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## The Regulatory Responses to the Global Financial Crisis: Some Uncomfortable Questions

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## **IMF Working Paper**

Research Department and Institute for Capacity Development

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#### **Abstract**

We identify current challenges for creating stable, yet efficient financial systems using lessons from recent and past crises. Reforms need to start from three tenets: adopting a system-wide perspective explicitly aimed at addressing market failures; understanding and incorporating into regulations agents' incentives so as to align them better with societies' goals; and acknowledging that risks of crises will always remain, in part due to (unknown) unknowns – be they tipping points, fault lines, or spillovers. Corresponding to these three tenets, specific areas for further reforms are identified. Policy makers need to resist, however, fine-tuning regulations: a “do not harm” approach is often preferable. And as risks will remain, crisis management needs to be made an integral part of system design, not relegated to improvisation after the fact.

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<b>Contents</b>	<b>Page</b>
Abstract.....	2
I. Introduction .....	4
II. What caused the global financial crisis? And what is the state of affairs of reform? .....	5
A. Common causes .....	6
B. New causes .....	6
C. Regulatory responses to date: Where are we now? .....	8
III. Why haven't we made more progress? An analytical framing.....	9
A. Think system-wide and address market failures and externalities.....	10
B. Improve incentives .....	11
C. Realize risks, known and unknown, will remain .....	12
D. Adapt approaches and avoid fallacies.....	13
IV. Some reforms to achieve global financial stability.....	15
A. Adopting a system-wide view.....	15
B. Improving incentives.....	22
C. Better data and information to reduce the unknowns.....	27
D. Assume crises will recur, improve crisis management.....	29
V. Conclusions: What do we have to do in order to do better? .....	30
References.....	34
Box	
1. Overall Approaches to Determine Specific Reforms.....	14
Figure	
1. Knowns and actionable.....	32

## I. INTRODUCTION

This paper identifies some of the current key reform challenges for creating stable, yet efficient financial systems. It does so in light of lessons from the recent and past financial crises and using insights from analytical and empirical studies. The general objective of possible reforms is clear: to reduce the chance and costs of future systemic financial crises in the most efficient manner, that is, at the lowest costs to economic growth and welfare more generally. The most important conceptual and practical challenge identified in the paper is that policy makers (and market participants) need to think more about the system as a whole when engaging in their risk monitoring efforts and financial system reforms. Although some policy makers have adopted this mindset, many are still questioning its usefulness. However, the crisis has made clear that, in spite of what appeared to be individually sound and well supervised financial institutions, well functioning financial markets, well diversified risks, and robust institutional infrastructures, systemic risks emerged, yet went undetected or not addressed for some time and then created great havoc.

Here, despite some decent progress in a few areas, the sad news is that the general approach to reforms is largely still based on an outmoded and by now largely repudiated conceptual framework of regulations, which does not start from the “system-wide” characteristics of risks and often misses key risks. Systemic risk in modern financial systems arises endogenously and cannot just be captured by individual institutions’ balance sheets, or specific market or asset price-based measures alone, especially when these metrics are static or backward looking. A system approach is all the more necessary as modern financial intermediation processes add newer elements that do not always fit into the traditional, silo-based ways of formulating microprudential, bank- or market-based regulations and conducting institution-based or market-specific supervision. Reform approaches need to be more holistic – examining the interactions between and across institutions, markets, participants, and jurisdictions, and across types of risks (e.g., market, credit, liquidity, and operational). Moreover, approaches need to actively anticipate the side effects of one regulation or action on others, both within and across jurisdictions.

In addition to lacking a focus on systemic risks, many reform areas have lagged for other reasons: a lack of a specific enough analytical framework and appropriate data with which to evaluate the possible costs and benefits of various regulations and their interactions, making reform steps consequently unclear; and a lack of practical methods of implementation or enforcement of conceivable reforms. We realize that there will always remain such and other constraints on knowledge and data, but we argue that these constraints should be more explicitly acknowledged. The outcome should be that policy making takes a more “Bayesian” approach where reforms are implemented in areas where knowledge is greater, while in other areas both a more “experimental” approach is taken and more resources – data, analyses – are invested to clarify the best approach. And, in the end, there needs to be adequate recognition that institutional, political, and other constraints will affect the final reform choices and the degree to which regulations are actually enforced. As such, and despite various efforts, financial crises will likely recur. There is thus a need to enhance crisis management (including resolution and transparent burden sharing), again both within and across jurisdictions.

The paper begins by reviewing the most common explanations for the recent financial crisis, which tend to stress both causes common to many other, past financial crises and a set of new causes. The exact weight to put on each of these causes is not clear, however. It also briefly reviews the main financial reforms, highlighting the areas where progress has been greatest.

Section three frames the overall challenges in developing policies that will prevent future crises, considering three perspectives: taking a system-wide view and addressing market failures and externalities; improving incentives at all levels (i.e., including market participants, other monitors, and supervisory agencies); and improving data and analyses to reduce the unknowns. It recognizes that these general principles do not suffice to determine specific reforms. It thus ends by suggesting specific further steps that can be undertaken, within all the constraints, to improve financial policy making. That said, we do not flesh out specific reforms, but simply intend to provide ways in which the principles could be met.

The next section assesses progress in three areas corresponding to the perspectives identified in the previous section: first, pursuing a system-wide view – adopting macro-prudential policies, reducing procyclicality, and addressing the shadow banking and OTC derivatives markets; second, encouraging more prudent banking, reducing the too big to fail problem, improving regulatory governance, and achieving better international financial integration; and third, getting more data and conducting better analyses. Unfortunately, rigorous theoretical analysis of recent and historical experiences remains in short supply, as does relevant evidence about the impact that various new regulations and requirements have on the risks of new financial crises. As a result, we caution that in designing reforms, policy makers have to be more explicit about the analytical, practical and data constraints, and the many remaining known unknowns and unknown unknowns. The section ends therefore with a (sober) message: given the likely inability to prevent all future financial crises, there is a need to enhance crisis management and resolution as part of the ongoing reform agenda. The last section concludes with some general lessons.

## **II. WHAT CAUSED THE GLOBAL FINANCIAL CRISIS? AND WHAT IS THE STATE OF AFFAIRS OF REFORM?**

Analyzing the policy responses needed to prevent future financial crises has to start with an analysis of the causes of crises, most notably, but not solely the most recent one, the global financial crisis. While its exact causes will be continue to be debated, it is clear that this crisis, like others, had multiple and interlinked causes, some common to other financial crises and others unique. We can group them into four common causes and four unique causes (see further Reinhart and Rogoff, 2009, Calomiris, 2009, Claessens and Kose, 2014, Eichengreen, 2002 and 2010, and Claessens et al., 2010, the latter on which this section draws, for reviews of the causes of financial crises in general and the most recent specifically). We next review briefly the main regulatory responses to date.

### **A. Common causes**

The first common cause stressed in most accounts of the recent crisis is the occurrence of a credit boom or, more generally, rapid financial expansion. Credit booms are often associated with deterioration in lending standards – as observed in the subprime lending in the United States. While booms do not always cause crises, they do make them more likely (Dell’Ariccia, et al., 2012) and most financial crises are in some way related to credit extension to borrowers that become non-performing. Moreover, credit booms are typically associated with high leverage, which is why they can be so dangerous.

A second, and often related, 'common' cause is rapid asset price appreciation, with housing the most common asset. House prices in the United States rose more than 30 percent from 2003 to the onset of the crisis. In many other markets, such as Ireland and Spain, prices rose even more. Because houses are used as collateral underpinning mortgage credit, their rising values facilitate accelerating credit extension, and hence are often associated with a rapid growth in household credit and increased leverage, all of which further heightens the risks and adverse consequences of a subsequent bust.<sup>2</sup>

The creation of new instruments whose returns rely on continued favorable economic conditions stands out as a third frequently invoked cause of crises. In this instance, the rapid growth of structured credit products – such as collateralized debt obligations (CDOs) and the like – depended in complex ways on the payoffs to other assets (see IMF, 2009, and Fostel and Geanakoplos, 2012). Often the risks associated with the new products are not fully comprehended or appreciated, or are simply explained away by key institutional players such as rating agencies, adding to instability.

Financial liberalization and deregulation constitute a fourth commonly identified contributor to crisis conditions. Observers have emphasized such moves as the removal of barriers between commercial and investment banking in the United States and the greater reliance of banks on internal risk management models, all of which occurred without a commensurate buildup in supervisory capacity. Conversely, regulation and supervision were slow again to catch up with new developments, in part due to political processes and capture, and failed to restrict excessive risk-taking. Risks, notably in the 'shadow banking system' but also at large, internationally active banks, were permitted to grow without much oversight, leading eventually to both bank and nonbank financial instability (see Wellink, 2009).

### **B. New causes**

Of the new causes, the first and most significant was the widespread and sharp rise of households' leverage and subsequent defaults on (housing) loans. While other crises have been associated with real estate booms and busts, most of those centered on excessive commercial real estate lending and rarely on households'. The collapse of the subprime market and the vicious cycle of falling house prices was a catalyst for the crisis in the United

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<sup>2</sup> See Kiyotaki and Moore (1997) the seminal work demonstrating this property and Fostel and Geanakoplos (2013) for a more recent review of leverage cycles.

States. It triggered similar declines in housing markets in many advanced countries (Ireland, Spain) as well as some emerging markets that had seen booms.<sup>3</sup> By directly involving so many homeowners, this crisis became far more complicated. There are no established best practices for how to deal with large scale households' defaults and associated potential future moral hazard problems, and equity and distributional issues. What is clear is that restoring households' balance sheets will take a long time, making the economy recovery period extended.

A second new aspect was how increased leverage manifested itself across a wide range of agents – financial institutions, households – and markets. While a buildup in leverage was not new, the extent of many classes of borrowers' dependence on finely priced, illiquid collateral limited the system's ability to absorb even small shocks. This led to a rapid decline in collateral values (notably of houses and their related structured credit products), which shook confidence. Fear of counterparty defaults in major financial institutions – that were highly leveraged, thinly capitalized, short of funding liquidity and had extensive off-balance sheets exposures – rose dramatically early on in the crisis, freezing market transactions and making valuations of underlying assets even more problematic. The emergence of systemically important non-bank financial institutions (MMMFs, finance companies, insurance companies (e.g., AIG), and investment banks added to overall risks, and in some cases required public backstops for the first time. The systemic vulnerabilities that were building up eventually helped turn a liquidity crisis into a solvency crisis.

