THE REGULATORY AFTERMATH OF THE GLOBAL FINANCIAL CRISIS

The EU and the US responded to the global financial crisis by changing the rules for the functioning of financial services and markets and by establishing new oversight bodies. With the US Dodd-Frank Act and numerous EU regulations and directives now in place, this book provides a timely and thoughtful explanation of the key elements of the new regimes in both regions, of the political processes which shaped their content, and of their practical impact. Insights from areas such as economics, political science and financial history elucidate the significance of the reforms. Australia's resilience during the financial crisis, which contrasted sharply with the severe problems that were experienced in the EU and the US, is also examined. The comparison between the performances of these major economies in a period of such extreme stress tells us much about the complex regulatory and economic ecosystems of which financial markets are a part.

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THE REGULATORY AFTERMATH OF THE GLOBAL FINANCIAL CRISIS

EILÍS FERRAN, NIAMH MOLONEY,
JENNIFER G. HILL
and
JOHN C. COFFEE, Jr.

with a foreword by
ETHIOPIS TAFARA

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CONTENTS

FOREWORD

Observations about the crisis and reform

ETHIOPIS TAFARA*,**

I: Overview

The most recent financial crisis is of paramount concern. But in the long run, what it reveals may be of greater concern. It is said that this crisis is a once-in-a-century event. If viewed narrowly in terms of the proximate causes, this may be true. But closer examination of the crisis reveals a fertile ground for additional crises, albeit with each one perhaps displaying unique features. So in devising reforms, regulators must not only address the most immediate causes of this crisis, they must also tackle the fertile ground from which they spring.

In essence, this crisis is the result of an evolution in markets and financial services. Over the past fifteen years, the structure and principal characteristics of the world's financial system have dramatically changed. The current turmoil is likely the result of the system having failed to adapt to these fundamental changes.

The modern market:

- is global in nature, featuring highly mobile capital;
- is characterized by fierce competition among financial service providers;
- no longer features barriers between historically separate financial products, sectors and actors;
- features increasing cost to investors, financial entities and regulators of monitoring conduct and risk due to increasing use of complex products; and

* Director, Office of International Affairs, Securities and Exchange Commission. The Securities and Exchange Commission, as a matter of policy, disclaims responsibility for any private publication or statement of any SEC employee. This article expresses the author's views and does not necessarily reflect those of the Commission or other members of the staff.

** This note is the fruit of many hours of reflection and intense debate with my SEC colleagues and friends, Robert M. Fisher and Robert Peterson. As such, it is as much theirs as it is mine.

- features large and relatively liquid unregulated institutional financial markets paralleling the regulated markets.

A sixth pertinent characteristic of modern markets is the rapid incorporation of advanced technologies. But as described in more detail below, technology has tended to act as an amplifier or enabler of the other five market factors.

Taken together, these changes constitute a profound alteration of capital markets, which calls for an equivalent shift in regulatory approach. As capital markets transition, we should expect significant adjustments in industry business models and changes in the nature and degree of risk to investors. The optimal blend of regulatory tools is also bound to follow suit. In 1996, two McKinsey consultants – Lowell Bryan and Diana Farrell – made a rather prescient (but hopefully not too prescient) statement in a book entitled *Market Unbound: Unleashing Global Capitalism*:[1]

> As the market becomes unbound from the constraints of national governments, it is creating the potential for a tidal wave of global capitalism that could drive rapid growth and highly beneficial integration of the world's real economy well into the next century. There is also a somewhat less probable, but nonetheless significant, chance that the power of this market could turn destructive and unleash financial instability and social turmoil such as the world has not seen since the 1920s and 1930s.

In order to define a new strategy or framework, regulators around the world must explore and understand the manner in which the market has been altered, and the ramifications of this shift. I would suggest five changes to the current regulatory framework, and insist upon one constant.

First, of course, the new regulatory framework must address the issue of increased systemic risk. But it must do so without suppressing risk-taking per se. This is crucial if we are to address the challenges inherent in this new environment, yet not undermine economic innovation. To sustain the economic innovation needed to drive the economy, financial capital must be able to take risks.

