A Financial Precautionary Principle:

New Rules for Financial Product Safety

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Abstract

High risk, opaque, and extremely complex financial products such as collateralized debt obligations (CDO)s and credit default swaps (CDS) have been among the key causes of the worst economic crisis since the Great Depression. Regulators, buyers, and even many issuers of these investor or capital market products (as distinct from consumer products) did not understand how they worked in calm times, much less in times of extreme market stress. Not only have these products helped cause the crisis but they have also made the crisis extremely difficult to resolve. In response, building on the analogy of the Food and Drug Administration (FDA), a number of analysts have proposed a requirement that financial products be approved by a government regulatory authority **before** they can be marketed. Crotty and Epstein (2009) have termed this a *financial precautionary principle.*
In this paper we outline how a financial products regulatory authority which, we call for purposes of exposition the *Financial Stability and Product Safety Administration (FSPSA*), would work.

The key idea behind the *FSPSA* is that financial products must be approved before they can be marketed and should be subject to continuing evaluation and monitoring combined with enforcement mechanisms over the life cycle of these products. The FSPSA could be a stand alone regulatory agency or it could be part of some other (presumably reformed) agency such as the SEC, Fed, Treasury Department, or a new financial stability regulator. In any case, we argue that the FSPSA will contribute significantly to reducing four of the problems that have been at the root of the current financial crisis: 1) By ensuring that products are safer, the FSPSA will contribute to systemic stability: 2) It can significantly reduce tax and regulatory evasion that are facilitated by new financial products: 3) It will help reduce the problematic role of credit rating agencies since this FSPSA will, in effect, be a screen for the safety and effectiveness of financial products; and 4) It will reduce the pro-cyclicality of system in several ways: first, by limiting products that excessively contribute to such cyclicality; second, by reducing the reliance on credit rating agencies which have contributed significantly to the system's degree of pro-cyclicality through over-optimistic ratings in the boom followed by downgrades in the bust; and, third by reducing the tendency for regulations to become more lax in the upswing by allowing firms to progressively evade regulations through more complex and obscure products.

Responding to the argument that a financial precautionary principle will reduce the pace of "financial innovation," thereby harming the economy, we show that, rather than enhancing economic efficiency, much so-called "financial innovation" is designed to avoid taxes, evade financial regulations and redistribute income from stakeholders or customers to groups within the financial commodity chain. As such, appropriate reductions in the pace of "financial innovation" will actually improve the operations of the economy, including the operation of financial regulations. Some will argue that the FSPSA will be captured by industry interests and the resolve to limit harmful products will erode when financial markets boom again. These are real dangers. Keys to avoiding them include: 1) heavy doses of democratic accountability for the regulatory process and 2) automatic, counter-cyclical, tightening of the financial product regulatory bite.

I. Introduction

Two years in, the global financial crisis that started in the U.S. subprime sector and broader financial markets is deepening and spreading throughout the world, turning now into a full-blown economic crisis. Pressure from the public for answers and reform is becoming especially intense, as taxpayer anger over multi-billion dollar financial "bail-outs" approaches the boiling point.[1] For now, there is broad agreement that lax or "light touch" financial regulation, especially in the U.S. and U.K., was a major contributor if not primary cause of the current mess. In recent months, a number of economists, policy makers, international financial institutions and commissions have issued reports on the need for new financial regulation and, in many cases, specific proposals for change. (see, for example: Crotty and Epstein, 2009; Stiglitz, et. al., 2009; Soros, 2009; Group of 30, 2009; GAO, 2009; Stern School, NYU, 2008; OECD, 2009). At the April 2009 G-20 Summit, governments agreed to make financial re-regulation a top priority, but there is little agreement on what those specific changes should be. More to the point, it is completely unclear what stomach governments will have to take on powerful interests that historically have been very successful in pushing for financial deregulation, and which, though battered and bruised, are still a formidable force. Indeed, the Obama/Geithner financial reform blueprint released in June, 2009 fails to truly confront the massive financial and regulatory failures that lay at the heart of the financial crisis we face. (U.S. Treasury, 2009) However, balancing the political equation now is the vast amounts of public money invested in bailing out the financial system and the public distress at the role that finance and financiers played in the crisis, both of which give the general public a more intense interest in these issues than they have had in decades. In terms of both politics and economics, then, time is now ripe for developing and promoting proposals for financial regulation that can actually work to help prevent another financial meltdown.

Most economists agree that one of the factors at the heart of the crisis was the creation and sale of new financial products, an alphabet soup of highly complex, opaque, and ultimately toxic securities and derivatives, including Asset Backed Mortgages (ABMs), Collateralized Debt Obligations (CDO's), Asset Backed Commercial Paper (ABCP), Credit Default Swaps (CDS) and many others. (For descriptions and these securities, see, for example, BIS, 2005a, 2008). An example of these problems are collateralized debt obligations of asset backed securities (so-called CDOs of ABS). According to analyses reported in the *Financial Times* (FT), almost half of all these credit products ever built out of other securitized bonds have now defaulted, and of those issued in the last few years of the credit boom, almost two-thirds are in default (Paul J. Davies, "Half of all CDOs of ABS Failed", *Financial Times*, February 11, 2009, http://www.ft.com/cms/s/0/ddaa47f4-f79b-11dd-a284-000077b07658.html). According to the *Financial Times*, "these defaults have affected more than $300 billion worth of collateralized debt obligations which were built out of bits of other asset backed securities such as mortgage bonds, other CDOs, structured bonds, or derivatives based on these." These have caused huge losses to major banks and have been one of the key factors driving these banks toward insolvency. These losses, which have been obscured by the complexity of these securities, also

[1] The *Financial Times* (FT), February 23, 2009 reports that, among average opinion in Europe and the U.S., over 80% of the populace blame bankers and investment bankers for the crisis and 60% blame financial regulators, as compared with about 30% who place "primary or considerable" blame on home buyers.

explain why financial institutions have been reluctant to lend to each other: they have not known the status of these assets on various banks' balance sheets and so have not been able to assess the health of those banks. This unwillingness to lend has led banks to hoard cash and tighten lending standards and reduce credit to the real economy, thereby adding to the contractionary pressures engulfing the world. It is also increasingly recognized that "credit default swaps" (CDSs), unregulated over-the-counter (OTC) "insurance instruments" that were turned into complex means by which banks and others could gamble on security failures, have enormously complicated the winding down of debt positions and may be one of the key reasons the crisis is so difficult to resolve. (See for example, Newsweek, 2008 and Whalen, 2009).

Now, top officials from the very banks that wrote and bought these products agree with this assessment. A top group of bankers from large financial institutions such as Lehman Brother, Citi, Bank of America and others that make up the Counter-Party Risk Management Policy Group, (CRMPG) published a report in August 2008 (a month before the collapse of Lehman Brothers) containing the following assessment of the role of financial products in the crisis:

> "… throughout the credit market crisis, the behavioral characteristics of several classes of structured credit instruments have accounted for a significant fraction of the write-downs and losses incurred by large integrated financial intermediaries, hedge funds, specialized financial institutions and other market participants. Moreover, there is almost universal agreement that even with optimal disclosure in the underlying documentation, the characteristics of these instruments and the risk of loss associated with them were not fully understood by many market participants. This lack of comprehension was even more pronounced when applied to CDOs, CDOs squared, and related instruments, reflecting a complex array of factors including a lack of understanding of the inherent limitations of valuation models and the risks of short-run historical data sets. As a consequence, these instruments displayed price depreciation and volatility far in excess of levels previously associated with comparably rated securities, causing both a collapse of confidence in a road range of structured product ratings and a collapse in liquidity for such products" (CRMPG III, 2008).

Yet, regulatory authorities were and mostly remain committed to self-regulation of financial institutions and products. This is despite the fact that even long time proponents of self-regulation have admitted that it has failed. Alan Greenspan noted in his October 23, 2008 congressional testimony that "I have found a flaw. … I have been very distressed by that fact … a flaw in the model that I perceived is the critical functioning structure that defines how the world works. Those of us who have looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a stated of shocked disbelief … I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such as that they were best capable of protecting their own shareholders and their equity in the firms." Christopher Cox, then-chair of the Securities and Exchange Commission announced as Lehman Brothers was failing the end of the voluntary regulation mechanism Consolidated Supervised

Entities Program (CSEP) by stating "The last six months have made it abundantly clear that voluntary regulation does not work."[2]

The G-20 summit and U.S. Treasury outline for financial regulatory reform call for enhanced measures to promote systemic financial stability and to "monitor" risky product and practices. But they do not specify how such monitoring will take place. Indeed, they are especially vague on the issue of risky products, focusing instead on issues such as capital and liquidity cushions for institutions and trying to limit leverage of institutions as a whole. To be sure, it is now increasingly recognized that lax standards, excessive leverage, high concentration of risks, complex interactions among products and institutions, and major maturity mismatches, were key factors in causing the crisis. But less recognized is that complex, risky and opaque financial products themselves were key transmission and enabling mechanism of a number of these problems themselves. For example, financial products such as CDOs and CDOs-squared embedded within their structures very high leverage. This leverage in products interacted with opaqueness which made it difficult for regulators, investors, or the issuing banks themselves to understand them. They were financed by short term borrowing even though they were long term products and became even longer term when they became illiquid in the crisis. And they made it easy to obscure and avoid financial regulations that had been themselves a weak line of defense against crisis. They were thus key transporters of leverage, riskiness and opacity throughout the system. Hence, regulating these products, and not just the financial institutions, is important to protect overall financial stability.

This raises the key question addressed in this paper: What is the best way to prevent these toxic securities from infecting the financial blood-stream in the future? As Greenspan and Cox admit: market discipline and self-regulation are not enough.

