

**Financial Regulation After the Crisis:  
How Did We Get Here, and How Do We Get Out?**

By

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# **Financial Regulation After the Crisis: How Did We Get Here, and How Do We Get Out?**

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William Brough Professor of Economics and Chair, Center for Development Economics at Williams College. Paper prepared for the 2013 Asia Economic Policy Conference at the Federal Reserve Bank of San Francisco. James Barth, Charles Calomiris, Stijn Claessens, James Hanson, Takeo Hoshi, Ross Levine, Ashoka Mody, and participants at the conference provided helpful comments. The conference organizers and Kevin O'Rourke posed questions that inspired the focus of the paper. The author would like to thank Brian McNamara for excellent research assistance. As usual, responsibility for what lies herein rests with the author.

### **Abstract**

Following the crisis of 2007, regulatory authorities either are or should be engaging in a fundamental reconsideration of how they approach financial regulation and supervision. This paper briefly summarizes the present international consensus on regulation as embodied in the Basel framework, looks at how we came to be in such a situation, and proposes a re-start of the process that has been organized by the Basel Committee on Bank Supervision. It reviews the flaws of that framework and concludes that its weaknesses are fundamental, in its neglect of the endogeneity of risk to the regulatory structure, and of the dynamic nature of finance, and thus of its regulation as well. Neither a static rulebook, nor an ever increasingly complex one, will ever provide financial safety and soundness. Specific recommendations are made, starting with an abandonment of risk weights and the adoption of a simple leverage rule, supplemented by CoCos, and some simple rules. More radically, a different approach is urged, one that focuses on the oversight and accountability of regulators and greater transparency, both of banks and of the regulatory process.

I come to bury Caesar, not to praise him. The evil that men do lives after them; the good is oft interred with their bones; so let it be with Caesar.

William Shakespeare, Julius Caesar, Act III, Scene 2

## **I. Introduction**

In the wake of one of the worst financial crises in history, governments in the United States and Europe are moving in fits and starts to adjust financial regulation, albeit in increments far smaller than virtually anyone with advance knowledge of the dimensions of the crisis might have imagined. Just as barn doors tend to be shut after a horse has escaped, banking crises routinely are followed by new and ‘tougher’ regulation. Regulatory change, tougher enforcement of existing rules, or both have been the norm following most modern crises, notably in the Great Depression, the U.S. Savings and Loans (S&L) crisis, and many emerging markets since the 1980s. Yet crises have showed no signs of abating or diminishing in severity, and their fiscal cost has exploded.

Discouragingly, many – including the author – believe that the reforms in the wake of the crisis that began (to be evident) in 2007 fall far short of what is needed to reduce the likelihood and severity of future crises,<sup>1</sup> and policy recommendations – somewhat to much more (and differently defined) capital, higher liquidity requirements, conditional convertible debt (or CoCos), narrow banking, criminal prosecutions, or all of the above – have yet to enjoy a consensus. Any solution that is effective will reduce the availability of credit from what it was in the extreme years during the run-up to the crisis, but notwithstanding the unwillingness of politicians to make that point, better-allocated credit would be a boon to societies. Just as the tech bubble saw investments financed that should not have been (e.g.,

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<sup>1</sup> Though hardly an arbiter of effective regulation, Time magazine’s recent cover (September 23, 2013) captured the concern: “How Wall Street Won: Five Years After the Crash, It Could Happen All Over Again.”

so-called ‘dark fiber,’ or fiber optic cables that still have not been utilized), the credit bubble in the 2000s featured unproductive investments in housing and a variety of consumer goods that left societies with high unemployment, a debt overhang and little else, save some empty houses, the memories of the borrowers and the enlarged wealth of many in the financial sector. Nonetheless, bankers are protesting that the response in the pipeline will produce financial disintermediation, denying credit to many and thus reducing growth.

As the title suggests, this paper looks at where the formerly<sup>2</sup> advanced countries are in terms of financial regulation and makes some suggestions about how countries might escape the current situation of a massively complex regulatory apparatus that is not producing banking sector that is both safe and yet still contributes to prosperity. Section II begins that task, focusing on how the current approach to regulation came to be the new norm. Section III reviews some lessons from the recent crisis, with the focus on the issues in which the author’s views differ from the majority position in the literature. Section IV then looks at Basel as a regulatory model and concludes that its fundamental shortcomings played a role in recent crises and that the approach to regulation requires ‘rebooting.’ Some possible ways ahead on the regulatory front are offered in Section V. Changing bank regulation and supervision is an arduous task, and as suggested by Calomiris and Haber in a forthcoming book, politics, not policy advisors, dominate the decision-making process. Erstwhile reformers therefore should know that their task will at least seem, and perhaps be, Sisyphean.

To anticipate the key conclusions, the Basel Approach to bank regulation and supervision is choking on its own complexity, as it continues to tackle three jobs: keeping the

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<sup>2</sup> The word ‘formerly’ is used because as will become clear the much vaunted regulatory ‘best practices’ that were the model for the rest of the world, and the supposed state of the art on bank supervision were part of the problem in causing the crisis.

banking system safe, leveling the playing field for banks, and being responsible for risk management at the individual bank level. Just as Soviet planners found that they had to intervene at an ever more granular level to avoid market participants adjusting in undesirable ways, the Basel Committee has responded to the failure of each of its Accords with an ever more complicated version. But beyond complexity, the Basel Committee has neglected the endogeneity of risk: its attempts to level the competitive field for banks have increased the covariance of banks' exposures, which should be anathema to bank regulators but instead has received little attention. Furthermore, there is no reason to think that harmonized policies will work the same in different institutional environments, which might be one reason why cross-country empirical studies cannot find any consistent effect of tighter capital regulation or increased supervisory powers (Barth, Caprio, and Levine, hereafter BCL, 2006). The upshot of these points – increasing complexity, endogeneity, and the differences in countries' institutional environments – means that the Basel Committee is playing at a game – literally, in that they are locked in a strategic battle with market participants – that they cannot win and should not be attempting to play. Temporary 'wins' will not only be short-lived, they will necessarily entail a 'loss' someplace else. Implications for what a new Basel Committee might do are discussed, beginning with an abandonment of the risk weighting of capital (and liquidity) requirements and the adoption of a meaningful leverage, or unweighted capital, rule. Additional specific measures are suggested as well for consideration by a proposed newly reconstituted committee with new membership.

Most tellingly, as has long been known, thanks to the seminal work of Ed Kane (1981) and Buser, Chen and Kane (1981), finance is dynamic, responding to and innovating around regulation. Indeed, this point was clear at the dawn of modern banking, when fledgling bankers used simple innovations to evade limits on usury despite the seemingly stiff

penalty (eternal damnation). The Basel answer to this problem of evasion has been ever-increasing complexity and ever-growing numbers of supervisors. But if finance is dynamic, then so too must be its regulation. The failure of regulators to use the powers that they had during the crisis alone calls for greater accountability. But the dynamic nature of finance, by suggesting either that legislators must constantly reconsider financial legislation (a scary thought), or that more discretion for regulators is warranted, also demands more accountability, as power without accountability is unsustainable in a democracy. Creative ways of disclosing more information should be considered, and one proposal related to compensation and risk management, is offered. No doubt there will be disagreements with many of the proposals, but the key points are that the current framework, like that of Soviet attempts to replace market forces with diktats, is doomed, and that a different approach focused on simple rules (that would actually be enforced), disclosure of information, and monitoring and accountability of regulators is long past due.

It is useful to delimit this paper. Humans' tendency to engage in searches for explanations – even of random events – tends to be equaled by their belief in single causes, or 'silver bullets.' Yet, in the experience of this author, most complex phenomena have diverse causes, the crisis of 2007 being a clear example. A global savings glut, integrated international capital markets with macroeconomic policies that fueled large capital flows, easy monetary policy, resulting in lowered interest rates and credit spreads, easy loan standards, a boom in toxic financial innovations, greedy bankers, and an unsustainable explosion of credit, have all been cited in explanations of the crisis, and no doubt these factors played a role. And a favorite explanation is the "perfect storm" story, namely the coincidence of all or many of these factors at once, which, it is said, could not have been anticipated. This explanation might better be labeled 'the perfect excuse,' as the coming

together of such a complicated set of factors was said to have made it impossible to anticipate or predict the crisis.<sup>3</sup> The present paper will not revisit that discussion, but rather focuses on the inefficacy of the current approach to regulation. As much as international capital flows and macro policies may have played a role, the author wishes good fortune to those who would reform the international financial system or find a way to guarantee better macro policy. Also, there is no intention here to let bankers and others in the financial sector off the hook for responsibility, and one can only applaud the efforts, unsuccessful in the U.S. thus far, to encourage prosecutions, subjects on which this paper will not dwell.

Also an important clarification on terminology that is not inconsequential. The term ‘regulation’ as a shorthand for regulation and supervision, and ‘regulators’ is employed for regulators and supervisors. This will no doubt bother some readers. However, regulatory agencies shift back and forth their personnel working on regulations and those working on supervision, so it seems fair that authors have a similar flexibility. More importantly, what most care about is an effective regulatory framework, which results from a combination of the regulations themselves and how they are enforced. Rules without enforcement are tantamount to no rules at all. In the instance in which the act or process of ‘supervision’ (or ‘supervisors’) is the focus, that term will be used.

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<sup>3</sup> See the Letter to Her Majesty The Queen (<http://www.ft.com/intl/cms/3e3b6ca8-7a08-11de-b86f-00144feabdc0.pdf>), by Timothy Besley et al, July 2009. Interestingly, the perfect storm explanation was first seen in a number of letters that hedge fund managers send to their clients in the fall of 2007 explaining the unusual losses incurred. Some went so far as to state or imply that even if the history of the universe were re-run a number of times, events seen that summer still would not have been anticipated. An alternative explanation – that their models were wrong, in part by ignoring the increase correlation of risk – was not voiced until much later.

## II. Where We Are, and How We Got Here

Before getting to the story of how we arrived at the current approach to bank regulation, a few facts about the shape of the banking system around the world are warranted. The financial world in North Atlantic countries now, compared with that a decade ago, in many respects is markedly different as a result of the crisis and policy efforts to deal with it. Around the world, we still see, as of 2011, tremendous differences in banking (and more generally, financial sector) development, shown in Figure 1 by the ratio of credit to the private sector relative to GDP. These differences reflect dramatic differences in the institutional setting, using this term in the sense of institutional economics and referring to the rules, laws, customs and other country characteristics that affect behavior. This figure then is a handy beginning, because a reminder of the substantial difference in countries' institutions and stages of financial development raises cautions for any attempt to impose the same regulatory systems in every country.