As a corollary, we need a regulatory framework that provides prudential regulation for those intermediaries that are too big to fail. Surely, the essence of our capital system is to let people and firms take chances

[1] New York: John Wiley & Sons, 1996.

with their money, and to enjoy most of the benefits and to endure most of the pain associated with risk-taking. However, if we are in a world where financial entities are too big, too indebted and too interconnected to fail, we know they will have an incentive to take excessive risk at the ultimate expense of the public. From a policy perspective, we want to end up in a world where we can afford to let firms fail if they make bad decisions.

Second, we need the regulatory framework to address the misaligned incentives that lead to excessive risk-taking. In a world where one can slice and dice risk any way that is desired by trading highly opaque, difficult-to-value instruments, it is challenging to monitor money managers well. Part of the answer will lie in finding different compensation schemes for money managers and financial executives. Part of the answer will lie in fuller disclosure about market actors and the source of their returns. Part of the answer will lie in extending the framework to cover historically unregulated market actors such as hedge fund advisers and credit rating agencies.

Third, we need a regulatory framework that mandates enhanced disclosure so that capital providers can better determine counterparty risk. Capital markets dried up when this crisis hit, because nobody was able to assess anyone else's exposure. A major step in this direction would be the introduction of clearing houses and exchanges in any market (including derivative markets) above a certain scale, and to impose basic disclosure requirements with respect to any type of financial product that achieves a certain prevalence.

Fourth, the regulatory framework needs to account for the fungibility of financial products, actors and markets. Many products, actors and markets have the same underlying economic characteristics, motivations or clientele, yet are regulated based on connection to an institution that can be described as having either a securities, banking or insurance function. This leads to market participants searching for the path of least regulatory resistance and pursuing regulatory arbitrage. Although this is sometimes in the interest of the regulated community, it is frequently to the detriment of consumers and investors. Of course, we need to be vigilant not to pursue uniform regulation for the sake of simplicity or ease given that there are instances where differences in the regulation of securities, banking and insurance are legitimate and, indeed, important.

Fifth, the regulatory framework of the future must be responsive to the fact that capital is mobile, markets are interconnected, and technology makes the movement of capital irrepressible. Capital travels in search of investment opportunities, which means companies, intermediaries and markets can choose their preferred location. Preference is frequently a matter of regulatory comfort. As a consequence, we need to ensure that our regulation is optimal in providing the best cost-justified protection for investors and at the same time comparable across developed markets. Otherwise we will create opportunities for jurisdictional regulatory arbitrage in contrast to functional arbitrage.

Finally, we need a regulatory framework that is ruthless in pursuing the protection of investors. Securities regulators must remain focused on generating well-founded market confidence. Trust is the lubrication that keeps the wheels of a market from grinding to a halt. It is the faith that a buyer is buying what he or she expects, and the faith that the seller will receive the payment promised at the time promised. And this faith has never been blind. Without this basic trust, no market in the world will succeed. In the diamond markets of New York and Amsterdam, trust is based on ethnicity, religion and the personal interaction of a handful of traders. The markets work because of reputation and the small community that makes up these markets. With the anonymous trading that characterizes modern capital markets, this personal trust, perforce, has been replaced by a surrogate – clear, useful and timely information about the products bought and sold, rules on fair dealing between buyers and sellers and their intermediaries, and vigorous enforcement by securities regulators with the powers and resources necessary to do the job.

The chapters by Ferran, Moloney, Hill and Coffee examine in detail how well the ambitious reform programs in the European Union, Australia and the United States respond to these needs. In this foreword, I outline my own personal reflections on some common and quite fundamental challenges that efforts around the world to effect regulatory change must address.

II: Altered terrain

Globalized markets, and capital mobility

Today capital is both widely dispersed and mobile. More investors than ever before invest in domestic capital markets as well as foreign markets. And the mobility of capital allows all actors in securities trading – investors, issuers, brokers, trading facilities and investors – to become entirely mobile as well. Capital raising and financial services are no longer geographically bound. This mobility presents both promises and challenges. The promises include greater competition in the market for financial service providers; an opportunity for investors to diversify their portfolio risk across borders more effectively and at less cost; and the ability of issuers to seek the lowest cost of capital wherever it might be.