A third new element has been increased complexity and opacity, resulting largely from the U.S. private label securitization of weak credits, the explosive growth in derivatives globally, and the murky operations of the shadow banking system. While the originate-and-distribute model of securitized mortgages held the promise of better risk allocation, it turned out that risks were less widely distributed than envisaged and incentives to properly assess risks, including by rating agencies, were undermined. The complexity of the securitized products made it much more difficult to know their true value and who incurred the various risks. Hence, the solvency of financial institutions that were thought to own them quickly became questioned. The complex use of asset-backed commercial paper (ABCP) backed by CDOs and other Mortgage Backed Securities (MBS) – with their differential maturities of liabilities and assets, added the risk of rollovers to a loss of confidence in the values of the underlying assets. In the run-up to 2007-2008, huge sums from U.S. and euro area money market funds flowed into bank commercial paper and short-term debt, while extensive use of repurchase agreements and rehypothecation strategies<sup>4</sup> generated long chains of borrowings for the support of other trading book assets in large, interconnected securities dealers and banks. These developments fostered excessive use of short-term wholesale funding in various forms that was not well understood, setting the stage for a confidence crisis.

Fourth, international financial integration had increased dramatically over the decade before the crisis. Global finance no longer involves just a few players, but many from various

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<sup>3</sup> A few countries, notably Korea and Iceland, have seen household leverage-induced financial difficulties, but advanced economies seldom witnessed such widespread household distress outside of the Great Depression.

<sup>4</sup> Rehypothecation refers to the re-use of collateral in other repurchase or securities lending agreements.

markets and different countries. Many mortgage-backed securities and other U.S.- originated instruments were held in other advanced economies and by the official sector in several emerging markets – and funded by dollar-based liabilities in other, non-dollar-based countries. Cross-border banking and other capital flows had increased sharply, notably for and among advanced European countries. While these developments undoubtedly had benefits during “normal” times, they quickly translated the turmoil in the United States into a global crisis. Subsequently, turmoil in countries in the euro area led to multiple rounds of cross-border spillovers and further crises. The various intense links meant not only that disturbances quickly spread, but also made co-coordinated solutions much more difficult to implement. More generally, there may have been “too much finance,” in that finance had grown big and complex, and provided many products which offered little real added value but generated many risks.

The exact weights of each of these and other causes remain unclear, generating many questions as to why this crisis has been so bad and so long. Other contributing factors suggested by scholars include too loose monetary policy and weaknesses in fiscal policy, such as generous tax deduction of interest, but since these factors have been present in previous cycles it is difficult to conclude that they are much to blame. Nevertheless, it is generally agreed that the causes were many and the “solutions” to prevent future crises will equally have to be found in a combination of important changes to national and international regulatory frameworks, the conduct of monetary policy and fiscal policies, and legal and institutional environments (see Viñals, et al., 2010 for an overview of the overall policy agenda). Below we focus on the financial regulatory agenda, acknowledging policy changes are also needed in other areas.

### **C. Regulatory responses to date: Where are we now?**

Policy-makers have sought to rectify the damage done to financial systems and economies by enacting a large set of financial reforms, both at the international and domestic level. The informal group of regulators and central bank experts that had been meeting in Basel prior to the crisis became more formal in April 2009 through the establishment of the Financial Stability Board (FSB). The FSB now coordinates the work of national financial authorities and standard setting bodies at an international level. It brings together national authorities responsible for financial stability, albeit mostly from G-20 countries. Some of the key reforms that have been finalized under FSB guidance and are being implemented can be summarized as follows (for more details, see the latest FSB progress report to the G-20, September 5, 2013, on which this section draws, and for example Atlantic Council, Thompson Reuters, and The City UK, 2013).

- Adoption of Basel III capital requirements, including a countercyclical capital buffer and a surcharge for globally systemically important financial institutions (G-SIFIs), both of which represent a first international attempt to institute a macroprudential tool.<sup>5</sup>

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<sup>5</sup> The rules (see Basle Committee on Banking Supervision, BCBS, 2011) are: a 4.5 percent basic and a 2.5 percent conservation buffer requirement for all banks; a 2.5 percent countercyclical buffer in the boom phase of the financial cycle; and for some banks (designated as systemic), an up to 2.5 percent systemic

(continued...)



- Agreement reached on one of two envisioned liquidity standards – the Liquidity Coverage Ratio (LCR).<sup>6</sup>
- Some progress on reducing too-big-to-fail, with the identification of G-SIFIs, domestically systemically important banks (D-SIBs), higher capital adequacy requirements and more intense supervision, and some reforms of national resolution schemes (including bail-in instruments) so that failing institutions can be resolved without wider disruptions.<sup>7</sup>
- Enhancements to the “securitization model.”<sup>8</sup>
- Adoption of principles for sound compensation practices, to avoid perverse incentives for risk-taking.<sup>9</sup>
- Agreement in principle on similar treatment of some types of financial transactions under U.S. Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS).
- Some closure of data gaps, e.g., the beginning of harmonized collection of improved consolidated data on bilateral counterparty and credit risks of major systemic banks (for the major 18 G-SIBs and 6 other non-G-SIBs from 10 jurisdictions).<sup>10</sup>
- Some OTC derivatives reforms.<sup>11</sup>

### III. WHY HAVEN’T WE MADE MORE PROGRESS? AN ANALYTICAL FRAMING

The reforms to date, in light of the diagnosis of the crisis, provide some insights into what more might be needed. To identify, evaluate, and prioritize further specific reforms is challenging, however, as the “right” tools can be hard to identify and conceptual and practical issues raise many difficult tradeoffs. There clearly is much “path-dependency” in that reforms undertaken to date can constrain choices going forward and a radical rethinking might not be feasible technically or politically. Furthermore, countries differ in many

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surcharge. Altogether, the highest minimum requirement in the form of common equity (Tier 1) would be 12 percent. In addition to this would be 1.5 percent alternative Tier 1 equity and 2 percent Tier 2 (hybrid) forms of capital. These ratios all apply to risk-weighted assets. Additionally, a simple leverage requirement, ratio of (common) equity to total assets, has been adopted. Besides raising the level of requirements, at least as important, Basel III requires better forms of capital, especially more core equity, rather than the hybrid forms of equity that were much used before the crisis.

<sup>6</sup> The LCR, announced early 2013 by the BCBS, requires banks to have enough liquidity, defined as having on balance sheet certain assets (High Quality Liquid Assets) and access to some facilities (including some forms of central bank liquidity), to cover 30 days of outflows. The Net Stable Funding Ratio (NSFR), still under discussion, aims for better structural asset and liability maturity matches.

<sup>7</sup> See FSB (2013a).

<sup>8</sup> Credit rating agencies are asked to disclose more; formal rules requiring the retention of underlying assets have been instituted in various jurisdictions; and accounting information on off-balance sheet vehicles, such as Special Investment Vehicles (SIVs) and conduits, must be consolidated.

<sup>9</sup> See FSF (2009).

<sup>10</sup> See further Heath (2013) and FSB-IMF (2013).

<sup>11</sup> For requirements of the reporting and centralized clearing of some types of OTC derivatives in some jurisdictions, as well as guidelines and minimum standards for centralized counterparties (CCPs) by the Committee on Payments and Settlement Systems and the International Organization of Securities Commissions (“CPSS-IOSCO”, 2012). For a review of recent OTC derivatives reforms see the FSB (2013b).

dimensions, suggesting reform choices will vary, possibly greatly.

Determining approaches and constraints to reform is nevertheless best done with a clear framework in mind. The general analytical approach this paper uses can be summarized under three themes: think system-wide and try to explicitly address market failures and externalities; improve incentives, individually and collectively, of all those involved in finance; and, collect more, higher quality data and conduct better analyses of that information. At the same time, the paper stresses the importance of acknowledging that many risks may remain, in part due to unknowns, so one also need to proceed cautiously and plan (better) for future crises.

#### **A. Think system-wide and address market failures and externalities.**

The crisis has made clear that in spite of what appeared to be individually sound and well supervised financial institutions, risks that were thought to be well diversified, and institutional infrastructures that appeared to be robust, systemic risks nonetheless emerged, went undetected for some time, and then created great havoc. Since then, through better analytical modeling, information gathering, identification, and monitoring as well as a focus on macro-prudential policies, systemic risk has received a greater focus. Yet, these efforts do not suffice. A perspective that acknowledges much more explicitly the interactions, market failures, and externalities is still needed. This system view should include but not just be limited to regular (public) financial stability reviews, large scale stress tests, and other such analyses.<sup>12</sup> Such reviews and analyses should be an integral part of a broader process by which all supervisory agencies consider their roles primarily to oversee (a segment of) the financial system in its entirety, and only secondarily the individual institutions or agents within certain markets. Any micro-prudential supervisor, for example, should consider, and be equipped to address if necessary, the systemic consequences of the institution she reviews.

The system-wide view is not just needed for supervision, but also for the design of regulations. Conceptually, it is now well recognized that even fully effective regulation (and supervision) at the individual level (alone) does not assure a safe financial system (see Brunnermeier, et al., 2009, and Osiński, Seal and Hoogduin, 2013, for a general discussion and De Nicolò et al., 2012, for an analytical review of a macroprudential versus a microprudential perspective on financial stability and regulation). One obvious reason is the various fallacies of composition. Bank A can have liquidity insurance from bank B, and bank B from bank A, allowing both to satisfy a microprudential liquidity requirement, yet in aggregate, liquidity risk obviously still remains. More generally, the high degree of interconnectedness of financial systems and the large scope for market failures and externalities make a system-wide perspective necessary for financial stability, both at national and international levels.

Currently, regulations and other requirements are, however, largely designed from a micro-

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<sup>12</sup> As with all efforts, publication of a financial stability report and other such analyses does not necessarily contribute to financial stability as Čihák, et al. (2012) find. When of higher quality (clear, consistent, etc.), however, publication is more likely positively associated with financial stability.

prudential perspective. It can even be the case that such micro-prudential requirements, even when well designed, make the system as a whole more, instead of less, risky.<sup>13</sup> Some regulations can lead to more procyclicality, as for example has been argued in case of Basel II.<sup>14</sup> And without a system-wide view on both private and public provision of liquidity, a microprudential liquidity rule can act perversely – as when all banks have to meet a requirement at the same time. Reducing the risks of a crisis requires therefore a system perspective combined with a (macroprudential) toolkit, some of which has to be global given the close connections these days among financial systems and through international markets (and this may have to involve as well capital flows management tools). And it requires proper institutions to assure, besides system-wide risk monitoring, the necessary remedial actions.

