role to play. Third, policy coordination is essential not just nationally among monetary policy, fiscal policy and macro- and microprudential policies but also internationally. Finally, although this paper does not...
address them, there is a fourth group of very important measures bearing on market discipline, transparency, governance, incentives, market integrity, consumer protection, etc, that would also be very relevant to supporting confidence, fostering market and institutional resilience, and curbing excesses in risk-taking.

A key message is that
a lot of progress has already been achieved, but the reform agenda is still large, and its implementation will speed up this year. In the first section, the paper briefly discusses the concept of systemic risk. The second section focuses on the regulatory policies in the pipeline to address
that risk. The third and fourth sections deal with monetary and fiscal policy approaches to the same risk, while the fifth section outlines the role of international coordination. The last section concludes with a few final remarks.

I. Concepts of systemic risk

As already mentioned,
Systemic risk has two dimensions, cross-sectional and time. Each has very different policy implications. The first dimension of systemic risk — the common exposures/interlinkages in the cross section — relates to how a specific shock to the financial system can propagate itself and become systemic. The focus is
on how risk is distributed within the financial system at a given point in time.

A shock may take two main forms:

- The financial system is a network of interconnected balance sheets. As a result, an increasingly complex web of daily transactions means that
A shock hitting one institution can spread to the other institutions that are connected to it and become systemic. The Herstatt and Continental Illinois crises both started with problems in one specific financial institution. Because of settlement and interbank linkages, the failure of
each of these specific firms threatened wider problems for connected institutions that were otherwise sound.

- Alternatively, a shock can have wide ramifications and become systemic because of direct common exposures. By its nature, a nationwide downturn in commercial real estate or housing markets
tends to have this character. As the recent crisis has shown, such common exposure can have a profound international sweep. A negative exogenous shock, or, metaphorically speaking, a meteor strike or perfect storm, is indeed how many practitioners viewed this crisis, at least
initially.

The procyclicality dimension of systemic risk relates to the progressive build-up of financial fragility and how aggregate risk evolves over time. Over the economic cycle, the dynamics of the financial system and of the real economy reinforce each other, increasing the amplitude of booms and
busts and undermining financial and macroeconomic stability. Typically, booms are periods of financial innovation. When things are going well, firms and individuals feel (over)confident in experimenting with and taking on risk. They create new, untested instruments that are difficult to understand and value. Credit grows rapidly, based on, and
contributing to higher asset prices. In this way, the common exposures/interlinkages dimension concerns the various interconnections among the network of financial institutions. By contrast, the procyclicality dimension of systemic risk highlights the underlying build-up over time of risks that are hidden and underpriced. As strains develop, previously unseen
risks materialise, deepening the retrenchment that is already under way.

In this procyclicality dimension, the financial sector endogenously generates systemic risk and this risk can be highest precisely when it looks lowest. It is precisely then that credit is extended most freely and that low volatility encourages the
Complacency regarding risk itself turns into a source of risk. Normal margins of safety, whether down payments in real estate lending, haircuts in securities financing or covenants in corporate loans, are seen as unnecessary hindrances to profit.

Policies to deal with systemic risk must operate in
II. Policies to deal with system-wide interlinkages and with too-big-to-fail and moral hazard issues

Turning first to the cross-sectional dimension of systemic risk, the policy task is to capture system-wide risk and to adjust prudential tools based
on individual institutions’ contribution to that risk.

It is a continuous approach, which does not require one to draw up a list of systemic institutions.

Let me highlight six key building blocks in setting policies to mitigate this common exposures/interlinkages aspect of systemic risk.
Firms that contribute to systemic risk must internalise the externalities that they create. Higher prudential standards would be one way to do this.

Capital and liquidity buffers need to be higher across the board. The Basel Committee’s recent reform package is aimed at improving the
banking sector's ability to absorb shocks arising from financial and economic stress - whatever the source - thus reducing the risk of spillover from the financial sector into the real economy. The Committee's proposals include a series of measures to raise the quality, consistency and transparency of the regulatory
In particular, they aim to strengthen the component of the Tier 1 capital base that is fully available to absorb losses on a going concern basis. This will contribute to a reduction of systemic risk from the banking sector.
the capital framework's risk coverage. Failure to capture major on- and off-balance sheet risks, as well as derivatives-related exposures, was a key destabilising factor over the past two and a half years. Therefore, in addition to the trading book and securitisation reforms announced in July 2009, the
Committee is proposing to strengthen capital requirements for counterparty credit risk exposures arising from derivatives, repos and securities financing activities.