The current capital mobility grew out of the collapse of the Bretton Woods system. At the conclusion of the Second World War, the "free-floating" exchange rates of the 1930s were viewed by many as contributing to the Great Depression by discouraging trade and investment and encouraging currency speculation. In light of this, the Bretton Woods system, established in 1944, fixed major world currencies to the value of gold as a mechanism for facilitating international trade. In 1971, the Bretton Woods system collapsed as the United States decoupled the dollar from the price of gold. This collapse has had major and lasting effects on the international financial system.

The most important consequence of Bretton Woods' demise was the elimination of cross-border capital controls in most developed markets. While not mandatory, the Bretton Woods system encouraged capital controls – strict limits on the transfer of capital by investors in or out of a country – to facilitate fixed exchange rates. Ironically, although Bretton Woods was designed to encourage cross-border trade, its collapse greatly expanded cross-border financial services and led to the global financial market that exists today. In short, the collapse of Bretton Woods made capital entirely mobile.

This capital mobility can have a profound effect on financial regulation. While suboptimal financial regulation has always caused both suppliers and users of capital to seek either less costly or less risky alternatives, modern technology greatly accelerates the ability of market participants to search for, and take advantage of, such alternatives. Internationally, this can translate into capital flight, as investors and issuers flee a market for better alternatives overseas. It can also present the financial industry with opportunities for regulatory arbitrage. At the same time, technology can also amplify the types of problems that have historically plagued capital markets by, for example, permitting those who commit financial fraud to transfer assets overseas, or to perpetrate their frauds across borders with greater ease.

Increasing competition and the end of "old boy networks"

The effect competition has had on financial regulation is complicated. Historically, financial markets have been characterized by guild-like organizations, often revolving around exchanges and policed by exchange membership criteria. In some cases, these organizations evolved as an explicit effort by financial service providers to reduce competition.

But since the 1970s there have been a series of regulatory and legislative changes designed to dismantle the guilds and increase competition in the financial services industry. In the United States, these changes include the elimination of fixed commissions and the beginning of efforts at establishing a national market system in the 1970s. Likewise, the Gramm-Leach-Bliley Act of 1999, which substantially repealed the separation of investment and commercial banking, allowed securities, banking and insurance firms to compete against each other within and across financial sectors. While justified partly as a response to globalization (given that European universal banks faced no such prohibition), the end result was increased competition among US financial firms.

Other policy choices have introduced new competitors. For example, while mutual funds in the United States must be registered with the SEC, SEC decisions to offer exemptions to funds with a small number of high net-worth clients led to the creation of the hedge fund industry. This sector competes directly with traditional funds for a particularly lucrative market sector. Likewise, best execution rules led to increased competition among stock exchanges, and Regulation ATS and MiFiD, which fostered the growth of electronic communication networks among broker-dealers, gave rise to alternative trading venues. The competition engendered by these new trading platforms led exchanges both in the United States and abroad to forego their non-profit mutual ownership structure in exchange for a public ownership structure that enables them to access the capital markets directly.

As increased financial market competition proved successful, the trend was emulated in other markets. In many cases, intra-market competition also fueled inter-market coordination, as demutualized stock exchanges and investment firms sought foreign partners and foreign capital to better weather the newly competitive environment. The result is a feedback loop – while globalization increases market competition, competition also increases market globalization.

While greater competition is a boon for investors in terms of cost, choice, and innovation, it also tightens profit margins among many financial service providers. This, in turn, places new pressure on the role of self-policing. Indeed, incentives to commit fraud – or to engage in non-transparent risk taking to enhance returns – at both the individual and firm level are greater since the costs of failure (in terms of foregoing the high bonuses and returns) in a highly competitive environment are more significant. In other cases, where regulated firms face competition from either an unregulated sector (e.g. hedge funds) or foreign competitors facing lower regulatory costs, it leads to pressures on regulators to curtail domestic oversight.