### **B. Improve incentives**

Improving incentives, rather than prescribing specific behavior, is obviously, to an economist at least, the best way to enhance financial sector performance and ensure greater financial stability. This “incentives view” applies to direct market participants, to what can be called “auxiliary monitors,” and to regulators and supervisors. Direct market participants include owners, creditors (including deposit insurance agencies), managers as well as staff (e.g., the “traders”) of financial institutions; the many, often atomistic participants in financial markets; and the numerous final users of financial services – households, corporations, sovereigns, others. Incentives – the possible gains and losses they face, including the chance of sanctions for (criminal) wrongdoing – drive these agents’ actions, including how they manage risks and serve (or not) as mechanisms to absorb shocks. Because of the diversity of modern finance alone, no single economic or financial “model” can capture the motivations and incentives of each of these agents. And clearly there are many behavioral and other non-economic aspects that drive the decision-making of agents for which economic “models” do not exactly apply (and knowledge is otherwise as of yet limited). Nevertheless, altering these incentives through the “right” regulations and policies is likely to bring about a better (that is, both more stable and efficient, and fairer) financial system. As such, we devote considerable attention to reviewing existing knowledge on incentives of the direct participants (see further World Bank, 2013, on the role of incentives for a sound and efficient financial system).

Generally, less attention has been given to the incentives of auxiliary monitors. These agents include rating agencies, accounting and auditing firms, various elements of the institutional infrastructure for financial markets (e.g., clearing houses, CCPs) as well as the financial press and other “whistleblowers.” They can all play useful roles in creating a safer financial system

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<sup>13</sup> For instance, the zero-risk weight on sovereign debt in bank capital requirements arguably encouraged larger holdings among European banks than would otherwise have been the case in the crisis deleveraging process and hence large, simultaneous losses when sovereign downgrades took place.

<sup>14</sup> One notable reason is that Basel II encourages the use of VaR models, which are often used with similar inputs, including a short time frame, which induces more risk-taking, as volatility of asset prices fall in an upswing, and a common withdrawal from risks, as volatility rises in a downturn. Some other (capital and liquidity) regulations can also, by inducing more common behavior, increase overall risks (e.g., by focusing on risk weights, rules can induce too much investment in some asset classes). More generally, even when rules encourage diversification at the individual firm level, they may reduce useful diversity at the system level.

by exercising market discipline, identifying problems and risks at both the micro and system level. Whether these agents can identify important risks, will voluntarily reveal them and act on them will depend on their incentives. An examination of the incentives facing rating agencies revealed their contributing role in perpetrating the financial crisis (e.g., Partnoy, 2010) and part of the reform agenda underway is consequently aimed to remedy this. There are many other auxiliary monitors, though, which arguably also failed in their roles or had a conflicted set of incentives, for which reforms still have to start.<sup>15</sup> Yet, others have been surprisingly strong in their roles as monitors, even when not charged with monitoring formally. Many cases of malfeasance have, for example, been discovered by employees and the press (see Dyck, Morse and Zingales, 2010).

If incentives of direct market participants and auxiliary monitors fail to detect and act on risks that can become systemic, regulatory and supervisory agencies become the last, but important, defense. Weaknesses in supervision and capture of agencies, nationally and internationally, however, have at times also adversely affected financial stability (and possibly as well as the efficiency of provision of and the access to financial services by many groups in society). Capture of regulatory, supervisory, and other public oversight agencies occurs in many ways and can undermine financial stability and efficiency.<sup>16</sup> Regulators, supervisors, and many other officials who failed in their public policy roles, have suffered little ex post cost (in terms of loss of jobs, for example). At the same time, few if any officials receive any reward for discovering risks early or attempting to flag imminent problems. As such, enhancing national and international regulatory governance and accountability must anchor any incentive approach to reduce the chances of financial crises.

### **C. Realize risks, known and unknown, will remain**

As in other industries (e.g., nuclear, health, food) and with other types of man-made and other risks (e.g., climate, spread of diseases, weather), there has to be the realization that, even with better incentives and a more system-wide view, many risks will remain. Some will constitute risks that explicitly or implicitly will be deemed to be “acceptable” – since a fully “fail-proof” financial system may not be the most efficient in delivering economic growth or other desirable outcomes. Optimizing welfare in the presence of full information about risks

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<sup>15</sup> This relates to the role of self-regulatory organizations (SROs) in finance. In many other industries, such SROs can help exercise discipline, in part as the collective reputation of the industry depends on the behavior of individual members (see other contributions in this volume). This reputational channel appears to depend, however, on the industry facing potential competitive threats, which may not work equally well in financial services industries that are often essential and therefore protected to some degree, including by a public safety net. The international nature of the financial services industries makes the model also harder to implement. See Omarova (2010) for a proposal for a new paradigm for SROs to account for systemic risk.

<sup>16</sup> Some forms of capture are subtle: insiders – both people within the financial industries and important users – set the rules, standards, and institutional designs, mostly to benefit themselves. As rents arise, the costs of financial services increase and access declines for some groups. In some cases, capture occurs in very blatant ways, such as corruption, which includes not only “stealing” (as when state-owned banks lend to cronies who subsequently default) but also the misallocation of resources. Gains from capture often occur ex post – through, for example, bailouts induced by the moral hazard of too big to fail financial institutions or more relaxed monetary policy and fiscal policies to deal with (the risks of) a systemic financial crisis. In addition to capture, there can be group-thinking (see further Barth, Caprio and Levine, 2012 and section IV.B).

can after all mean a genuine tradeoff between efficiency and stability. And insuring explicitly against some risks may not be efficient or actually create more moral hazard.

More resources, analyses and data can help reduce to some degree the set of currently unknown risks that are deemed unacceptable. Some old and new risks, including perhaps those (deliberately) hidden, can be discovered using a more eclectic way of doing “prudent” oversight, i.e., not (just) relying on formal risk indicators or rules, but using more “market intelligence.” For instance, usually asking “why”-type questions of intermediaries or market participants is helpful, e.g., why are some users willing to manufacture or buy some new product?<sup>17</sup>

Some (perhaps many) risks though will remain undiscovered, not just because of a lack of attention by markets, supervisory agencies and others, but because they are not easily recognizable. Indeed, sometimes these (system) risks of a (new) product are not even known by the purveyor. Other risks will come from new sources or arise from existing sources anew, such as unforeseen interactions between markets and agents, or side effects of new regulations. Some systemic events will not be anticipated in any way (“Black Swans”). Because many risks remain, contingency planning and the ability to respond to (the onset of) financial crises with flexibility will remain needed. And effectively and efficiently mitigating the impact of crises when they occur will have to remain an important policy area too.

#### **D. Adapt approaches and avoid fallacies**

While useful starting points, these general considerations do not suffice to determine specific reforms. That still requires much more analysis and work, including notably adaptation of approaches to country circumstances. Here constraints are numerous, as examples in a number of areas show (see Box 1). Further progress to overcome these constraints is needed to avoid at times mistaken approaches and fallacies. Even though general prescriptions are not possible (or useful), recommendations in terms of process can still be made, including: adopting a framework for regular consultation and coordination across regulators, possibly even cross-border, and with financial services providers and users; and conducting from time to time a review of financial regulations from both development and stability points of view.

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<sup>17</sup> This relates to work by Ayres and Braithwaite (1995) on the balance between formal rules and informal regulatory governance (regulators “kicking the tires” to keep abreast of what is going on), and to the empowerment of both private and public interest groups in the regulatory process, including by encouraging effective industry self-regulation.

### Box 1. Overall Approaches to Determine Specific Reforms

- Overall consistency across reforms.* This consistency, especially when reforms proceed on many fronts as they have recently, is often not assured. As one example, there is a tension between liquidity regulations (the LCR) and components of the resolution regime (bail-in requirements). Another, related problem is that regulators in one area do not necessarily talk to those in another area – e.g., resolution authorities and banking supervisors (even if they are in the same building) or accountants (requiring consolidated treatment of SIVs and conduits), banking supervisors (assigning risk-weights to securitized product), and securities regulators (insisting on more “skin in the game” for securitization). These and many other such examples show the complexities of designing and implementing financial reforms at the same time as well as balancing various tradeoffs, such as between assuring financial stability and having efficient financial services provision to support economic growth. Unfortunately, policy makers do not always discuss, assess, or even recognize many of these complexities and tradeoffs.
- Timing of reforms and implementation.* Consistency is also necessary with respect to timing. Some “fixes” are hindering the current economic recovery (such as higher capital ratios that are leading to deleveraging through asset sales or less credit creation). Other reforms aimed to support a recovery, such as credit enhancing policies (such as (temporarily) lower risk weights on SME loans), may lead to excessive risk-taking, since they purposely underprice risk relative to its true price. More generally, if reforms are too slow, risks will build up again; if reforms are too fast, the real economy fails to recover: a “just right” approach requires a lot of judgment and flexibility.
- Migration and global consistency.* Despite, or perhaps because of, a “global” (e.g., at least G-20 or G-25) representation within the FSB for regulations to be “cleared,” there is (still) a tendency to adopt the lowest common denominator or to negotiate specific one-off exceptions. An example is that for some concentrated market activities (e.g., OTC derivatives) migration and fragmentation are constantly issues for the private sector, with pressures on their regulators to favor their own jurisdiction. Protecting the financial system can then conflict with making markets (especially market infrastructure, such as CCPs) more competitive. Competition among countries and more generally can lead to lower standards and higher risks. Minimums (of capital, risk-management standards, leverage, remuneration, and so on) are meant to help avoid a race to the bottom, but require all jurisdictions to actively enforce the minimums. At the same time, some countries are aiming to be “super safe” and hence are going much beyond the agreed-upon standards. For some, this includes segmenting (parts of) their system, which raises many questions, including at what point the benefits of an open, global financial system with free movement of resources and ample risk diversification begin to be outweighed by protectionism.
- Cost-benefit analysis.* Regulators/supervisors are thinking about cost-benefit analysis, but usually in a very narrow way, with many worried about raising the costs of intermediation while the recoveries in many crisis-hit countries remain weak. Policy-makers should be thinking long-term – through the business cycle – adjusting implementation time frames, but not the final goal. And they should explicitly

**Box 1. Overall Approaches to Determine Specific Reforms (continued)**

acknowledge that ever more complexity in rules has not just direct costs, but can even increase financial stability risks. Related is the need to avoid a *narrow view of the crisis "causes."* The notion of choosing "winners and losers" among the various activities depending on whether they were viewed as "causing" the financial crisis is a concern. For example, new rules have made most private label securitization more expensive (and possibly uneconomic) for securitizers and potential purchasers are not participating due to the negative perception such activities engenders – even though restarting securitization could help the economic recovery. Moreover, introducing too much rigidity in rules hinders future crisis management. For instance, the Dodd-Frank Act disallows the Federal Reserve System from providing liquidity to certain entities, even in an emergency, without the Treasury Secretary's "permission." To "tie the hands" of some authorities in such a way to prevent moral hazard issues from arising may at the end of the day cause more panic than it prevents when financial stress arises. Restricting business activities (the Volcker rule in the United States, the Vickers Commission in the United Kingdom, and Liikanen report in the European Union) all similarly have the problem that they attempt to isolate the "risky" activities from the banking system, but this only moves the risks (and only if effective) and doesn't necessarily lessen them for the system as a whole.

