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Discussion

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IN THE AFTERMATH OF THE DEMISE of Long Term Capital Management (LTCM), the topic of contagion appears to be contagious. Sandy Grossman made it a main point of his joint AEA/AFA address, and it seems that half of my stu-

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dents want to write about liquidity and contagion effects. Thanks to Kyle and Xiong, I can now point them to a very nice paper on this topic.

Contagion is about the spread of financial problems from one financial institution to others. There are three strands to the growing literature on this spread of financial crises. First, information asymmetries are identified as the main culprit. Second, some of the research stresses wealth or liquidity constraints to generate spillover effects. Third, other researchers put weight on endogenous market effects through prices. This is not to say that these are three different approaches; in fact, they are all related and very difficult to separate. For example, all involve some form of market incompleteness, and directly or indirectly, the first of them, information asymmetries, seems ubiquitous.

Kyle and Xiong stress wealth effects, but they indirectly appeal to information asymmetry, specifically to moral hazard, to put a bound on entry to the class of fully rational traders in their model. Ironically, though, they skirt the issues surrounding borrowing constraints on these traders with the assumption of log utility preferences. In the absence of a more complete description of the consequences of insolvency, putting infinitely negative utility on zero wealth is, at best, a somewhat artificial way to permit the economic system to trust that these traders will not risk bankruptcy.

Without summarizing the paper, a discussant should at least note the main features and what he or she likes and does not like about them. Kyle and Xiong build a model with three types of agents. As noted above, they have fully rational traders whom they call convergence traders. Second, they have fundamentalists whose demand is an ad hoc function of the spread between market prices and theoretically determined fundamental prices. Lastly, there are the noise traders. In contrast to the spirit of behavioral finance, I only like 33 1/3 percent of these folks.

Noise traders exist solely as a modeling mechanism for avoiding perfect revelation. I have no alternative to this way of introducing noise into such models, but neither am I a fan of this approach. I suppose it falls into the category of when a sin is committed often enough, it becomes a virtue. But, in contrast to a necessary evil, the fundamentalists in this model are a little too hard-wired for my taste. The central result of the paper is what may be called the amplification effect, and this is produced by the interaction of the fundamentalists with the other traders. I will expand on this below, but these fundamentalists seem a bit removed from reality in a world where hedge funds trade Russian bonds and not Warren Buffet's Coca-Cola value stocks. Not surprisingly, I think the third type, convergence traders, are perfectly fine, although presumably they are a metaphor for hedge funds and here the exactitude of their preferences is a bit too narrow.

Amplifying on amplification, the mechanism is as follows. A negative innovation, either to noise or to fundamentals, decreases the wealth of the rational convergence traders, which forces them to reduce their positions. To induce fundamentalists to take the other side of their sales, prices must fall further and that results in a further decline in the wealth of the convergence traders. In sum, taking account of the endogenous feedback, the full decline

in the wealth of the convergence traders exceeds the initial wealth decline. By contrast, in most noisy rational equilibrium models, there is an attenuation effect rather than an amplification effect. The intuition for this is that the inferred price function is the result of projecting the actual value onto the current information signals, and projections. That is, conditional expectations, are less volatile than the unconditional variable they predict. In the Kyle and Xiong model, the interaction of the rational traders with the fundamentalists overcomes this tendency toward attenuation.

Notice, though, that this is not easy to disentangle from a pure information story in which a negative innovation leads to a price decline, a consequent fall in wealth, and reduced positions from (possibly) informed traders. All this, in turn, leads to further price declines as others make inferences that the initial decline may have been driven from informed observations about a deterioration in fundamentals. As they point out, the Kyle and Xiong mechanism is complementary and not competitive with this approach.

But why does such a result have to be so forced? With incomplete markets, we know the economy will arrive at state/space nodes that agents were unable to hedge against ex ante, and that they will be forced to rebalance when that occurs. We would expect this to lead to increased volatility, and it would seem that a more general amplification argument—if not a result—would be possible here. More concretely, Kyle and Xiong produce the amplification effect by having rational investors whose positions are self-limited (by their log utility preferences) interact with fundamental traders. With this level of specificity, I would rather model lending and collateral constraints (see, e.g., Geanakoplos (1997)) as a more natural and obvious source of both spillover and amplification.

Kyle and Xiong also place some stress on their finding of a spillover across the prices of assets with independent fundamentals, but this is less interesting than their amplification effect. For one thing, it is certainly to be expected, since even assets that have independent cash flows will have prices that are correlated through the common pricing operator. What is harder to understand is how a small market like that for Russian bonds or for a particular merger arbitrage between two medium-sized companies can have a big and unsettling impact. That is one reason why the amplification effect is interesting, although, personally, I find the causal mechanism derived from asymmetric information more compelling.

Kyle and Xiong end their paper by pointing out the implications of their model for risk management, and this may be their single most important contribution. I concur with their assessment of the inadequacy of current statistical approaches, but that is more an argument against bad statistics than against statistics itself. Typically, to assess the risk of a position, historical data is used to create a distribution of outcomes for asset returns, and this is applied to a particular firm's positions to determine a measure such as VAR (value at risk). Taking the Kyle and Xiong model seriously, one would argue that wealth—I would rather say, market position sizes—should be used as an explanatory variable in the forward-looking statistical analysis of the volatility of individual positions. This is an intuitively appealing,

and, I would expect, empirically supportable view. Currently even the most sophisticated of statistical scenario analysis employed in practice rarely conditions on the current state of the economy and never on the aggregate of outstanding positions.

There is no argument with the proposition that such statistics should be conditioned on the current state and anything that improves the way risk assessments are carried out should be welcomed. As we appear to live in a world where 10 sigma events happen every couple of years, it is useful to remember that the problem is obviously with our measurement of sigma and not with the world. A good example is the case of Russian bonds. Clearly we could usefully augment our analysis of the risk of this or any emerging market instrument with information about the historical risks of other emerging markets. We should also consider the basic historical context of any such market. For example, surely an interesting piece of information for anyone contemplating trading in Russian bonds is the observation that since they were first issued in Tzarist times, no long Russian bond has ever fully paid off. This may be an even more pertinent datum than the six-month average of the daily volatility. Beyond this, Kyle and Xiong would presumably argue that there are systemic effects that impact all markets and that overall position sizes are an important conditioning state variable that must be taken into account. In this I would concur, and as one of its contributions, their valuable paper offers solid theoretical support for such a position.

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