The Argument

In an earlier paper, we proposed as part of a nine point program of regulatory reform that we should institute a "Financial Precautionary Principle."[3] Under this financial precautionary principle, financial innovations would be prohibited unless those issuing them got permission to do so (Crotty and Epstein, 2009). To get permission to sell these products, those issuers would have to provide evidence that these products were safe, both to those buying them, and to the

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[2] **http://www.sec.gov/news/press/2008/2008-230.htm**

[3] We use the term `precautionary principle' somewhat loosely as it has many different definitions and disputes associated with it. Wikipedia's useful article defines it this way: "The **precautionary principle** is a moral and political principle which states that if an action or policy might cause severe or irreversible harm to the public or to the environment in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action." Versions of the precautionary principle have been recognized by UN agencies, European Union Law, and many other places. But, as far as we know, it has not been widely applied to finance. http://en.wikipedia.org/wiki/Precautionary_principle

overall financial system as a whole. This "Financial Precautionary Principle" would reverse the existing practice in the U.S. by which firms are allowed to issue these products unless they are explicitly prohibited from doing so.

The basic idea of a financial precautionary principle is quite simple: it is important to establish a level of risk tolerance and to take definitive actions to try to ensure that that risk tolerance is not breached, by placing the burden of proving the products are safe on those wanting to sell them.

The Obama/Geithner financial reform blueprint proposes the creation of a new "Consumer Financial Protection Agency" (CFPA)which might embody some "precautionary" components with respect to consumer products. [4] But it avoids any such regulations concerning investor products.

A number of economists spanning a wide range of political persuasions have suggested that financial innovations should be more carefully tested and regulated both **before** and **after** they get into circulation. These include economists like Nobel Prize winner Daniel McFadden[5], and Martin Hellwig[6], and many others including Dani Rodrik[7], George Soros[8], Robert Wade[9] and Nobel Prize winner Joseph Stiglitz.

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[4] Elizabeth Warren, Professor of Law at Harvard University, and Amelia Warren Tayagi, her co-author, proposed a *Financial Products Safety Commission (FPSC)* based on the model of the Consumer Product Safety Commission. (See, for example, Warren and Tyagi, 2008). Most relevant here is their suggestion that the FPSC would "test products for safety before they had a chance to reach customers." In extreme cases, they proposed "banning outright the most dangerous" products. It is not clear whether the new CFPA, the brainchild of Warren's, would have such powers.

[5] Daniel McFadden was quoted as saying: "a financial equivalent of the U.S. Food and Drug Administration (FDA) (should) be established to monitor and certify new financial instruments." (Bloomberg, 2008).

[6] Martin Hellwig (2008), another prominent economist notes: "It is probably sensible to prohibit the higher stages of securitization (MBS, CDOs, CDO^2s, etc). However, I see little prospect of these securities returning anyway. More importantly, it might make sense to have some system of oversight which examines whether newly created securities provide effective improvements to the scope for reallocating risks and sharing risks through markets or whether these securities are just there to circumvent statutory regulation of risk taking by insurance companies and the like." (p. 61)

[7] Dani Rodrik of Harvard's Kennedy School likewise used the Food and Drug analogy, suggesting that financial innovations might be better treated like pharmaceuticals, tobacco or firearms, and strictly regulated because they are potentially dangerous (Rodrik, 2008).

[8] Investor and philanthropist George Soros has taken the idea of a Consumer Products Safety Commission and applied it to investor products such as CDOs. In testimony to the U.S. Congress, Soros argued that financial engineering has created highly complex financial securities that are designed to circumvent regulations such as capital and margin requirements, but that also leave financial institutions and the whole financial system extremely vulnerable. "In order to activate such requirements, financial engineering must also be regulated and new products must be registered and approved by the appropriate authorities before they can be used. Such regulation should be a high priority of the new Obama administration. It is all the more necessary because financial engineering often aims at circumventing regulations." (Soros, 2008, p. 10). Soros does not go into detail, however, about how such regulation would work or should be structured.

[9] Robert Wade, from the London School of Economics, suggested that new financial regulation should embody "a requirement that new financial products be certified by a regulatory body to make sure that their risk characteristics can be easily understood and determined by the buyers." (Wade, 2009, p. 28).

The Government Accountability Office (GAO) too has seriously raised the question of ex-ante approval of financial products. "Important questions also exist about the extent to which financial regulators should actively monitor and, where necessary, approve new financial products and services as they are developed to ensure the least harm from inappropriate products."[10]

Most developed are the proposals put forward by Nobel Prize winning economist, Joseph Stiglitz of Columbia University and director of the Secretary General's UN Commission on *Reform of the Financial System*. Here, Stiglitz has proposed a *Financial Product Safety Commission (FPSC)*. This involves fencing off a highly regulated banking sector from what he calls the "risk sector" of the financial system. Under Stiglitz's scheme, highly regulated core banking institutions could not trade in products from the risk sector unless they have first been explicitly approved by the *FPSC*. Stiglitz recognizes that the dangers for risky financial products extends to the financial system as a whole and not just to those individuals or institutions that purchase them. To deal with this overall system risk, Stigliz further proposes a *Financial Markets Stability Authority (FMSA)* to assess system risks of products. He explains that, "While the *Financial Products Safety Commission* looks at individual products, and judges their appropriateness for particular classes of purchasers, the *Financial Markets Stability Commission* looks at the functioning of the entire financial system, and how it would respond to various kinds of shocks." (Stiglitz, 2009).

Rationale for a Financial Precautionary Principle

The lessons from the current crisis make it clear that these suggestions are on the right track. As much of the discussion over the last year has made clear, many warnings, going back several years, were available to regulators about the great dangers of current financial practices. But these were not acted on for a number of key reasons,[11] as a recent Government Accountability Office Report makes clear (GAO, 2009b):

1. A number of the financial products and practices were too complex to be understood by the banks themselves or by the regulators. Many regulators of large complex organizations reported that they did not understand, for example, how quickly liquidity would evaporate until after the crisis began. This stemmed partly from the complexity of these products, and partly from the willingness of the regulators to accept at face value the risk assessments of the bankers themselves.

2. Very little of the regulation that was in place directed regulators to look at the riskiness of particular financial products as they spread throughout the system, so they could not understand the extent or how quickly they would undermine the solvency of financial institutions if a crisis period began.

[10] By way of summary, the GAO notes that: "Key issues to be addressed: Determine how to effectively monitor market developments to identify potential risks; the degree, if any, to which regulatory intervention might be required; and who should hold such a responsibility. Consider how to strike the right balance between overseeing new products as they come onto the market to take action as needed to protect consumers and investors, without unnecessarily hindering innovation." (GAO, 2009a, p. 54).

[11] See GAO, 2009b, for a number of revealing examples.

3. Even when they understood that there were some risky practices and products, the regulators did not have the enforcement tools available to stop the sale of these products or have them recalled.

4. Even where the regulators did have stronger enforcement mechanisms available, they did not use them. This was partly due to regulatory capture; partly due to the bluntness of the instruments they did have available and the absence of a norm or confidence in using them to oppose the large financial firms especially in a period of financial boom. That is, regulators are subject to the same pro-cyclical processes as the banks they regulated. In the upturn, most bankers – and the regulators who regulated them – became over-optimistic and those who were out of step and issuing warnings, were thrust aside.

It's Time for A "Financial Stability and Product Safety Administration" (FSPSA)

What is the solution to these problems? Preventing the system from getting too complex and subject to pro-cyclical financial and regulatory booms are the key to substantially reducing the risk of catastrophic financial crisis. With respect to financial products, the key to assessing and managing their safety and effectiveness, is to prevent the products that are highly dangerous and opaque from being marketed in the first place, and to have a clear assessment and evaluation structure in place to monitor the approved but risky products as they populate the financial system. Many of these products undermine financial regulatory authority in the boom because they are designed to avoid regulations. Hence, regulating these financial products' *social* effectiveness is crucial for helping to stem the pro-cyclical laxness of financial regulation itself.

While Joseph Stiglitz has gone further than others and has laid out a useful general framework, despite the increasingly widespread discussion of institutions to regulate dangerous financial innovations, no one has provided a detailed description of how such regulation should be structured. This paper attempts to begin filling this gap. We develop here the outlines and rationale for a *Financial Stability and Product Safety Administration* (FSPSA) that will test and approve (or deny) the marketing of new financial products. In doing so, we outline the case for strict regulation and monitoring of new financial products both *before* and *after* their introduction into the economy; we will discuss how such regulation should be designed, drawing on analogies with the FDA, and somewhat ironically, risk management practices currently proposed by groups of bankers ((eg. CRMPG, 2008; COSO, 2004) and government analysts and regulators (BIS, 2008; Government Accountability Office, 2009a, 2009b). We propose the FSPSA title and structure just for the purposes of exposition. Obviously, the precise name of the institution, whether it should be lodged in another institution such as the Federal Reserve or a new regulatory institution – or whether it should be free standing like the FDA – is a complex matter than will depend on the overall structure of financial reform as it develops. The main focus here is on the *functions* such an institution should perform and how it would perform these functions rather than on the institutional structure within the overall regulatory scheme.

In outlining the rationale and design of the FSPSA, complementary mechanisms of financial regulation must be addressed to some extent. On a short list of suspects (apart from the crucially important lax regulatory environment and toxic securities just mentioned) these include,

most importantly: the incentives for financial actors to take on excessive risks; conflicts of interest which made it more difficult for accurate information of the risks to be revealed, for example as the operations of the credit ratings agencies; and the pro-cyclicality of the overall financial system that allowed it to grow excessively in a positive feed-back look and then led it to crash catastrophically. (See Crotty, 2008, for a detailed and clear explanation of these problems with the financial system; for a short summary see Crotty and Epstein, 2009). The point is that a multi-headed set of reforms will be required and any one component, such as those that deal with toxic products, will have to be developed in the context of a broader set of reforms.[12]

Possible Objections

There are a number of objections that may be raised to such a reform. First, it may be objected that a financial precautionary principle will unduly stifle innovation, leading to significant losses to the economy. Yet, while it certainly must be the case that some financial innovations are quite useful, there is, in fact, very little evidence of either a theoretical or empirical nature that financial innovations in general have a significant positive impact on economic growth or development (Elul, Ronel, 1995; Frame and White, 2002) And there is a great deal of evidence and concern that many financial innovations are largely motivated by desire to evade taxes, avoid financial regulations, and create temporary monopolies that allow firms to charge excessive fees (Tobin, 1984; Van Horne, 1985; Tufano, 2002).