**IV. SOME REFORMS TO ACHIEVE GLOBAL FINANCIAL STABILITY**

With this general framing and keeping in mind the many constraints and tradeoffs, we next discuss general remedies to the three main areas identified above on which forward progress is still needed in many jurisdictions: reforms mitigating systemic (as opposed to idiosyncratic) risk; alterations in incentive structures; and better data and information to reduce unknowns. These areas are interdependent – without advancements in all three areas, any one set of reforms may only marginally improve global financial stability.

**A. Adopting a system-wide view**

*Macroprudential policies.* Consistent with the greater appreciation of *externalities and market failures*, a new area of "macro-prudential" policy making has emerged (IMF, 2013a and 2013b review; see Claessens et al., 2011 for a collection of papers). There are many dimensions to having a macroprudential approach, varying from better identifying risks, to building more robust institutional infrastructures (like more use of CCPs), to adopting new, system-oriented policies aimed at reducing excessive procyclicality and risks, and designing the institutional framework for operating them. The starting point and most complex issue, as

already noted, is to better understand the dimensions of systemic risks and have associated warning signals.<sup>18</sup>

Despite much discussion and some tentative steps forward, as of yet approaches remain largely micro-prudential. For the most part, Basel III is micro-prudentially oriented. It, appropriately, targets the quantity and quality of bank capital as these institutions' lack of good capital made them vulnerable during the crisis. However, more capital only helps cushion an individual institution's losses and hence the systemic nature of multiple and simultaneous bank distress is only partially addressed. As for liquidity risk, the determinants of the Net Stable Funding Ratio (one of the two liquidity risk components of Basel III) are not yet finalized and various parts look watered down already. Again neither element – the Liquidity Coverage Ratio nor the Net Stable Funding Ratio – firmly counters banks' potential to generate systemic liquidity risk *ex ante*, although with high enough ratios the chance of a systemic liquidity event is lessened.

As regard to possible macroprudential *policies*, a broad distinction can be made between those that aim to reduce risks arising from procyclicality (the time-series dimension) and those arising from interconnections (the cross-sectional dimension). So far, only a few macroprudential tools have been adopted and mostly only for banks. Notably, Basel III contains the countercyclical capital buffer to account for the procyclicality of credit extension and the systemically important capital surcharge that tries to address the over-weight importance of too-big-to-fail (TBTF) institutions. The calibration and effectiveness of these surcharges, and macroprudential policies tools more generally, is, however, yet to be fully determined, with the calibration mostly based on rough estimates so far. While countercyclical buffers have been used, notably in Spain, where the evidence suggests some effectiveness (e.g., Saurina, 2009; and Jiménez, et al., 2012), they did not stop a banking crisis from occurring.

Many other tools, ranging from adjustments in loan-to-value ratios (to limit real estate lending during booms to avoid busts) to levies or taxes (to reduce the incentives for wholesale funding or to offset the TBTF subsidy), have been mentioned as potential macroprudential tools. Some of these have been studied (see for example, Lim et al., 2011, for the effectiveness of various macroprudential tools in a cross-country context; Crowe et al., 2011, on the use of macroprudential policies for mitigating real estate booms and busts; and Claessens, Ghosh and Mihet, 2013, for cross-country work on how macroprudential policies affect banks' riskiness). These tools are in the correct direction as they attempt to put in place incentives that will lower systemic risks. Nonetheless, much still remains to be determined before their effective use can be assured, including their calibration to country characteristics and circumstances (see IMF, 2013a; IMF, 2011).

Other important elements of a macroprudential framework include issues of the regulatory governance (who is in charge, including as regards to cross-border aspects; see further Nier,

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<sup>18</sup> See further IMF (2012a) and Blancher et al. (2013) for various types of systemic risk monitoring tools and Arsov et al. (2013) for comparisons across a set of indicators regarding their effective prediction of financial distress.



et al., 2011), and their relationships and interactions with other policies (notably microprudential, monetary, and fiscal policies). So, while the greater emphasis on macroprudential policies is promising, and some emerging market countries seem to have used such policies effectively, it is still too early to rely on them heavily, also as their costs – including (indirect) adverse effects on resource allocation – are not well known. This is notably so in advanced economies: with their more sophisticated financial systems, where arbitrage and avoidance are serious problems. It will hence remain important to not rely on macroprudential policies too much and complement them with tools such as banking system stress tests (which can also be viewed as a macroprudential tool).

*Procyclicality.* Another element of the system-wide approach that could reduce the frequency and depth of crises is to reduce the procyclicality of financial markets by structural means. Some forms of procyclicality are embedded in market practices – including compensation practices, risk management tools, such as traditional Value-at-Risk (VaR) modeling and credit risk modeling, and margining and collateral practices applied in a number of markets, notably derivatives markets. Procyclicality can also be induced by regulations such as accounting and valuation practices, capital and liquidity requirements, risk-weights, provisioning requirements, and deposit insurance schemes (that lower premiums in boom times and raise them in bust times). And still other forms seem more behavioral in nature – e.g., the tendency for investors to buy as asset prices are rising.

Typically (or at least in the pre-global financial crisis era) compensation packages had a bonus component solely based on “returns” without considering risks. A bonus pool was built up during the year, based on the trading or other profits that a business unit accumulated and then it was dispersed at the end of the year or the beginning of the next. Little attention was paid to the risks involved in gaining those profits or whether the risks would later materialize from transactions taken during a previous time period. Since profits normally expand during an economic upswing, the procyclicality of compensation schemes is built into the system.

A first step to remove this procyclical element is to allocate compensation on a risk-adjusted profits basis. A second and even better step is to do so “through the cycle” and pay only a portion of the profits in any given year of the cycle with the remaining amounts used to absorb losses occurring later. Some of these notions have been instituted – some institutions now pay only a portion of the bonus pool out in a given year (usually with a 3-year horizon), some tie it to options on their stock price, and some have a “high water” mark that hold some of the bonus pool back in case losses later materialize.

Although total pay packages have become less bonus-oriented, payouts from bonus pools are still largely short-term and large relative to base pay. Most firms are reluctant to risk-adjust bonuses because they are unsure whether their risk models are accurate enough for compensation purposes. They are also concerned that other firms will continue to pay on a non-risk adjusted, return-only basis and hence they might lose their best talent to better-paying firms. There may be a need for a mandatory, coordinated compensation scheme with risk-adjusted bonus payments to overcome this incentive. Even then, limited liability, for the institution and clearly for the employee, makes risk-based packages in general less than

perfectly incentive compatible.

Risk management systems themselves can be procyclical. For instance, low volatility of and low correlations across asset prices during economic upswings mean that risks are underestimated in VaR models that use only a limited historical period to calibrate potential losses. Regulations that strongly encourage firms to use only short periods (1-year) of historical data for regulatory capital purposes also encourage procyclical trading behavior. To the extent that many financial institutions use similar models and hold similar positions, overall procyclicality increases.<sup>19</sup> Credit models also typically measure the probability of default at a point in time rather than “through the cycle.” Even credit rating agencies that claim to rate through the cycle are not, in fact, doing so.<sup>20</sup> Such problems can be ameliorated by encouraging longer-term horizons for risk modeling, but for newer products it is harder without historical price data.

Accounting standards and fair-value accounting (FVA) also contribute to procyclicality. With asset values increasing in upswings and decreasing in recessions, there is a natural procyclical tendency built into the asset side of balance sheets when assets are mark-to-market. Although this could be offset in part if liabilities were also mark-to-market, few businesses extend this practice to both sides of their ledgers. Balance sheets therefore tend to expand in upswings and contract in downturns (Adrian and Shin, 2010). Book equity values (the residual of assets less liabilities) tend also to be procyclical (IMF, 2008).

A corollary to FVA is that many other practices, such as using margins and haircuts on collateral, are dependent on mark-to-market values. So when collateral looks highly valuable, the margin or haircut required for a borrower to post declines (Geanakoplos, 2010). This occurs in repo transactions, securities lending, collateral posted at central banks, centralized counterparties (CCPs), and stock and derivatives exchanges. Hence a number of practices reinforce procyclicality.

On the regulatory side, earlier regulation was known for its procyclicality. Basel II capital requirements were highly criticized, even at their inception, for being procyclical – the amount of capital needed during an upswing became less and less as the value of risk-weighted assets rose. The notion that buffers should be built up during the good times for use in the bad times was viewed as a preferred outcome, but the regulation was not constructed in way to codify this notion. Similarly, loan loss provisioning practices have this characteristic – as loans look safer during an upswing, less specific (and general) loan-loss provisions are made since the borrower is viewed as more likely to be able to pay interest and principal on the loan. Only when bad times hit, does it become clear that not enough had been put aside for the larger share of non-performing loans. In both cases, a more “through-the-cycle” notion needs to be instilled. And in many countries, the accounting and tax systems do not allow or discourage through-the-cycle loan-loss provisioning.

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<sup>19</sup> The use of a “stressed” VaR in Basel 2.5 that requires additional capital (calculated on a continuous basis) to be added to other market-based capital requirements may help mitigate some of the procyclicality embedded in VaR-based capital requirements.

<sup>20</sup> See IMF (2010) and Kiff, Kisser, and Schumacher (2013) for empirical evidence.

Basel III has gone some way to ameliorate this problem with a countercyclical capital buffer added onto the usual minimum regulatory capital standard. The ability to provision against future loans is encouraged, but some accounting practices have not made commensurate progress. The IASB is only now discussing the use of an “expected loss” concept that would allow financial institutions to align the supervisory definition of “all possible default events for the life of the financial instrument” with accounting definitions.