Increased competition in the financial sector has also changed risk management. As is discussed in more detail below, even where intense competition does not lead to fraud, it can distort incentives in such a way as to lead to suboptimal behavior. For example, as competition eroded profit margins for the traditional services offered by broker-dealers, many shifted away from a fee-based business model selling traditional brokerage services to one based on proprietary trading. However, since returns on proprietary trading are limited in a highly competitive market, broker-dealers, hedge funds and other firms used leverage to magnify returns dramatically. In a bull market, the higher returns provided by leverage will draw in new investors, particularly if the degree of leverage is not completely transparent. Investor expectations, in turn, make it impossible for competing firms to avoid a leveraged strategy, regardless of the risks presented to the firm.

Fungibility of financial products, sectors and actors

Since all finance is a measurement of risk, from an economic perspective, banking, securities and insurance products are all variations on a theme. Historically, the users of these different products had different objectives and different risk tolerances, even if banks, investment firms and insurance companies approach risk in a similar fashion. Given these different risk tolerances, the securities, banking and insurance industries are regulated differently.

In the United States, the Gramm-Leach-Bliley Act broke down previously existing barriers between the banking, securities and insurance sectors. Rather than being limited to the United States, this proved to be a global trend. At the same time, the development of financial derivatives markets led to innovative new products with characteristics that clearly cut across the traditional borders erected between banking, insurance and securities sectors. Notwithstanding the current crisis, these new financial derivatives proved better at accomplishing the goals of a particular financial sector than traditional products since the risks inherent in allocating capital can be better spread across different investors with different risk preferences.

The consequences of the Gramm-Leach-Bliley Act, globalization, and increased competition are a new fungibility in financial products and financial service providers. As the recent market turmoil has demonstrated, a hedge fund on one side of a financial derivative contract can be indistinguishable from an insurance firm – except for the manner in which they are regulated. Likewise, money market funds offered by traditional investment banks are used by investors as savings accounts, notwithstanding the differences in regulation and oversight. Many issuers that traditionally sought short-term bridge loans from commercial banks or sold commercial paper through investment banks now seek short-term funds directly from hedge funds or the hedge fund-like proprietary trading arms of consolidated financial firms.

While banking, insurance and securities regulators have fought to build regulatory bridges via working agreements or memoranda of understanding to rationalize the regulation and oversight of financial products that cut across traditional financial sectors, in reality this has proven difficult. Financial regulators in many countries differ not just in their legislative mandates and legal powers, but also in their regulatory cultures. However, even in countries that have adopted consolidated financial regulatory systems (with a single regulator overseeing all sectors of the financial market), the fungibility of financial products and financial actors has proven to be a regulatory challenge. Part of this challenge stems from the rapid evolution of financial products in a global and highly competitive market. But the competition and globalization themselves also present special challenges, since the costs to regulators of getting regulation "wrong" have become higher.

Unregulated institutional markets

In 1990, as sophisticated institutional investors increasingly sought to invest in foreign markets, the SEC adopted Rule 144A, which permitted certain types of issuers to sell securities in the United States to certain types of institutional investors without registering them with the SEC. The goal of Rule 144A was two-fold – to permit sophisticated institutional investors in the United States to buy and sell amongst themselves certain foreign securities without having to direct those transactions through their foreign affiliates; and to facilitate the provision of venture capital funding from institutional investors to start-up companies in the United States.

Rule 144A has been widely viewed as successful in achieving these goals. Over the past several years, and particularly since the bursting of the "Tech Bubble" in 2001, the Rule 144A "market" has expanded rapidly, with Rule 144A issuances occasionally equaling or exceeding in value public offerings in the US market. The reasons for this growth include:

A decrease in general investor interest in new equity offerings following the collapse of the Tech Bubble;
An increase in regulatory costs for public offerings following passage of the Sarbanes-Oxley Act of 2002; and,
The increasing "institutionalization" of the US market, with retail investors preferring to hold diversified investment portfolios via mutual funds, pension funds, hedge funds and other collective investment schemes.

This last point – the increasing institutionalization of the US investor – has meant that issuers making a restricted Rule 144A offering can often attract nearly as much capital as could only be accessed via a public offering in the past. Issuers of Rule 144A products can also structure complex securities tailored to a particular investor without having to make certain public disclosures which either the issuer or the investor believes might prove problematic from a business confidentiality perspective. And since Rule 144A-exempted securities are not sold on an exchange, the transactions are not made public to the market, permitting institutional investors to take a position in or divest themselves of an issuer's securities without that information having as immediate an impact on the price of that security as might be the case on a large, liquid exchange.

