BANK FOR INTERNATIONAL SETTLEMENTS

Financial regulation, complexity and innovation

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Thank you for your kind invitation. I am especially honoured to have been asked to contribute to a series of lectures in memory of Tommaso Padoa-Schioppa.

Tommaso was ever alert to the constant evolution of the economy and the financial system, and the need always to adapt policy to address new challenges. In the international sphere, he rejected the "own house in order" doctrine, which asserts that, if each national policy player keeps its house in order, then there is no need for additional policy cooperation. In particular, he identified an especially strong need for coordinated international action in the areas of monetary policy, payment system oversight and banking supervision – and he himself made essential contributions to the progress of international initiatives in all of these areas. The establishment of the euro, the ECB and the TARGET system represents the realisation of Tommaso's vision at the European level.

Tommaso had great foresight. He anticipated issues that would confront policy in the future, well before anyone else was aware of them or had given them much attention. And he would be right. For example, in 1999 he argued – correctly – that monetary union in Europe was not consistent with a geographically decentralised supervisory framework. European authorities have finally recognised the logic of this position with the establishment of the European banking union and the single supervisory mechanism.

Today I'd like to review some of the regulatory challenges being addressed at the international level. But I also want to take a step back and ask, in the spirit of Tommaso, whether and how we can devise approaches to regulatory policy that can help us stay on top of the continual changes in the financial system, instead of merely reacting to them. To that end, we need to constantly reflect about the evolving nature of systemic risk and a multidisciplinary approach to contain it.

Completing the agenda

A lot has been achieved since the crisis. Conceptually, regulation has incorporated a systemic perspective. At the international level, agreement has been reached on many issues, and a good part of the regulatory agenda is in the process of being implemented. I don't need to go through the details for this group, but I would emphasise the increase in the quantity and quality capital held against risk-weighted assets, the leverage ratio as a backstop to the risk-weighted measure, the liquidity standard based on the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR), and efforts to promote the shift of a substantial portion of derivatives clearing to central counterparties.

Speaking more broadly, there is a collective understanding that in a globalised world regulation is more effective if the core is based on internationally agreed standards. This crucial achievement is often underestimated. We know well that in a crisis the temptation to go your own way is high, but the costs and risks of moving backwards in financial integration would be enormous.

While we've gone quite a way down the post-crisis "to-do" list, there are still a number of key items that need to be finalised.

One area is bank resolution. We have addressed one aspect of the "too big to fail" problem by establishing higher capital standards and more intensive supervision for the largest internationally active banks. But we also need to put in place mechanisms to resolve these institutions in an orderly way, to reduce the potential systemic disruption their failure could cause. There is also work to ensure that banks maintain an adequate buffer, the so-called gone-concern loss-absorbing capacity, or GLAC, that would take losses in the event of insolvency. This is a long-term project, which requires among other things enhancements to regulatory rules, legal frameworks, cooperation agreements among supervisors, and quite a bit of advance planning.

We are also working to strengthen standards for insurance regulation. The crisis showed that, while insurance is generally a pretty stable business, risks can lurk there undetected and suddenly emerge in a way that threatens financial stability. Just think of AIG, or the monolines. The International Association of Insurance Supervisors (IAIS), working with the Financial Stability Board (FSB), has started publishing lists of globally systemic insurers and measures to strengthen their loss absorbency and supervision. They are also working to enhance capital and supervisory standards for the insurance industry more broadly.

As we work our way down this agenda, the spotlight is shifting to assessing implementation and monitoring the intended and unintended consequences.

Implementation is key – both in letter and in spirit. Tommaso understood this and indeed, in his Per Jacobsson Lecture at the BIS in 2010, went so far as to say that "Stronger enforcement of the existing [pre-crisis] rules would have sufficed" to prevent the crisis. The Basel Committee has now turned a substantial part of its attention and resources to reviewing implementation of Basel III. They have not been shy about pointing out areas in which members, even the largest ones, fall short of the framework.

How should regulation deal with complexity and innovation?

All these initiatives are necessary for reducing risk in the system. But now it may be time to step back and ask: will this ever be enough? We all face a fundamental challenge. In a highly dynamic world, imperfect knowledge leaves regulatory design permanently in catch-up mode. Two problems loom large.

First, we need to be humble about pretending that we (official and private sector) fully comprehend the risks we face, particularly tail risks. We need to understand the limits of our knowledge and the limitations of our models, no matter how sophisticated they are. The financial system has become more complex, more globalised and more intertwined with the real economy. Improving risk management systems is very important, but even with state-of-the-art systems some risks can't be measured and internalised. As in any complex system, the behaviour of the whole financial system is dependent not only on the parts but also on the linkages. Dynamics can easily become non-linear; small causes can produce large effects. We know that relying on banks' own risk management systems is not enough: they will never fully manage the individual banks' tail risk (because of "too big to fail" and limited liability) and they will never incorporate the impact of the banks' actions on the stability of the system. This is why getting initial conditions right is more important than trying to manage dynamics later. Good risk management for a bank is not just about complex models. It is also about creating the right risk culture and incentives, it is about appropriate governance and oversight, and it is about understanding the limitations of models.