Second, it will be objected that creating a *Financial Stability and Product Safety Administration* will be much too complex an undertaking. How can we identify risky products? How can we test them? How can they be evaluated before the fact and monitored afterward if approved? The answer is that many of the pieces necessary to undertake these tasks are either already in place or are currently being developed. There are numerous private reports that have developed practices for product assessment, monitoring, proper marketing and evaluation. (CRMPGIII, 2008; Institute for International Finance, 2008; BIS, 2008; Financial Stability Forum, 2008; COSO, 2004)). GAO, 2009b discusses the evaluation processes designed by the Federal Reserve, the Security and Exchange Commission (SEC), the Comptroller of the Currency (CC), and the Office of Thrift Supervision (OTS). In fact, financial regulators at the Bank For International Settlements (BIS), regulatory agencies, and the investment bankers themselves have come up with elaborate check lists that they believe banks should implement in deciding whether to market or use new financial products, including demonstrating to themselves that their upper level management and clients can understand the real risks associated with financial products (CRMPG, 2008; GAO, 2009b and the sources cited there). Of course, those representing the banking institutions are committed to self regulation, and insist the banks simply adopt these "best practices." But the FSPSA would insist that the issuers of new financial products provide convincing evidence to the agency of what the risks are, that their management has the capacity to understand and manage the risks without undue harm to their firm or the financial system, and that their clients do so as well. In other words, if the bankers believe that they can self-regulate sufficiently, than they and their products can certainly be regulated by

[12] See for example the set of proposals coming out of the Stiglitz Commission at the UN.

external regulators as well. The key is to group them into a workable, more comprehensive framework and to: give them teeth; make sure the regulators have the resources to implement them; and make sure that the are mechanisms in place so that they are not whittled away and undermined in the next big upturn and change in political governance.[13]

Fourth, it may be argued that the process of product approval could get corrupted; lobbying by financial firms, for example, could lead to the approval of products that should not be approved. Of course, the corruption of the regulatory process is always a potential danger in any field. The key to avoid this corruption is to have highly skilled, highly paid regulators with high status; democratically based oversight groups made up of a group of knowledgeable stakeholders and experts, including potential financial instrument users, academics and policy makers.

Outline of Our Paper

The rest of the paper proceeds as follows: In section II, we briefly discuss the current regulatory system in place for financial products in the U.S. and detail why the current system has failed. Section III shows how a financial products regulatory authority could build on the analogy and experiences of the FDA, and learn from the work already carried out and proposed by private financial institutions and financial regulators. Section IV, building on these lessons, describes our preferred regulatory structure for financial products – the Financial Stability and Product Safety Administration (FSPSA). Section V concludes. The Appendix addresses a key potential criticism that is likely to be raised against such regulation, namely the concern that it will stifle valuable financial innovation.

II. Some Aspects of the Current Regulatory Regime[14]

The current regime of financial regulation in the U.S. is dominated by three mechanisms: self-regulation, outsourcing and ineffectual policing. Self regulation relies on market discipline by lenders and investors to circumscribe the risks undertaken by financial institutions; outsourcing relies on using private, outside agencies like credit-rating agencies, auditing firms and accountants to provide information to investors, and to certify that financial institutions are meeting certain standards. Self-regulation is subject to abuse and cannot, even in principle, take into account externalities, system risk and contagion. Outsourcing has been riddled with conflicts of interest and ineffectiveness, and again, has ignored the issues of systemic, as opposed to private, stability. Even in the cases where regulators have a role to play, their policing efforts were largely ineffectual in controlling the risks that destroyed the financial system. It is now almost universally recognized that this "light-touch" regulatory mechanism was one of the major causes of the financial crisis. Here we will just emphasize a few points that relate to financial product regulation.[15]

[13] It is important to note that the precautionary principle has been applied in practice in a number of countries around the world, including those that have avoided the worst of the current financial meltdown.
[14] See Crotty, 2008, for an extensive discussion of these issues in the current context.
[15] This section draws heavily on the highly informative report: GAO, 2009b.

So-called "Large, Complex Financial Institutions" such as Lehman Brothers, Citicorp, Bear Stearns, J.P. Morgan, Merrily Lynch, and Bank of America, along with a group of foreign financial institutions such as Deutsche Bank, Societe Generale, Barclays and others – were the major culprits in the financial debacle. A complex of regulations and regulatory authorities had responsibility for regulating the U.S. institutions on this list, and, it is now clear, failed miserably. These consist of banking regulators, the Federal Reserve (Fed) and Office of the Comptroller of the Currency (OCC), and Office of Thrift Supervision (OTS) and securities regulators, the Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA).

According to an audit by the Government Accountability Office (GAO), (2009b) the Federal Reserve, OCC, OTS and SEC maintain continuous contact with large, complex institutions, "using a risk-based examination approach that aims to identify areas of risk and assess these institutions' risk management systems. …" (p. 3). Banking examiners used these assessments to assign ratings. The securities regulators undertook risk examinations as well, though in somewhat different ways. "Generally, all the regulators look at risk management at the institutional level, but they also perform horizontal examinations – coordinated supervisory review of specific activity, business line, or risk management practices of peer institutions." (p. 3). When bank regulators identify weaknesses they have a number of informal and formal supervisory tools they can use: informal enforcement actions include commitment letters, memoranda of understanding, and safety and soundness plans. Formal action are authorized by statute: these include consent orders, cease and desist orders and formal written agreements, among others." (p. 3.)

In examining how the regulators behaved in the period leading up to the crisis and after the crisis became apparent, the GAO found quite disturbing facts: "… we found that regulators had identified numerous weaknesses in the institutions' risk management systems prior to the beginning of the financial crisis; however, regulators did not effectively address the weaknesses or in some cases fully appreciate their magnitude until the institutions were stressed." For example: " Some regulators found that institutions' senior management oversight of risk management systems had significant shortcomings … yet some regulators gave the institutions satisfactory assessments until the financial crisis occurred." (p. 3)

The regulators' failures stemmed from a number of factors (GAO, 2009b). First, like the banks themselves, they often did not understand the risks involved, especially with respect to major shocks affecting complex and opaque products.[16] Second, they either did not have the authority or were reluctant to strongly confront financial institutions' management about their risky behaviors. Part of this stemmed from the third factor: in the boom, the regulators, like the managers, thought that problems could be relatively easily worked out as asset prices were going up and liquidity seemed to be plentiful. "In hindsight, officials told us that the current crisis had gone beyond what they had contemplated for a worst-case scenario, and they said that they

[16] "In these instances, regulators told us that they did not fully appreciate the risks to the institutions under review or the implications of the identified weaknesses for the stability of the overall financial system. One regulator told us it was difficult to identify all risk management weaknesses until these systems became stressed by the financial crisis." (p. 4)

would probably have faced significant resistance had they tried to require the institutions to do stress tests for scenarios such as downgrades in counterparties' credit ratings because such scenarios appeared unlikely. (GAO, 2009bpp. 33 – 34.)[17]

Fourth, regulations hamstrung the regulators in a number of ways: letting some institutions, such as dealer-brokers, fall through the cracks exempting offshore entities from regulatory over-sight, where, many of the riskiest assets were booked,[18] reducing the ability of the same regulator to look at the whole picture of a complex organization, but rather had to share oversight with multiple regulators. Fifth, they lacked independent expertise in some of the risk management areas such as model validation and stress testing, so they often had to take management's word on the nature of the risks involved.[19] And sometimes, regulators just seemed to lack the will to do anything about the problems.[20]

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[17] (Some) regulators in 2005 issued letters raising questions about "a lack of …a corporate policy for approving new products which could ensure that management had reviewed and understood any potential risks (p. 18), an institutional tendency to give earnings and profitability growth precedence over risk management." (p. 19) … However the regulator's assessment of the institution's risk management remained satisfactory during this period because senior management reported that they planned to address these weaknesses … after 2007, the examiners changed their assessment, citing many of the same shortcomings they had identified in 2005. (p. 19).
"We found that regulators had identified numerous weaknesses in stress testing at large institutions before the financial crisis. However, our limited review did not identify any instance in which an institutions lack of worse-case scenario testing prompted regulators to push forcefully for institutional actions to better understand and manage risks. A 2006 Federal Reserve horizontal review of stress testing practices at several large, complex banking institutions revealed that none of the institutions had an integrated stress testing program that incorporated all financial risks enterprise-wide, nor did they test for scenarios that would render them insolvent…..the review was particularly critical of institutions' inability to quantify the extent to which credit exposure to counterparties might increase in the event of a stressed market risk movement….It also found that institutions' senior managers were confident in their current practices and questioned the need for additional stress testing, particularly for worst case scenarios that they thought were implausible…."

[18] "First they noted that FINRA's regulatory authority extended only to U.S. broker-dealers and that related transactions generally are booked in other legal entities. FINRA noted that the riskiest transactions were usually booked in legal entities located offshore." (P. 29).

[19] "Some regulators told us that they had relied on management representation of risk, especially in emerging areas. For example, one regulator's targeted review (of) risk relied heavily on management's representations of risk related to subprime mortgages – representations that had been based on the lack of historical losses and the geographic diversification of the complex product issuers. However, once the credit markets started tightening in late 2007, the examiners reported that they were less comfortable with management's representations about the level of risk related to certain complex instruments." (p. 19) "Another regulator conducted a horizontal examination of securitized mortgage products in 2006 but relied on information provided by the institutions. While the report noted that these products were experiencing rapid growth and that underwriting standards were important, it focused on the major risks identified by the firms and their actions to manage those risks as well as on how institutions were calculating their capital requirements." (ibid., p. 20).