The growing fungibility of financial products in the United States has also added to the popularity of the Rule 144A market. For example, insurance products structured as financial derivatives or securities, securitized banking products such as retail mortgage-backed securities (RMBS), or collateralized debt offerings (CDOs) secured by consumer credit card debt can be sold to large institutional investors via a Rule 144A offering, effectively permitting hedge funds or investment firms to take a position in an entirely unrelated financial sector. Furthermore, these offerings can be concluded in a comparatively short period of time versus a public offering of a similar product.

Rule 144A, when combined with the SEC registration exemption for hedge funds, has created an essentially private, more lightly regulated market for securities in the United States. While fraud in an offering or by a market participant remains prohibited, the degree of disclosure, counterparty risk and market transparency is not overseen by any financial regulator. The justification for such an unregulated market was essentially predicated on sophistication – i.e. that private transactions among sophisticated institutional investors did not merit the type of regulatory oversight and disclosure required of a public market, where individual investors might not be in a position to demand the type of information necessary to allow them to make informed investment choices. As this market was originally small and secondary to the public markets, concerns were not raised. But the opacity of this market serves to hide risk from the overall public and this uncertainty is cause for vigilance.

Increasing agency cost

Today, complex, opaque instruments for slicing and dicing risk any way that may be desired are readily available to parties large and small. Many of these markets involve customized products or transactions that are traded "over-the-counter" (i.e. not on an exchange), and can be extremely difficult to value. No one knows who is holding what basket of risks at any given point in time. An enterprise, or an employee of an enterprise, can bet the "farm" in one instant, and then reverse the bet in another. This presents a challenging world for risk managers, investors and regulators.[2] While the availability of these complex instruments brings many benefits to investors and the marketplace as a whole, they also serve to increase what economists refer to as "agency cost" – that is, the cost due to the misalignment of incentives between the principals, who hire someone to perform a service for them, and the agents performing the services.

[2] While derivative markets are nothing new, technology has dramatically lowered their transaction costs as well as provided a means of valuation. This has led to a scale, complexity and (normal) depth of liquidity that is unprecedented. For example, the credit default swap market, in which "default insurance" on bonds may be purchased from counter-parties, has recently involved nominal aggregate valuation of $55 trillion, which is larger than the annual gross domestic product of all nations combined. Neither regulators, nor investors, nor counter-parties are in a position to know the exposures that are created through these transactions. Even small perturbations in markets of this scale can have significant consequences for the real economy.

The availability of these tools renders it much more difficult to determine the risks faced by the particular enterprise. Because the risks being taken by the enterprise are more difficult to monitor, and intrinsically less transparent, its managers might be tempted to take on more risk than is apparent and attempt to tout any returns from taking that risk as the returns from value-added performance (instead of simply the returns from hidden gambling). In addition, if the managers of the enterprise are paid substantially more for upside performance, they may have an incentive to take on risks that are economically inefficient (i.e. that do not provide expected rewards to the enterprise warranted by such risk). The increased prevalence and use of complex instruments presents much greater complexity to the investing public and to regulators in determining what risks enterprises actually face.

The availability of these instruments has shifted the balance of power away from investors and regulators and toward financial intermediaries and agents. The argument that these instruments make the world a better place relies, at least in part, on the notion that risk would be better dispersed and end up being held – more or less – by those better able to absorb it. But the legitimacy of this argument relies on a certain degree of transparency. The question of what impact these new instruments would have on the incentives (and therefore the behavior) of financial intermediaries and other agents cannot be overlooked. If we do not address this new situation with the right set of regulatory tools designed to enhance investor powers, we may find ourselves thrown into crises such as the ongoing one on a regular basis.

Technology

Over the past 40 years, changes in information-processing and communication technology have also had a significant impact on the shape of the US capital market. While often described in revolutionary terms, in many cases these technological innovations have acted as amplifiers of the change enabled by regulatory and policy decisions, or as a result of financial product innovations, rather than as the impetus for regulatory or policy change itself. In many cases, one of the major effects of modern computing and communications technology has been to make other market characteristics seem inevitable, or significant policy decisions intractable once implemented.