[Figure 1 goes here]

Banking itself, once argued to be outmoded, expanded rapidly from the 1990s (Figure 2) relative to GDP, using the broadest measure of global banking available from the Bank for International Settlements (BIS). Bank concentration is an increasing worry after the crisis, and Figure 3 shows how far it has advanced as of 2012. Although a high degree of concentration may reflect in part changing technology that allows greater capture of economies of scale and scope, the boom in bank mergers (below) emerged from the ending of U.S. restrictions on branching and the EU move to a single banking market. Other significant changes (BCL, 2013) include a significant increase in the share of banking assets

held by foreign banks in many countries since the late 1990s. In areas such as derivatives, a handful of institutions essentially are the market.

[Figures 2 and 3 go here]

These developments in the sector, featuring greater interconnectedness, larger size, a smaller share of state banks, and more dominant big banks, suggest that the regulation of the banking system is more important than ever. Against this background, what was happening with regulation?

Until the early 1980s, prudential regulation and supervision was relatively simple: many countries around the world relied on reserve, liquidity, and portfolio requirements, along with controls on interest rates, to keep the banking system safe. Some countries had more highly segmented financial sectors (notably the U.S., Japan – reflecting the U.S. influence in the immediate postwar period – and the U.K), while others relied on more universal banking systems; however, the author would be willing to bet that no industrial country had either budgets in real terms or staff devoted to prudential regulation and supervision equal to 10% of the current total.<sup>4</sup> With the decontrol of interest rates and decreased intervention on the asset side of banks' balance sheets, regulatory agencies, at first gradually, ramped up their efforts to substitute indirect prudential regulation and supervision for more direct controls. This effort was advanced in developing and emerging markets with

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<sup>4</sup> This statement reflects the perspective of someone who was working at the Federal Reserve Board in the late 1970s and early 80s, as the adjustment was beginning, and at the World Bank in the late 1980s and 1990s as deregulation was spreading around the world. Unfortunately, although the World Bank's first survey on Bank Regulation and Supervision attempted to get comparable data going back in time on budgets and staffing, it was not possible to do so.

the assistance of the World Bank and IMF, whose loans in the 1980s and 1990s often required deregulatory steps – in some cases, even where banks were insolvent! -- and offered technical assistance on the transition to less direct controls. Direct controls had broken down, as a result of the much greater volatility of the post-Bretton Woods era, the recycling of petro-dollars, and the increased financing needs of many governments. Financial disintermediation of the banking sector was a driving force of change.

The Basel Committee on Bank Supervision (BCBS) was formed in the 1970s as policy makers realized, at least from the 1974 failure of Herstatt Bank, the complexities associated with banks' cross border exposures to one another, especially in the case of bank failure, and the move away from direct controls was a key factor in expanding their work.<sup>5</sup> This effort soon focused on creating a level playing field for internationally active banks, and although established by the G-10 central bank governors, who might have been more concerned with systemic issues, quickly came to be dominated by a focus on individual banks. It is not clear which was cause and which was effect, but the Committee took a 'micro-prudential' focus, that is, looking at the banking sector on a bank-by-bank basis and in turn thinking about bank safety on loan by loan. The 1982 debt crisis, the subsequent failure of Continental Illinois, and the expansion of Japanese banks in the 1980s seemed to have been factors in the emphasis on capital. By definition, banks that fail have insufficient capital to cover their obligations, and as Japanese banks were dominant on lists of the top banks in the world and threatened to continue their expansion, thanks in part to an asset boom at the time that was boosting their balance sheets, including the market value of their capital, attention to the definition and minimum amount of capital seemed warranted. Also,

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<sup>5</sup> Goodhart (2011) provides the definitive history of the Basel Committee. The BCBS website contains many gigabytes of documents on the Basel process, but Goodhart benefited additionally from some unpublished material as well.

bank capital holdings had fallen from their much higher pre-Depression levels, reflecting both the extension of the safety net as deposit insurance expanded and an activist Lender of Last Resort (LOLR) approach became more widely accepted (Herring, 2011).

The 1988 Capital Accord, or Basel I, adopted the approach of a minimum risk-weighted capital ratio, justified presumably by the reasoning that banks differ in their degree of riskiness, and that it was unfair to require banks with a relatively low risk portfolio to hold as much capital as one with much greater risk. So the Committee agreed to a set of arbitrary risk weights, or risk buckets. The original Accord only covered credit risk, setting minimum capital as equal to 8% of risk weighted assets. An agreement on some market risk was reached in 1996. Two important features of the risk weighting of Basel I were first that government debt was accorded a zero risk weight and second, that the weight for most residential mortgages was 50%, whereas mortgage-backed (and other) securities – a bundle of presumably diversified mortgages – carried a 20% risk weight.<sup>6</sup>

Not surprisingly, financial markets continued to evolve, driven in part by the Basel Accord itself. Asset securitization took off in the 1990s, reflecting several factors, notably the differential risk weights in Basel I, as well as an increasingly quantitative approach to risk management, which in turn drew on the continuing steep declines in the costs of computing and communicating, as well as advances in finance itself. The result was that banks shed assets with higher risk weights to economize on their capital. The merger boom, described below, likely fed this process as well. In addition to the changing environment, the Basel Committee's recognition of the need to amend its Accord also was responding to the

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<sup>6</sup> As developing countries moved to adopt Basel I, they allowed their banks to use a zero risk weight for their own sovereign exposure, even though there is no evidence that the Basel Committee ever intended this application. Initially the committee's focus was on the largest internationally active banks in OECD countries.

criticism of the arbitrariness of the weights and in particular that the 100% risk category included so many disparate assets that were argued to differ in their risk attributes. Moreover, the Committee saw its first Accord quickly become adopted, at least in name, by most countries around the world.<sup>7</sup> Thus, in addition to a revision of the risk weights, the Committee, after repeating for years that its first Accord was not intended to apply to developing countries, appeared to be motivated by the goal of achieving an accord that was more general. The Committee also expanded its membership and the group with which it consults as well (see Tables 1 and 2). After a lengthy search for a new basis for assigning risk and eventually a new compromise, Basel II was published in 2004.

Basel II was based on three pillars: minimum capital requirements, supervisory review, and market discipline, though it was immediately noted that the pillars were unevenly developed. The bulk of the Accord was devoted to the first pillar, with the fewest -- 15 of the 239 pages (BCL, 2006, p. 69) -- dedicated to market discipline. Bank supervision was the focus of 17 pages, but this material was supplemented by many documents then on the Basel website, as the BCBS had already issued its Core Principles on Bank Supervision in 1997 and much intervening work of the Committee had been devoted to this area. Basel II's first pillar on capital (the focus of the revised Accord) also was distinguished by four variants: simplified standardized, standardized, internal ratings based (foundation) and advanced internal ratings based. What were the key differences? Risk weights in the first variant essentially were those of Basel I, except that the risk categories of export credit agencies could be used for sovereign risk; the second featured a few more risk categories and allowed the setting of weights according to the risk ratings of the export credit agencies or the ratings

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<sup>7</sup> For those not up to Goodhart's encyclopedic coverage, BCL (2006, Chapter 2) contains a shorter description of the Basel I-II era).

agencies (Fitch, Moody's, S&P); the third allowed banks to use their internal models to estimate their loss given a default; and the last allowed banks to go even further in using their own models to decide on their own risk weights.<sup>8</sup> Low and middle-income country authorities complained that the ratings agencies were pressuring them to adopt more sophisticated variants of Basel II than appropriate for the stage of development of their banking system, and private consulting firms rushed to sell models and technical assistance for their implementation – and even offered to run the models with U.S. data when countries did not have sufficient data of their own!

Most higher income and some middle-income countries were adopting Basel II in the 2004-2008 period and then this process was hit by the financial crisis. This event was especially jarring for the Committee because a number of the countries, such as the U.K., the U.S. and the largest EU countries, whose regulatory and supervisory systems under Basel were essentially the model for others, were the ones most seriously affected. And although Ireland was not necessarily a model, and in fact its banking system had been dangerously expanding for a decade with no regulatory check on its growth, it was given a very positive review in the Financial Sector Assessment Program Update (2006, p. 5):<sup>9</sup>

The Irish financial sector has continued to perform well since its participation in the Financial Sector Assessment Program (FSAP) in 2000. Financial institution profitability and capitalization are currently very strong, with Irish banking

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<sup>8</sup> Banks' expected loss can be written as the probability of default times the loss given default times the exposure at the point of default. Thus the foundation IRB approach allowed banks to use their models to estimate the second of these three elements, and the advanced approach permitted model estimation of the latter two. Powell (2004) presents a nice description of Basel II aimed at a developing country audience, reflecting the desire of authorities in many countries to move to that system.

<sup>9</sup> The FSAP is a joint program of the World Bank and IMF, with the IMF having chief responsibility for assessments of higher income countries and the Bank correspondingly a lead role in developing countries.

sector profits amongst the highest in Western Europe. Reflecting their good performance, the major Irish banks receive upper medium- to high-grade ratings from the international ratings agencies.

Although the report notes some risks associated with housing and its possible adjustment, it concludes (p. 6) "...the financial system seems well placed to absorb the impact of a downturn in either house prices or growth more generally." This suggests that both the yardstick and diagnostic capabilities were flawed, in particular given the problems with Irish supervision, below, in the years leading up to the crisis.

The latest variant by the BCBS is Basel III, agreed to in 2010 and subsequently revised.<sup>10</sup> It features a redefined and higher capital requirement, a liquidity requirement, likely a leverage requirement (the commenting period on this proposal just ended in September) and still greater complexity. In a speech on Basel III, Andrew Haldane (2011, p. 2-3), a critic of the complexity of Basel, describes Basel I as having 7 risk categories and requiring 7 calculations, whereas he rates Basel II/III as having more than 200,000 categories with more than 200 million calculations, though the latter apply to the advanced model approaches, and it is unclear how one arrives at a minimum or a maximum for either. However measured, it is undisputed that the complexity of regulation has increased, as reflected in the establishment of a Basel Committee task force on simplifying regulation. According to the press release issued with a discussion paper by the task force (BCBS, 2013a),

Mr. Stefan Ingves, Chairman of the Basel Committee and Governor, Sveriges Riksbank said: "The Committee is keenly aware of the current debate concerning the complexity of the current regulatory framework. For that reason, the Committee set up a Task Force last year to look at this issue in some depth. The

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<sup>10</sup> Basel 2.5, like Windows ME, can best be passed over.