[20] "Regulators identified …risk management weaknesses, such as testing and validation of models used to assess and monitor risk exposures and price complex instruments. For example, some regulators found that institutions had not tested the assumptions in models used to evaluate risk – such as the likelihood of a borrower to default – but, for at least one institution, examiners did not prohibit the institutions from using untested models, nor did they change their overall assessment of the institutions' risk management program based on these findings." (p. 4)…"In a 2006 review, the Federal Reserve found that none of the large complex banking institutions it reviewed had an integrated stress testing program that incorporated all major financial risks enterprise-wide, nor did they test for scenarios that would render them insolvent." (p. 4)

It is clear that a regulatory framework that prevents the system from getting too complex in the first place, that gives more power, tools and resources to regulators, will be necessary to prevent a crisis like this from happening again. One key to this is to prevent dangerous and socially ineffecient financial products from being issued in the first place.

III. The Financial Stability and Product Safety Administration (FSPSA): The FDA Analogy

In this section, we describe how a precautionary principle could be implemented in relation to the creation of new financial products, focusing on those marketed to large investors such as banks, pension funds and insurance companies. For purposes of discussion we will call this regulatory authority the *Financial Stability and Product Safety Administration (FSPSA)*. We choose this name for three reasons: first, to distinguish this from the retail-oriented financial products safety commission that has been widely discussed and now proposed by the Obama administration; second, to stress that this regulatory commission will focus not only on the impact of the financial products on those institutions buying them, but also, and more importantly, on the impact of these products on over-all systemic financial stability. Third, we use the word *Administration* to draw on the analogy of the Food and Drug Administration (FDA). Despite many obvious and important differences between drugs and financial securities, we nonetheless use the FDA somewhat as a model in developing the FSPSA because of important parallels.

To exploit this analogy, we first give a very brief over-view of the history of drug regulation in the U.S.. Along the way, we will highlight some perceived problems in this regulatory framework that will help us develop our proposed framework for financial products.

The Food and Drug Administration (FDA): History, Structure and Problems[21]

Short History

The FDA's regulatory authority originated in 1906, with the Pure Food and Drug Act, which focused on misbranding and adulteration. This law focused only on actions the government could take *after* a product was already being marketed (so called *postmarketing* remedies). Under this approach, if a drug already on the market was proven to be dangerous, the government could seize it and stop future sales. In 1938, after deaths associated with elixir of sulfanilamide, the law was replaced by a stronger law, the Federal Food, Drug and Cosmetic Act. This law was a major advance in that it forced companies to notify FDA before beginning tests on human subjects and to submit drug safety test results before placing a drug on the market. But it still was weak overall because it placed the burden of proof on the FDA to show a drug was unsafe. Marketing could begin if the FDA did not find proof of danger within 60 days.

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[21] This section draws very heavily on the excellent Institute of Medicine (IOM), *The Future of Drug Safety; Promoting and Protecting the Health of the Public*, National Academies Press, 2007. www.nap.edu

It was not until 1962, with the thalidomide tragedy in Europe, that the big change to a precautionary system occurred. The Drug Amendments of 1962 shifted the burden of proof from the FDA -- which previously had to prove harm to keep a drug from being marketed -- to manufacturers who "now were required to demonstrate both safety and efficacy prior to receipt of marketing approval." (IOM, 2007) The 1960s was also the period when the modern system of pre-trial tests and regulation was developed.

The Current FDA System for Regulating Drugs

The current system of drug testing has the following five components (IOM, 2007, Box 2-1, slightly modified): Component 1: A company applies to FDA to get approval to run clinical trials.
Component 2: If trials are approved, clinical pharmacology studies are conducted in healthy volunteers. Component 3: Clinical investigation studies are conducted in subjects with the target disease to determine efficacy, safety and tolerability. Component 4: Large scale, placebo controlled and uncontrolled studies are conducted to study effectiveness, safety and tolerability of the drug. Component 5: At this point the FDA "can send the sponsor a `not approvable' letter that explains why an application cannot be approved on the basis of current information, an `approvable' letter stating that the product could be approved if specified actions additional actions were taken, or an `approval' letter indicating that the product has been approved with specified labeling and postmarket requirements.' (IOM, 2007). Thus, if the drug is approved, postmarketing mechanisms may then be put in place to gather further information on safety and effectiveness.

The current system for drug regulation, thus, can best be characterized as having a *pre-marketing phase* and a *post-marketing phase*. Though the system is evolving to some extent, it can still be roughly described as a fairly strict regimen of pre-marketing testing by drug companies to try to demonstrate that the drug is safe and effective, and a fairly weak post-marketing phase during which in principle the FDA can impose more tests, restrictions on marketing and periodic review to ensure that more data are collected and the initial decision to approve the drug is still warranted. (IOM, 2007).

In practice, the postmarketing mechanisms do not work well. The main problems stem from three factors: 1) The FDA's statutory authority giving it the ability to impose and enforce requirements after drugs have been approved is either weak or ambiguous. As a result, the FDA is often left with only one recourse: to withdraw the drug from market, a very blunt and costly response. 2) The FDA does not have sufficient staff to continue monitoring and testing drugs post-approval. 3) For political and bureaucratic reasons, the organization is not totally committed to the importance of the post-marketing phase and, of course, industry is not likely to cooperate unless it absolutely has to.

This issue of "pre" versus "post" marketing evaluation and monitoring is crucial in the case of drug regulation and is likely to be at least as important in the case of financial products. Pre market testing cannot establish with certainty, or necessarily even with a high degree of probability, that drugs are safe and effective in the ways they will actually be used as they are dispersed through the population. Controlled tests of drugs are performed on specific populations

of patients who are not necessarily representative of the group which eventually takes drug. Some risks manifest themselves only in people who have certain complexes of health factors: in other words, it is the interaction effects that matter. Some risks are very small and so it would take an extremely large study to identify them. Some risks take years to manifest themselves, so the trials would have to be very long.

Note that knowledge about some new financial products, as discussed below, share a number of these key characteristics: as financial products are distributed widely, they may end up in the portfolios of a wide variety of asset/liability holders who have characteristics quite different from what was initially thought or intended; the dangers of some of these products might occur only with extremely rare events or with complex interactions with other assets and characteristics of the asset holders; these systemic impacts may only occur once these assets have been distributed in large amounts or widely and therefore, only occur in the longer term.

In this context, it is clear that approving the new product cannot be the end of the story in monitoring the drug's impact. The Institute of Medicine (2007) strongly recommends that post-marketing mechanisms must be established and existing ones strengthened to allow the FDA to force the product issuer (and encourage third parties) to gather more data about how the product is being used, what its impacts are, and whether new or clearer dangers are being revealed as the product is dispersed and as more time passes. According to the IOM, the agency must have the resources, monitoring authority, enforcement ability and the will to ensure these data are created, tests performed, and that appropriate actions can be taken. For those drugs that are seen in the premarketing phase to have some significant change of being dangerous, the FDA should have the ability to limit its initial distribution, require the company to provide specific data as it evolves, provide education materials to the drug's users explaining possible dangers and educate them in the drug's use, and put a label on the drug indicating that it might be dangerous. Drugs with such labels need to be re-certified within a specific period of time (IOM uses the example of two years). Moreover, all drug approvals should have a sunset period after which they need to be re-certified. The IOM suggests this be 5 years. In the vast majority of already of approved drugs, this would be a very simple and inexpensive process. But for those drugs where some significant concerns have been raised about their safety, the process would be more detailed and costly. (see IOM, 2007, chs. 4 and 5).

A key aspect of the ability to properly test and monitor drugs is having the scientific knowledge to properly do so, and to have the personnel both in the FDA and in the private and non-profit sector (e.g.. universities) who have the incentives and ability to develop this knowledge and apply it. As a result, the IOM suggests that the government think carefully about ways of advancing scientific knowledge of testing and of training sufficient experts, to develop and apply that knowledge. A big issue here is avoiding conflicts of interest as many researchers work for or receive grants from pharmaceutical companies. As the reader can see, while there are some important differences between drugs and financial products, as we discuss below, there are many principles in the analysis and critique of the FDA that seem relevant to creating a *Financial Stability and Product Safety Administration.*

Financial Products and Drugs Compared

While drawing on the analogy between drugs and financial products in utilizing aspects of the FDA as a model, we are, of course aware, that while there are commonalities between drugs and financial products, there are also be some significant differences.

First of all, there is significant and obvious evidence that some drugs have major social benefits. As discussed in the appendix, the record on the social benefits of financial innovations is much less clear. One could argue that it may not be worth it to society to invest a large amount of resources in monitoring and testing financial innovations to make sure they are safe if, in the end, the societal benefits are not large. If this is the case, then the system would be structured to minimize social costs, while keeping the bar quite high for introducing new financial products. It is certainly the case that the public benefits of investing public resources in facilitating the introduction of new financial products should be carefully considered. This should be taken into account in designing the financing mechanism for operating the system of financial product testing and monitoring. (See below for more discussion of distributing the costs of operating the FPSSA between the public sector and the financial firms themselves.)

Second, as we discuss further below, it is obvious that the form of initial testing of financial products will have to be quite different from that of testing drugs. Whereas drugs use controlled clinical trials of various kinds, financial testing will have to involve two main mechanisms: computer simulations and economic analysis. Computer simulations have been widely used already by financial institutions and ratings agencies (so-called Value at Risk modeling (VaR) and, to a lesser extent, so-called *stress tests*. VaR's, in particular, have been widely criticized as being inadequate to assessing the real risks associated with products (see for example, Crotty (2008)). As we discuss below, improvements in these models will be required and some useful ones have already been suggested. But, as we also now know, no matter how many models are employed or how complex they are, these models cannot substitute for economic analysis and good judgment combined with a mandate and commitment on the part of regulators to protect the public from financial instability.