Second, we need to be humble about the rules we put in place. Financial markets are constantly innovating, and institutions are constantly adapting to the new rules. Simple rules may seem appealing, but we should not be naïve: a good part of the complexity comes from this continuous adaptation once rules are implemented. Rules or procedures that look appealing on paper often turn out to be less effective once put in place. It reminds me of Heisenberg's uncertainty principle, which states, oversimplifying somewhat, that when humans try to observe the motion of small particles they change the very behaviour of those particles. We could think of a regulatory uncertainty principle, which would state that as soon as a rule, simple or complex, becomes a binding financial regulation, it will cause changes in financial institutions' risk management that will make it less binding and less effective.

What is to be done?

These issues came up last September at a conference at the BIS, where we celebrated the 25th anniversary of the first Basel capital accord. Here are some of the approaches that were prominent in that discussion.

- One suggestion was that we establish thicker buffers. Along with calibrating capital ratios, liquidity standards and other buffers to the measurable risks that banks face, we should include an additional element that reflects the risks that banks and supervisors cannot measure. This is consistent with the importance of initial conditions. But we don't want to stifle all risk-taking or paralyse banks or markets. How much is enough?
- A second suggestion was to set suitable incentives and penalties for banks. For example, the rules around the capital conservation buffer specify that banks can only make use of it if they reduce or eliminate dividends, which they are loath to do. But can those outside an organisation ever get the incentives right for those inside it?
- A third suggestion was to adopt more proactive, intrusive supervision. Essentially, this would allow supervisors broad discretion to identify and counter potentially destabilising behaviour. But again, how can outsiders understand everything that a large, complex organisation is doing?

All of these options have been elements of the post-crisis approach to regulation. But it's not clear whether we have made enough progress on any of them, or where we should focus our efforts going forward.

I would suggest that there's no fail-safe answer. We should recognise that no approach will be perfect. We need a combination of these three options and we need to be alert to new risks that the existing framework may fail to capture.

As a case study, consider how these approaches would be applied to one currently pressing issue: the diversity in risk weights from banks' internal models. Analyses by the private and official sectors have found that banks using internal models sometimes apply very different risk weights to essentially similar risks. This seems to result from a combination of banks' modelling choices, differences in data inputs (for example, the length of a time series used to calculate a model parameter), and supervisory choices.

The Basel Committee is considering a number of possible responses. These include improvements in public disclosure, narrowing the range of modelling choices, and further harmonising supervisory practices with respect to model approvals. Improved disclosure works on incentives, to the extent that it gives investors and credit analysts the ammunition they need to ask questions – possibly awkward questions – about how well a bank's management measures risks. Narrowing modelling choices and harmonising supervisory approvals empower supervisors to influence how banks measure and manage risks. And finally, there has been some discussion of relying relatively more on the leverage ratio than the risk-weighted ratio as a supervisory tool. This would be an example of our first option, strengthening buffers in the system to compensate for the shortcomings of more targeted attempts to mitigate risks.

None of these really ensure that we will achieve the objectives of the risk-weighted capital ratio, namely a buffer that reflects risks and safeguards the system without stifling risk-taking. But employing many or all of these responses could help us get closer to this objective. Most importantly, a proper private sector risk culture that adapts to the spirit of the regulation, namely the need to have large enough buffers proportionate to risk, could mitigate these problems and reduce the need to change the regulation.

Are we focusing too much on banks?

A related concern is that, even as we work to shore up banks, risks may be growing elsewhere in the financial system.

One area that we're watching closely is shadow banking. Definitions vary, but the broad concept adopted by the FSB – bank-like intermediation outside the traditional, regulated banking system – serves as a good starting point. The figures compiled by the FSB suggest that, after shrinking for a few years after the crisis, financial assets outside the banking, insurance and pension sectors have started growing again. This points to a shadow banking revival.

Shadow banking should not be regarded as a pejorative term. Nor is the sector's growth necessarily worrisome: there are some things that banks aren't equipped to do, and that we don't want them to do, which could be more efficiently and safely performed by other entities. But we do want to keep an eye on the risks. This is an area where innovation happens especially quickly, so we should make use of all of the approaches discussed above – incentives, buffers and supervisory judgment. We'll never come up with the silver bullet, because shadow banking covers a large, diverse and ever-changing set of activities. But we can monitor activity closely, and focus our efforts on particular areas that may become a source of systemic risk.