*Shadow banking.* The crisis revealed many systemic problems arising from so called shadow banking activities, notably in the United States (see Claessens et al., 2014, for a collection of papers on shadow banking). The FSB (2012) defined shadow banking as “credit intermediation involving entities and activities (fully or partially) outside the regular banking system.” This definition is meant to include any nonbanks that are active in one or more of the following activities: maturity or liquidity transformation, leverage, and credit risk transfer. As such, it is a broad definition that captures many forms of financial intermediation that are important for economic growth, but not necessarily of systemic size or importance. So which shadow banking activities that are systemic enough to be regulated needs to be determined separately. Indeed, some activities can be systemically stabilizing if they provide alternative financing arrangements when one set of institutions or activities become unable to perform their normal functions. And strictly speaking the FSB definition ignores shadow banking activities that occur *within* banks and that rely on the (implicit) safety net provided to banks (see also Claessens and Ratnovski, 2013, on how to define shadow banking).

While many of the previously identified risky shadow banking activities are lower today, the cyclical conditions associated with their lull are dissipating and some of the activities are picking up again. As such, going forward, shadow banking can again become a source of systemic risk. Furthermore, some countries (like China) are experiencing increases in forms of financial intermediation labeled as shadow banking, which could prove to be of systemic concern. How to monitor and regulate these new forms is thus a policy issue of much debate, in part because shadow banking is so broadly defined.

In generally, what specific aspects of shadow banking can lead to systemic risks is not clear. Neither has it been established whether shadow banking is best regulated indirectly, that is, by putting limits on the banking system which most often supports it or whether the “system” should be regulated directly, by for example, curbing certain activities via various means. Without addressing these issues, but on the basis of the crisis evidence, the FSB has identified five work streams that would require the initial attention of policymakers, with reforms started in some of the more obvious activities and progress in some others since.

One work stream is to examine the connections between regulated banks and shadow banks. So far, alongside the Basel Committee, the FSB has proposed restrictions on regulated banks’ large exposures to, and equity investments in, shadow banks (two of the main connections identified), with work underway on defining exposure limits to funds and securitized vehicles. This indirect method can reduce risk to the banks from shadow banking activities – as it removes a source of contagion to banks’ balance sheets, but may push systemic risks elsewhere.

A second work stream involves money market mutual funds (MMMFs). FSB has tasked the International Organization of Securities Commissions (IOSCO) to develop guidelines for MMMFs. The United States (the largest market for MMMFs) has shortened allowable asset maturities, thereby limiting maturity transformation, but has made no decision about whether constant Net Asset Values (NAVs) should remain a mainstay attribute of the sector nor whether, if a constant NAV remains, liquidity buffers or other capital-type regulations should be put into place.<sup>21</sup> As such, this remains a critical point of weakness to address – as noted, the run on MMMFs in fall of 2008 aggravated the financial turmoil.

The identification of other nonbank financial institutions that act like shadow banks and potentially pose systemic risks is a third work stream, but this one is far from being finalized. Monitoring exercises by the FSB are more detailed each year, but mostly measure shadow banking by examining assets under management (AUM) from national flow-of-funds data, hence it presents a very limited view of the risks they may pose. Agreement on a framework for other financial institutions, with more emphasis on functions rather than legal form, has been reached in principle, but it has proven hard to put to work without the appropriate data. Case studies and specific subsectors are currently under investigation.

Securitization makes up a fourth work stream. While some of the more obvious risks have been addressed in some jurisdictions, there is now a patchwork of retention rules that either provide avenues for regulatory arbitrage or make securitization uneconomical. The rules are not related, necessarily, to the risks that the originators face, and thus only partially create incentives to originate or monitor loans that are placed into securitization products.<sup>22</sup> Increased disclosure and capital-based risk-weights applied to the products has made them more costly to issue – so much so that some previous originators find it uneconomic to do so. That said, it is difficult to nail down whether the moribund securitization market (especially in the United States) is a result of its tarnished reputation and weak demand or over-regulation.

A final work stream involves repo and securities lending markets. Some risks in tri-party repo markets have been subdued given less intra-day counterparty risk taken by the tri-party repo agents in the United States, but no agreement exists on whether minimum haircuts should (or could) be established.<sup>23</sup> There has been only limited discussion of countercyclical margin requirements even though this was identified as a contributing cause of the crisis.<sup>24</sup> In

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<sup>21</sup> A constant NAV means that one share is priced to equal one dollar and “breaking the buck” refers to a situation in which the assets can no longer maintain the one share equals one dollar convention.

<sup>22</sup> See Kiff and Kisser (2010) for an analysis that shows retention rules can alter the incentives of those involved in securitization.

<sup>23</sup> The tri-party repo market is one in which a custodian bank or international clearing organization (the tri-party agent) acts as an intermediary between the two parties to a repo transaction. The tri-party agent is responsible for the administration of the transaction, including collateral allocation, marking to market, and substitution of collateral.

<sup>24</sup> While minimum haircuts in securities markets have not yet been adopted, the Basel III LCR does define stressed haircuts on particular instruments and against counterparties (e.g., 100 percent for banks/banks or banks/other financial institutions, or 100 percent on lower rated corporate debt or gold, or 25 percent on higher rated corporate securities, 0 percent for government securities), which have to be held through the cycle and

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this area, a quantitative impact study is underway to evaluate the effects on minimum haircut standards, including numerical haircut floors, but the study does not include haircuts on government securities (the largest repo instrument).

The New York Federal Reserve has collected information about the types of collateral underpinning repos, but it is still too coarse to identify the risks. Hence, the FSB's latest set of recommendations include three focal points: (1) more granular exposure data from the largest international financial institutions, (2) trade-level (flow) data of outstanding balances in repo markets, and (3) an initiative to aggregate and compare trends in securities financing markets at the global level by the FSB. Other recommendations focus on disclosure to end-investors and others, as well as implementation of regulatory regimes that meet minimum standards for cash collateral reinvestment. Since repo activity (and its associated risks) is on the upswing again, this work has a high priority.

*OTC derivatives markets.* The OTC derivatives markets represent one of the most globally active markets, allowing the transmission of risks across markets, institutions, and jurisdictions. In good times, the lack of transparency about the location and extent of risk taking is acceptable to its participants, but during volatile times this feature can be debilitating. While jurisdictions are making progress in OTC derivatives reform, progress is very uneven across jurisdictions and not all G-20 countries have implemented earlier commitments. Without a coordinated response, there is increasing concern about the inconsistency of rules and the migration of trading to less regulated jurisdictions as costs are rising in important centers – this dichotomy is particularly noticeable across the Atlantic where the United States and Europe are moving in different directions.<sup>25</sup> A recent study examining how the costs and benefits to the currently formulated reforms are likely to affect economic output concluded that the benefits outweigh the costs, but by a relatively small amount – about 0.12 percentage points more GDP growth per year over the long run when the reforms have been fully implemented and their full economic effects realized.<sup>26</sup> That said, many end-users claim that they will stop using derivatives altogether due to higher costs of trading (a factor not accounted for in the study), which presumably would reduce their ability to lay off risks.

Of particular difficulty has proven to be the process to calibrate regulations for bilateral collateral requirements, capital charges for non-collateralized trades, and collateral to be held in CCPs so as to engineer incentives to move standardized OTC derivatives to CCPs where multilateral netting can lower bilateral exposures. Progress on getting trades into trade repositories (reporting venues) is much better, but getting the information out of trade repositories to those responsible for examining risks has not appreciably improved. Currently, restrictions on data usage mean only a few regulators get information, and only about their own institutions, so third-party interconnectivity is not visible to anyone. Efforts to loosen these restrictions is ongoing.

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also applied to securitized products including repos. The same haircuts will likely be applied within the NSFR framework to banks' assets and liabilities.

<sup>25</sup> See for example Atlantic Council, Thompson Reuters, and The City UK (2013).

<sup>26</sup> See the MAG on Derivatives (2013).

## B. Improving incentives

*Incentives associated with banking system reforms.* Albeit with some important differences across countries, banks generally still undertake the largest share of financial intermediation. To assure safer and more efficient banking systems, higher capital and stricter liquidity requirements are very much at the center of current regulatory efforts, with Basel III at its core. Furthermore, a minimum leverage ratio has been agreed upon. Such an approach may help remove some of the gaming of the more complicated risk-based capital system, though it is currently being viewed as an ancillary “cap” on overall leverage. The analytical and empirical support for these formal requirements from an incentive point of view are, however, less clear than perhaps often thought. For example, as is, the analytical literature has offered relatively limited guidance on the exact incentive effects of capital requirements. Some theoretical analyses have even found that higher requirements can have perverse effects (for an early version of this argument, see Genotte and Pyle, 1991). Furthermore, risk taking incentives are affected by both a bank’s current capital adequacy and its franchise value of future profit and growth opportunities, with possibly opposing effects.<sup>27</sup>

While the incentive effects, in terms of reduced risk-taking, are perhaps less clear, most research does acknowledge the obviously beneficial effects of higher capital in terms of buffers as well as easing the need for public intervention in weak banks. By having more capital, it is easier for a bank to absorb losses when hit by an adverse shock, thereby helping it lower the risk of default and permitting it to “go on.” This can be privately beneficial for all stakeholders combined, as it preserves specialized knowledge and franchise value and avoids the direct and indirect costs of a potential bankruptcy. Yet, owners and managers may not fully internalize these deadweight costs, in part due to the presence of a public safety net, and hence choose to hold too little capital. This can thus justify government-mandated and enforced capital adequacy requirements. Capital also facilitates and eases interventions when a bank is a “gone concern.” It helps to protect debtholders, including (small) depositors and their “agent,” the deposit insurance scheme, from the consequences of distress. And it can help regulators define measured shortfalls, indicating when to intervene from a legal perspective and discipline the regulators to intervene in a timely fashion. For these reasons, most research supports some government-mandated and enforced capital requirements, as private costs seem low and social benefits considerable.

While the case for good liquidity management at the micro-prudential, individual bank level is obvious, the analytical case for liquidity requirements from a system point of view is less clear. This is not surprising as the concept of liquidity at a system level is very complex and not well defined, making liquidity requirements not easy to design from an incentive or a buffer point of view. And current academic thinking on liquidity seems both less well

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<sup>27</sup> One other indication of the difficulty with capital adequacy requirements is that the risk models banks use show vary large differences, i.e., banks apply very different risk weights for the same asset. The BCBS (2013) study asked 15 large banks in nine countries to calculate the total capital required to support the same hypothetical trading portfolio. The results ranged from €13m to €35m and the variation within individual asset classes – such as credit risk or interest rate portfolios – was in several cases more than eight times.

advanced and less reflected in regulations being adopted or underway.<sup>28</sup> Overall, research suggests no clear form for liquidity requirements. It does acknowledge that the current design of liquidity rules, given the interactions across financial institutions and with retail customers, may be (even) less likely to be effective than capital regulation. A liquidity problem develops into a systemic problem much faster than a solvency problem. A rethinking of how best to “tax” an institution or market for contributing to a lack of liquidity, given the contingent nature of the problem, may end up looking more like an insurance-type charge or levy than a consistent “buffer”-type surcharge.