Third, the FDA's main means of protecting the public from drugs that are discovered to be dangerous AFTER they have been introduced into the system, is to issue drug recalls. The FDA recognizes that this is a blunt instrument, and is reluctant to use it, but it is in fact feasible and can be done without contributing to the problem the drug recall is designed to avoid. Financial products present a special problem in this regard. If they are discovered to be dangerous to the individual institutions or to the stability of the overall financial system after they are widely dispersed, a "recall" can trigger a crisis – just as the credit rating downgrades of these products contributed to the crisis of 2007 – 2009. The problem is that these are assets on the books of institutions and a downgrade or "recall" could lead to cascading liquidity and solvency problems throughout the system. To some extent, this is unavoidable and is a characteristic of asset markets: asset valuations change in light of new information. This dilemma will always be present. It implies, however, that recalls in the case of financial assets may be an even blunter and more dangerous instrument than they are in the case of drugs and therefore would not only have higher costs, but would also make the regulators less likely to want to issue them.

There are ways to ameliorate this problem. For example, the FSPSA can facilitate a swap of safer assets for dangerous ones. They can also place a moratorium on the sale of the product once it is discovered that they are particularly dangerous. While this might have disruptive effects on the holdings of existing products, they need not, especially if the danger of the product only becomes serious with respect to larger quantities sold or in the event of an unlikely shock. Still, the problems associated with issuing financial product warnings and recalls suggests that the bar of pre-market testing and the criteria for allowing new products to be sold may need to be stricter and the early follow up in the case of risky products may need to be more intense so that problems can be caught before there has been a large accumulation of problematic assets in the financial system that will be difficult to unwind.

Beyond Analogy: Current Knowledge and Practices in Financial Product Regulation

Critics might argue that, analogies aside, assessing the safety and effectiveness and regulating financial products is too difficult and complex. We can go well beyond analogy with the FDA to find useful knowledge and practices for financial product regulation. For years, private institutions and government authorities have developed tools for assessing and regulating such products.[22] In this section we look in detail at the regulation suggestions developed by the (former) large investment banks that developed many of these products for how they believe *self-regulation* should occur. The point is that the most useful of these methods and practices can be taken over quite easily by the FSPSA to implement mandatory regulations.

Risk Management Guidelines for Complex Products as a Model for the FSPSA: The Counter-Party Risk Management Policy Group (CRMPGIII)

In recent years, a number of private and public authorities have developed guidelines for private banks to use their manage their own risk profiles.(COSO, 2004; CRMPG, 1999; 2005; 2008). These guidelines were developed in the spirit of the self-regulation of the "light touch," principles based approach to regulation that has dominated financial regulation and led to disaster. These management practices were routinely ignored by most financial institutions in the lead up to the crisis. (GAO, 2009b; Senior Supervisors Group, 2008; Institute of International Finance, 2008; BIS, 2009). Yet, strangely enough, these guidelines demonstrate that there is a great deal of accumulated knowledge of how, in principle, to identify and manage risks of products and institutions.

One guide in particular is especially useful in thinking about how to implement a FDA type safety system for high risk financial products. This comes from none other than a policy group made up of representatives of the major investment commercial banks that have now either failed, been merged, or are on the verge of insolvency. In August, 2008, little more than a month before the collapse of Lehman Brothers and the catastrophic intensification of the crisis, the so-called Counter-Party Risk Management Policy Group published a report entitled: Containing Systemic Risk: the Road to Reform (CRMPG III, 2008 "Containing Systemic Risk: The Road to Reform." www.crmpolicygroup.org) In this report, these bankers deal with many of the vexing issues that would need to be answered in order to implement a Financial Stability and Product Safety Administration. They propose a number of very good principles and initiatives to

[22] Governments in other countries have done so as well.

define and deal with highly complex and risky products. But, of course, in the end, they propose that these be implemented virtually *entirely* by *voluntary measures*, that is, self-regulation by the banks themselves. Indeed, one month before the virtual collapse of the global financial system, this report boldly claims:

> "supervisory practice and policy as applied to large integrated financial intermediaries constitute a sizeable challenge for the international community of prudential supervisors. On the whole, however, the supervisory process works reasonably well, especially as the emphasis of supervisory practices has shifted, in recent years, toward a principles-based approach." (p. 137.)

Despite the audacity of this statement, many of the reports' proposals can be usefully applied to structuring the *Financial Stability and Product Safety Administration*.

Definition of Risky Financial Products

Some critics of the FSPSA might argue that it is impossible to define risky product before the fact, but the bankers from CRMPG, while acknowledging the complexity involved, nonetheless detailed what they viewed as the characteristics of highly complex securities:

The bankers argued that high risk financial products have one or more of the following characteristics: 1) They embody high leverage 2)They are prone to periods of large and rapid reductions in market liquidity 3) They lack price transparency. The report argues that there are other factors, that contributed to the high risks associated with these products. They include: "maturity mismatches, (and) obscure disclosure information. (In addition) many high risk complex financial instruments presented significant challenges for risk monitoring and management systems which struggled to keep up with the complexities of product design and development, and, in particular, encompass the risk that hedging strategies are ineffective."

1. Leverage

According to CRMPGIII, the first and perhaps most important characteristic of high-risk complex financial instruments is leverage. Leverage can take several forms. What is crucial for financial products is "embedded leverage." "An example of this is an investment in subordinated tranches of asset-backed or corporate credit derivative contracts. In the case of these instruments, the market exposure is magnified relative to an investment in the underlying security and gains and losses are experienced more quickly, sometimes much more quickly, than in an un-leveraged investment."

2. Sharply reduced market liquidity

The second key characteristic of high-risk complex financial instruments is that, by their nature, they are prone to periods of sharply reduced market liquidity. According to the 2008 report, market liquidity of high risk complex instruments "was not merely reduced but in some instances virtually evaporated." In this environment, risk reduction – including de-leveraging – were nearly impossible and hedging was very expensive and often imperfect." The report goes

on to note: "Needless to say, in these circumstances, valuations and price verification for these instruments had limited evidential support. …"

3. Lack of Price Transparency

The third characteristic of high-risk complex financial instruments is that they may be characterized by a lack of price transparency. These instruments are often custom designed ("bespoke"), and their valuations depend on proprietary financial models and the inputs that drive their models.[23] CRMPGIII lists complicating factors including widespread maturity mismatches in funding these products and inadequate control mechanisms at the firm level. Importantly, in matters of identification, CRMPGIII concludes with this observation:

> "The aforementioned characteristics are neither an exhaustive list nor should they be assumed to provide a strict definition of high-risk complex instruments, which the Policy Group believes should be avoided. Instead, market participants should establish procedures for determining, based on the key characteristics discussed above, whether an instrument is to be considered high-risk and thus require … special treatment."

And indeed, this can be a guideline for regulatory treatment by the FSPSA.

CRMPG Structure for Risk Management of Complex Financial Instruments

Approval of New Products

The CRMPGIII recommends that a committee must look at the risks associated with new products before they are approved for marketing by the firm. Special attention should be given to highly leveraged, less liquid instruments. The committee must subject these instruments to tests designed to "reveal less obvious risks that can occur infrequently but that may have significant impact." The pricing structures associated with these instruments should reflect the high risks associated with them, including liquidity risks that might arise in a crisis, should these positions need to be unwound. However, they note that these models are not perfect and that risk management officials must use their judgment, and not blindly apply these models.[24]

Financial Health Warning

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[23] "Frequently, the inputs for these models are not directly observable in the market. In addition, even a valid model with accurate inputs will not always capture immediate and supply and demand profile on the market, meaning the model price will not always determine the price at which a transaction will occur. In these circumstances, buyers and sellers of high-risk complex financial instruments may achieve their price discovery only through actual transactions, but these may not occur because of the aforementioned illiquidity."

[24] "Incremental analytical detail must not be allowed to overwhelm users of the data. The salient risk points must be drawn out and made apparent, especially to senior management….The policy Group recommends that large integrated financial intermediaries ensure that assumptions underlying portfolio analyses are clearly articulated and are subject to frequent, comprehensive review."

The policy group recommends that all financial instruments having one or more of the key characteristics associated with high risk complex financial instruments must have a **"financial health warning"** prominently displayed in bold print indicating that the presence of these characteristics gives rise to the potential for significant loss over the life of the instrument.

Information Disclosures

"The documentation of all high risk complex financial instruments should include a "term sheet", which is a "concise summary highlighting deal terms. These should include: "a clear explanation of the economics of the instrument including a discussion of key assumptions that give rise to the expected returns"; a "rigorous scenario analyses and stress tests that prominently illustrate how the instrument will perform in extreme scenarios, in addition to more probable scenarios", including, where appropriate cash flow/stress scenarios.

Limiting the Market for Such Products

If approved by the new product assessment committee, the high-risk complex financial instruments should sold only to "sophisticated investors."[25] This idea is guided by the "overriding principle" that all participants should be capable of assessing and managing the risk of their positions in a manner consistent with their needs and objectives." These include:

1. The capability to understand the risk and return characteristic of the specific type of financial instrument under consideration.
2. The capability or access to the capability to price and run stress tests on the instrument
3. The governance procedures, technology and internal controls necessary for trading and managing the risk of the instrument
4. The financial resources sufficient to withstand potential losses associated with the instrument
5. Authorization to invest in high-risk complex financial instruments from the highest level of management.
6. The large integrated financial institutions may want to get written assurance from the counterparty that they possess these abilities.

The key point is this: for many of these complex and high risk products, it may not be possible to understand the risk and return characteristics, or develop the capability to price and run stress tests in a meaningful fashion. If these cannot be done, then the product must not be approved for marketing, or if already approved, then banned from further sales and if necessary, pulled off the market.

Post-Approval Review Process

CRMPG recommends that for high risk financial products the bank committee responsible for the approval of new products should also implement a "systemic post-approval review process." In addition to assessing the commercial success of the product, the post-

[25] Note that the idea of a "sophisticated investor" is not highly relevant when we are concerned with systemic risk, since, as we have seen, when they "fail" they threaten to bring down other financial institutions and the economy as well.

approval process would assess "whether the risk characteristics of the new product have been consistent with expectation."

