

BROOKINGS-WHARTON
PAPERS *on*
FINANCIAL
SERVICES

ROBERT E. LITAN
and
ANTHONY M. SANTOMERO
Editors

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Comment and Discussion

Comment by Erik R. Sirri: Regarding the ability of mutual funds to fulfill their contractual obligations at times of market stress, a concern arises that funds may not be able, or required, to make payments to shareholders based on their Net Asset Values (NAVs) at the time shareholders wish to redeem. I want to clarify a couple of points that will tie in with systemic risk issues.

First, investors' behavior was remarkably calm over the 500-point market decline that took place Monday, October 27, 1997. Retail fund customers did not suddenly pull money out of the equity market. I believe the fund flow numbers are going to show that individual investors were net buyers of equities. This should not be a surprising result. Over the last decade, the one lesson that retail investors learned about market breaks is "Do not panic. Do not sell." In 1992 I asked my master of business administration (MBA) students what they would do in the afternoon following a morning during which the market dropped 25 percent. A significant majority of students said they would buy stock. Right or wrong, this is the lesson many retail investors took away from the October 1987 stock market crash.

Second, mutual funds have a number of safeguards built into their mechanism for redeeming shares. Funds have the option to redeem fund shares "in kind." The law provides a mechanism for funds to give shareholders the underlying fund assets instead of the cash value of their shares. As a practical matter, this does not occur for a number of

My remarks do not represent the views of the commissioners or any of my colleagues at the Securities and Exchange Commission.

reasons. Funds would never exercise this option against investors of retail size because dividing portfolio assets into retail-sized portions is impractical. Also, many states require funds to give investors cash for their shares. The funds are not allowed to pay investors back in kind—that is, in fund assets.

Mutual funds can take up to seven days to pay an investor who redeems fund shares. Two things are happening at once in such an instance. When you sell your shares, you have the right to receive the amount of wealth reflected in today's end-of-day NAV. So if you sell now, the amount of money you are due is the product of the number of shares you own times the NAV at the end of the day. The seven days' delay only applies to when you receive the money, not when the value of your investment is computed. This is an important distinction.

On rare occasions the Securities and Exchange Commission (SEC) may allow a fund to deviate from the above policy. An example of such a circumstance was when the Hong Kong markets closed for several weeks and funds could not compute reliable NAVs. But, for all intents and purposes, a selling shareholder will receive today's NAV in at most seven days hence.

Mutual funds, as a matter of course, maintain significant lines of credit with commercial banks. Open-end funds can borrow up to one-third of their total net assets to fund redemptions. Funds are likely to make use of such lines around steep market declines. The borrowing capacity prevents managers from having to sell assets at prices the manager may feel is too low. Funds cannot, however, use such loans over the long haul for the purpose of raising a fund's financial leverage.

The October 30, 1997, *Wall Street Journal* ran an article that related to the pricing of funds around market crashes. Recall that on Monday, October 27, the stock markets closed for the day at 3:30 p.m., but the article said that funds price their shares at 4:00 p.m. This raises a number of questions. For example, on Monday could I have gone to a mutual fund and sold my shares at 3:50 p.m. at that day's closing NAV? In other words, do I have a half-hour option to gather information on asset values and realize the market closing prices at 3:30 p.m. for my shares when I redeem them at 4 p.m.?

It is clear to see what type of incentive problems could arise and why such problems could induce elements of systemic risk. Suppose that, outside of the United States, Standard & Poor's (S&P) 500 futures

contracts (or other claims correlated with U.S. asset values) traded, allowing you to refine your estimates of U.S. stock prices. If the U.S. equity market closes at 3:30 p.m., you could check at 3:50 p.m. and see that the S&P futures in that country are trading down. You could then profit, at least on a relative basis, by redeeming your equity assets at their stale 3:30 p.m. value.

If funds set their pricing policy in such a manner, they are implicitly granting a potentially valuable option to mutual fund shareholders to receive the 3:30 p.m. value of their shares at 4:00 p.m. The systemic risk component enters into the equation because even if shareholders do not wish to sell their fund shares, they will be forced to do so to avoid dilution by other opportunistic shareholders who will sell at the stale prices. Any shareholder who refuses to sell is subsidizing the mark-to-value losses of those who do sell. Fortunately funds do have a fair-value pricing mechanism that they can exercise to revalue assets at prices other than their last trade price.

On the issue of comovements of broad-based international equity indices, Ingrid M. Werner and others have shown that international markets tend to be more highly correlated in bear markets or around sharp downward movements than in either up markets or quiescent times.¹ This has two interesting implications regarding the management of systemic risk.