More importantly, the reforms also have the necessary macroprudential focus, addressing both system-wide risks and their procyclical amplification over time. One way to get systemically important institutions
to internalise the risks they pose is to require them to hold more capital and more liquidity than other firms. Such additional charges should be calibrated to a given institution's contribution to systemic risk on a continuous basis, with a view to reducing its probability of default and
related knock-on effects. In addition, a straightforward leverage ratio will serve as a backstop to risk-weighted capital measures.

*Resolution regime:* The failure of a systemically important institution should be managed in an orderly manner. Adequate resolution regimes should be put in place to hold down...
the system-wide loss that arises when such an institution fails. One important aspect is to ensure that the counterparties of an important institution are not sheltered from loss in the event of failure, so that market discipline is strengthened ex ante. This can further help to limit the
probability of default. However, setting up adequate resolution regimes is no easy matter. Progress has been limited, and work by the FSB and the Basel Committee continues. One reason is that the legal problems are complex, as the ongoing Lehman Brothers liquidation reminds us. Another difficulty highlighted by
the recent crisis in Iceland relates to the problem of cost-sharing across countries. Nevertheless, new standards for cross-border resolution frameworks have already been developed. Concrete proposals to facilitate the orderly resolution of a failing firm are actively being worked on, and progress can be expected this year.
Structure of the financial industry:
The recent financial crisis was a sign of market failures within the financial industry. Measures must be adopted to avoid perverse incentives that spur leverage and the pursuit of short-term profit. Bank supervisors are working on proposals to strengthen governance within firms.
and to encourage sound compensation practices. In addition, a number of countries are considering steps to limit the size/structure of financial groups, or to place curbs on some of their business activities. We have to accept that there will never be total agreement across borders on what banks should
and should not be allowed to do. There have always been differences in the business lines permitted to banks in different countries and there probably always will be. Hence, there can be a wide range of approaches, depending on the particular circumstances. But all measures should be consistent with
internationally agreed standards to ensure that the playing field is level and that systemic risk is reduced.

*More robust market infrastructure:* A key way to lessen the systemic risks created by large, interconnected firms is to put in place more resilient market structures. Trading of financial derivatives on
organised exchanges is one way. Another is to replace the web of bilateral exposures with robust central counterparties (CCPs). This can reduce the risk of common exposures in several ways. A CCP is an entity that interposes itself between the two sides of a transaction, becoming the buyer to
every seller and the seller to every buyer; this contributes to greater liquidity in the market and reduces contagion effects. A CCP also addresses default risk by requiring each participant to hold a margin account in which the balance is determined by the value of the participant's outstanding contracts:
the more volatile the market, the larger the required margin balance and the more expensive it becomes to hold large positions. Furthermore, channelling transactions through a single platform enhances the collection and dissemination of information. This in turn allows market participants and the authorities to monitor the concentration of
individual exposures and the linkages that they create.

_taxation:_

Another building block added recently to the debate is the idea of taxing bigness or interconnectedness. While this deserves study as a classic means of dealing with an externality, many questions arise. Would the tax end up being paid.
by customers, or even by shareholders if their control over management is weak? Wouldn't higher capital and liquidity requirements for systemic institutions, or prudential incentives for simpler structures, be preferable?

Supervision: Finally, more proactive supervision of systemic institutions is necessary to ensure that the perimeter of financial regulation
is wide enough for supervisors to be able to see right through a financial institution, no matter what the legal configuration may be. An interesting question posed by the recent crisis is why the same regulation produced different results in different countries. Banking systems in Australia and Canada, for
instance, remained relatively resilient during the recent crisis. There were obviously many reasons for the differences seen across various jurisdictions including differences in the structure and the business models of the financial system. Still, another relevant factor was that regulation was not implemented across countries with the same rigour.
So a key lesson is that good regulation will not work without adequate supervision that looks through both the business cycle and the structures of financial institutions.

But this is easier said than done. The recent crisis has highlighted the difficulties of setting a consistent perimeter of regulation.
over time and across jurisdictions. Moreover, the problem of the shadow banking system remains a challenge. Ongoing work to ensure greater consistency across sectors and jurisdictions in the key respects of capital, liquidity and resolution regimes will be essential to address these issues.

III. Policies to deal
Let me now turn to policies that deal with systemic risk in the time dimension, the so-called procyclicality aspect.