Committee believes that it would benefit from further input on this critical issue before deciding on the merits of any specific changes to the current framework...’’<sup>11</sup>

Although the Committee is to be commended for recognizing the criticism of the enormous complexity of Basel III, as noted below, much of the history of Basel has been a relentless march to ever-greater complexity – and now it has spawned another task force. As argued below, it is not clear that the process can be stopped without a fresh start and fresh perspectives in the group. In fact, the BCBS focus on risk-adjusted capital ratios, the key source of the complexity of its approach, is unabated.

By any metric then, banking regulation seems as complex as it is has ever been. Compared with the Federal Reserve Act (only 31 pages) and the Glass-Steagall Act (37 pages), it would be an arduous task even to count the pages or terabytes of regulations and interpretations for the Basel Committee, not to mention the Dodd-Frank Wall Street Reform and Consumer Protection Act (2319 pages, plus requirements for 330 rule making provisions and more than 60 studies, BCL, 2012, p 172), the Vickers Report for the U.K. (a mere 26 pages), and the report of the Liikanen Group (153 pages) for the EU and supporting studies and rules. Bank regulatory agencies in the U.S., the U.K., and the EU are said to be substantially increasing the number of supervisors. According to the Basel Committee, as of their latest survey published August 2013, about 100 countries either had implemented or were in the process of implementing B-II that year, and about 72 were in the process of implementing B-III (and this definitely involves double-counting, as all 27 BCBS countries are listed as in both categories). The BCBS is not solely responsible for this situation, as this list reflects; Dodd-Frank for example was driven by the crisis and domestic

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<sup>11</sup> This statement is available on the BCBS website, <http://www.bis.org/press/p130708.htm>.

politics. Still, the approach to regulation that has been taken by Basel is a significant contributor to the present state of bank regulation.

### **III. What are the lessons of the recent crisis?**

A popular canard is that the crisis that began in 2007 was ‘made in America,’ with other industrial countries affected by financial contagion. The explanation as to why some countries were affected more seriously was said to be due to their greater exposure to securitized assets that were largely generated in the U.S. Yet authorities in the countries that seemed to have suffered the most in that crisis – Iceland, Ireland and the United Kingdom – have since put out multiple reports arguing that their crises were home grown, in the sense that they would have happened in the absence of the events following the demise of Lehman in September 2008.<sup>12</sup> The first two countries had only a minor degree of financial innovation, and like most crisis countries, none of them had any separation of commercial and investment banking – no Glass-Steagall – to repeal, two popular explanations for the U.S. crisis do not fit these crises. What they did have in common with the U.S. were incredible lending booms and in the case of the UK, the expansion in mortgage lending was largely backed by short-term funds. Northern Rock failed because of the outrageous extent to which it played the yield curve – not exactly the first time in history that banks have gotten into trouble in this fashion, and not due to securitization (which was less prevalent in the U.K. compared with the U.S. Official reports in all three countries conclude that the warning signals, notably the high double-digit growth of balance sheets, were clear in advance and that the crisis represented a failure on the part of regulators.

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<sup>12</sup> See BCL, Chapter 5.

The general phenomenon that characterized crisis countries was the failure by the regulatory authorities to enforce the powers that they had, notwithstanding the ludicrous risk taking that was occurring. There is no dearth of examples. The stratospheric expansion of Icelandic banks (their 'assets' grew to an order of magnitude greater than the size of the economy) failed to attract much supervisory resistance, and supervisors there were singled out in a Special Investigative Report of the Icelandic Parliament (2010, Chapter 21, pp. 98-104) as being understaffed, excessively meek in pursuing corrective actions, and willing to tolerate flagrantly risky behavior with little or no response. Or consider the slower but still suicidal expansion of the Anglo-Irish Bank's loan book (nearly 40% per year for a decade), which only elicited a letter of concern from the Irish Regulator and no follow-up for two-and-a-half years. As detailed by the Central Bank of Ireland's 2010 Report (Chapter 4), there were numerous examples of supervisory laxity on the part of the (then separate) Irish Financial Regulator, notably that all too frequently banks were violating their own lending criteria without facing a response from the Regulator. Like many regulatory agencies, the adequacy of staff resources was an issue. The 2010 report details (p. 62) how staff resources available for bank supervision declined to a mere 13% of the Regulator's total, but also the unfortunate fact that a group almost as large – 11% of staff resources – was devoting its time to Basel Committee and EU Affairs. The Irish report also notes the similar issue was cited in the U.K. FSA's report (Financial Services Authority, 2008, p 2-3) on its oversight of Northern Rock.

So rather than 'sticking to the knitting' of bank supervision, staff among other activities were spending time dwelling on the complexities of Basel – another common factor that while not limited to the crisis countries, was particularly intense there. Bureaucratic sport or mismanagement also played a role: responsibility for supervising

Northern Rock was kicked around the FSA like a football – 3 different lead supervisors in 2 years before its failure. It is worth repeating the verdict from the UK report (p. 34) as quoted in BCL (2012):

The FSA did not supervise Northern Rock properly. It did not allocate sufficient resources of time to monitoring a bank whose business model was so clearly an outlier; its procedures were inadequate to supervise a bank whose business grew so rapidly. We are concerned about the lack of resources within the Financial Services Authority solely charged to the direct supervision of Northern Rock. The failure of Northern Rock, while a failure of its own Board, was also a failure of its regulator. As the Chancellor notes, the Financial Services Authority exercises a judgment as to which ‘concerns’ about financial institutions should be regarded as systemic and thus require action by the regulator. In the case of Northern Rock, the FSA appears to have systematically failed in its duty as a regulator to ensure Northern Rock would not pose such a systemic risk, and this failure contributed significantly to the difficulties, and risks to the public purse, that have followed.

While the Irish and Icelandic reports have similar language criticizing their own regulators, the U.S. Financial Crisis Inquiry Commission was less harsh with both U.S. regulators (notwithstanding the examples below) and the banks. Apparently, it is more popular on this side of the Atlantic to say that mistakes were made than to detail who made them. These examples do not mean that new regulatory measures are unnecessary, but they do suggest that the lack of attention to enforcement and regulatory oversight is a grave shortcoming of many recommended responses to the crisis. And to the extent that new regulations are needed, regulatory officials were not known to be complaining in the run-up to the crisis that they needed more resources or powers. Indeed, the U.S. SEC went on record in congressional testimony to assure Congress that it was on top of its job of supervising the investment banks. For commercial banking, the revolution in risk management and in the sophistication on thinking about bank regulation, as embodied in Basel II, were regarded as a source of strength. Potential reasons why regulators were not more active in protecting the public’s interests are discussed below.

Regulatory laxity also was a clear concern in continental Europe, where a devotion to Basel was perhaps most intense. Banks there, along with other financial intermediaries, notably insurance companies, were buying securities with higher rates of return than other securities in their risk class. The claim that European and U.S. regulators were trusting the ratings on the securities is hardly a defense; given the strong positive correlation between risk and return, vigilant regulators would have been asking whether these higher return securities were as safe as those with comparable high ratings (e.g., comparing AAA-rate CDOs with AAA-rated corporate bonds). There are no reports that those questions were raised.

Regulatory laxity of course was an important factor behind the U.S. crisis. BCL (2012) cite numerous examples, including: the Fed's late-1990s decision to allow banks to lower their capital by buying CDS from entities that the Fed did not oversee, and thus depended on the ratings agencies' views; the Fed and OCC's ignoring of information on widespread fraud in mortgage markets in the early 2000s and other incontrovertible evidence (e.g., widely advertised NINJA loans) of heightened risk in banks; the FDIC's failure to act promptly even to intervene in small banks (this from its own Material Loss Reviews); and numerous and flagrant instances of the SEC defaulting on its regulation of investment banks and ratings agencies, both of which affected commercial banks.

An important and easily observable factor in the crisis was the sea change in compensation in some countries, documented well in the U.S. case by Philippon and Reshef (2012), that began slowly in the 1980s and then accelerated in the mid-1990s. Although it is difficult to get data on compensation in the financial sector on a cross-country basis, pay packages that favored return and did not adequately, if at all, weight risk, seem to have been pronounced in the crisis countries and especially in the banks that were most in need of

support. As in the U.S., pay in a number of European institutions emphasized return and growth (BCL, Chapter 5), and these changed incentives seem to explain how separate units in banks such as UBS could play a role both in generating assets that were said to contain ‘toxic waste’ and yet be on the buying side as well for these instruments. Staff in both parts of that bank clearly, at least to their auditor, were being paid for returns, without regard for risk.<sup>13</sup> Such behavior is in line with Akerlof and Romer’s (1993) framework, as this type of compensation scheme is a form of looting, with the only uncertainty being how long it will take before the institution fails and those responsible escape.

How did this change in incentives in the financial system take place? After all, many U.S. and European countries had gone for years without a systemic financial crisis notwithstanding the turbulence of the 1970s, 80s and 1990s. One change that likely played a critical role is the merger movement in the U.S. and Europe, the former in response to the ending of limits on interstate branching in the 1980s and 1990s (Strahan, 2003), and the latter as a result of the drive to a Single Banking Market that picked up speed in the late 1980s ((Kleimeier and Sander, 2007)).<sup>14</sup> As mergers take off, banks tend to focus on the business of growing themselves – partly based on survival, partly also because bank executives discover that it is much more remunerative, not to mention more flattering to one’s ego (e.g., more media attention, potentially more political power, etc.), to be the CEO of a large bank than of a smaller one. When senior bank management assigns the top priority to the growth of their institutions, they tend to base compensation more on returns, and are less concerned about financial risk, since there is also a risk to slow growth, namely being taken over and even out of a job. Except in recessions and/or outright bank crises, markets

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<sup>13</sup> See the April 2008 Report by UBS management.