First, consider an investor, either institutional or retail, who is trying to form a mean variance efficient portfolio. Such a portfolio will generally be either based on or heavily weighted toward a covariance structure calculated using more recent observations. If this estimation window did not contain any sharp market downturns, the resultant portfolio will have a greater variance than the investor expects. Sharp market moves could cause the portfolio to take a bigger jump than the investor thought. That may induce portfolio managers to realize that overall portfolio risk is higher than expected so that they sell stock, simply because they learn more about the covariance structure of asset returns. All portfolio managers may be selling at once, causing liquidity to dry up and temporarily driving asset prices below true values. If the downturns are infrequent enough, the learning process of portfolio managers about the true correlation structure of asset returns may be very slow.

1. See, for example, Odier and Solnick (1993).

Second, many financial intermediaries are beginning to use Value-at-Risk (VaR) techniques to calculate net capital.² VaR is a method of assessing the risk of a portfolio of assets. It quantifies the probability that a given portfolio will suffer a change of value of more than a set amount over a specified horizon. For example, a \$100 million equity portfolio may have a VaR of \$5 million at the 5 percent level over one week; that is, 95 percent of the time, the portfolio's value will not change by more than \$5 million in a one-week period. The estimates of portfolio variability are drawn from a weighted series of past returns. If more covariation exists between the international securities in the internationally diversified portfolio than the manager thought, then the unconditional variance of the portfolio is also higher than expected. The result is that the financial intermediary may be holding too little net capital in support of its assets. These models have built-in cushions to guard against these and other problems. Practitioners tend to calculate 95 percent confidence VaRs and multiply the resultant capital by something like a factor of three as an ad hoc cushion. An improper understanding of international asset correlations can lead to systemic risk issues as portfolio managers simultaneously revalue the risk of their portfolio strategies and try to trade out of them.

Derivatives are, by nature, netting contracts. That is, when you exchange periodic cash flows in a derivative such as a swap, you do not exchange gross cash flows. You exchange only the net flows. Thus if Party A owes Party B \$3 million, but B owes A \$2.5 million, A will only pay B \$500,000.

So, how can netting decrease systemic risk? Take the example of someone who wants to execute a common foreign exchange speculative strategy of buying a high-yielding currency and finance the purchase by borrowing a low-yielding currency. Absent derivatives contracts, the contact is executed in the spot markets, resulting in large financial

2. The Securities and Exchange Commission (SEC) recently put out for comment two new rules related to the use of Value-at-Risk (VaR) for net capital calculations. The SEC proposed (Exchange Act Release No. 39454 (December 17, 1997), 62 Federal Register 67940) that a new class of limited purpose broker-dealers be created, characterized by, among other things, lower net capital requirements than normal brokers. Capital requirements could be calculated using VaR techniques. In addition, the SEC issued a Concept Release (Exchange Act Release No. 39456 (December 17, 1997), 62 Federal Register 68011) asking comment on whether normal broker-dealers should also be allowed to make use of VaR.

flows at the outset and maturity of the contract. There may be large gross periodic flows every week or every month, depending on the period of the maturity of the chosen contracts.

Now, consider a derivative contract designed to mimic such a speculative arrangement.³ At the onset, no cash is exchanged to initiate the contract, similar to a plain-vanilla swap. Daily payments are made between counterparties to settle valuation changes that are functions of the differences in the yields and overnight change in the exchange rate of the two currencies. In this latter arrangement, the financial system avoids the gross flows with the purchase and sale of the underlying currencies and, instead, just processes the net periodic payment. In this context, derivatives are efficient ways of reducing gross payments.⁴ Any reduction in gross payment flows will serve to alleviate concerns about Herstatt, or nonsettlement, risk.

Jonathan R. Macey argues that regulation is a response to disaster. The SEC wants to make sure that regulation does not beget disaster. A rational reason exists for why regulatory action follows regulatory events: Many policy actions are not feasible, or are very costly to take, during quiescent times when markets and institutions are functioning well. In effect, policy windows open up when certain types of regulation may be crafted, and the period following a disaster is potentially one of those times.

In regulating the securities industry, changing policy and rules during times when things are going well can be difficult. The securities industry has a number of focused interest groups that are effective and voicing their concerns around Washington, D.C., and the greater financial community. Rule changes often either alter the competitive positions or impose costs on regulated parties, and opponents to any policy changes can always be found. These groups' self-interest present a formidable obstacle to change.