For example, although technology advancements did not enable the creation of a global capital market (a market which has existed for decades and which expanded rapidly as a result of economic and regulatory changes), modern communications technology enables even retail investors to access information about investment opportunities abroad, and permits small US institutional investors to have quasi-direct access to foreign trading screens through larger broker-dealers with overseas affiliates. The effect has been more closely to integrate national markets across borders, even where the integration itself is only possible because of regulatory changes such as the elimination of capital controls (i.e. the collapse of the Bretton Woods system) and the acquiescence of national regulators. At the same time, technology can also amplify the types of problems that have historically plagued capital markets by, for example, permitting those who commit financial fraud to transfer assets overseas more readily.

Modern communication and computing technology also makes capital more mobile, both domestically and internationally. Domestically, technology-enabled capital mobility can mean the creation of entirely new financial products or financial sectors, almost overnight, to either circumvent suboptimal regulation or to take advantage of disparities in how economically fungible financial products are regulated.

Technology has also greatly amplified the degree of competition market participants face, while simultaneously amplifying possible systemic risks. For example, cheap computing technology now enables investors to engage in complex algorithmic trading not possible in the past. This translates into potentially greater market risk analysis and price discovery, as computers can execute trades with the introduction of new information far more quickly than can a human. This can make a market significantly more efficient, to the benefit of investors and issuers alike. However, technology also allows successful trading innovations to be deconstructed, reverse-engineered and copied by competitors. While this, too, can prove a boon to both investors and issuers, it also raises systemic risk concerns if widely used assumptions prove inaccurate or if errors are introduced into an electronic trading system. While not substantively different from the past – inaccurate assumptions and error trades have always been a bugbear of a capital market – automated trading systems can rapidly turn a costly but manageable mistake into a market-shattering systemic problem.

Technology also heightens competition across borders. In the past, trading and clearance and settlement systems were complex affairs, difficult to construct and hard to replicate. Now, the most advanced trading and clearance and settlement technology is commercially available to stock markets everywhere, making it possible for even the youngest exchanges to have the type of systems (assuming they can afford them) necessary to make the technical aspects of their operations competitive with more established institutions.

Finally, technology has accelerated both the cross-sectoral fungibility of financial products, and helped entrench policy decisions that have led to large, private and unregulated markets among the largest, most sophisticated financial institutions. Modern computing technology permits a degree of risk analysis not possible in the past. While financial scandals repeatedly demonstrate that this risk analysis is not infallible and can even magnify market difficulties by creating the illusion of greater confidence than is warranted, it also allows for greater risk segmentation. Greater risk segmentation, in turn, permits financial service providers to craft banking, insurance, derivatives and securities products designed to achieve the types of investor objectives once reserved for products solely the province of an entirely different financial sector. Similarly, in the past, while institutional investors frequently traded securities amongst themselves directly, such markets lacked the liquidity of an exchange. Modern technology, by contrast, can now permit institutional investors to emulate a degree of exchange-like liquidity while conducting purely private transactions with other institutions, bypassing exchanges altogether – although, as recent events have shown, quite possibly at the cost of the transparency and safety that an exchange and its clearance and settlement system offers.

III: A cautionary note

As we consider regulatory reform, we should not lose sight of the differences between market regulation and the supervision of institutions. Insurance, banking and securities regulators all historically have a common interest in maintaining the health and soundness of financial firms by, for example, requiring the firms to maintain capital reserves. And all functional regulators have an interest in enforcing the law.

But there also are differences. For example, the inherent tension between "consumer protection" and systemic stability often means that enforcement activities of insurance and banking regulators are negotiated and conducted more discretely. This happens because banking and insurance regulators are concerned that public enforcement activities will lead depositors or consumers to lose faith in the firm involved, possibly leading to a run on the bank or a dramatic reduction in the insurers' ability to distribute risk as consumers leave. By contrast, securities regulators tend to have aggressive and public enforcement programs – with punishment meted out in the public square, as it were. Indeed, securities regulators believe public enforcement actions are necessary to deter fraud and reassure investors in the integrity of the system.