<sup>14</sup> See BCL (2012, Chapter 3) for more details on these merger movements.

tend to value expanding banks higher relative to their sluggish competitors. And of course this type of pay structure is consistent with the Akerlof-Romer looting story. Bankers know that when they hold stock or stock options, they get the upside of their risk-taking. To the extent that these risks pay off in the short run, the longer-run consequences are less relevant. ‘Volume-based’ compensation models, which first took root with the “2 and 20%” formula<sup>15</sup> for pay in hedge funds, spilled over to investment and even commercial banks, as business lines blurred. BCL (2012) even note that rating agencies – unbelievably – adopted a similar model, with pay based on securities rated. Compensation packages that generously rewarded returns or the volume of business permeated the sector in part due to overlapping labor markets – some people moving from commercial or investment banks to hedge funds, or from ratings agencies to a bank – but even more to the emphasis in the sector on growth. The sharp expansion of banks internationally (BCL, 2013) was part of the boom in the size of U.S. and European banks.

The consequences – more highly rated securities and more risk – were surprising only to those not paying attention. Risk taking was most pronounced where it was least regulated, which is why the large investment banks were the ones that failed or had to get access to the Fed’s support by becoming commercial bank holding companies. They had survived for years with more prudent pay practices as partnerships, where the partners had a truly long-term interest in the firms health (no put option there), but thanks to financial globalization and increased competition – including more mergers or takeovers in their

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<sup>15</sup> According to this formula, pay would equal 2% of the assets under management plus 20% of the return above some benchmark, though with no sharing of losses. Since investors often rush into top performing funds, it pays managers thus remunerated to take significant risks, have a good year, and cash in. Even though this strategy might lose over the longer run, without any claw back provisions in contracts, the managers get to keep this inflated reward.

sector – they went public, thus making their senior management agents for the shareholders rather than the principals of the firm.

This view on compensation is not without some controversy. Although Bebchuk, Cohen and Spamann (2010) and Bebchuk, Cremer, and Peyer (2010) find support for it, Fallenbrach and Stulz (2010) contradict it, arguing among other things that the most senior management (top 5 executives) of Bear Stearns and Lehman lost a significant amount of money when their firm failed. However, this latter view ignores that in the Akerlof-Romer looting framework, the stock price might merely be the tool for holding up the bank: an inflated stock price – and the excessive risk taking that fueled it – was the instrument by which senior management cashed out hundreds of millions of dollars in the years leading up to the crisis (as Bebchuk et al showed). Might they have cashed out more without bringing forward in time the collapse of their firm's stock price? That is not clear, and it is evident that the amounts that they extracted were considered, even by bank executives, to be a fortune. Moreover, the study of the compensation of the top five executives of banks – all that is permitted by the data – necessarily ignores the pay of many of the other executives who were paid extraordinarily well for earning higher returns without regard to risk, as documented well in the case of Lehman and UBS.

Those who view the crisis as an American Affair, spread by contagion to a group of innocent bystanders, often argue that it was the repeal of Glass-Steagall that caused the crisis. In addition to the point above (no Glass-Steagall there) on countries such as Iceland, Ireland, and the U.K., this view has trouble explaining why some countries saw a serious financial crisis while others did not.<sup>16</sup> To be sure, one factor in the severity of the crisis was

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<sup>16</sup> The link between the repeal of Glass-Steagall and the crisis is not always clear. For some it suffices to note that the period in which the G-S Act was in force was free of systemic crises;

the drying up of liquidity, but this was an event that was truly global. If the channel were primarily portfolio links, it does not appear to have been the case that the 3 hardest hit crisis countries in Europe were particularly large purchasers of CDOs. Instead, these countries had their own domestic lending bubbles that were set to explode, they were fed by incentive systems that favored risk and they were largely unrestrained by regulation and supervision. Ireland even adopted procyclical fiscal policies that worsened their eventual crisis and adjustment problems (Lane, 2003).

Many assumed that the adoption of extreme compensation models and the pursuit of growth at all costs – what would be regarded as ‘irresponsible’ behavior on the part of management -- would not occur; well-governed financial institutions were supposed to have the incentive to look after their business, and the fact that so many institutions engaged in the above types of compensation and took on absurd risks likely was part of what Alan Greenspan meant when he famously testified that his model of the world failed.<sup>17</sup> However, it has long been acknowledged in the corporate governance literature that shareholders with limited liability tend to favor greater risk, compared with creditors, as only the former benefit

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for others, it might be that the repeal of G-S marked an increase in compensation in the financial sector. As noted it is arguable that the latter was due to the merger boom and for the investment banks to the change in their ownership form from partnerships to public companies, which made their former principals to be agents of the shareholders. Globalization likely was at least as important a factor in the need to go public as competition from commercial banks, and investment bank management certainly exploited the change to reward themselves lavishly. To the extent that these arguments hold, re-installing G-S, without a change in incentives, will have little effect on the stability of the system.

<sup>17</sup> Greenspan also famously said: “Through all of my experience, what I never contemplated was that there were bankers who would purposely misrepresent facts to banking authorities... You were honor bound to report accurately, and it never entered my mind that, aside from a fringe element, it would be otherwise. I was wrong.” See Liam Vaughan & Gavin Finch, *LIBOR Lies Revealed in Rigging of \$300 Trillion Benchmark*, BLOOMBERG (Jan. 28, 2013, 4:54 PM), available at [http://www.bloomberg.com/news/2013-01-28/libor-lies-revealed-in-rigging-of-300-trillion-benchmark.html?src=longreads&buffer\\_share=65f56&utm\\_source=buffer](http://www.bloomberg.com/news/2013-01-28/libor-lies-revealed-in-rigging-of-300-trillion-benchmark.html?src=longreads&buffer_share=65f56&utm_source=buffer).

from the upside of risk taking, whereas excessive risk jeopardizes the promised returns for the latter. Similarly, although a well-governed institution presumably was thought to be one in which management answers to all shareholders, the difficulty of succeeding in addressing this principal-agent problem also is discussed in many texts.

Another at least debatable conclusion from the crisis is that higher capital ratios based on equity alone will insulate the economy from banking crises. Although at least ex post it is true that banks with more capital would have fared better, it is not clear that higher risk-weighted minimum capital requirements would have left them with more capital or less risk. In addition to the theoretical literature suggesting that the impact of higher capital requirements is ambiguous (Koehn and Santomero, 1980; Buser, Chen, and Kane, 1981) with one reaction being to take on more risk, some empirical evidence also is relevant. BCL (2006), using a large cross-country database, found no robust impact of tighter capital requirements, given the variation in those requirements as of the late 1990s, and Laeven and Levine (2009) showed that the impact of regulation, including capital requirements, varies with ownership structure. Banks with more concentrated ownership tend to take increased risk with an increase in capital requirements.

A limitation of these empirical studies is that the data are from the late 1990s, a period when capital ratios alone fluctuated within a relatively narrow range, compared with its historical variation since the mid-19<sup>th</sup> century, though the definition of capital requirements utilized includes factors that capture related requirements affecting the stringency of the definition of capital, which varies widely.<sup>18</sup> Still, these studies should be interpreted as

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<sup>18</sup> The capital regulation index includes variables related to how tough are provisioning requirements, the sources of capital, and how authorities verify those sources. Thus although many countries adopted an 8% minimum risk weighted capital ratio, they varied widely in

suggesting that modest variations in capital requirements might have little impact, whereas a substantial increase – say to 20 or 25% -- is outside their sample, so that their empirical findings might not apply. This appears to be a plausible point, because the possibility that banks with higher capital requirement might indulge in greater risk taking depends on that behavior not being observed by the market or by regulators. Although even a doubling or tripling of capital requirements could induce greater risks on the part of banks, the increased risk taking might be thought to be so large that it would be obvious to all. However, the absence of a regulatory response in the run up to the recent crisis, which saw a substantial increase in leverage and risk in banking, belies this reasoning. Many who hope that higher capital requirements will lead to safer banking systems point to the late 19<sup>th</sup> and early 20<sup>th</sup> century times when capital ratios were much higher and bank failures less costly (Calomiris and Gorton, 1991), however these earlier times differed in a number of dimensions (e.g., the many U.S. states and countries that had double- or higher liability limits).

A final and misunderstood lesson of the crisis is the impression that the market supposedly missed it, and that therefore ever greater reliance on official supervision and regulation is needed. In addition to the profits made by those who were vigorously shorting the housing market, some simple market ratios (Tobin's q) showed that equity markets were distinguishing between the 'crisis' banks that had to be bailed out or merged with others, compared with stronger banks, several years before the crisis (Haldane, 2011).<sup>19</sup>

Unfortunately, this information, embedded in equity pricing, did not lead to any regulatory action, and some of the troubled banks, such as Northern Rock, even were allowed to adopt

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the stringency of their provisioning rules, and lax provisioning standards leads to an overstatement of capital.

<sup>19</sup> To be sure, other market indicators, such as CDS prices, missed the crisis, but then some of these markets clearly were 'polluted' by skewed compensation models – clearly at work in the writing of CDS contract, for example.

the advanced IRB approach (a regulatory ‘blue ribbon’) and increase dividends shortly before they failed. The interpretation of the crisis with the supervisory community that it demonstrated that market monitoring does not work, and therefore that they must step up their efforts, is ill founded. Indeed, BCL (2012) show that this response was similar to those following earlier crises: more rules, with little attention to information and enforcement. Instead, the conclusion might be that supervisors should be spending less time on risk management and more time mastering – and disclosing – information that is in the market.

#### **IV. Basel as a Regulatory Model**

Perhaps the best-known drawback to the Basel approach is its complexity. Haldane and Madouros (2012, p. 4) argue that “...the more complex the environment, the greater the perils of complex control.” They also contend, as do Blundell-Wignall and Atkinson (2008), that banks were using Basel I and Basel II to reduce capital, returning funds to shareholders by reducing their higher risk assets. The later notes that Citi’s holdings of assets not requiring capital rose to close to half its overall balance sheet. Some ‘riskier’ assets were being moved to off-balance sheets entities. We do not know – thanks to the confidentiality of supervisory information, such as that embedded in bank examination reports -- if regulators ever considered that these assets might come back to the originating bank’s balance sheet, or if they worried about it daily.

Much of the complexity associated with Basel is a result of the attempt to gauge the risk of banks, and the BCBS shows no sign of backing away from this orientation.

In fact, it is clear that the Basel Committee wants all banks to limit the variation in risk weights for the same or similar assets. In the press release for the “[Report on the regulatory consistency of risk-weighted assets in the banking book issued by the Basel Committee \(July](#)

2013),” Stefan Ingves, Chairman of the Basel Committee and Governor of Sveriges

Riksbank, said:

While some variation in risk weightings should be expected with internal model-based approaches, the considerable variation observed warrants further attention. In the near term, information from this study on the relative positions of banks is being used by national supervisors and banks to take action to improve consistency. In addition, the Committee is using the results as part of its ongoing work to improve the comparability of the regulatory capital ratios and to enhance bank disclosures. The Committee will be considering similar exercises to monitor consistency in capital outcomes and assess improvement over time.