Regulators thus take advantage of policy windows, and regulatory reform follows Macey's disasters. As an example, recall the SEC's investigation and subsequent censure of the National Association of Securities Dealers (NASD) for their failure to adequately supervise the National Association of Securities Dealers Automated Quotations

3. The Rolling Spot contract on the Chicago Mercantile Exchange is such a contract.

4. For a discussion of the netting and other effects of derivative contracts on the payment system and systemic risk, see Perold (1995).

(NASDAQ) market. NASDAQ marketmakers engaged in anticompetitive behavior by keeping spreads artificially wide. The SEC determined that the market was in need of basic structural reforms to protect investors.⁵ The period surrounding the SEC's NASD investigation bracketed a policy window in which the necessary market reforms could be effected. This is only one recent example of when policy follows not so much disaster but a revealed shortcoming of the capital markets.

The reforms that followed the October 1987 crash are another example of where some much needed reforms occurred after what Macey might term a disaster. Many of these reforms unquestionably strengthened the soundness and security of the capital markets. They included the movement from T + 5 to T + 3 days for settlement, improvements in the degree of automation and the capacity of various exchanges, enhanced coordination among key market regulators including the establishment of the President's Working Group on Financial Markets, and an increase in the net capital requirements of certain dealers.⁶

One of the more controversial reforms effected in the wake of October 1987 were circuit breakers. Up until October 1997, limited comfort could be taken in the notion that the breakers had yet to be tripped.⁷ After Monday, October 27, however, that is not the case, as the breakers were tripped twice in succession late in the day. No doubt studies will be conducted about the impact of the circuit breakers and any attendant issues that may arise. Judgment perhaps should be forestalled on how well they worked until more rigorous empirical analysis is completed.

Theoretical studies have argued that circuit breakers will have harmful effects on the market as traders attempt to trade ahead of the predicted market closing, causing prices to plummet because of a "gravitational effect."⁸ I will, however, provide a different type of argument for why circuit breakers should be in place. Think back to Black Mon-

5. See Securities and Exchange Commission (1996).

6. For a detailed description of these and other reforms, see Lindsey and Pecora (1997).

7. An exception are the circuit breakers tripped on the Tel Aviv Stock Exchange during the 1987 market break. A study finds that though circuit breakers may have reduced order imbalances, there may have been negative side effects as well. (Note that the Tel Aviv Stock Exchange has a different market structure than U.S. markets.) See Lauterbach and Ben-Zion (1993).

8. For example, see Subrahmanyam (1994).

day in October 1987. A number of people and intermediaries were clamoring for the federal government to step in and shut the market. I have no doubt that, if another steep market decline occurred, people would clamor for the same. The question thus becomes: "Are you better off having a policy of not shuttering markets and hoping that such a policy is credible in times of market stress, or instead having a explicit policy stating the terms by which the market will shut?"

I am not sure the government and the self-regulatory organizations (SROs) can bind themselves credibly to a policy of not shutting the markets. When a decline occurs, a strong likelihood exists that the policymakers could renege on earlier commitments. And even if they do not, traders and investors may not believe they will act to keep markets open and may wrongly anticipate a market shutdown. An advantage, therefore, of an explicit policy of circuit breakers is that it provides a more credible guarantee that neither the government nor anyone else will step in to shut markets before the breaker point. The question then comes down to a discussion of where the breaker levels should be set.⁹

A reform following the 1987 market break about which some data are available concerns critiques leveled at the NASDAQ marketmakers that they did not pick up phones as prices were falling. The rules for NASDAQ were changed to require that a minimum quotation depth obligation be instituted on NASDAQ marketmakers. They were required to provide firm quotes of at least one thousand shares on both the bid and offer side of the market.¹⁰ Over the decline on October 27, 1997, I do not know of any complaints about NASDAQ marketmakers not quoting in their respective issues. Also, the SEC has a pilot program in place in which fifty stocks were exempted from the obligation to quote a thousand-share market. In other words, fifty stocks have marketmakers who can quote whatever size they want, meaning they could quote one hundred shares as the minimum amount. The other NASDAQ stocks retain their minimum depth requirement. This presents the opportunity to conduct an experiment to see whether the market reform was either effective or necessary.

9. In another article, Avanidhar Subrahmanyam argues the opposite—that the gravitational effect induced by fixed circuit breakers may be overcome by discretionary market closings. See Subrahmanyam (1995).

10. The minimum quote depth is lower for less liquid stocks.

A number of reforms have been made over the past ten years, including clearing procedures, net capital rules, coordination policies, and the like. In most instances, however, the SEC's main tool in its tool kit is disclosure. It is the primary device to regulate the markets. In January 1997 the SEC required issuers to disclose information about their sensitivities to market risks. The disclosure is both qualitative and quantitative in nature and appears outside of the financial statements. The goal was to give investors a bigger and better picture about the basic risks they are holding when they invest in a firm. These efforts, and those of the Financial Accounting Standards Board (FASB) as they try to promulgate a rule for derivative accounting, have been met with a tremendous amount of reluctance from issuers and intermediaries. It is an example of the difficulty of regulating firms outside of a policy window. Critics of these rules have been vigorous in trying to either block or diffuse their impact. Time will tell if the additional disclosures and their concomitant costs were worthwhile.

