MARKETS AND SYSTEMIC RISK

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This summarizes the approach of a lengthy research project in which I am presently engaged. Interested members of the International Insolvency Institute are welcome to e-mail me (address shown above) for a draft of the full working paper. **Readers should be cautioned, however, that my research is ongoing and thus the working paper, as well as this summary based thereon, are subject to (and in fact almost certainly will) change.**

I. INTRODUCTION

Governments and international organizations are calling for increased regulation of systemic risk. The International Monetary Fund ("IMF"), for example, is concerned about bank deregulation, which has allowed financial systems to become more vulnerable to systemic risk and to a growing number of financial crises. The lack of transparency and increase in opaque investments by banks create chains of exposure where financial regulators do not understand "who owns what." There is also increasing concern about the potential for systemic risk stemming from hedge fund failure, originally raised by the near failure of Long-Term Capital Management and more recently prompted by the unregulated spread of hedge funds as a favored investment tool. As a result, government agencies are making broad demands that hedge funds be regulated to mitigate this risk. Additionally, the Federal Reserve has warned of the potential for systemic risk in the mortgage-backed securities market. Leaders of foreign monetary organizations are also calling for increased focus on systemic risk that extends past the traditional, bank-oriented, approach.

There is, nonetheless, a great deal of confusion about what types of risk are truly "systemic." Some commentators define systemic risk as "the probability that cumulative losses will occur from an event that ignites a series of successive losses along a chain of [financial] institutions or markets comprising . . . a system." Others, however, define it as "the potential for a modest economic shock to induce substantial volatility in asset prices, significant reductions in corporate liquidity, potential bankruptcies and efficiency losses." Still others define it as "[t]he risk that a default by one market participant will have repercussions on other participants due to the interlocking nature of financial markets. For example, Customer A's default in X market may affect Intermediary B's ability to fulfill its obligations in Markets X, Y, and Z."

These definitions are inconsistent in several ways. For example, the trigger event in the first is merely an "event," in the second a "modest economic shock," and in the third a "default by one market participant." The consequences of the trigger event are also different, in the first definition being "a series of successive [and cumulative] losses along a chain of institutions or markets," in the second being "substantial volatility in asset prices, significant reductions in corporate liquidity, potential bankruptcies and efficiency losses," and in the third being merely "repercussions on other [market or interlocking market] participants." There is not even agreement on whether systemic risk should be defined by reference to market losses or just market participant losses. The only common factor in these definitions is that a trigger event causes a chain of bad economic consequences.

Alan Greenspan has summed up the confusion, observing that although "[i]t is generally agreed that systemic risk represents a propensity for some sort of financial system disruption[,] one observer might use the term 'market failure' to describe what another would deem to have been a market outcome that was natural and healthy, even if harsh." As a result, the "very definition [of systemic risk] is still somewhat unsettled."

If a problem cannot be defined, it cannot be solved—or, at least, it cannot be efficiently solved since confusion over the nature of the problem can obscure attempts to provide solutions.

My article therefore proceeds, first, by trying to define systemic risk and by examining what it is about this risk that is most problematic. Based on that foundation, the article then attempts to derive a conceptual framework for solving the problem of systemic risk, focusing on regulatory solutions. In that context, the article examines how risk itself—in particular, financial risk—should be regulated and then inquires how that regulatory framework should change by reason of the financial risk being systemic.

A threshold question is whether regulatory solutions are appropriate. My article argues they are because no individual market participant has an incentive, absent regulation, to limit its risk taking in order to reduce the systemic danger to other participants.

II. DEFINING SYSTEMIC RISK

As discussed, a common factor in the various definitions of systemic risk is that a trigger event, such as an economic shock or institutional failure, causes a chain of bad economic consequences—sometimes referred to as a domino effect. These consequences could include (a chain of) financial institution and/or market failures. Less dramatically, these consequences might include (a chain of) significant losses to financial institutions and/or substantial financial-market price volatility. In either case, the consequences potentially could affect financial institutions and markets.