In other words, the BCBS has no intention of jettisoning its risk weights and its mission seems to be to have every bank assess risk in the same fashion. It is as if the BCBS sees itself as overseeing risk management in banks.

Basel’s approach to risk weights and risk models results from a confusion of regulator’s responsibilities with those of the market. Communist governments failed at the same task, trying to micromanage firms rather than allow prices and the profit motive to send the signals, and discovered instead that not only does replacing market forces require a large bureaucracy, but is ineffective as well. As documented in older editions of economics texts, Soviet planners found that they had to go beyond specifying the feet or pounds of glass output in order to avoid market participants adjusting in undesirable ways, such as producing glass either in sheets so thin as to guarantee a high rate of breakage, or so thick as to be opaque. In other words, people adjust to regulation based on their incentives, and those designing regulatory interventions need to factor this tendency into how they operate. This does not suggest that bank regulators should not have rules – some are suggested below – but that if bank management is not doing its job and corporate governance

is not working, then they should look to the deeper causes and avoid complex approaches to regulation.

This Basel approach has been a key contribution to financial crises since the late 1990s. Although the BCBS treats risk as an exogenous characteristic of assets, in fact it is endogenous. Persaud (2000) and Danielsson, Embrechts, Goodhart, Keating, Muennich, Renault and Shin (2001) made this point early when Basel II was still under discussion, but the BCBS has not addressed the point. Whether it is requiring banks to have the same risk weights (Basel 1) or to use the same or similar models (Basel II and III), the Committee's assumption is that risk is an exogenous property of various assets and that it can be estimated. However, the act of encouraging all banks to look at risk the same way and to reward them when they increase the proportion of 'low risk' assets in their portfolio increases the fragility of the banking sector. First, it increases the funds that are available to the asset classes that are claimed to be low risk, even though these estimates are based on a time when those assets had less funding available. Increased funding by the banks (and other sources) changes this important fact. Second, it increases the demand for assets that can be labeled as low risk, which in turn creates incentives to boost the supply of such assets. Basel's approach to risk weighting, along with the US approach to sanctioning certain ratings agencies and the passive acceptance of these ratings by regulators generally, led to an explosion in the revenues of these firms and a fundamental change in their internal incentive systems (BCL, Chapter 3).<sup>20</sup> The billions of dollars of commissions that were available to those creating complex securities at least in part were the result. Third, it ignores that fact

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<sup>20</sup> Regulations encouraging or requiring other financial intermediaries (insurance companies, pension funds, etc.) to hold highly rated instruments also contributed to the increase in demand for these assets and the rewards for those who could create what appeared to be safer assets.

that a given risk exposure entails different risk for different banks to the extent that their portfolios differ and therefore the given exposure's correlation with that portfolio will differ. This goes back to an 'original sin' of Basel, risk weights assessed one asset at a time, rather than recognizing that capital should be held based on the likelihood of unexpected losses for the portfolio as a whole. Basel II and III try to make ad-hoc adjustments to take account of this consideration, but the above quote and the BCBS drive to make risk modeling consistent suggests that it remains unappreciated.

Danielsson et al (2001) argue that ignoring the endogeneity of risk is innocuous in normal times but deadly in a crisis, because it encourages a simultaneous run for the exit, that is a simultaneous dumping of assets and drying up of markets for these assets as only sellers are to be found. The authors point to the Russian crisis of 1998 as an example of the impact of similar trading strategies on bringing about a crisis. However, now there is more evidence of the effects of the Basel approach to risk in recent crises. These events should make clear that ignoring the endogeneity of risk is dangerous even in normal times, because these are the times when exposures are built up and risk is changing. By rewarding banks for holding highly rated securities, Basel helped create the immense rewards that were to be had for manufacturing these securities, and for the build up in banks' exposure to so-called highly rated instruments, such as mortgage-backed securities and CDOs. Yet the ratings methodologies were long known to be faulty (BCL, pp. 68-73). The ratings agencies' models were recognized as flawed, they paid little attention even to diversifying the credit risk of the bundled loans, they ignored the changing population of borrowers and the fact that by representing financing at the same point in time, these securities shared interest rate and

credit risk, even though diversifying this risk was the justification for securitization.<sup>21</sup>

Moreover, a reliance on a similar approach to modeling ignored model risks: the model might be estimated with limited data; and any data set is inadequate since the adopting of modeling changes the world by increasing the covariance between banks' risk profiles. Thus a similar approach to risk contributed to the changed incentive system in banking and finance more broadly, and to the massive buildup of exposures to real estate and other forms of risky debt (e.g., Icelandic paper, which was bundled in some CDOs)

In addition to helping explain the severity of the 2007 crisis, the Basel approach also is a culprit in the Euro crisis, but though with many co-conspirators. Basel I assigned risk weights of zero to all OECD countries sovereign debt.<sup>22</sup> Although Basel II allowed for a more varied treatment, the EU assigned a risk weight of 0% for "...exposures to Member States' central governments [...] denominated and funded in the domestic currency of that central government (EU Directorate-General, 2010, p 6)." As a result, capital flowed to the periphery. Funding for example to Greece might have been in ample supply as a result of its membership in the Euro and the assumption by Euro-area banks that those governments would stand behind Greece. Still, it is likely that part of the capital flow resulted from this approach to risk weighting. The EU shares in the blame, but once a principal of zero risk for

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<sup>21</sup> The most straightforward case is for a security that contained a number of adjustable-rate mortgages. Those that were taken out when interest rates were low and were exposed to risk should rates have risen. Mortgages that had low or zero down payments, or were lacking verified information on borrowers, shared greater credit risk, which was not factored into models used by the ratings agencies. Similarly, mortgages taken out when real estate prices were high both relative to historical values and to incomes, were assumed to have the same risk characteristics as those originated when prices were much lower. BCL (2012) note that statements of former senior managers at ratings firms reveal that they were aware of shortcomings of their models and processes, but also that arguing for greater prudence not only was not rewarded in their firms but actually was punished.

<sup>22</sup> And even though the risk weight was set at 100% for non-OECD countries, outside the OECD, governments regularly allowed their domestic banks to adopt a zero risk weight for lending to their home government.

a government is established, it seems unrealistic to expect that any government could say that it was a higher risk than others. A system that relies on governments to commit political suicide in order for that system to work is not well conceived. And of course had the EU instead insisted either that risk models or ratings from ratings agencies be used for sovereign risk, the aforementioned problems apply: the models failed to take account of their simultaneous adoption by others, and ratings of sovereign debt are notoriously lagging indicators.

A legacy of both of these crises is a debt overhang and years of misallocated capital, both of which are contributing to lower growth. It is impossible to re-run history to see whether banks would have indulged in the same risk taking – after all, there were banking and real estate related crises long before the Basel Committee existed, and as noted in the previous section and the literature cited, there was no shortage of factors behind the crisis of 2007. Similarly, the Euro crisis was well anticipated by economists who pointed out that a fiscal and banking union were essential prerequisites for monetary union, and who knew well the lesson of Bretton Woods, namely that a fixed rate system without these prerequisites and missing symmetric pressure on deficit and surplus countries is doomed. However, it is reasonable to view the virulence of these crises as in part a direct result of the Basel approach. And barring a change in that approach, it will exacerbate the next one.

Returning to the issue of complexity, an additional consequence is that it makes it incredibly difficult to hold regulators accountable. Regulatory accountability already is made difficult by the confidentiality of information – an issue that needs revisiting – because it is impossible for the public or legislators to know what did the supervisors know and when did they learn it. BCBS guidelines on supervision focus on the information that banks are

required to make available to the supervisor, not to the public, nor do they have standards for supervisory disclosure.

Complexity also favors big banks – they have the large staff to deal with an increasingly cumbersome and costly approach to regulation, and thus can exacerbate the issue of excessive size and concentration in the sector. Thus Basel’s approach to regulation may have been a factor in the consolidation of the sector, noted above, though it is difficult to quantify its importance.

## **V. Lessons**

Paul Krugman has said that the last year or two has seen a remarkable change in the conventional wisdom on a number of macro issues – at least in his view.<sup>23</sup> What is remarkable is that following one of the most wrenching financial crises in history, the approach to financial regulation is essentially more of the same – a bit higher but still complex capital ratio, supplemented by a liquidity ratio and possibly a low leverage ratio. This review of where we are argues that it is time for a change. What guidance then might be offered, in particular given the focus of this conference, for Asian countries? Some conclusions are suggested by the above arguments as well as by recent research.

Recalling the opening quotation, no one would mistake this paper as an attempt to praise Basel. Burying it and starting over is an attractive proposition, as changes in orientation and thinking clearly are demanded. A new committee, perhaps with a different meeting place, dedicated to looking at regulation and supervision from a systemic or

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<sup>23</sup> He observes a change in professional opinion on structural unemployment, that fiscal austerity is expansionary, and more. See Paul Krugman, The Year of Living Stupidly, August 7, 2013, from his blog, the Conscience of Liberal, <http://krugman.blogs.nytimes.com/2013/08/07/the-year-of-living-stupidly/>.

macroprudential vantage is long past due. If Asian governments and emerging market authorities more generally were interested in increasing their role in what has been the Basel Committee, this change in direction should be a first priority. This new group – perhaps the Bali Committee – should be composed of those with responsibility for macroprudential regulation and should reach out to the researchers who are active in this area, rather than basing their work on the least common denominator approach of the Basel Committee. The recommendations here apply wherever the group meets – even if it is a very different group meeting in Basel.

An early accord by the ‘Bali’ Group should feature an abandonment of risk weights and an adoption of a simple, unweighted capital or leverage ratio. This would not only end the gaming of the system but remove an important source of increased covariance in banks’ exposures. Members of the current Basel Committee might argue that this would allow some banks to price their loans below other banks, and thus create an unfair competitive advantage for some banks – a ‘tilted playing field.’ The point is, to the extent that their exposures differ, variations on loan pricing should be accepted, as long as banks meet other regulatory requirements. To the extent that this loan pricing reflects excessive risk taking, there are better ways to deal with it than a horde of supervisors and a mass of complex rules. Banks with an large exposure on one area (a given sector, or their home market) would benefit from diversifying into another, but would meet with more competition in the former area from banks with the opposite portfolio. Stability would no longer be sacrificed on the altar of leveling the playing field.