Knowledge and Model Updating

CRMPG further recommends that there be continuous updating and review of risk assessment models and controls, including on going application of stress tests and updating the tests to make sure they are evolving according to new data and improved knowledge.

Closing Notes

The CRMPG is not alone in detailing practical product risk assessment and management practices. The Federal Reserve and other bank regulators, in recent years and especially since the crisis has broken out, have also developed procedures and tools to identify and manage risk, including those associated with financial products. So, there is no need to reinvent the wheel. It is quite feasible to develop and build on this quite large body of knowledge (and smaller body of actual practice) to develop structures for a mandatory product regulation institution that regulates both before and after products are improved.

IV. The FSPSA: Structure and Function

Building on the FDA analogy, and drawing on actual practice in other countries as well as detailed prescriptions by bankers and regulatory authorities, we can now outline a viable set of procedures for implementing a *financial precautionary principle*.

Financial Product Testing, Approval and Monitoring Stages

This section describes the stages of financial product testing, approval and monitoring.

Step 1: Pre-marketing Testing and Approval

The sponsoring financial institution will submit an application to market a new financial product. It will be required to pay a significant fee that will fund the cost of testing . The sponsor will provide a ***Safety and Effectiveness Statement***, which will include comprehensive information concerning the nature of the product, the marketing plan (eg. to whom it will be marketed, etc), what the functions of the product are and then evidence that the product will serve these functions. In addition the sponsor will provide results of safety tests based on its internal models, including the structure, inputs and assumption guiding these models. Unlike current practice, however, the models cannot be proprietary. They must provide the FSPSA with full code information about the models, because the FSPSA (and/or its advisory experts) will need to be able to replicate the studies and understand their meaning.

In addition, the sponsor will also be asked to provide information for and fill out a ***Financial Stability Impact Statement***. Whereas the ***Safety and Effectiveness Statement*** will focus on the risk impacts on the sponsoring institution and on the buyer of the financial product, the ***Financial Stability Impact Statement*** will focus on the impact of this product on the

financial stability of the system as a whole taking into account not only the impact on the buying institutions, but on how stresses to the system can lead to interaction effects through asset prices and liquidity to affect the whole system. Of course, each sponsor will not have all the knowledge necessary to fully address this issue, but their inputs will be crucial for the FSPSA's analysis. The FSPSA will take these data and analyses and subject them to their own tests, rather than simply taking them at face value from the sponsors. The FSPSA will use a combination of in-house experts and outside experts to analyze these models, inputs, and data. (See more discussion of outside "experts" below).

What should be the level of acceptable risk?

This is a key question that is very complex and must be subject to widespread discussion as it is in other areas including public health, Food and Drug laws, environmental regulation, among many others. Still, several specific aspects of this issue deserve attention here. First is the tendency for regulatory enforcement to become more lax as financial booms occur. As Orace M. Williams, GAO's Director of Financial Markets and Community Investment noted in recent Senate Testimony: "Responsible regulation requires that regulators critically assess their regulatory approaches, **especially during good times**, to ensure that they are aware of potential regulatory blind spots." (GAO, 2009b, p. 30, (emphasis added)). One way to contribute to this is to have countercyclical maximum risk levels embedded into the structure of the FSPSA. In boom times, new products have to demonstrate a lower level of risk to be approved and continued, than in bust times. This would work against the natural tendency to be over-optimistic and subject to industry influence in boom times, and to the over-shooting of pessimism in bust times.

Second, in light of the inherent problems with risk management models discussed below, the maximum level of acceptable risk should only be raised as the models and other analytical tools for both creating the *Financial Safety and Effectiveness Statement* and even more importantly, the *Financial Stability Impact Statement*, are significantly improved as verified by the FSPSA and outside experts.

<u>Increasing Capital and/or Liquidity Requirements</u>

One approach to dealing with financial products that have been evaluated as a high but acceptable risk, is to impose higher capital and/or liquidity requirements and stronger reporting requirements on these products. This is a model apparently followed by the Spanish regulatory authorities and can be implemented by the FSPSA as well. (Crotty and Epstein, 2009).

Determining Safety and Effectiveness at the Institutional and System-Wide level

The major means up to now for trying to determine the safety of complex financial products have been the computer models developed by the ratings agencies and by the banks in order to satisfy the Basel Capital rules. Many of these models are called Value At Risk (or VaR models). (Crotty, 2008). These have been shown to have been inadequate for testing risk, and, as Crotty shows, they can actually NEVER be a sole indicator of safety. This is because in a world of fundamental uncertainty, the data generation process is unlikely to ever be appropriate to truly understand these risks. In a boom period, the recent data are too rosy to be of use; and with rapid

financial innovation, data from the distant past will be unlikely to be useful because structural change has been too significant.[26] In addition, in the event of a systemic crisis, there are complex, non-linear interactions among security prices and liquidity, as many institutions try to sell securities all at once, driving down their prices and drying up liquidity.

To try to deal with some of these liquidity and interaction effects analytically, some researchers have suggested a modification of the VAR analysis, for example a CoVaR analysis. (Adrian and Brunnermeir, 2008). CoVar is defined as the value at risk of financial institutions, assuming that other institutions are in distress. It tries to take into account how securities will behave if the whole system is in trouble and will take into account the impacts on the institutions holdings if prices fall and liquidity problems emerge. An increase in the CoVAR relative to the standard estimates of Value at Risk, is a measure of the spillover risk effects among institutions. (Adrian and Brunnermeir, 2008). While in theory CoVaR may be a better measure of risk than VaR, it is nonetheless subject to many of the same data problems as is VaR because the cross-institution data will be subject to the same timing problems as just described.

Note that these data problems are even more severe with new securities since there may be no data directly applicable to the performance of these securities under stress. The firms themselves, and the ratings agencies, currently use models to try to test these securities in order to develop and market them.

Stress Tests and Reverse Stress Tests

A central problem associated with VaR and CoVar analysis is the fact that they rely on data from the past which, as we have pointed out, do not necessarily give a good indication of the actual risks involved with current products and practices.

Stress tests could help to remedy some of these problems as they are based on simulaton modeling rather than exclusively on actual data. For example, they can be used to try to assess what would be the impact on the solvency of an institution or a product if there were an extreme event, such as major downgrades of counterparties in trades. (BIS, 2009). The BIS has recently published suggested best practice approaches for conducting these stress tests.

Another tool that is available is reverse *stress tests.* (BIS, 2009; CRMPGIII, 2008). In these tests, the analyst starts with the assumption that an event could jeopardize the solvency of a firm, and then look at what kinds of products and practices would lead to that.

Another tool to study the effects of new products, would be to use stress testing to estimate how financial institutions and individual products will behave in response to extreme shocks, including shocks were other institutions are subject to the same shocks and therefore overall market liquidity and counter-party solvency is affected. To study the safety of new products, for example, stress tests could be applied to systems both with and without the existence of these products, and under varying assumptions about the nature of the distribution of

[26] This is in addition to problems of financial crises happening more frequently than assumed with normal distributions, and other such issues (Crotty, 2008).

these products throughout the financial system. The level of system risk created by these products under various degrees of distribution and types of shocks can then be assessed.

Here too the FSPSA could build on guidance and practices that have been or are being developed. The BIS notes in its recent guidance that supervisors should: 1) Make regular and comprehensive assessments of banks' testing programs. 2) Require management to take corrective action if material deficiencies in the stress testing program are identified or if the results of stress tests are not adequately taken into consideration in the decision-making process. 3) Ask banks to use specific scenarios under which their viability is threatened. 4) Ensure that they have the capacity and the skills to assess banks' stress testing programs (BIS, 2009, pp. 21 – 23.). Thus even the extremely timid BIS is willing to promote much more aggressive regulatory supervision of risk testing and also has developed check lists of what needs to be done.

Assessing the Effectiveness and Social Value of Products

It has now been demonstrated that passing a short-term "market test" is insufficient to demonstrate the social value (and often even the private value to the customer) of a financial product. Hence, the FSPSA must also assess products for their social efficiency (See Tobin, 1984, for an excellent definition of the social efficiency of financial institutions and products.) Complex models are unlikely to be as useful here as serious analytical work carried out by knowledgeable, objective experts. Financial engineers and economists are capable of assessing whether financial products are likely to contribute to true efficiency enhancements, and the only issue will be to make sure that they are giving their objective, expert opinions, rather than opinions tainted by financial involvement with the financial products firms. (Partnoy, 2003; Dad, 2006; Bookstaber, 2007).

The Bottom Line: Just say No

Given all these data and modeling problems, the key rule for the FSPSA should be this: if the product is too complex to understand with a relatively high degree of certainty as to how it will function in normal times and especially in times of stress, then it should NOT be approved until it is well understood. In less extreme cases where the likely benefits are high, it should only be approved with very strict limitations and follow-up requirements, including possibly high liquidity and/or capital reserve requirements. In other words, the rule should be that if the tests are insufficiently clear and the assumptions insufficiently sensible, and the results murky or negative, then the product should not be approved, unless it can be proven by the sponsor that the social benefits far outweigh the risks.

Post-Marketing Testing, Monitoring and Assessment

As with drug approvals, the FSPSA can refuse to allow the product to be marketed on the grounds that it is ineffective or unsafe, (with full explanation and an appeals process in place); it can ask for more data or tests; it can approve the product but insist on higher capital and/or liquidity requirements; it can limit the distribution of the product to certain institutions or types of investors and/or in certain quantities; and impose certain production information and product safety instruction requirements, including labeling. In the latter case, for example, it can insist

that the sponsor provide information sessions for those buying the product to insure they fully understand them. In virtually all cases, the FSPSA will impose a post-marketing plan through which the sponsor (and/or the exchange on which the product is sold) will provide key information concerning the distribution of the product, price specs, default or liquidity problems associated with the product, and so forth. For products which are highly risky or uncertain but, for some reason were approved anyway, there may be a short trial period imposed after which time the approval must be renewed. All products will have a sunset date by which time re-approval will be necessary (see below).