I will not go through all of the initiatives, but I will highlight a few examples. A first initiative comprises efforts to set minimum haircuts for some securities lending transactions. The idea is to prevent procyclicality – the serious feedback loops that can threaten stability. In this case, the concern is that market stress leads to wider haircuts and declining collateral prices, which in turn leads to collateral calls, which forces sales of collateral, pushing prices down further. This goes in the category of strengthening buffers – large haircuts help us delay the point at which this feedback effect kicks in. A second initiative comprises efforts, mainly in the United States, to reduce the bank-run-like risks facing money market funds that promise a constant net asset value. A third set of initiatives goes back to banks, which tend to be deeply intertwined with shadow banking as providers of credit and liquidity, for example as warehouses for claims that are awaiting securitisation. Banking supervisors have worked to better capitalise securitisation exposures and to limit the credits that banks extend to investment funds. From these examples you can see that regulating shadow banking involves a range of regulatory disciplines: regulation of banks, markets, asset managers and so forth.

In monitoring shadow banking we should pay special attention to the most common risks as revealed in the historical crisis record: excesses in leverage and in maturity/liquidity transformation. But again in the spirit of Tommaso's forward-looking way of thinking, we need to reflect about how the real-life counterparts to these concepts are evolving. Leverage is usually associated with financial institutions, companies or some financial instruments. It is important because it magnifies losses, amplifies responses and contributes to making market dynamics abrupt and non-linear. But similar amplification effects and non-linear behaviour can be observed in capital markets. They can originate in the behaviour of traditionally less leveraged institutions, such as asset management companies. This leveraged-like behaviour of unleveraged institutions deserves more attention, particularly against the backdrop of increasing stocks of debt – private and public – in the global economy, a progressive deterioration of credit quality and a compression of spreads.

In this regard, we need to pay close attention more generally to the growth of intermediation through capital markets. Foreign and local currency bonds are a growing component of the capital that has flowed into emerging economies over the last few years. This is a positive development, contributing to the diversification in the sources of finance, but we're still learning about what this means for the stability of the financial system. It raises an important question: Is a market-driven boom more or less risky than a bank-driven boom? I will not venture a complete answer, but I will say that the risks are different and need to be understood.

- For one thing, market liquidity conditions take on greater prominence. If markets threaten to become illiquid, we can see a rush for the exits by bondholders, or an attempt to hedge risks in one market by shorting a related, more liquid market. The results are bouts of fire sales and contagion. These dynamics are accentuated to the extent that products offer investors the illusion of liquidity, which disappears in stressful conditions. Put differently, there can be runs on market instruments just as there are on banks. For example, many exchange-traded funds (ETFs) promise continuous, liquid exposure to markets and sectors that are themselves relatively illiquid. A sudden shift in buying or selling pressure for these funds could be disruptive to the underlying markets, and potentially to the dealers and asset managers that stand behind these funds.
- Secondly, asset managers become more important in the financial system. Usual practices and the incentives facing these managers can result in leverage-like amplification and non-linear effects to market dynamics. Examples of such mechanisms include:
    - Aversion to coming last in short-term relative performance, which can exacerbate buying and selling pressures.
    - The need to meet market benchmarks, which can lead to the concentration of exposures, higher correlations and herd behaviour – it is always better to be wrong in a crowd than to be wrong on your own.
    - A larger share of intermediation in the economy might be driven by the search for yield. This is problematic to the extent that investors focus too much on central scenarios, and do not allow for a wider distribution of potential outcomes. When these unexpected outcomes occur, they lead to unusually sharp jumps in valuations.

All of these examples of how market dynamics can amplify market stress conditions need to be better monitored and understood.

Conclusion

I am not trying to sound a note of despair about our ability to effectively regulate the financial system. Instead – and again, I think this would be in the spirit of Tommaso – I would emphasise the fact that we have accomplished a great deal. And we can accomplish more by continuing to take a multifaceted, proactive approach, making use of all channels of cooperation at the international level, factoring in the limits to our own knowledge and always being alert to the evolution of the system.

What should guide this approach? Even as the system evolves and innovates, I think regulators should stay focused on a few core principles. For example, we need to put in place appropriate buffers to make sure that initial conditions provide room for manoeuvre. We need to monitor leverage, currency mismatches and maturity mismatches on the balance sheets of financial institutions. And we need to be open to understand how these risks mutate and widen. While each of these is essential to what the financial system does, excesses can be a source of fragility. Another key objective is to reduce the importance of any one institution for the stability and functioning of the system, so that none is too big to fail. Where entities perform critical functions, such as providers of financial infrastructure, this calls for especially close supervision and limits on risk-taking.

Let me close by recalling another notable facet of Tommaso Padoa-Schioppa: he refused to be bound within any single discipline. As an economist, central banker, supervisor and finance minister, as someone whose expertise ran from payment systems to banking supervision to monetary policy, he understood how all these fields are interrelated. Strengthening policy in one area is often meaningless unless and until complementary work is done in related spheres. And progress in one policy area should make it easier for us to achieve our objectives in others. For instance, monetary policy can contribute by making sure that the price of leverage is adequate. So, despite the huge challenges involved, I am optimistic that our work on each of these different aspects of the reform agenda will, in aggregate, help us build a strong, stable financial system that also nurtures progress and innovation.