Systemic Risk as a Negative Externality

by Rick Gorvett

The recent financial crisis was a significant, but not a unique or inconceivable, event. The inherent uncertainty of economic and financial processes, along with the ever-increasing interconnectedness and interdependence of economies and financial markets, suggests that crisis events are always possible, and, in the end, probably inevitable. Most likely, the best we can do is attempt to minimize the frequency and severity of market-wide financial distress.

The new Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 has numerous provisions involving oversight and monitoring of financial activities and stability, with an eye toward reducing the potential for systemic financial distress. Perhaps one of the more interesting provisions is the liquidation of troubled financial firms by the Federal Deposit Insurance Corporation (FDIC), while limiting the ability of government entities and regulators to implement bailouts and similar interventions. It is certainly unclear at this point how effective this new law will be (in part because of the large number of studies and rules which still must be promulgated by government regulators and agencies).

But one thing is clear: actuaries are well-positioned to contribute significantly to risk management efforts in the area of systemic risk. Many of the products and techniques in insurance and risk management have great potential for helping to identify, measure, and manage systemic risk – especially when that risk is examined within a broader economic context.

Systemic Risk as a Negative Externality

Systemic risk is the risk of significant impairment of the overall economy or financial markets, resulting from actions of the financial intermediary system. In particular, the failure or collapse of one or more financial intermediaries, due to interdependencies and interconnectedness across firms and economies, can result in financial market instability at a macro level. This instability largely stems from liquidity and flight-to-quality issues.

Thus, systemic financial risk can be viewed, from the perspective of economic theory, as a "negative externality." A negative externality occurs when a transaction between two parties results in costs which accrue, in part, to one or more third parties – e.g., to society as a whole. In other words, the total cost of a decision by a firm is not borne by that firm, but rather in part by another party. Negative externalities are sometimes referred to as local or neighborhood costs – especially in cases where the externality is most impactful to those who are geographically proximate to the activity or transaction. The classic example of a negative externality is pollution.

The existence of a negative externality may be known at the time of the transaction or activity, or it may be initially unknown and only emerges and is recognized when the transaction or activity is consummated. In general, consumers and society end up paying higher prices and/or taxes in the presence of a negative externality.

Financial intermediary activities which increase the risk of financial distress, instability and crisis may actually benefit a financial firm. But, of course, such increased systemic risk is potentially costly to other firms, consumers, and the economy and financial markets at large. Thus, systemic risk can be viewed as a negative externality.

Reducing Negative Externalities

There are several ways to attempt to address and reduce a negative externality. One is to provide an incentive for

the firm to avoid or reduce the activity which produces, or causes, the externality. This incentive results from placing a tax on the externality-producing activity. This is referred to as a Pigovian tax, after economist Arthur Pigou. By basing the level of the tax (at least conceptually) on the marginal cost of the societal damages produced, the true cost of the cause of the externality is recognized; assuming that the firm engaging in the activity is the one which pays the tax, the tax forces the firm to internalize the activity's true cost. With respect to systemic risk, such a tax could be risk-based (determined as a function of an individual financial intermediary's specific characteristics – its financial attributes, liquidity situation, and modeled contribution to macro risk), pre-assessed (so that the tax is paid by all firms, including and especially those firms most likely to fail and thus to impose macro costs on the overall markets), and collected for the purpose of partially offsetting future systemic loss costs.

Another approach to reducing a negative externality is through regulation and control. This is indeed a technique which has been, and will continue to be, used with respect to financial market stability and systemic risk. The issue here is that regulation has largely focused on individual financial intermediaries; however, the risk of financial market crisis is a function of multi-firm interconnectedness. It is important that regulations directed toward systemic risk focus on the marginal cost to society of adding an additional unit of systemic risk to a firm's operations. As with the Pigovian tax, this quantification can be aided by appropriate economic and financial risk modeling.

A third approach is a market approach – a system involving permits (which are tradable) for engaging in the externality-producing activity. A carbon tax and permit market is an example of such a facility. One issue with the application of this approach to systemic financial risk would be how the level of "acceptable" overall systemic risk would be determined (and then distributed or allocated to the various financial intermediaries). However, if such a quantity can be determined, this approach would allow systemic risk to become an optimization problem: how to optimize societal benefits (or minimize societal costs) within specified risk-level constraints. Again, actuarial modeling, especially as it is evolving within the context of enterprise risk management, can provide techniques of significant value to such a process.

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