I therefore examine systemic risk in the context of both financial institutions and markets. Although a chain of bank failures remains an important symbol of systemic risk, the ongoing trend towards disintermediation—or enabling companies to access the ultimate source of funds, the capital markets, without going through banks and other financial intermediaries—is making these failures less critical than in the past. Companies today are able to obtain most of their financing through the capital markets without the use of intermediaries. As a result, capital markets are increasingly central to any examination of systemic risk. Systemic disturbances can

erupt outside the international banking system and spread through capital-market linkages, rather than merely through banking relationships. I conclude that it may be confusing to separate institutional and market systemic risk, and that perhaps a better way to think about systemic risk is that its focus is sometimes critical financial intermediaries, like banks, that facilitate the funding of companies, and other times markets and/or institutions, such as hedge funds, that are either not financial intermediaries or at least not critical financial intermediaries.

This integrated perspective is useful because a chain of failures of critical financial intermediaries, by definition, would significantly affect the availability and cost of capital. These failures, therefore, implicitly become a proxy for market consequences. In contrast, a chain of failures of institutions that are not critical financial intermediaries could only significantly affect the availability or cost of capital when those failures are large enough to jeopardize the viability of capital markets. As disintermediation increases, therefore, systemic risk should increasingly be viewed by the effect on markets, not institutions per se.

This perspective also reveals that the business or legal characterization of any given institution should be far less important, from the standpoint of systemic risk, than whether such institution is, in fact, a critical financial intermediary. Taking hedge funds as an example, the likelihood that systemic risk would result from the failure of Long-Term Capital Management (LTCM), or from the failure of any hedge fund that is not a critical financial intermediary, depends not on the entity's characterization as a hedge fund but rather on the likelihood that its failure would jeopardize the viability of capital markets. Other than their lack of transparency—making it difficult to publicly determine the size of hedge fund exposures—there is little inherently unique about hedge funds from the standpoint of systemic risk. Equity investors in a failed hedge fund may lose their investments, but that should not necessarily raise concerns over systemic risk because those investors are necessarily wealthy and sophisticated and, if they are prudent, the hedge-fund investment will be only part of a diversified investment portfolio. Lenders to a failed hedge fund may not be repaid in full, but this is no different than a company defaulting on its debt, which is addressed as a regulatory matter through bankruptcy law.

Derivatives counterparties to a failed hedge fund may not be paid if the derivatives settle in their favor; but this is no different than a company defaulting on its obligations to derivatives counterparties, which again is addressed as a regulatory matter through bankruptcy law. In LTCM, the potential for systemic risk existed not by reason of its status as a hedge fund per se but by the sheer size of its exposure to other institutions and market participants. Size matters.

Synthesizing these factors, I propose a working definition of systemic risk: the risk that (i) an economic shock such as market or institutional failure triggers (through a panic or otherwise) either (x) the failure of a chain of markets or institutions or (y) a chain of significant losses to financial institutions, (ii) resulting in substantial financial-market price volatility. This definition of systemic risk underlies the remainder of my analysis.

III. REGULATING SYSTEMIC RISK

After defining systemic risk, my article examines how, if at all, systemic risk should be regulated. To this end, the article first reviews historical regulatory approaches and then attempts to identify, normatively, what should be the goals of a systemic-risk regulatory regime.

A review of historical approaches shows that attempts to regulate systemic risk can be imperfect and messy. Furthermore, the historical focus has been on bank systemic risk whereas modern models of systemic risk should be additionally focused on non-bank and market failures. My article next considers potential regulatory approaches in that broader context.

B. Identifying Regulatory Goals

The first step in analyzing how to regulate systemic risk is to identify the goals of such regulation. To this end, my article examines what should be the goals of regulating financial risk and then asks how, if at all, those goals should change by reason of the risk being systemic. Assuming that preservation of the financial system is socially desirable, I conclude that the goals

of regulating systemic risk should include both efficiency and stability. Although I recognize that efficiency, in a broad sense, includes stability, I show that it is analytically useful to view stability as separate from efficiency per se.

My article next uses these goals to attempt to identify potential approaches to regulating systemic risk. In identifying these approaches, I take into account not only the goals of stability and efficiency but also—to the extent not already explicitly included in assessing efficiency—the costs of regulation based on these goals.