Almost regardless of the exact design, banks and others in the financial services industries object to the new capital and liquidity requirements. Their arguments mostly rest on the increased costs of financial intermediation and the resulting adverse impact on the real economy. The arguments are not particularly strong. For one, it is worth recognizing that many banks already hold capital and liquidity buffers above the requirements currently considered and would not need to change their operations. And even for those banks affected, most analyses finds small costs of reasonably higher requirements (see Santos and Elliott, 2012; and BCBS, 2010). And, even then, banks could adjust along several margins, some of which may further improve stability, say if they curtail activities “underpriced” before the new regulations (e.g., lending to marginally productive sectors).<sup>29</sup> Moreover, since there are cases where countries have raised capital well beyond the minimums (e.g., Switzerland for their two systemically important banks) – a race to the bottom is not always evident.

A bigger long-term issue may be the “dis-intermediation” triggered by higher requirements, where activities migrate to less regulated parts of the industry. Only to the extent this raises new forms of systemic risk, however, should this be a source of concern. A more important worry is that in the transition to moving to higher requirements, adverse effects may be large, undermining the economic recovery. This is hard to judge, in part because how banks will adjust remains unclear – raising capital or deleveraging – and because the costs of raising capital or liquidity quickly are not well known. MAG (2010) nevertheless estimates that a 1 percentage point increase in the target ratio of tangible common equity (TCE) to risk-weighted assets leads to a reduction in the annual GDP growth rate of 0.04 percentage points over a four and a half years period. These transition costs seem reasonably low.

*Incentives to limit “too-big-to-fail” institutions.* Many large financial institutions (especially

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<sup>28</sup> Regulations are largely for example aimed at banks, i.e., they tend to try to address funding liquidity, but are less able to affect market liquidity, which is likely a big deficiency given the increasing importance of capital markets. There are also many cross-border issues in liquidity, important as well during the recent financial crisis – such as the shortage of dollar funding, but these are even less well understood. The behavioral components leading to the start of a run – a tipping point – is seldom discussed and in the past it was assumed “savers” are depositors in banks, whereas in today’s markets the risks is more of large, wholesale providers of “liquidity” that may run. Measures of systemic risk are still relatively untested and their ability to signal difficulties much in advance of a period of liquidity distress is limited.

<sup>29</sup> BCBS analyzes the costs to the real economy of higher requirements. A one percentage point increase in the capital ratio is estimated to translate into a median 0.09 percent decline in the level of output at the end of an eight year period relative to the baseline. The impact of meeting the liquidity requirement is estimated to be of a similar order of magnitude, at 0.08 percent. As a stronger banking system should be expected to reduce the occurrence and severity of crises, albeit these gains are hard to quantify, there are likely net positive gains.

G-SIFIs) benefitted in the past from government support – indeed, the majority of recapitalization and guarantees support in the financial crisis went to them. And today many still benefit from an implicit safety net subsidy. This subsidy has been estimated to amount to be up to 100 basis points, or up to \$10 billion per banking group (as the average balance sheets for a SIFI is about \$1 trillion) (Ueda with di Mauro, 2012). The (continued) large size of this “subsidy” indicates how distorted the provision of financial services is and how much taxpayers continue to be at risk. Hence the creation of a safer system requires reducing the incentives for institutions to become too big to fail. Clearly, this goal implies a broad agenda with multi-pronged solutions. Some elements have been set in motion, but many other important reforms are still needed (see further IMF, 2014).

As a start, the new capital and liquidity regulations are more likely to be binding on those institutions that have implicitly (or explicitly) benefitted from their size. Furthermore, the global systemically important banks (G-SIBs) on which extra capital will be imposed have been defined. Also guidance about how to identify domestic systemically important banks (D-SIBs) has been promulgated. Most jurisdictions, though, have yet to implement final rules and higher capital requirements for D-SIBs. And rules for defining systemically important non-banks have only just started. Systemically important insurance companies, for example, are only just now being identified (the difficulty has been to define and identify “non-traditional insurance business,” the root cause of AIG’s problems prior to its bailout). Also, there is still no global agreement on how to deal with CCPs which can be systemically important financial market infrastructures (FMIs).

While preventative tools, such as higher capital and liquidity buffers and more intrusive supervision, could help *ex ante*, reducing the too-big-to-fail problem will also need to include the assurance that an individual institution’s failure can occur without damaging the rest of the financial system. Today, it is far from clear whether existing regulations will provide institutions with enough incentives to avoid failure and whether supervisors will be willing to stand aside, and use their resolution powers as prescribed. A smooth process of unwinding *ex post* requires enhanced resolution frameworks and enough loss-absorption capacity, including a minimum amount of bail-in debt to encourage better risk-taking, and a loss-sharing arrangement so unsecured creditors bear the risks that they legally agreed to assume. Requiring *ex ante* contractual new capital raising arrangements, such as those embedded in contingent capital (CoCo) type instruments, and improving the design of the public safety net to make transparent which depositor holders receive preferential treatment (as done in some areas of the Dodd-Frank Act) would also be helpful. Other tools, such as living wills or rapid resolution plans, may help *ex ante* to encourage simpler, more resolvable, institutions.

The global nature of large financial institutions, however, continues to raise thorny problems about resolution policies. Many coordination failures can arise for troubled institutions operating across borders, as governments have political incentives to protect their own constituencies. While an agreement on a comprehensive framework has been reached in 2011, in the form of the “Key Attributes of Effective Resolution Regimes” (FSB, 2011; IMF, 2012b), the agreement largely calls for harmonized resolution regimes, rather than addressing the issue of cross-border resolution, and there are as of yet few details about this issue specifically. For instance, questions on which agreement has yet to be reached include: how



to deal with bail-in debt (should there be a minimum amount and how big should it be?); asset encumbrance (should there be a constraint and if so how much?), or depositor preference (who should be covered and what will be its effect on unsecured debt holders?). Importantly, cross-border burden sharing issues have yet to be addressed even in Europe, which is otherwise moving ahead with a banking union, including a single supervisory mechanism.

*Incentives for regulating the regulators.* Improving regulatory governance is clearly necessary, given the many supervisory failures before and during the recent crisis. While this is a complex and multi-faceted problem (with many political economy aspects) and should be considered in a broader context of government vs. market failures, some steps to enhance regulatory governance seem feasible. For one, in many countries, agencies lack sufficient legal, financial, and operational independence from the financial services industry and legislative bodies, and operate under political economy pressures more generally. Funding independence can be an important element to secure intellectual and operational independence and hence improve the process for formulating and implementing good regulation (Fullenkamp and Sharma, 2012).

At the same time, formal public oversight of regulators and supervisors as to their performance is often minimal with essentially no consequences for poor performance (few supervisors have gotten “fired”). Through objective assessments and regular checks, weaknesses in their independence, accountability, integrity, and transparency of operations could be brought out and corrected through new laws or self-imposed new internal practices. Some of this is already done in the IMF’s and World Bank’s *Review of Standards and Codes* (ROSCs) and in some peer reviews, but more emphasis could be put on assessing the effectiveness of “governance” of regulators and the transparency of “processes” (and the link to outcomes).

With better regulatory governance in place, one could have less emphasis on formal rules and give more discretion to supervisory agencies. This could perhaps avoid the proliferation of rules that may add more costs than they provide benefits and may even increase overall risks (see Haldane and Madouros, 2012). Of course, such greater discretion may have to come with limits in other ways (for example, it could be balanced with some formal triggers, as has been done in the United States through the FDICIA which codified prompt corrective action, or PCA). It could also be combined with greater use of market signals, such as declines in stock prices or increases in interest rates on repriced subordinated (or other classes) of junior debt. Either way, such thresholds can be useful disciplining devices for supervisors, even (or especially) in cases where large, systemic banks run into some difficulties.

Better governance should also involve more transparency in the design of rules, with more views (allowed) to be expressed and greater participation by the public. Better and maybe new institutions are needed. Despite the inefficiencies, distortions and costs, the general public is little involved in financial sector matters, both because it is poorly informed about some of the problems – financial systems and regulations are complex – and because it is not easily mobilized. At the heart of the issue is that the incentives (benefits) for correcting problems are too diffuse so that any single individual has very little to gain by themselves. The new Consumer Financial Protection Bureau in the United States can be seen as an

attempt to create a counterforce to insiders designing and applying the rules for the financial sector. Although few other such bureaus exist so far, and the one in the United States remains very incipient, it could be a sensible model, as it replicates what often exists for other products (for example, consumer product safety bureaus). There may be a role for public financial support (perhaps through grants) for (new and existing) non-partisan, non-profit groups to represent the interest of the general public in financial reform, including in the area of macro-prudential policy.<sup>30</sup>

There could also be additional forms of formal oversight, both before and after financial crises or events. For example, some academics have proposed a “sentinel” – an informed, expertly staffed and independent institution evaluating financial regulations and regulatory actions from the public’s point of view (Barth, Caprio, and Levine, 2012). Although hard to design in such a way as to avoid “group-think,” it is worth considering. Perhaps requiring formal, *ex ante* “Food and Drug Administration”-style approvals of new financial instruments could be a more modest, yet still useful, concept to ensure that financial services are not only “safe” for the general public, but also socially valuable.<sup>31</sup> Or – and maybe more realistically, as each new financial service would be hard to approve *ex ante* – an agency could be set up to systemically investigate and report on financial “failures.” Such a “National Transportation Safety Board”-like agency would be better than financial crises commissions, which are too ad hoc and often have too little standing (see Fielding, Lo and Yang, 2011). Complementary, countries could engage in an “incentive audit,” as proposed by Čihák, Demirgüç-Kunt and Johnston (2013). This would entail reviewing regulations so to have at their core the objective of addressing incentives on an ongoing basis.