The first, and obvious, lesson is that capital and liquidity buffers need to be higher on average over time, as was outlined in...
A second element of the macroprudential response to procyclicality consists in building up and running down buffers over the cycle. The guiding policy principle must be to build up safety margins of capital in good times, when it is easier and cheaper to do so.
These can restrain risk-taking. In bad times, the margins can be run down, allowing the system to absorb emerging strains more easily and dampening the feedback mechanisms. At the level of individual banks, the maintenance of appropriate buffers can be achieved through capital conservation measures when the
buffers are inadequately replenished, including actions to limit excessive dividend payments, share buybacks and compensation; these buffers can then be used when periods of stress arise. At the macroprudential level, an operational framework has to be set up that relies on adequate indicators signalling the build-up of risks.
in the financial system.

A third element is to encourage banks to use forward-looking provisioning based on expected losses instead of more backward-looking provisions based on realised losses. This will promote early identification and recognition of credit losses in a more robust manner. It will
better reflect the reality of the financial performance and risk of financial institutions, by incorporating a broader range of credit information, both quantitative and qualitative. This should be done in a transparent way and be subject to appropriate internal and external validation by auditors.

Finally, it should be
acknowledged that other macroprudential policy tools can be used to limit or prevent the emergence of macroeconomic and financial imbalances. Indeed, they have long been part of the arsenal, particularly - but not only - in Asia. For example, tighter provisioning norms against rapid credit expansion have been
used in China to counter potential vulnerabilities from excessive credit growth or asset price bubbles. Other prudential tools have been used as automatic stabilisers, that is, to forestall the emergence of such imbalances. In India, for instance, a long-standing prudential requirement is that banks must hold a relatively
large part of their assets in risk-free liquid securities. Several other Asian economies place limits on credit exposures or otherwise restrict concentration risks towards banks. Korea, for instance, has announced loan-to-deposit requirements that aim to limit the exposure of its banks to wholesale funding markets.
Because it can be difficult to set general rules that cut across all sectors, some countries have also used sectoral policies to regulate credit terms, as well as capital or provisioning requirements for loans to specific borrowers or sectors. For instance, loan-to-value (LTV) ratios and restrictions on
mortgage lending have often been used by Asian authorities to address concerns about real estate bubbles. In India, the central bank has actively used differential risk weighting in capital regulation and countercyclical provisioning norms to slow the pace of growth of bank credit to specific sectors. One must,
however, recognise that some of these measures can be intrusive and can have unexpected distortive effects. In addition, significant uncertainty remains about how and under what circumstances these measures are likely to be effective. While discretionary sector-based prudential measures taken by Asian policymakers have proved quite successful in
containing financial system damage as asset prices fall, generally they have been less effective in preventing or constraining asset price booms. It remains to be seen whether and how rule-based measures might counter the effect of distorted incentives and so prevent boom-bust cycles. Effective rules need to
take into account the endogenous behaviour of financial institutions and their impact on credit extension, as well as the relationship between the financial and real sectors of the economy.

IV. Regulation is not enough: monetary policy

This brings me to my next point, that is: better
regulation is essential, but even with the new macroprudential focus it may not be enough to prevent the build-up of systemic risks. Other policies, particularly monetary policy, must play a supporting role. The question is not whether monetary policy should target asset prices. It is rather what role
monetary policy should play in leaning against the build-up of imbalances that contribute to systemic risk which can derail the economy.

It is tempting to make a neat Tinbergen assignment in which we would assign a single policy instrument to each policy objective. In such a world,
Interest rate policy is assigned to stabilise prices, while prudential policies, be they capital requirements or credit restrictions, are assigned to maintain financial stability. In reality, however, prudential policies will not suffice to maintain financial stability and should be supported by monetary policy.

A key element is that
monetary policy should take into account its effect on financial stability, for instance on financial innovation and the quest for yield. The current crisis has highlighted the hitherto neglected channel of monetary transmission, the "risk-taking" channel: the link between monetary policy and the perception and pricing of risk.
by economic agents.

Such self-reinforcing dynamics were detected empirically in Spain, where lower short-term interest rates led Spanish banks to loosen their lending standards and to grant riskier loans.

This and other research at the ECB suggests that this effect is related to the impact
on the banks' appetite for credit risk when interest rates are low. As a result, the interest rate can affect the supply of credit through the bank lending channel and risk-taking through the search for yield, thereby influencing the pace of financial innovation.
cycles cannot be treated as exogenous when they are, in fact, inherently influenced by the monetary policy stance. A more symmetrical approach is needed: monetary policy should not act only when the bubble bursts, leading to a macroeconomic downturn; it should also act pre-emptively to limit the preceding
phase of expansion.