To better identify these approaches and implement that balancing, it is useful to think not only conceptually but also in concrete terms. For the latter purpose, my article uses a generic example, which adheres to the article's working definition of systemic risk and is also consistent with supposition by the President's Working Group on Financial Markets, Hedge Funds, Leverage, and the Lessons of Long Term Management as well as testimony before the U.S. House of Representatives' Committee on Banking and Financial Services of what a systemic market meltdown could look like. A huge hedge fund or private-equity company, XYZ Capital, defaults. Its many contractual counterparties rush to try to close out or otherwise protect their positions on hundreds of billions of dollars in transactions. As a result, collateral is liquidated and assets are sold in "fire-sales," causing prices to drop sharply. The price drops in turn exacerbate the rush to close out positions, which in turn causes prices to drop further. The price drops become so severe that one or more capital markets stop functioning, at least temporarily. Investors lose confidence and begin withdrawing their money from the remaining capital markets, weakening those markets and—due to a perception, if not reality, of heightened default risk—leading to a significant widening of credit spreads and a resulting higher cost of funds. In a vicious cycle, the increased cost of funds triggers defaults, and also causes further liquidations of positions (to generate cash) and thus further price drops.

C. Identifying Regulatory Approaches

Averting Panics:

One possible approach to regulation is functional: to attempt to prevent financial panics, since they are often the triggers that commence a chain of failures. Imposing regulation to help avert panics can facilitate the goal of stability. Any regulation aimed at preventing panics that trigger systemic risk, however, could fail to identify ex ante all the causes of these panics. Even beyond the generic example of the failure of XYZ Capital, a former Vice Chairman of the U.S. Federal Reserve System believes there may be many such causes. Furthermore, even when identified, panics cannot always be easily averted.

The same trigger also can foreshadow small consequences some times and large consequences other times. To the extent feasible, therefore, regulation intended to avert panics should attempt to take into account what it is beyond the triggering event that sorts the magnitude of the consequences, and should apply only to deter panics that trigger large consequences.

Disclosure:

Disclosing risks traditionally has been viewed, at least under U.S. securities laws, as the primary market-regulatory mechanism. It works by reducing, if not eliminating, asymmetric information among market players, making the risks transparent to all. It therefore might seem that, in a world of perfect disclosure, financial panics would be minimized because investors would price in all risks. In the context of systemic risk, however, my article shows that individual market participants who fully understand that risk will be motivated to protect themselves but not necessarily to protect the system as a whole. For this same reason, it is unlikely that requiring non-public entities such as hedge or private-equity funds to disclose their financial condition or leverage would go far in deterring systemic risk.

The efficacy of disclosure also is limited by the increasing complexity of transactions and markets. Disclosure alone therefore appears to be a weak regulatory approach.

Financial-Exposure Limits:

The failure of one or more large institutions could create defaults large enough to de-stabilize other highly-leveraged investors, increasing the likelihood of a systemic market meltdown. This suggests another possible approach to regulation: placing limits on inter-institution financial exposure. Financial-exposure limits would facilitate stability by reducing the losses of any given contractual counterparty, and thus the likelihood that such losses would cause the counterparty to fail. Such limits also might reduce the urgency, and hence the panic, that contractual counterparties feel about closing out their positions.

This approach is now applicable to banks through lending limits, restricting the amount of bank exposure to any given customer's risk. A way of thinking about these limits is that they assure diversification of risk.

My article is still exploring whether it makes sense to extend this approach beyond banks.

Reducing Leverage:

Reducing leverage is relevant to systemic risk insofar as it reduces the risk that a financial entity fails in the first place and also reduces the likelihood "that problems at one financial institution could be transmitted to other institutions." Reducing leverage would strongly facilitate the goal of stability but could create significant costs. Some leverage is good, though there is no optimal across-the-board amount of leverage that is right for every company. Regulation therefore would be complex. Imposing too restrictive limitations on leverage would impair a firm's ability to operate efficiently, and impede economic growth.

My article is still exploring the feasibility of restricting leverage, including the importance of "size matters." Small institutional failures are unlikely to result in failures to pay amounts large enough to trigger other institutional defaults, so perhaps this approach could be applied only to large firms. I am also considering the efficacy of reducing leverage in a world where leverage can be structurally masked.

Ensuring Liquidity:

This approach, at least in theory, could facilitate stability in two ways: by providing liquidity to prevent financial entities from defaulting (or to prevent defaulting financial entities from failing), and by providing liquidity to capital markets as necessary to keep them functioning. This would strengthen these two key links in the systemic meltdown chain, thereby strongly facilitating the goal of stability.