Second, however high the capital ratio, and partly because not only is it impossible to know how high to raise this requirement but also in all likelihood the regulatory community will adopt a ratio too low, it is important to impose a contingent convertible debt

requirement (CoCos), along the lines proposed by Calomiris and Herring (2013). Well-designed Co-Cos would provide a more continuous cushion to protect taxpayers from having to inject funds into banks and importantly would serve as a check on banks that attempted to increase their risk even in the face of high capital levels. CoCos only would be effective if debt is not bailed out, though even the uncertainty of a bailout would encourage monitoring through this market, and would discourage greater risk taking and loan underpricing. Co-Co holders would not care about how banks price a given loan in a single market, but rather would monitor their overall pricing and risk management strategy. There are objections to some plans for Co-Cos, but the Calomiris-Herring plan meets them, and in effect functions like a gun pointed at the heads of managers, going off well in advance of bank failure.<sup>24</sup> Similar to proposals calling for mandatory subordinated debt, it would be important to make sure that the holders of Co-Cos have an arms-length relationship to the bank, a job that supervisors, freed up from worrying about risk weights, could fulfill. Co-Cos also could be used to improve the incentives for bank managers; as proposed by the Squam Lake Group (2010), banks might be compelled to hold Co-Cos in their bonus pool, with the requirement that their bonds convert to equity before those of other Co-Co holders, effectively insuring that they would take a loss).

Little has been said here about the Too Big To Fail (TBTF) issue. Even those who insist on the need to downsize banks have no analytical approach to determine where to draw the line. Co-Cos would help deal with this problem, as Calomiris and Herring point out, provided of course that governments are not there to bail out debt holders before the conversion takes place. The other key elements of their proposal – setting the trigger so that

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<sup>24</sup> It is not only possible to write a paper just on Co-Cos, many have. The interested reader is referred to Calomiris-Herring and the literature they cite.

conversion occurs well before insolvency, and making sure that existing equity holders are subject to a painful dilution – are critical to improve the monitoring of large, complex banks. Indeed, such banks might find it so painful to sell Co-Cos that they would downsize on their own.

Third, consideration should be given to some simple rules. Claessens, Ghosh and Mihet (2013) find that measures to discourage excessive borrowing, such as limits on debt-to-income, loan-to-value, and overall limits on credit growth and foreign currency lending, could be effective to limit booms during their expansion phase. Of all of these measures, restrictions on loan-to-value ratios for mortgages seems like the most promising, and also useful not just for prudential reasons but also consumer protection – as some who purchased homes with no down payment near the peak of a housing cycle discovered.

More radical still, it is past time for a different approach to regulation and supervision. The orientation of the Basel Committee has been to focus on the information available to the supervisor, and has seen the supervisor almost as a risk manager for the banks they oversee. Yet BCL (2006) found no evidence that supervision works in contributing positively to the development of the financial system or its resiliency to crises, and recent crises show that supervision was ineffective.

Thus two further key changes then are suggested. First, whatever regulators and supervisors do, they must face some credible accountability. Finance is dynamic; so too must be its regulation. Most static rules are possible to evade, implying that regulators must be given some discretion to respond. However discretion demands close accountability, otherwise regulators could become (even more) direct agents for banks, and the poor performance of regulators in crises requires effective monitoring as well. BCL (2012) argue that like sports referees, regulators were biased. While standard models of regulatory capture

might apply, it is plausible that psychological capture is at least as important. In sports, it has been convincingly argued (Moskowitz and Wertheim 2011) that the key explanation of home field advantage – the fact that in all referred sports, home teams win more games than visitors -- is the influence of the fans influence on the referees. Perhaps the most convincing evidence is from baseball, where electronic cameras – before their presence was known to the umpires – showed that the strike zone when the visiting team was at bat was significantly larger than for the home team.<sup>25</sup> Numerous other examples of referee bias were found, even though the referees maintained that they were doing their job in an unbiased fashion. Moskowitz and Wertheim note, however, that humans have a psychological need to be liked, and that the presence of instant replay in the sports that have adopted that technology was followed by a reduction in the home team's advantage.

BCL (2012) suggest that in banking, the bankers play the role both of the home team as well as the fans sitting in the plush box seats near the field. The public sits far up in the stands (in the 'nosebleed' seats), so far removed from the action that they cannot even see what is going on and even have trouble understanding the game. BCL argue for the creation of a Sentinel, a watchdog group that would have access to all of the information that the regulatory agencies collect and would have the job of publishing a regular report on the key systemic risks in the banking sector and what the regulators were doing about them. The goal is to instill greater regulatory accountability; the Sentinel would have no regulatory power whatsoever, just the power to interpret and reveal non-proprietary information. BCL

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<sup>25</sup> And in soccer it was found that when the home team was behind (ahead) in a close game, there were more (fewer) penalty minutes, whereas there was no bias when the game was not close. And the authors creatively show that times when the fans' influence on the players – the leading view of why the home crowd matters – is at its peak (e.g. when a basketball or soccer player is taking a foul shot or penalty kick) – there was no influence of the crowd (the percentage of foul shots/penalty kicked scored was identical for home and visiting teams.

also discuss some of the operational issues with making their proposal effective, including the need to offer compensation sufficient to offset severe limits on private sector employment. By revealing the key systemic issues in banking and what the regulators are or are not doing about them, the Sentinel serves as a type of ‘instant replay’ that has worked in sports to reduce home field advantage. Thus a Sentinel might have flagged that the Irish regulators were not stopping the 40% growth rate of Anglo-Irish Bank, or that this bank was violating its own lending guidelines in an alarming proportion of its loans; that the Fed was not acting despite its information about mortgage fraud; or even that overall leverage in several economies was increasing to alarming levels, calling for increased oversight. A Sentinel will not guarantee that regulators will act, but it increase the odds that they will do so.

Second, with risk weights ended, an important focus of regulation should be increasing the transparency of the banking system. Holders of Co-Cos want the best possible information, and supervisors’ job could center on compelling banks to disclose more information, ensuring that this information is accurate, and assessing penalties for inadequate and/or misleading disclosure.<sup>26</sup> As seen in the last crisis, although many knew of the lavish compensation in the financial sector, it was not well known how salaries were determined, and more disclosure in this area would be quite helpful in serving as a check on potential looting behavior. Regulators now regularly assess banks’ risk management systems, the most important ingredient of which is how they reward risk, including their boards’ oversight of

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<sup>26</sup> Charles Calomiris pointed out to me that Co-Cos would reduce the tendency of bank managers to try to use differential risk weights to lower their capital, because of the threat of being replaced. This certainly might be the case for banks that are closer to having Co-Cos convert, but it would seem that banks far from conversion, and with existing shareholders who want dividends, might well respond. And risk weights still are endogenous. I would rather depend on Co-Co holders to monitor the risk of the bank, as they will have every incentive to do so as long as never being bailed out.

this process. Indeed, in assessing risk management, how risk is rewarded should be the most important determinant. Merely publishing these scores would not violate anyone's privacy and yet would send a signal to banks' creditors and shareholders as to which were excessively risky compared with those more prudently managed (those paying out much of profits as current rather than deferred compensation, compared those paying bonuses deferred further into the future, with 'claw back' features or with debt, etc.). This disclosure is appropriate for any financial intermediary. If Co-Co holders, other creditors, and shareholders had more information on how compensation was being awarded at Lehman or AIG, as well as at WaMu, Northern Rock, or Anglo-Irish, their unhappiness likely would have been revealed in the prices of debt and equity.

An attractive feature of this approach is that markets and regulators would in effect be working together to support one another: more information, reviewed by supervisors, would improve monitoring by those with funds at risk, and clearer signals from the market (e.g., it would be difficult to ignore the signal when Co-Cos are triggered) would tell both management and supervisors when banks need to be wound down. A Sentinel or some substitute group, by holding regulators more accountable, would contribute to the quality both of regulation and the information available in the market.

With the ending of risk weighting, it would be useful also to end the encouragement or requirement to hold highly rated instruments in other parts of the financial sector (e.g. for pension funds or insurance companies) and to end the category of Nationally Recognized Statistical Ratings Organizations. Prior to these changes, ratings agencies were tiny, because they added little value (Partnoy, 1999, and Sylla, 2001). The SEC has repeatedly shown that it exerts no effective regulation over the NRSROs, and the existence of this category, along with legal requirements or inducements to hold highly rated paper, makes it difficult for

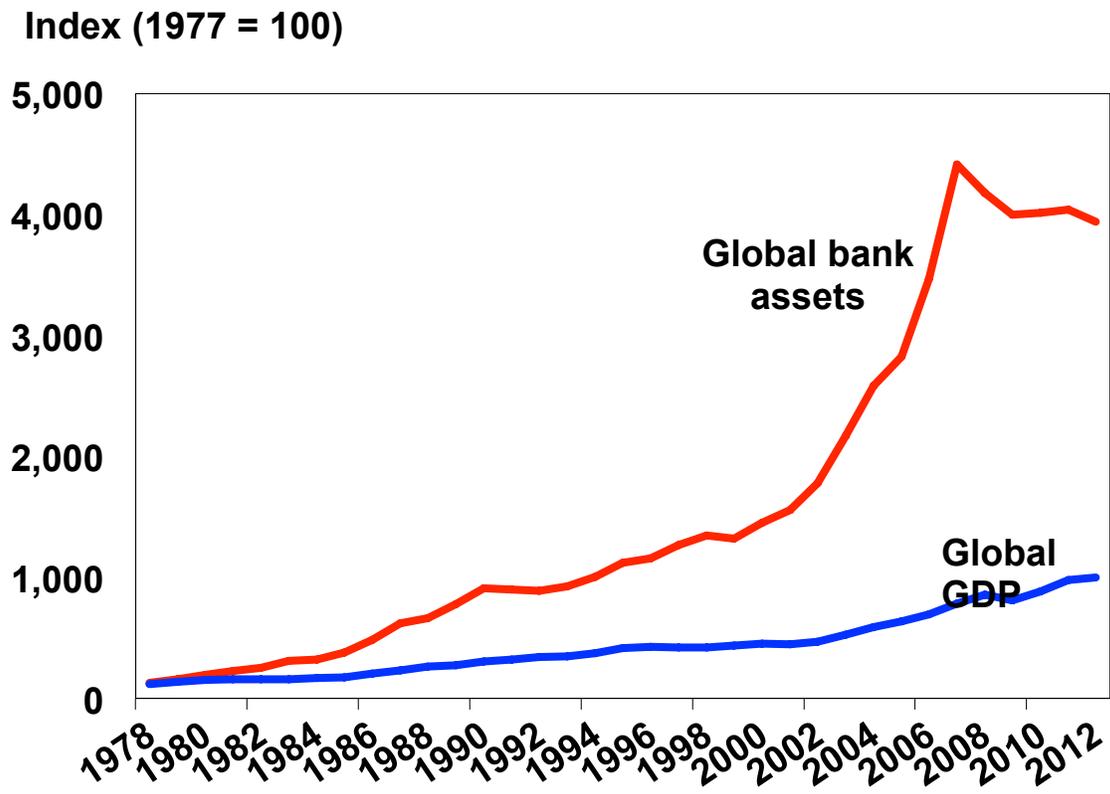
those harmed by these ratings (e.g., the pensioner who suffers when his pension fund buys highly rated paper that plummets in value) to seek legal redress. Without the comfort of these ratings, institutions will hesitate before buying complex securities, which is exactly what regulators who care about protecting their citizens should desire. National authorities should not wait for U.S. actions, as misleading ratings have contributed to the perversion of incentives in the financial system.