Sunset Stage and Re-Approval

The approval of all highly complex financial products should have a sunset provision requiring them to be re-certified after a certain period of time. Over that period, the post-marketing data gathering, testing and other procedures will have been followed and then will be incorporated into the analysis in a systematic fashion. Without re-approval, the product can no longer be marketed. In extreme cases, if the product is found to be extremely dangerous, then measures may be need to be taken to swap out the outstanding stock of assets, with appropriate penalties imposed on issuers and buyers, so as to avoid moral hazard problems in the future.

Staffing the Approval and Monitoring Process: Internal and External Expertise

Protecting the economy from dangerous products while allowing truly socially valuable financial innovations to develop will require sufficient numbers of skilled and appropriately motivated experts to assess the safety of financial products and to develop better mechanisms for assessing their safety. Some of this expertise will be developed within financial institutions themselves (and related consulting operations who sell such knowledge based services to these institutions). But the FSPSA must also have adequate numbers and quality of personnel – in house and externally from universities, think tanks and elsewhere – who can also contribute to the evaluation and monitoring of risk.

Staffing issues and the use of outside consultants and advisors is also a constant concern of the FDA. Issues related to possible conflicts of interest with respect to outside consultants and advisors are especially problematic. In the field of drugs, many scientists, even from academia, are also consultants for pharmaceutical companies. Similarly, many academic experts in finance have developed financial consulting practices, or own significant shares in financial institutions, or receive research grants from financial institutions to help develop new products.

Part of the solution is to develop conflict of interest guidelines for all outside experts. In addition, however, the FSPSA may have to try to encourage the development of more objective academic experts to help analyze these financial products, and, as we discuss below, develop new and improved means of assessing the safety and social effectiveness of financial products.

Improving Knowledge of Financial Product Effectiveness and Safety

The Institute of Medicine Report on the FDA noted that there is a paucity of scientists trained in the skills to test the safety of new drugs or to develop improved methodologies for

assessing drug safety. (IOM, 2007) They recommended that the FDA help underwrite research and training for scientists in these areas. Along similar lines, the FSPSA may need to develop incentives and training opportunities for economists to develop skills in risk assessment and new methodologies for assessing the safety of financial products. These could include for example: 1) Sponsoring a high quality refereed journal where academics could publish high quality and innovative research on financial safety assessment; 2) Grants for young scholars to carry out such research and develop new methodologies; 3) One or more prestigious conferences each year where scholars can present and get feedback on research in this area. These would be relatively cheap ways to develop "expert citizen watchdogs" to help develop a cadre of experts who are not beholden to the financial interests and will be able to develop an objective analysis of such products.

Burden Will Ultimately Be on the Financial Product Developers Themselves

Ultimately, however, the burden of proof for demonstrating the safety of financial products will be on the financial institutions who want to sell the products. In fact, that is the whole point of the financial precautionary principle: to shift the burden to those wanting to market and profit from the products. With a high bar raised for product approval, the financial institutions themselves will have to invest heavily in financial risk assessment and new methodologies for improved analysis.

High risk, opaque and extremely complex financial products such as Collateralized Debt Obligations (CDO)s), CDOs made up of other CDOs (so-called CDOs-squared), Credit Default Swaps (CDS) have been one of the key factors at the root of the economic crisis that has pushed the global economy toward depression. As a result, not only have these products helped cause the crisis but they have also made the crisis extremely difficult to resolve. In response, building on the analogy of the Food and Drug Administration (FDA), a number of analysts have proposed a requirement that financial products be approved by a government regulatory authority before they can be marketed. Crotty and Epstein (2009) have termed this a *financial precautionary principle.* In this paper we outline how such a financial products regulatory authority, which for expositional purposes, we name the *Financial Stability and Product Safety Administration (FSPSA)*would be structured. We show that it can build on a great deal of accumulated analysis and some practice developed by both regulatory authorities as well as the financial sector itself. The crucial differences are that the burden of proof for the safety of financial products will be shifted from the regulatory authorities to the financial institutions, and that the burden of costs will be shifted from the public to the banks.

Some may object that this regulatory structure will be corrupted by capture: the financial institutions that can profit from these new products will eventually use their financial and political muscle to erode and eventually destroy these regulations.[27] This is a great danger. There is also the risk that the resolve to limit harmful products will erode as the financial markets boom

[27] See the excellent study "Sold Out: Who Wall Street and Washington Betrayed America" which describes how wall street money corrupted the political process to lead to financial regulation that has greatly contributed to the crisis. (Essential Information/Consumer Education Foundation, March, 2009. www.wallstreetwatch.org

again. The keys to avoiding these dangers are: 1) Heavy doses of democratic accountability of the regulatory process; and 2) Counter-cyclical, automatic tightening of financial product regulatory bite. In the boom, the acceptable level of risk of financial products must be lowered to reflect the over-optimistic projections and the increasing financial, political and cultural power of finance. Ways to accomplish this would be to implement automatic increases in capital and liquidity requirements for institutions and risky products in the upturn (see Crotty and Epstein, 2009) and/or raise the minimum threshold safety rate and fees for new product approval as the boom proceeds.

Ultimately the only solution is to get money out of politics, and get more citizens in. This means putting more community members into more levels of governance and oversight, including oversight of the financial regulatory authorities. For that reason the FSPSA should have a **Community Oversight Board** made up of knowledgeable citizens to monitor the activities of the FSPSA. In the end, until we get regulators who are serious about regulation, until we give them the resources necessary to staff their administrations with enough skilled, competent and committed staff, and until we arm them with the legal and analytical tools to adequately regulate, then no institutional structure, no matter how appropriate its title or how rational its design will protect the public from the destructive practices of overly exuberant financial institutions, unethical financiers and the potentially destructive interactions of financial products and firms.

Appendix

Financial Innovation

Opponents of stricter regulation over the marketing of new financial products will object that this will reduce the pace of useful financial innovation. In this appendix we address this concern by looking more closely at the nature of financial innovation and evidence of its impacts on the economy. Below we show that: 1) Even as a theoretical matter, there is no presumption that "financial innovation" will create increases in societal welfare 2) There is very little empirical evidence that more financial innovation is associated with higher rates of productive investment or economic growth 3) There is evidence that a good deal of financial innovation is motivated by tax or regulatory evasions, or by redistributing income among stake-holders, rather than increasing efficiency or making financial markets more complete.

We are NOT arguing that financial innovations cannot improve social welfare. We simply claim that there is no presumption that they do and that many of them clearly do not. At the same time, some undermine regulations and contribute significantly to financial instability. So even if stricter regulation on the creation of new financial products reduces the rate of financial innovation, the impact on the financial risk/return frontier may well be beneficial from a societal perspective.

Definitions and Functions

Peter Tufano's classic review of financial innovation defines the term this way:

Some economists distinguish between "financial innovation" and "financial engineering." (Finnerty and Emery, 2001). They define financial engineering as crafting innovative products to solve financial problems, but argue that these are only *truly* innovative if they create more efficiency or reduce the "incompleteness" of financial products. This distinction, of course, hints at the key issue addressed here: the idea that some financial "innovations" may not add to efficiency or might be too dangerous, and therefore might need to be more highly regulated or prohibited all together.

What Functions do Financial Innovations Serve?

In the most comprehensive studies to date, John D. Finnerty

[28] Agency costs are costs associated with conflicts among the various income claimants associated with a firm.

[29] "The new options an futures contracts do not stretch very far into the future. They serve mainly to allow greater leverage to short-term speculators and arbitrageurs and to limit losses in one direction of the other. Collectively they contain considerable redundancy. Every financial market absorbs private resources to operate and government resources to police. The country cannot afford all the markets that enthusiasts dream up. It should consider whether they really fill gaps in the menu…not opportunities for speculation and financial arbitrage." (James Tobin, "On the Efficiency of the Financial System"), pp. 13-14.

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Table A2

Most Frequent Financial Innovators, 1990 – 2000*

Company Name	Number
Merrill Lynch	20
Citigroup	15
American Express	13
Citicorp	13
McGraw-Hill	13
Charles Schwab Corp.	11
Dow Jones	10
Morgan Stanley	10
Goldman Sachs	9
Bear Stearns	8
IBM	8
Reuters Group	7
Bank of America	6
Barclays	6
Chase Manhattan	6
J.P. Morgan	6

*Financial innovations were identified by searching a data base of *Wall Street Journal Articles.*
Source: Lerner, 2006.

[30] Excellent critical studies by knowledgeable financial practitioners confirm that many derivate and other complex financial products are primarily used to evade taxes, regulations, enhance speculation or simply defraud customers. See, for example, Partnoy, 2003; Das, 2006; and Bookstaber, 2007)

Table A3

Breakdown of Innovations by Industry*

Total Stories by Year		**Breakdown of innovations by types (%)**		**Distribution of Innovatiors by Industry (%)**	
1990	48	Security Underwriting; Trading	33.5	Securities Brokers and Dealers	23.5
1991	61	Asset Management; pensions	26.2	Commercial Banks	22.3
1992	47	Combination of Classes; other	17.7	Other Non-depository credit institutions	8.2
1993	49	Retail/Mortgage Banking	11.6	Computer programming &related	6.7
1994	38	Credit Cards	5.2	Books	4.4
1995	29	Insurance	5.2	Newspapers	3.5
1996	34	Commercial Banking	0.6	Motor Vehicles and equip.	2.9
1997	54				
1998	49				
1999	55				
2000	74				
2001	55				
2002	58				

*Financial innovations were identified by searching a data base of *Wall Street Journal Articles.*
Source: Lerner, 2006.

Theoretical and Statistical Evidence

REFERENCES

Ashcraft, Adam B. and Joao A. C. Santos. 2007. Has the CDS Market Lowered the Cost of Corporate Debt?." New York Federal Reserve Working Paper, June.

Bookstabber, Richard 2007. *A Demon of Our Own Design: Markets, Hedge Funds, and the Perils of Financial Innovation*. Hoboken, New Jersey: John Wiley & Sons.