There are at least two possible regulatory ways to ensure liquidity: creating a lender of last resort, and imposing entity-level liquidity requirements. These are potentially costly, however. Establishing a lender of last resort, for example, could create moral hazard, potentially shift cost to taxpayers, and also foster adverse selection.

Diversifying Risk Through Hedging:

Hedging is intended to protect institutions from risk by using credit derivatives to diversify that risk. On the other hand, diversification through hedging increases linkages among market participants which, at least in part, could offset the risk spreading (i.e., if there is any given institutional failure, it would impact on many more other institutions). I am, among other things, considering what the net effect might be.

Derivatives also can be used for speculation, which might increase, rather than protect against, the potential for systemic risk. I am examining this increased potential, including the recently-enacted derivatives netting provisions of the U.S. Bankruptcy Code.

Ad Hoc Approaches:

The extent to which ad hoc responses to systemic risk facilitate stability and efficiency is, of course, partly dependent on what those responses turn out to be. Nonetheless, some general observations can made. For example, ad hoc approaches do not always work. Sometimes they are too late and the harm has been done or no longer can be prevented, and sometimes there is

insufficient time to fashion and implement an optimal solution. In these cases, ad hoc approaches do not strongly facilitate the goal of stability and are second-best.

From an efficiency standpoint, ad hoc approaches can help to minimize the difficulties in measuring, and balancing, costs and benefits. Furthermore, ad hoc approaches reduce moral-hazard cost to the extent an institution cannot know in advance whether, if it faces financial failure, it will be bailed out or fail.

Market Discipline:

As the above discussion of ad hoc approaches shows, regulatory approaches to systemic risk do not have to be prescriptive ex ante. In a market context, moreover, they may not have to be prescriptive at all. Some amount of bank "regulation," for example, is believed to be imposed by the market itself. Market-imposed regulation is efficient insofar as it minimizes regulatory costs.

Although in theory perfect markets would never need external regulation, actual markets, including financial markets, are not perfect. Under a market-discipline approach, the regulator's job is to ensure that market participants exercise the type of diligence that enables the market to work efficiently. This appears to be the type of approach presently taken by the Federal Reserve Board to minimize hedge-fund failure and the resulting possibility of systemic risk.

For two reasons, however, a market-discipline approach only weakly facilitates the goal of stability. Market discipline to avoid systemic risk already has been shown to be inherently suspect because no firm has an incentive to limit its risk taking in order to reduce the danger of systemic contagion for other firms. Perhaps this helps explain why, even though the banking and securities-brokerage industries have long been subject to a market-discipline regulatory approach, significant potential for systemic risk from an LTCM default was attributed to the overly "generous terms from the banks and broker-dealers that provided credit [to LTCM] and served as counterparties."

Furthermore, even outside of the systemic-risk context, regulators have a mixed track record, absent prescriptive rules, of ensuring that participants exercise market discipline. For example, industry observers have expressed concern that banks are now competing to make loans without financial covenants, even though it is questionable whether that constitutes "safe and sound" banking practice—a standard of self-discipline that regulators are supposed to ensure that banks follow.

I also argue that this mixed track record of ensuring that participants exercise market discipline may well represent a larger, and almost inevitable, behavioral-psychology phenomenon.

Thus, although market discipline is attractive as a supplement to other regulatory approaches, there is some doubt whether it should serve as the exclusive, or even primary, regulatory mechanism.

D. Assessing Regulatory Approaches

The discussion above has identified potential regulatory approaches, highlighting the extent to which these approaches facilitate the goals of stability and efficiency and generate possible associated costs. My article next attempts to balance these costs and benefits in order to compare and assess the different approaches. For this purpose, I show that a modified precautionary principle may be appropriate.[1]

In this context, I also explore the suitability of a range of regulatory approaches working together.

[1] Under the most utilized form of the precautionary principle, government may decide to regulate an activity notwithstanding lack of decisive evidence of the activity's harm, such as controlling low-level exposure to carcinogens notwithstanding lack of proof of a causal connection between such exposure and adverse effects to human health.

IV. REGULATION IN AN INTERNATIONAL CONTEXT

Finally, my article examines the need for cross-border regulation of systemic risk, since financial markets and institutions cross sovereign borders. In this context, I attempt to assess the potential for a regulatory race to the bottom if regulation is done on a national as opposed to an international level. I also examine the feasibility of international regulation.