Final areas for consideration are the most challenging, having plagued financial regulation since medieval times when usury restrictions were circumvented. Goodhart (2010) has emphasized that as a result of boundary issues (the ability of regulated entities to shift prohibited activities to unregulated domains, whether in another part of the financial system or another location), it is better to think of controls as continuous variables rather than on/off switches, to lessen these concerns. The above recommendation on Co-Cos is an application of his point; rather than attempt to draw a line that either prohibits activities or size constraints, Co-Cos should work to gradually raise the cost of undesirable attributes of banking, such as excessive complexity. Similarly, a binding ceiling on pay would just drive risk taking on a wholesale basis into a less regulated part of the sector; greater disclosure of compensation practices might encourage some shift but would act as a countervailing force to the pressure of competition from other parts of the financial system to force an imprudent reward of risk in banking. Boundary issues are difficult, should be an important consideration in regulatory design, and are yet another reason to give regulators discretion. For example, allowing bank regulators to define a bank would give them the power to extend reserve and other requirements to money-market mutual funds, which owe their existence entirely to regulatory arbitrage.

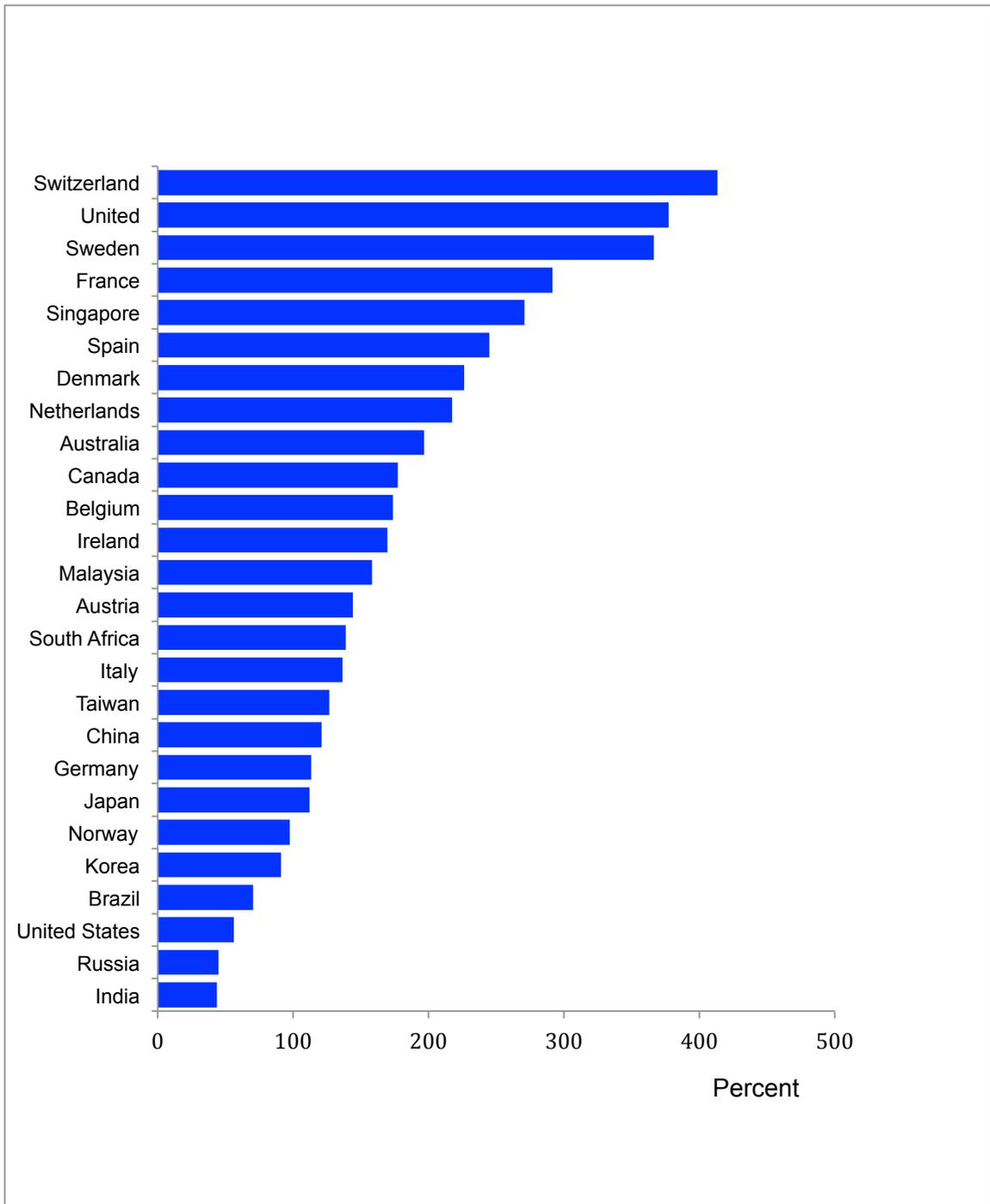
These recommendations, some of which would mark a sharp departure for bank regulation, presume that decisions are driven by results. Unfortunately, as Calomiris and Haber (2013) contend, political factors likely are the real driving force of what countries do, international politics included. Thus regulatory failures in their view (for example, the limits on branching earlier in U.S. history) are the result of political coalitions forming to secure the adoption of rules that benefit them. In this interpretation, large banks (along with regulators and perhaps even the hotel and restaurant industry in Basel) have been the primary winners from a complex risk-weighting system and have outmaneuvered the general public, which suffers from crises. Merely moving the meetings from Basel to Bali will not change this dynamic, even though the assertion of a greater role by Asian countries and other emerging markets will upset this process. That is precisely why a sentinel, meaning some oversight of regulators, is so important, as it would at least tip the scales a bit less against consumers and taxpayers in the battle over regulation by exposing the action of regulators. We have tried regulation without accountability and oversight and seen its sorry results. Is it not now time for a change?



Figure 2. Global Banking Assets (BIS Reporting Banks)



Source, BIS.

**Figure 3. Assets of the Top Five Banks (Percent of GDP)**

Source: Barth, Caprio, Prabha, and Warden

**Table 1. Membership in the Basel Committee on Bank Supervision**

Argentina	Central Bank of Argentina
Australia	Reserve Bank of Australia Australian Prudential Regulation Authority
Belgium	National Bank of Belgium
Brazil	Central Bank of Brazil
Canada	Bank of Canada Office of the Superintendent of Financial Institutions
China	People's Bank of China China Banking Regulatory Commission
France	Bank of France Prudential Supervision and Resolution Authority
Germany	Deutsche Bundesbank Federal Financial Supervisory Authority (BaFin)
Hong Kong SAR	Hong Kong Monetary Authority
India	Reserve Bank of India
Indonesia	Bank Indonesia
Italy	Bank of Italy
Japan	Bank of Japan Financial Services Agency
Korea	Bank of Korea Financial Supervisory Service
Luxembourg	Surveillance Commission for the Financial Sector
Mexico	Bank of Mexico Comisión Nacional Bancaria y de Valores
Netherlands	Netherlands Bank
Russia	Central Bank of the Russian Federation
Saudi Arabia	Saudi Arabian Monetary Agency
Singapore	Monetary Authority of Singapore
South Africa	South African Reserve Bank
Spain	Bank of Spain
Sweden	Sveriges Riksbank Finansinspektionen
Switzerland	Swiss National Bank Swiss Financial Market Supervisory Authority FINMA
Turkey	Central Bank of the Republic of Turkey Banking Regulation and Supervision Agency
United Kingdom	Bank of England Prudential Regulation Authority
United States	Board of Governors of the Federal Reserve System Federal Reserve Bank of New York Office of the Comptroller of the Currency Federal Deposit Insurance Corporation
Basel Consultative Group Secretariat	(full list of jurisdictions and institutions below) Bank for International Settlements

Observers on the Basel Committee:	European Commission European Central Bank European Banking Authority International Monetary Fund Financial Stability Institute
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## Table 2. Basel Consultative Group

Chairman: Herr Karl-Friedrich Cordewener, Switzerland

Chairman: Mr Bryan Stirewalt, United Arab Emirates

Austria	Austrian Financial Market Authority Group of Banking Supervisors from Central and Eastern Euro
Bulgaria	Bulgarian National Bank
Chile	Banking and Financial Institutions Supervisory Agency
China	China Banking Regulatory Commission
Cote d'Ivoire	Commission Bancaire de l'Union Monétaire Ouest Africaine
Czech Republic	Czech National Bank
Germany	Deutsche Bundesbank Bundesanstalt für Finanzdienstleistungsaufsicht
Hong Kong SAR	Hong Kong Monetary Authority
Hungary	Hungarian Financial Supervisory Authority
Isle of Man	Financial Supervision Commission Group of International Finance Centre Supervisors
Japan	Bank of Japan
Korea, Republic of	Bank of Korea
Malaysia	Central Bank of Malaysia Islamic Financial Services Board (IFSB)
Mexico	Association of Supervisors of Banks of the Americas
Netherlands	Netherlands Bank
New Zealand	Reserve Bank of New Zealand
Norway	Finanstilsynet
Philippines	Bangko Sentral ng Pilipinas
Poland	Polish Financial Supervision Authority
Qatar	Qatar Financial Centre Regulatory Authority
Saudi Arabia	Saudi Arabian Monetary Agency
Thailand	Bank of Thailand
Tunisia	Central Bank of Tunisia
United States	IBRD/World Bank International Monetary Fund
Switzerland	Bank for International Settlements