Regulatory governance issues also arise, albeit with even more complexity, in an international context. Overseers often fail in their (macroeconomic and financial stability) surveillance roles. More attention has been placed on international governance and legitimacy in recent years, and some progress is being made to broaden the set of stakeholders (as reflected in the greater role of the G-20). Peer reviews on countries’ reform progress are underway in some areas, but their effectiveness is not yet clear. Still, formal governance has proven hard to change (witness, for example, the tediousness of the ongoing governance and quota debate for the IMF).

One clear means of improving international decision-making would be to open up further the standards-setting processes, especially by broadening membership of some groups and soliciting public inputs from the end users of finance more explicitly (although many small users will need support given the technical nature of the discussions). Although transparency has improved, more is still needed at the international level on how decisions are reached and the information on which they are based. The countries requesting deviations or exceptions

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<sup>30</sup> The U.S. Federal Trade Commission’s Consumer Protection Agency is a case in point. Formed in the 1970s to represent the consumer interest in the regulatory proceedings of other agencies, it remains a focal point for consumer complaints for a number of industries. The newly created Americans for Financial Reform, a coalition of more than 250 national, state, and local groups advocating for reforms in the financial sector could be a model for such finance-oriented groups.

<sup>31</sup> The Commodity Futures Trading Commission used to require futures exchanges to justify new futures contracts by demonstrating a public benefit.

from the established guidelines should be required to identify themselves and publicly provide their economic (as opposed to political) rationales.

*Incentives for better international financial integration.* Coordination improved during the early days of the crisis, but has largely lapsed since. Financial regulation and supervision remain largely national. Still there has been some progress. Supervisory colleges have been set up for the G-SIBs; there is some (but not enough) sharing of information on bank exposures across jurisdictions. The most important issue that needs to be tackled convincingly is cross-border burden sharing – both governmental costs of supporting cross-border banks and the allocation of remaining assets in the situation of a resolution or liquidation. The banking union in the euro area is a step in the right direction, but much of its details still need to be worked out. More generally, supervision of parent and cross-border subsidiaries relationships for financial institutions is still murky (e.g., which entity should or can hold capital, pay dividends, or fund assets under various circumstances) and the thinking about these issues is often domestically oriented – again resulting from the lack of a governmental burden sharing arrangements.

International coordination of the activities of global markets, including debt issuance, trading, OTC derivatives reforms, and a host of reporting and disclosure issues is even less well-developed. Some guidelines have been issued by IOSCO and the Committee on Payments and Settlement Systems (CPSS), but they are not focused on systemic risk regulation, but on level-playing field considerations and establishing minimum requirements of various types (often devolving to the lowest common set to which all can agree). The thinking is just beginning about how interconnections across jurisdictions may alter how crucial institutional infrastructures might be affected under stress.

The FSB was set up, at least in part, to ensure better international coordination across financial regulatory regimes – and it has had some success in doing so. However, as with most international bodies (e.g., the Basel Committee, IOSCO, and the CPPS) decision making has to occur by consensus and the FSB has no mechanisms for enforcement of its guidance beyond peer pressure. Consideration of a body with global jurisdiction and authority has been bandied about, but the crisis did not provide enough impetus to develop such an agency.

### **C. Better data and information to reduce the unknowns**

The goals of preventing financial crises and accurately assessing the efficiency of financial services require much better data (not necessarily more) in multiple dimensions, for both the private sector and supervisory agencies. Those tasked with evaluating individual financial institutions require better financial statements, since some aspects of financial services provision remain obscure (“buried in footnotes”). And forward looking risk analysis is generally lacking (although it has improved over time). Even better disclosures, moreover, will not improve decision-making unless this more salient information becomes embedded in the decision making processes of financial firms and their customers. Some research has documented that only when this “embedding” is complete do disclosures begin to accomplish

their stated policy goals.<sup>32</sup>

At the system level, regulators should especially seek better and more disaggregated information on the costs of financial services, data on (aggregate and bilateral) exposures, including in shadow banking and OTC derivatives markets, and the extent of use of new instruments. Another area crying out for more data collection concerns more granular international capital flows in their various forms and cross-border exposures (see Cerutti, Claessens and McGuire, 2014).<sup>33</sup>

Raw data can be useful, but more and better analyses are at least as important. Besides trying to predict individual defaults and systemic risks using balance sheet related measures, including bilateral exposures, there have been a host of new systemic risk measures, such as the MES, CoVar, and SLR, which appear promising.<sup>34</sup> There remains, nevertheless, a large need for the development of better indicators and tools that can signal risks in a more timely fashion and evaluate their usefulness in various circumstances. Much of this work will likely remain confidential (to supervisory agencies), but information that does not compromise individual privacy concerns or unduly damages competition can be usefully made public to enhance market discipline. Analyses can for example be included in (global) financial stability reviews, which should also be conducted more frequently and be better resourced.

Financial system stress tests offer another means of trying to discern the impact of a systemic or tail event. Regulators should make the further development of techniques and data for financial system stress tests a priority; they should also conduct such tests more regularly. And finally, while the development and use of these and many other, formal analyses will be useful, it will remain important to combine them with “market intelligence” to gain a deeper understanding of why some risks are undertaken as well as to spot newly emerging risks. Observing new trends and talking to a variety of market participants and end users often produces useful “soft information” that lead to more formal data requests and analysis.

Generally though, modesty will remain important. As noted, we do not (yet) know many of the reasons why systemic risks build up, how these varied risks interact, or, more generally, how to avoid crises. This lack of knowledge even applies to the effects of what we think are the right incentives (e.g., does higher capital really lower incentives for risk taking overall?).

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<sup>32</sup> See Weil, et al. (2006) for a fuller discussion of this concept using eight case studies ranging from corporate finance to health and safety. They demonstrate the importance in tailoring the regulatory disclosure regime to how users do (or should) make decisions using the information so that the public policy goals are met.

<sup>33</sup> For what information is needed for financial stability analysis see Kodres (2013) and for current progress with the G-20 Data Gaps Initiative see Heath (2013).

<sup>34</sup> These are market-based risk measures that develop use market (as opposed to accounting) data to measure systemic risk. The Marginal Expected Shortfall (MES) measure has been developed by Acharya et al., (2010). The MES of a financial institution is its short-run expected equity loss conditional on the market taking a loss greater than its value-at-risk at a specific (predefined, tail) percentile. The Conditional Value at Risk (CoVaR) has been developed by Adrian and Brunnermeier (2011) and represents the value-at-risk (the loss) in the financial system conditional on one institution being under distress. The Systemic Liquidity Risk (SLR) is a global indicator of systemic liquidity stress developed by Severo (2012). It measures the breakdown of arbitrage conditions in major markets using the first principal component of a number of arbitrage violations in international financial markets.

And it applies to how to exactly design, calibrate, and use tools such as macroprudential policies without inducing unintended consequences, including, for example, the migration of risks to less regulated areas or to institutions or individuals unable to manage them. The lack of knowledge also extends to the drivers and the buildup of risks. How do buildups of risks in insurance and pension systems exactly come about? How, for example, do endogenous tail risks develop, say, through shadow banking?

Even as we obtain higher quality data and refine our analyses of these significant issues, formal knowledge will always remain limited, especially with rapidly evolving financial systems. This does not mean that we must resign ourselves to periodic financial crises. There may be scope to better use existing (collective) information and analyses that is already out there. Market participants, for example, have tried to develop “model-free” indicators to warn of the next “Black Swan” that will adversely affect markets (e.g., the number of Google hits of the words “crisis” and the like, etc.). Needless to say, not all of these efforts have been successful – many have analytical failings and most suffer from “in-sample” biases, making them less useful for predictions. Nevertheless, there are perhaps more ways to extract information from public sources than what has been done to date.

It may also be feasible to better use other sources of information or develop some markets that can reveal unknown or show unexpected risks. For example, the Iowa Electronic Markets allow traders to buy and sell, among other things, political elections results or economic indicators.<sup>35</sup> These aggregators can usefully provide additional information to that from financial markets or other sources. It may also be possible to develop new markets that can both serve to indicate the presence of systemic risks as well as to lay off some risks (e.g., see Brunnermeier, Krishnamurthy, and Gorton (2013) for ideas on a systemic liquidity risk measure of this type). Such indicators and markets could indirectly help to reduce the risk of financial crises though, careful attention to the types of participants and structure is important to avoid manipulation.

#### **D. Assume crises will recur, improve crisis management**

Unfortunately, even with improvements in all these areas, crises will likely recur. How one responds to crises will thus remain important. Here the recent record is better (say compared to what happened in the Great Depression) but still relatively poor. Interventions are often too late, too timid, and not well coordinated. This leads to a larger final taxpayer bill and higher economic costs – in the form of lost output. There is thus a need to do better.

There are relatively well-known lessons here at both national and international level that could be applied (better). The main one is the need to absorb any losses resulting from the crisis – whether in the financial, corporate, or household sector or at the sovereign level – as quickly as possible. In practice this means quickly recapitalizing banks when needed; having strong, efficient, less creditor-biased resolution and restructuring mechanisms to resolve overindebted corporations and households; and to quickly restructure sovereign debt if necessary, including through the use of concerted mechanisms (such as collective action

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<sup>35</sup> See [www.tippie.uiowa.edu/iem](http://www.tippie.uiowa.edu/iem).

clauses and the like). Another general lesson is the need for the capacity to efficiently and flexibly respond to a crisis. The large, but unplanned role of central banks during the (ongoing) crisis in advanced countries demonstrates the need to have this spare capacity. While there are tradeoffs here – too much spare fiscal capacity may introduce moral hazard – some ability of the central bank to manage unanticipated contingencies is nevertheless important.

## V. CONCLUSIONS: WHAT DO WE HAVE TO DO IN ORDER TO DO BETTER?

Given the many similarities in their run-ups, one would hope it should be possible to prevent financial crises. Yet, to date, that seems to have been an impossible task (of course there is a counterfactual – that many crises have been avoided – but it is hard to prove). Indeed one of the main conclusions of any review of the abundant literature on financial crises (e.g., Claessens and Kose, 2014, Reinhart and Rogoff, 2009, Allen and Gale, 2007, Kindleberger, 1978) is that it has been hard to beat the “*this-time-is-different*” syndrome. This, as aptly described by Reinhart and Rogoff (2009), is the belief that “*financial crises are things that happen to other people in other countries at other times; crises do not happen to us, here and now. We are doing things better, we are smarter, we have learned from past mistakes.*”<sup>36</sup> Although often preceded by similar patterns, policymakers tend to ignore the warnings and argue that: “*the current boom, unlike the many booms that preceded catastrophic collapses in the past (even in our country) is built on sound fundamentals... .*”

Leading up to a crisis, it is often claimed that the reasons for apparent vulnerabilities are different from those of the earlier episodes. Before the latest episode, the notions that risks were well diversified across agents and advances in risk management techniques and institutional frameworks were used to justify the belief that “*this time is different.*”

After crises, however, reforms remain often incomplete. One of the difficulties in making overall progress is that crises tend to instill forward momentum on obvious failings, but often ignore the underlying, deeper causes. Moreover reform processes (especially in advanced economies) take significant time for construction, debate, refinement, and implementation during which the public cries for reform diminish and financial sector lobbyists regroup to water down the reforms they perceive as lowering their profitability. The energy for reforms wanes and the perception of the benefits become distant memories. Rationales for enhancing crisis management and resolution also appear less urgent as the immediate crisis fades into the background.