For bank supervisors, the key objective is to maintain the stability of and confidence in financial institutions. The top nightmare for a bank supervisor is a contagious liquidity crisis, where concerns about one bank lead to a run on the entire banking system. Insurance supervisors, for their part, emphasize consumer protection and the solvency of the insurers – which makes perfect sense, since the worst time to learn that an insurer does not intend to live up to its promises is when an insurance claim is made. In short, traditionally, banking regulators have focused on prudential regulation, while securities regulators have focused on disclosure, transparency and enforcement. In the aftermath of the recent crisis, where should we extend the traditional tools of the banking regulator and where should we extend those of the securities regulator?

There is little denying that the recent financial crisis, while involving all types of market participants, was essentially a banking crisis. Although unusual, perhaps, in the number of non-banks that undertook bank-like activities and certainly unique in that securitized financial products were the instigators, the pattern of the crisis differed from other banking crises only in its depth. Financial firms – closely linked to each other through leverage and counterparty arrangements – exposed themselves to too much risk. And when that risk became apparent, there was a "run" on these financial institutions.

At the heart of the problem is the maturity mismatch that characterizes traditional banking. The dangers of a maturity mismatch were amplified, however, by the potential for increased volatility on the asset side of the balance sheet attributable to the "embedded leverage" inherent in certain securitized products. Potential volatility was further increased through derivative products.

Now, clearly, it is important that we understand why these widely varying financial firms were acting like traditional banks. Moreover, I think most of us would agree that when systemically risky financial firms take on the role of banks, they should face the same kind of prudential regulation as do banks. But we must pause here and ask ourselves: if all major sources of financing today are to be treated as banks – with more or less one-size-fits-all capital requirements and conservative risk measurement mandates – where is the financing to come from for the next wave of high-risk/high-payoff innovations? Who will finance the next great development in transportation, or medicine, or artificial intelligence?

In the wake of the recent financial crisis, our regulatory reform efforts have – quite properly – focused upon the reduction of systemic risk. Among the regulatory challenges here, I believe, is the grave danger that our efforts to reduce systemic risk may result in a reduction of the kind of risk taking that drives real innovation. This could result in substantially reduced economic growth – foregone economic growth that might, in fact, serve to address current economic straits.

If we look back at the many fundamental economic innovations of the 20th century – aircraft, antibiotics, the Internet, the transistor and semiconductor, the mass produced automobile and the plastics that Mr. McGuire recommended for investment in the movie, *The Graduate* – we see relatively little bank financing, at least not at the inception of each innovation's lifecycle. This is unsurprising because, as we know, banks are the archetype of systemically risky financial entities. Consequently, banking regulation, when it is done properly, imposes a certain degree of financial conservatism.

But we must ask: as we reform our markets in light of the recent crisis, where will the financing come from for the truly risky enterprises of the 21st century? This is where the traditional tools of the securities regulator come into play. While banking regulation is designed to control and, to a certain extent, suppress risk taking, securities regulation is, in stark contrast, designed to facilitate it. In the financing of economic pursuits that entail substantial risk, the traditional tools of securities regulators – that is, disclosure, transparency and rigorous enforcement efforts to police fraud and abuse – have a substantial comparative advantage over banking regulatory tools. As mentioned above, failure is an essential part of the innovative process. But that's precisely what the banks should try to avoid.

In our collective efforts to reform our markets in light of the systemic crisis, the danger is that the tools of the banking regulator come to dominate the regulation of capital markets and thereby unintentionally suppress needed real innovation. As regulators, we must look at what capital needs to do to support economic growth. We must be careful to recognize why different avenues for financing exist. We need to recognize why securities regulation has historically differed from banking regulation. As legendary venture capitalist William

Draper recently put it in an interview: "Facebook couldn't go to a bank and get a commercial loan to start up a company."

There is much at stake. If we want to encourage innovation and realize its benefits, financial regulation has to make a space for risk-taking. Only by recognizing the inherent functional differences between capital markets and banking can we succeed in both addressing systemic risk while at the same time spurring economic growth through innovation. Those economies that recognize these differences, and which regulate and supervise accordingly, will grow and prosper and become the leaders in the 21st century.

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TABLE OF CASES

TABLE OF LEGISLATION