Source: BCBS,

<http://www.bis.org/bcbs/membership.htm>

## References

- Akerlof, George, and Paul Romer, 1993. "Looting: The Economic Underworld of Bankruptcy for Profit, Brookings Papers on Economic Activity, No. 2.
- Barth, James, Gerard Caprio Jr., & Ross Levine, 2013. "Bank Regulation and Supervision in 180 Countries from 1999 to 2011," *Journal of Financial Economic Policy*, Vol. 5, Issue 2, 111-219.
- \_\_\_\_\_, 2012. *Guardians of Finance: Making Regulators Work for Us*, Cambridge, MA: MIT Press
- \_\_\_\_\_, (2006). *Rethinking Bank Regulation: Till Angels Govern* New York: Cambridge University Press.
- \_\_\_\_\_, (2004). 'Bank Regulation and Supervision: What Works Best', *Journal of Financial Intermediation*, 12: 205–48.
- Barth, James R., Gerard Caprio, Apanard (Penny) Prabha, and Staci Warden, 2013. "New Developments in Banking and Bank Regulation in Countries Around the World," Milken Institute Research Report, forthcoming.
- Basel Committee on Bank Supervision, 2013. "Report to G20 Leaders on monitoring implementation of Basel III regulatory reforms,' mimeo, August. Updates available at <http://www.bis.org/bcbs/>.
- \_\_\_\_\_, 2013a, "The regulatory framework: balancing risk sensitivity, simplicity and comparability," mimeo, July, <http://www.bis.org/publ/bcbs258.htm>.
- Bebchuk, L., Cohen, A., Spamann, H., 2010. "The wages of failure: executive compensation at Bear Stearns and Lehman 2000–2008," *Yale Journal on Regulation*, 27, 257-282.
- Bebchuk, Lucien, Martijn Cremers, and Urs Peyer, 2011. "The CEO Pay Slice," *Journal of Financial Economics*, 102, 199-221.
- Besley, Timothy, et al, 2009. "Letter to Her Majesty The Queen," The Financial Times, July 22, (<http://www.ft.com/intl/cms/3e3b6ca8-7a08-11de-b86f-00144feabdc0.pdf>).
- Blundell- Adrian Blundell-Wignall and Paul Atkinson, 2008. "The Sub-prime Crisis: Causal Distortions and Regulatory Reform," in Paul Bloxham and Christopher Kent, eds., *Lessons From the Financial Turmoil of 2007 and 2008*, Reserve Bank of Australia.

- Buser, S., Chen, A., Kane, E., 1981. Federal deposit insurance, regulatory policy, and optimal bank capital. *Journal of Finance* 36, 51-60.
- Calomiris, Charles, and Gary Gorton, 1991, "The Origins of Banking Panics: Models, Facts, and Bank Regulation," in R. Glenn Hubbard, ed. *Financial Markets and Financial Crises*, National Bureau of Economic Research, 109-174.
- Calomiris, Charles and Stephen Haber, 2014. *Fragile by Design: Banking Crises, Scarce Credit, and Political Bargains*, forthcoming Princeton University Press.
- Calomiris, Charles, and Richard Herring, 2013. "How to Design a Contingent Convertible Debt Requirement that Solves Our Too-Big-To-Fail Problem," *Journal of Applied Corporate Finance*, Vol. 25, No. 2, Spring
- Caprio, Gerard Jr., Vincenzo D'Apice, Giovanni Ferri and Giovanni Walter Puopolo, 2010. "Macro Financial Determinants of the Great Financial Crisis: Implications for Financial Regulation," mimeo, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1695335](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1695335)
- Central Bank of Ireland, 2010. "The Irish Banking Crisis Regulatory and Financial Stability Policy, 2003-2008: A Report to the Minister for Finance by the Governor of the Central Bank," 31 May, <http://www.bankinquiry.gov.ie/The%20Irish%20Banking%20Crisis%20Regulatory%20and%20Financial%20Stability%20Policy%202003-2008.pdf>.
- Claessens, Stijn, Swati R. Ghosh, and Roxana Mihet, 2013. "Macro-Prudential Policies to Mitigate Financial System Vulnerabilities," forthcoming, *Journal of International Money and Finance*.
- Danielsson, Jon, Paul Embrechts, Charles Goodhart, Con Keating, Felix Muennich, Olivier Renault and Hyun Song Shin, 2001. "An Academic Response to Basel II," LSE Financial Markets Group, Special Paper No. 130.
- EU Directorate General for Internal Policies, 2010. "The Interaction Between Sovereign Debt and Risk Weighting under the Capital Requirements Directive – as an incentive to limit government exposures," mimeo, a compilation of briefing papers, Economic and Monetary Affairs, September, [http://www.europarl.europa.eu/RegData/etudes/divers/join/2010/447501/IPOL-ECON\\_DV\(2010\)447501\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/divers/join/2010/447501/IPOL-ECON_DV(2010)447501_EN.pdf).
- Fallenbrach, Rudiger and Rene Stulz, 2011. "Bank CEO incentives and the credit crisis," *Journal of Financial Economics*, 99, 11-26.
- Financial Services Authority, 2008. "The Supervision of Northern Rock: a lessons learned review," Financial Services Authority Internal Audit Division, March, [http://www.frank-cs.org/cms/pdfs/FSA/FSA\\_NR\\_Report\\_25.4.08.pdf](http://www.frank-cs.org/cms/pdfs/FSA/FSA_NR_Report_25.4.08.pdf).

Goodhart, Charles, 2010. "How Should We Regulate Bank Capital and Financial Products? What Role for Living Wills?" in Adair Turner and others, *The Future of Finance: The LSE Report*, London School of Economics, <http://harr123et.wordpress.com>.

\_\_\_\_\_, 2011. *The Basel Committee on Banking Supervision: A History of the Early Years, 1974-1997*, Cambridge University Press.

Haldane, Andrew, 2011, "Capital Discipline", mimeo, speech given at the American Economic Association, Denver, Colorado, January, available at <http://www.bankofengland.co.uk/publications/Documents/speeches/2011/speech484.pdf>.

\_\_\_\_\_ and Vasileios Madouros, 2012. "The Dog and the Frisbee," Speech by Mr Andrew G Haldane, Executive Director, Financial Stability, Bank of England and Mr Vasileios Madouros, Economist, Bank of England, at the Federal Reserve Bank of Kansas City's 366th economic policy symposium, "The changing policy landscape", Jackson Hole, Wyoming, August.

Herring, Richard, 2011. "The Capital Conundrum," mimeo, The Wharton School.

International Monetary Fund, 2006. "Ireland: Financial System Stability Assessment Update, IMF Country Report No. 06/292, August.

Kane, Edward, 1981, "Accelerating Inflation, Technological Innovation, and the Decreasing Effectiveness of Banking Regulation," *Journal of Fin.*, 36 May, 355-367.

Kim, D., and Anthony Santomero, 1994. Risk in banking and capital regulation. *Journal of Finance* 43, 1219-1233. Koehn, M., Santomero, A., 1980. Regulation of bank capital and portfolio risk. *Journal of Finance* 35, 1235-1244.

Kleimeier, Stefanie, and Harald Sander, 2007. "Integrating Europe's Retail Banking Market: Where do we Stand," Centre for Economic Policy Studies Working Paper 1548.

Koehn, M., Santomero, A., 1980. Regulation of bank capital and portfolio risk. *Journal of Finance* 35, 1235-1244.

Laeven, Luc, and Ross Levine, 2009. "Bank Governance, Ownership, and Risk Taking," *Journal of Financial Economics*, August, 93(2), 259-275.

Lane, Philip, 2003. "The Cyclical Behaviour of Fiscal Policy: Evidence from the OECD," *Journal of Public Economics*, Elsevier, vol. 87(12), December, 2661-2675.

Moskowitz, Tobias and Jon Wertheim, 2011. *Scorecasting: The Hidden Influences Behind How Sports are Played and Games are Won*, New York: Crown.

- Partnoy, Frank, 1999. "The Siskel and Ebert of Financial Markets? Two Thumbs Down for the Credit Rating Agencies," *Washington University Law Quarterly* Vol. 77, No 3.
- Persaud, Avinash, 2000. "Sending the Herd Off the Cliff Edge: The Disturbing Interaction Between Herding and Market-Sensitive Risk Management Practices," *the Journal of Financial Risk*, Vol. 2, Issue 1.
- Philippon, Thomas, and Ariel Reshef, 2012. "Wages and Human Capital in the U.S. Finance Industry: 1909–2006," *The Quarterly Journal of Economics*, 127(4), November, 1551–1609.
- Powell, Andrew, 2004. "Basel II and Developing Countries: Sailing through the Sea of Standards," *Universidad Torcuato Di Tella Working Paper* 06/2004.
- Special Investigation Commission, 2010. "Report of the Special Investigation Commission (SIC), A Report to the Icelandic Parliament, mimeo, <http://www.rna.is/eldri-nefndir/addragandi-og-orsakir-falls-islensku-bankanna-2008/skyrsla-nefndarinnar/english/>.
- Squam Lake Group, 2010. *The Squam Lake Report: Fixing the Financial System*, Princeton: Princeton University Press.
- Strahan, Philip, 2003. "The Real Effects of U.S. Banking Deregulation," *Federal Reserve Bank of St. Louis Review*, July/August.
- Sylla, Richard, 2001. "A Historical Primer on the Business of Credit Ratings, paper Prepared for conference on "The Role of Credit Reporting Systems in the International Economy," The World Bank, Washington, DC, March 1-2, [http://www1.worldbank.org/finance/assets/images/historical\\_primer.pdf](http://www1.worldbank.org/finance/assets/images/historical_primer.pdf).
- UBS, 2008. "Shareholder Report on UBS's Write-Downs," April 18, [http://www.alternativeseconomiques.fr/fic\\_bdd/article\\_pdf\\_fichier/1213187130\\_Shareholder\\_Report\\_on\\_UBS\\_Write\\_Downs.pdf](http://www.alternativeseconomiques.fr/fic_bdd/article_pdf_fichier/1213187130_Shareholder_Report_on_UBS_Write_Downs.pdf).