This suggests that the reaction function of the monetary authorities should not be narrowly understood as aiming at controlling inflation over the short run. Rather, it must also take account of credit growth and asset information with the goal of promoting financial and macroeconomic
stability over the medium term. In some circumstances, central banks may need to respond directly to this additional information, even if inflation deviates from its objective in the short run. This is because the trade-off between financial stability and monetary stability may be more apparent than real when
the appropriate time horizon is considered. In the long run, the two goals are indeed likely to be complementary. For example, some restraint on the build-up of financial imbalances today may mitigate the severity of a subsequent financial crisis, preventing a future economic contraction and the undershooting of
Several recent experiences suggest that central banks are becoming more alert to developments in asset markets. In 2003, for instance, the Reserve Bank of Australia's interest rate policy quite appropriately erred on the side of tightness in the face of strong credit growth and housing.
price increases, even though consumer price inflation remained muted. The RBA also made public statements highlighting the risks in the rise in housing prices. There is little doubt that this subsequently contributed to the levelling-out of house prices.

In the euro area, the monetary pillar...
is, broad money and credit growth - also helped the ECB to take difficult interest rate decisions in 2004 and 2005.

V. Regulation is not enough: fiscal buffers and tax policy

Fiscal policy can also be called upon to promote financial stability, not least because of
the sheer scale of the financial resources that the public sector can call upon in times of stress. One obvious mechanism is to let fiscal automatic stabilisers play their part in difficult times, alleviating the impact of economic weakness on business activity and employment.
the role of a kind of insurer by building fiscal room for manoeuvre in good times. When bad times come, these "reserves" can be used for financial stability purposes. Governments have mobilised massive resources in the financial rescue programmes set up in response to the recent financial crisis. This
implies that government debt should be maintained at reasonably low levels in good times so that additional debt can be taken on in times of stress without unsettling financial market conditions. As with monetary policy, it is also important to take into account how fiscal policy affects financial
In good times, procyclical policies can serve to heighten complacency and encourage the build-up of financial imbalances. This is even more the case when rapid credit growth and high asset prices flatter the fiscal accounts during the upturn. All this implies that fiscal policy may have to
more on the side of tightness, preparing for the realisation that part of what appears to be sustainable revenues may be subject to a payback. Of course, this strongly reinforces the case for reducing government debt in relation to GDP in good times. That said, we should recognise
the political economy problem that Adam Smith highlighted in his treatment of the public debt.

Lastly, tax policy could also be used to address sectoral developments with potential financial stability implications. We have seen how macroprudential tools can be used to limit excessive credit growth in specific
areas such as housing; tax policy could also be of use here. A key way to ensure that the tax code worked for rather than against financial stability would be to reduce or to eliminate its bias towards debt and against equity. The recent crisis has shown the unfortunate
results this bias can have on asset prices and leverage, especially in housing markets. This is not the place to explore in detail how the tax code might be made more even-handed. Suffice it to say that getting rid of the tax incentive to leverage could make a
handsome
correction
to
financial
stability.

VI.
The
institutional
framework
of
systemic
regulation

To
summarise,
we
need
to
ensure
that
all
public
policies
- especially
monetary,
fiscal
and
macro-
and
microprudential
policies
(complemented
by
adequate
supervision)
- become
part
of
a
consistent
macrofinancial
stability
framework
designed
to
pre-empt financial excesses and serial boom and bust cycles.

To make this framework effective, careful thought must be given to the institutional setup and to international coordination. It is crucial to align goals, know-how and control over the various policy instruments, precisely because the responsibilities for
financial
stability
are
so
widely
distributed.
The
institutional
setup
should
therefore
be
based
on
clear
mandates
and
accountability.
It
will
need
to
rely
on
close
cooperation
between
central
banks
and
supervisory
authorities,
both
within
and
across
borders.

All
that
said,
let
me
recognise
that
some
important
questions
remain
A first open question pertains to the governance structure and flow of information in systemic risk regulation. The crisis has shown that central banks play a decisive role in systemic regulation. But it is not entirely clear how central banks need to be equipped to play this
especially where the central bank is not the bank supervisor, it is important that the goal be well defined, the instruments understood and the exchange of information with other authorities appropriate - including detailed supervisory information on individual firms. Financial supervisors can also benefit from information collected.
by central banks in the context of their liquidity operations.