This pattern suggests that one should be quite modest about the depth and impact of many financial reforms in beating the “*this-time-is-different*” syndrome. Indeed, many of the incentives for risk buildup are still present – despite regulatory reforms. Hence, to be more successful, the starting point must be a better understanding of people’s mindset and behavior. Moreover, a deeper understanding about why the previous set of rules has been unsuccessful in preventing crises is needed. And it is important to look carefully for all signs of risks and allow different views to be heard. It appears that prior to many crises, a small minority of onlookers *do* observe that a crisis is coming but they either do not have the

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<sup>36</sup> See also Reinhart and Rogoff (2013) which has the apt title “Banking Crises: an Equal Opportunity Menace.”

incentive to try to prevent it (perhaps because they benefit from the buildup of risks or the crisis itself) or do not have the means of convincing others of their insights.

The most recent crisis has convinced many policy makers and academics that the financial sector paradigm that emerged over the past quarter century is due for changes, both to mitigate the frequency and severity of financial crises and to reorient the financial sector toward activities that benefit society at large. To achieve these objectives, reforms must shift toward how benefits are allocated and risks occur, which in turn means rethinking both governance strategies and the fashioning of incentives. Changing governance will be complex and require altering both the set of stakeholders involved (including governments) as well as the processes that set the rules of the game. Although many stakeholders are involved in financial services, not all are well represented.<sup>37</sup> Improving governance and processes thus requires greater representation of some groups, especially those that are currently not present in the discussions (such as households and other end-users).

Representation and governance is largely an (international) political economy question, on which economists traditionally have had little to say, but they can nevertheless raise questions. How can relevant parties, including the general public, be better mobilized to demand a bigger say in discussions? How can one better harness the power of nongovernmental organizations, such as “99%”-type movements and other such groups, so that they advocate for a better balance of benefits and risks in finance? Of course, it is also relevant to better understand existing stakeholders’ objectives and views. How uniform or diverse are they actually? Does the lack of an effective voice from emerging markets in global regulatory reform for example derive from their diversity, as groups like the BRICs are not necessarily unified in their views? Would it be helpful if their views coalesced better?

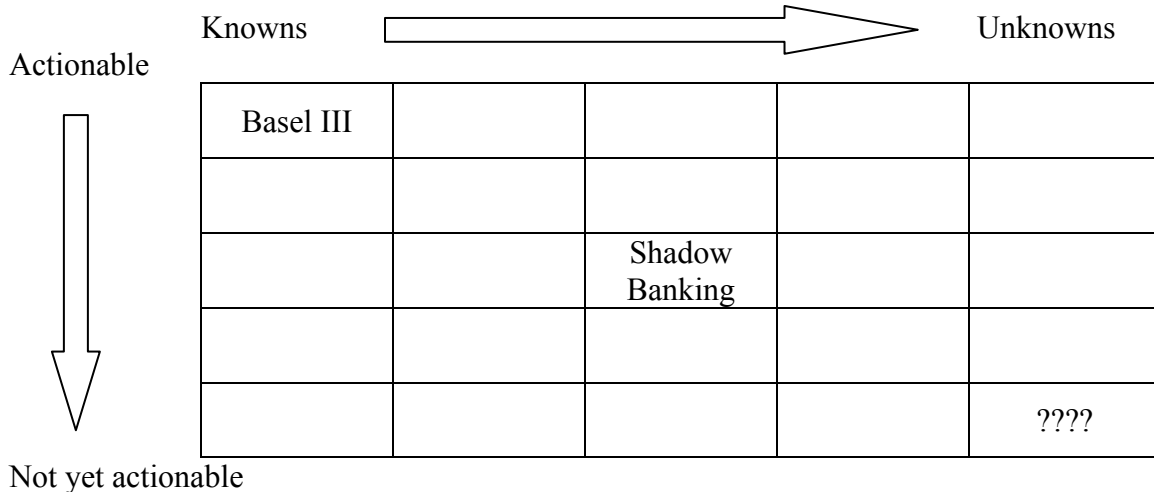
At this juncture, several years beyond the height of the crisis, the financial reform agenda is still only half-baked at best. As noted above, some reforms gesture in the right direction, but don’t go far enough or have not been implemented fully. Others are either in conflict with one another or appear to have unintended consequences. Policy makers continue to face severe constraints including complicated governance frameworks, unfavorable structures of political economy, limited knowledge, and stiff political opposition to implementation of reforms. Aside from the greater understanding of incentives of agents and the political economy of reform, how can we make progress on the designs of reform from analytical and empirical points of view? One way of visualizing the efforts so far and what to do next is to consider two dimensions of regulatory reform. One dimension could be the degree of knowledge about what needs to be done – as a gradient from “knowns” to “unknowns.” A second dimension would be the practical ability to formulate the regulations – as a gradient from “actionable” to “unactionable.” Of course these two dimensions are not separable (a point driven home by Figure 1 below) since how actionable a policy is will depend on the

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<sup>37</sup> In most countries, while providers of financial services are well represented, users, notably households, but also many institutional investors, are much less so. Much regulation is also determined through groups, such as the Basle Committee on Banking Supervision, where advanced countries dominate, with emerging markets much less represented than their current economic sizes warrants, and low-income countries hardly represented. With the ongoing shifts in income and financial assets toward emerging markets and developing countries, these discrepancies are likely to increase.

state of knowledge. When knowledge is based on “soft” information as opposed to “hard” data, political constraints become more difficult to overcome and policies appear less actionable.<sup>38</sup>

**Figure 1. Knowns and actionable**



So far the upper left box of the “knowns” and “actionable” figure has been the focal point, as it has been relatively easy. Regulation on bank capital is a good case in point. Larger capital buffers are known to help mitigate losses and there was already a large set of regulations dealing with bank capital. So tweaks to this area of regulation are relatively easy to define, explain to the relevant agents, including lawmakers, and accomplish. Moving down the diagonal of this “matrix” might be the topic of shadow banking. We know something about how financial institutions operated in this area in this crisis and how bank like-products emerged, but not everything is known, in part because of limited models and insufficient data. The basis on which regulation can be formulated may thus be only partially actionable, as the slower progress on shadow banking reforms shows.<sup>39</sup>

There are many areas that need attention, unfortunately, in the lower quadrant of the matrix: areas where a deep understanding of the problem is still nascent and actionable policies are lacking. For instance, many may feel uncomfortable about the speed and degree of automation of transactions in stock and foreign exchange markets or in the ETF markets with its broad retail participation. We do not know, though, if it would be useful to put “sand in the gears” of the trade execution system (e.g., put so called latency limits on High-Frequency Trading) or whether that would cause more harm than good (e.g., not just higher spreads/costs or lower liquidity, but even more volatility). Also, although we have a vague

<sup>38</sup> Agur and Sharma (2013) make these points.

<sup>39</sup> For instance, the repo market in the United States is known to have procyclical haircut (margin) practices and there has been discussion about how to ensure that these do not become too low in the upswing of the credit cycle. But, as yet, no one is quite sure whether such a rule will not distort the market in a way that is more perverse. Neither is it clear how to impose a minimum floor because a repo is not necessarily initiated from one side (borrower) or other side (lender) of the market. Moreover, since these transactions are not on any organized exchange or location, enforcement is problematic.



unease that there may be a “tipping point” in these fast-moving markets, we do not know how to identify it or what would happen if the market suddenly passes such a point.

The real issue, then, is how to gain enough understanding and practical knowledge to move further down the diagonal of this matrix. One way forward is to design ways of connecting the increasing number of measures of systemic risk directly to mitigation tools. So far this is done in a relatively simplistic way (e.g., size, interconnectedness, and substitutability are the sole criteria for G-SIBs/G-SIFIs) without really linking the “systemicness” to the tool (except for the rather coarse way in which Basel III assigns a systemic surcharge). If overseers could directly see the marginal contribution of each individual institution or agent to systemic risk, then one can devise a ‘cost’ (“levy”) that will provide an incentive to lessen that contribution, and thereby internalize the externality.

Even though the point is obvious, it bears repeating that all this requires the right information and ability to analyze it – without these basic building blocks the development and implementation of better policies will be inhibited. Here again incentives will play a role. Confidentiality agreements, the power from holding onto data and information, and the incentive to keep embarrassing information about the (missed) risks of individual institutions hidden, all stymie better understanding of the evolving financial systems. Independent and accountable institutions, whether national, regional or global, must receive the legal and administrative wherewithal to gather sufficient data and identify emerging risks.

In closing, to move forward to reduce systemic risks requires attention to three basic lessons.

- While much progress has been made since the crisis, policy makers (and market participants) need to think even more system-wide in their risk monitoring efforts and reforms. This system view should include not only many (new) forms of analysis, but also become a process in which supervision is primarily geared to oversee the financial system in its entirety. And a system view has to include the adoption of macroprudential and other policies that explicitly address market failures and externalities.
- Incentives matter, yet they are not nearly well enough incorporated into current regulations. Many problems will not be solved until one better understands the incentives of all those involved and regulations better align incentives with goals. Here, the ability to fine-tune regulations is likely to be low – given information constraints, the lack of appropriate data and information (including “soft,” qualitative information). Hence regulators would do well to take a “do not harm” oath in setting policies – using basic principles and simple measures when information on effectiveness is lacking.
- Risks and uncertainty will remain, in part as a conscious risk-return tradeoff and in part as there will always be unknown unknowns – be they tipping points, fault lines, or spillovers – and more data and information are clearly needed. It will thus pay (probably literally) to have a “plan B” – good crisis management plans for when preventive measures fail and risks occur. These plans need to be integral part of the design of the financial system as a whole, not improvisations after the fact.

With these basic components, we believe faster forward progress could be made than is currently the case.

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