Bank for International Settlements (BIS). 2005a. The Joint Forum, *Credit Risk Transfer*, March. http://www.bis.org/publ/joint13.htm

Bank for International Settlements (BIS). 2005b. The Role of Ratings in Structured Finance. Issues and Implications.

Bank for International Settlements (BIS). 2008. The Joint Forum, Credit Risk Transfer, an update. April. http://www.bis.org/publ/joint18.htm

Bank for International Settlements (BIS). 2009. Principles for Sound Stress Testing Practices and Supervision. Basel Committee on Banking Supervision. January.

Bank Nigara (Bank of Malaysia). 2003. Guidelines on Introduction of New Products. BNM/RH GL 008-3 Prudential Financial Policy Department. http://www.bnm.gov.my/guidelines/01_banking/04_prudential_stds/11_guidelines_introduction_new_products.pdf

Bank Nigara (Bank of Malaysia). 2007. *Financial Stability Report.* http://www.bnm.gov.my/files/publication/fsps/en/2007/cp03.pdf

Bloomberg News. (Simon Kennedy). 2008. "Nobel Laureates Say Credit Crunch Hurting Growth." August, 21. http://www.bloomberg.com/apps/news?pid=email_en&refer=home&sid=aTtYLhidMBuI Also see: (http://blogs.wsj.com/economics/2008/08/21/nobel-laureates-debate-role-of-regulators-during-financial-crises/)

Bloomberg News (Yalman Onaran and Michael Mckee). 2009." In Geithner We Trust Eludes Treasury as Market Fails to Recover", February, 25. http://www.bloomberg.com/apps/news?pid=20601109&sid=aLhs5Byln00k&refer=exclusive

Brunnermeier, Mark, Andrew Crocket, Charles Goodhart, Avinash D. Persaud, and Hyun Shin. 2009. "The Fundamental Principles of Financial Regulation." *Geneva Reports on the World Economy*, 11. (Preliminary Report).

Colby, Robert L.D., 2006; "Prudential Supervision of U.S. Securities Firms", Testimony Before the U.S. House Subcommittee on Financial Institutions and Consumer Credit. September 14.

Counterparty Risk Management Policy Group (CRMPGI). 1999."Improving Counterparty Risk Management Practice." June.

Counterparty Risk Management Policy Group (CRMPGII). 2005. Toward Greater Financial Stability: A Private Sector Perspective. July.

The Counter-Party Risk Management Group. (CRMPGIII) 2008. "Containing Systemic Risk: The Road to Reform." *Report of CRMPG III*. August 8, 2008. www.crmpolicygroup.org

COSO Treadway Report. 2004. Enterprise Risk Management –Integrated Framework. September.

Crotty, James. 2008. "Structural Causes of the Global Financial Crisis: A Critical Assessment of the 'New Financial Architecture'. Political Economy Research Institute (PERI) Working Paper September. No. 180. www.peri.umass.edu
Crotty, James and Gerald Epstein. 2009. "Avoiding Another Meltdown", *Challenge Magazine*, January/February, 2009, Vol. 52, No. 1, pp. 5 – 26.

Das, Satyajit. 2006. *Traders, Guns and Money: Knowns and Unknowns in the Dizzying World of Derivatives.* New York: Prentice Hall.

Davies, Howard and David Green, 2009. *Global Financial Regulation; The Essential Guide.* Cambridge, U.K.: The Polity Press.

D'Arista, Jane W. 1994. *The Evolution of U.S. Finance; Restructuring Institutions and Markets.* Armonk, New York: M.E. Sharpe.

Elul, Ronel, 1995. "Welfare Effects of Financial Innovation in Incomplete Markets Economies with Several Consumption Goods", *Journal of Economic Theory,* 65. pp. 43 -78.

Essential Information/Consumer Education Foundation. 2009 "Sold-Out: How Wall Street and Washington Betrayed America." www.wallstreetwatch.org

Finnerty, John D. 1988. "Financial Engineering in Corporate Finance: An Overview", *Financial Management* 17, No. 4. Winter, pp. 23 – 39.

Finnerty, John D. 1992. "An Overview of Corporate Securities Innovation", *Journal of Applied Corporate Finance,* Vol. 4, No. 4, pp. 23 – 39.

Finnerty, John D. and Douglas R. Emery. 2002. "Corporate Securities Innovation: An Update" *Journal of Applied Finance*, Spring/Summer, pp. 21 – 48.

Gray, Joanna, 2008. "Is it Time to Highlight the Limits of risk-based Financial Regulation"? *Capital Markets Law Journal.*

Government Accountability Office (GAO). 2009a. *Financial Regulation: A Framework for Crafting and Assessing Proposals to Modernize the Outdated U.S. Financial Regulatory System*. Document: 09-216.

GAO. 2009b. "Review of Regulators' Oversight of Risk Management Systems at a Limited Number of Large Complex Financial Institutions", Statement of Orice M. Williams, Director of Financial Markets and Community Investment, Testimony before the Subcommittee on Securities, Insurance, and Investments, Committee on Banking, Housing and Urban Affairs, U.S. Senate. GAO-09-499T. March, 18.

Group of 30. 2009. *Financial Reform: A Framework for Financial Stability.* www.group30.org (The "Volcker Report").

Hellwig, Martin. 2008. "Systematic Risk in the Financial Sector: An Analysis of the Subprime Mortgage Crisis." Max Planck Institute Reprints.

Hunt, Robert M. 2009. "Business Methods Patents and U.S. Financial Services", Federal Reserve Bank of Philadelphia, Working Paper.

Institute of International Finance (IIF).2008. Final Report of the IIF Committee on Market Best Practices: Principles of Conduct and Best Practice Recommendations- Industry Response to the Market Turmoil of 2007 – 2008, July.

International Swaps and Derivatives Association. 2005. Letter on Asset Backed Securties Regulations, 8 March.

India Planning Commission. 2009. *A Hundred Small Steps. Report of the Committee on Financial Sector Reforms*. New Delhi: Sage Publications.

Institute of Medicine. 2007. *The Future Of Drug Safety: Promoting And Protecting The Health Of The Public.* The National Academies Press.

Lerner, Josh. 2006. "The New Financial Thing: The Origins of Financial Innovations" *Journal of Financial Economics*. 79. pp. 223 -255.

Lerner, Josh. 2002. "Where Does State Street Lead? A First Look At Finance Patents, 1971 – 2000. *Journal of Finance*, 57, pp. 901 – 930.

Muolo, Paul and Mathew Padilla. 2008. *Chain of Blame; How Wall Street Caused the Mortgage and Credit Crisis.* New York: John Wiley and Sons.

Mayer, Brown, Rowe and Maw, 2004. "Securities Update: SEC Proposes New Rules for Asset-Backed Securities", May 21.

Newsweek Magazine. 2008. "The Monster that Ate Wall Street." http://www.newsweek.com/id/161199

NYU Stern School of Business. 2008. *Restoring Financial Stability; How to Repair a Failed System.* New York: Stern School of Business.

OECD, 2008. *OECD Economic Surveys: Spain*.

OECD, 2009. *OECD Economic Surveys: The Euro Area*.

Partnoy, Frank. 1999. "The Siskel and Ebert of Financial Markets? Two Thumbs Down for Credit Rating Agencies." *Washington University Law Quarterly*, Vol 77, No. 3, pp. 619-723.

Partnoy, Frank. 2003. *Infectious Greed*; *How Deceit and Risk Corrupted the Financial Markets.* New York: Henry Holt and Company.

Partnoy, Frank. 2006. "How and Why Credit Rating Agencies are Not Like Other Gate Keepers", University of San Diego Law School, Research Paper 07 – 46, May.

Reddy, Y. V. 2008. Meeting of the Task force on Financial Regulation. *Initiative for Policy Dialogue.* Manchester, UK. July.

Rodrik, Dani. 2008. "Financial Innovation: A Case of Aspirin or Amphetamines"? *Daily Star*. April 20.

Soros, George. 2008. "Testimony Statement Of George Soros Before The U.S. House Of Representatives Committee On Oversight And Government Reform", Washington, D.C. November 13. http://www.georgesoros.com/crisis-and-what-to-do110608.

Soros, George. 2009. "The Crisis and What to Do About It." http://www.georgesoros.com/crisis-and-what-to-do110608.

Stiglitz, Joseph E. 2009. *Principles for a New Financial Architecture*. The Commission of Experts of the President of the UN General Assembly on Reforms of the International Monetary and Financial System. http://www.un.org/ga/president/63/commission/newfinancialarchitecture.pdf

Tufano, Peter. 2003. "Financial Innovation," in *Handbook of the Economics of Finance* (*Volume 1a: Corporate Finance)*, George Constantinides, Milton Harris and Rene Stulz, eds. Amsterdam: Elsevier. pp. 307-336.

United States Department of Treasury. 2009. *Financial Regulatory Reform. A New Foundation: Rebuilding Financial Supervision and Regulation.*

Van Horne, J. C. 1985. Financial Innovations and Excesses. *Journal of Finance.* Vol 40. No. 3.

Wade, Robert. 2009. In interview with Kevin Gallagher, "The Economic Crisis and the Developing World: What Next?; Interview with Robert Wade and Jose Antonio Ocamp", *Challenge Magazine*, January/February, 2009.

Warren, Elizabeth and Amelia Warren Tyagi, 2008. "Protect financial consumers", *Harper's Magazine*, November, pp. 39 -40.

Whalen, Christopher. 2009. "What is to Be Done With Credit Default Swaps." February 23. www.institutionalriskanalytics.com

Wolfson, Martin. 1993. "The Evolution of the Financial System and the Possibilities of Reform", in Gary A. Dymski, Gerald Epstein and Robert Pollin, *Transforming the U.S. Financial System; Equity and Efficiency for the 21st Century.* Washington, D.C. Economic Policy Institute (EPI), pp. 133 – 157.