A second open question is how to balance rules and discretion. In principle, we should rely as far as possible on rules and automatic stabilisers rather than discretion. Rules can help avoid errors that can stem from difficulties.
identifying threats to financial stability contemporaneously -
dynamic provisioning is a good example of a rule that can help in dealing with procyclicality.
In addition, clear rules can allow the authorities to commit themselves ex ante to responses, thereby facilitating international coordination and enlisting the understanding, and even
the anticipation, of market participants. For instance, market participants, including rating agencies, may not necessarily permit capital and liquidity that is built up in good times to be used in bad times. In this case, clear rules communicated by supervisors will help drawdowns be accepted in the marketplace. Lastly,
and perhaps more importantly, rules reduce the enormous political pressures on policymakers to refrain from intervening against booms.

However, rules may not be enough: discretion has a role to play as it can help tailor intervention to varying, and often unpredictable, circumstances. This is why we should accept
that some degree of discretion is inevitable.

While these open questions have still to be dealt with, I would like to emphasise that important progress has been made in the international coordination of systemic regulation. Indeed, we emerge from the global financial crisis with a brand new structure.
The crisis gave further evidence that financial stability cannot be assured by each neighbour keeping his own house in order. This is necessary but not sufficient. Exposures to a neighbour's losses can bring down one's own house.

The Financial Stability Board has taken up a key role in
coordinating the work of national authorities and standard setters to ensure international consistency. New mechanisms have been developed to support the development of the IMF-FSB early warning exercises, to increase cooperation across borders and between supervisors, and to conduct peer review exercises. Comprising both thematic and country by
country approaches, such exercises are a new instrument that will strengthen adherence to international standards.

Key input into the coordinating work of the Financial Stability Board comes from the expanded Basel Process, which internationally coordinates standard-setting. Whatever the differences at the national level regarding the scale and
The scope of financial firms, international agreements on minimum capital and liquidity are being refined. Peer review exercises have been launched to ensure adherence to these standards in each jurisdiction.

New institutional arrangements are being explored to enhance cooperation among supervisors both at the national level and across borders.
Let me just mention a few examples. In the case of the biggest firms operating across borders, colleges of supervisors are supplementing the Basel Concordat that sets out the respective roles of home and host supervisors. Another example, of a different nature, is the proposed European Systemic Risk Board.
which will help to coordinate micro and macro approaches and enhance international cooperation. This body would take charge of macroprudential supervision at the European level, issuing risk warnings and making recommendations on policy measures.

Lastly, the G20 is playing an increasing role to enhance the necessary coordination of
macroeconomic policies and to ensure political support for financial regulatory reform. The mutual assessment process reinforces the commitment of national leaders to joint and coordinated action. Just as financial stability needs help from monetary and fiscal policy at the national level, international financial stability cannot be achieved in the
face of inconsistent policies at the global level. It is very important that leaders remain engaged in and committed to this effort.

No doubt this international structure will continue to evolve. The challenge is to maintain the intimate cooperation that has characterised the Basel Process even as it
widens the effort in terms of both participants and issues. As it approaches the end of its 80th year, the Bank for International Settlements pledges to continue its support for this cooperative project to tame systemic risk.

VII. Final remarks

The issue of systemic risk is
probably the most important and most difficult that we confront. Progress will require a combination of better regulation, a more macro orientation of prudential tools, better macroeconomic policies, enhanced international coordination and greater market discipline. A lot of work has been done and much progress made. In some areas,
such as capital and liquidity, the convergence of minds has already been substantial. In others, such as the handling of systemically important institutions, work is well under way. Many ideas and proposals are on the table, and we need to make sure that this work does not lose
sight of the forest for the trees. The BIS will fully support the Basel Committee and the Financial Stability Board in their comprehensive assessment of the impact of the various proposals to strengthen the financial system before they are implemented. This assessment will clarify the new regulatory framework and
will ensure that the transition to this new and more demanding framework is achieved with minimal interference to the ongoing recovery process.

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About the author

- Biography: Jaime Caruana
How to Deal With Racism. It seems you cannot turn on the news without seeing stories about hate crimes, riots, and even police violence attributed to racism. But what is racism, and what can you do to fight it? Learning about racism and... Understand that there is some risk involved in dealing with racism, especially when people are motivated by bigotry rather than just ignorance. Additional regulation, based on systemic risk considerations, is needed to deal with the externalities of distress of large banks. This may include capital surcharges on large banks and measures to reduce their involvement in market-based activities and their organizational complexity. Banks may operate at a size that is too large from a social welfare perspective due to “too-big-to-fail” subsidies and corporate governance shortcomings. It is instructive to see how the drivers of systemic risk compare to the drivers of individual bank risk. The results on capital are similar: capital ratios matter, particularly for large banks. The results on funding are also similar: large banks that rely on less-stable funding contribute disproportionately to systemic risk.