Fischer Black argues that the ultimate source of systemic risk is the government.¹¹ Investors have a natural proclivity to take on risk. They hold undiversified investment portfolios, such as mutual funds that overweight a particular asset class relative to the market portfolio. They issue callable fixed-rate debt for funding their housing instead of borrowing with other lower risk alternatives. Black argues that these and other risks are man-made and thus beneficial in total. Derivatives and other financial instruments are just tools to reallocate the risk. Their increasing variety and complexity is no more problematic than the abundance of fast-food restaurant choices now facing consumers.

Government, by failing to enforce contracts and voiding or altering the contracts of others, induces systemic risk into the system. Black argues that rules such as those related to investor suitability and to information disclosure leave open the opportunity to ex-post renegotiate and renege on contracts that parties were happy to enter into ex-ante. Parties need only sue, claiming they were damaged by unsuitable investment or incomplete disclosure if they suffer a loss on their security. Hence, Black concludes, "one kind of systemic risk . . . is an event that causes losses for politically powerful voters, which leads the government to declare their contracts invalid."¹² Black has a point, but he

11. Black (1995).

12. Black (1995, p. 8).

fails to acknowledge various investor protection and other mandates of federal securities regulation. Achieving the right balance between the regulator's mandate and the inducement of systemic risk is a task worthy of all market participants.

General Discussion: Brandon Becker stated that concern is growing among regulators regarding the adequacy of information available about mutual fund performance, especially considering the growing importance of mutual funds as vehicles for investment—through defined contribution plans, medical savings education accounts, or possible privatized social security accounts.

Anthony M. Santomero constructed a potential threefold argument in favor of increased regulation in the event of a substantial negative financial disturbance. First, a negative shock could significantly impair the capital positions of major financial institutions. Second, such a shock could cause problems in clearing systems. Third, some institutions may have very large trading positions, based upon some increasingly quantitative, but nonetheless inexact, Value-at-Risk methodologies that could backfire and lead to large losses in response to some unanticipated negative news. Erik R. Sirri added another complication: that a large amount of broker-dealer activity in derivatives goes on offshore, outside of the regulatory reach of the Securities and Exchange Commission (SEC).

Philip F. Bartholomew addressed the International Monetary Fund (IMF) and its work in Southeast Asia. He noted that supervisory systems in that part of the world relied on secrecy, while the financial positions of the institutions have hardly been transparent—a situation that the IMF has been trying to change.

Robert E. Litan added that the moral hazard problem concerning the IMF's actions in Southeast Asia has another side to it. No country willingly wants to experience the conditions imposed on it by the IMF to receive funds. Michael Pormeleano pointed to other ways in which moral hazard has been serious: Investors in securities can become complacent and expect to be bailed out, a situation reflected in vanishing risk premiums on securities in emerging markets before the crisis; in addition, governments can find implementing needed reforms difficult in countries where diverse interests may oppose them.

Jonathan R. Macey argued that a major crisis is a necessary, but not

sufficient, condition for regulation. Political support for change is also needed. Politicians operate in a competitive environment, just like people in the private sector, so they respond to incentives. Macey added that circuit breakers are similar to deposit insurance in the following sense: Circuit breakers can be justified not because they indicate when to close markets down, but because they reveal when to open them up. Under the premise that markets would be closed for even longer without circuit breakers because of political pressure, the presence of circuit breakers could then be a positive thing. Sirri clarified that Macey's argument assumed that, in the absence of formal circuit breakers, politicians would close down markets for an extended period.

Martin Mayer stated that the one regulatory change that needs to be made in light of events of the last few years is to impose a liquidity requirement on mutual funds offered to the public. He suggested that, if a large group of fund managers believe that stock prices are going to be lower in a few months than they are today, they will attempt to get out all at once, causing a downward cascade of prices, which would be reinforced by mutual fund holders asking for their money back. An assured supply of liquidity could blunt the need for mutual funds to continue selling to raise cash.

Edward J. Kane addressed the problem of deciding how to set regulation in a completely integrated global market. He suggested that the preferred course is not common regulation across countries, but competition in regulation between countries. Without competition, regulations are likely to be set either too high or too low. Bartholomew responded that the new European Monetary Union and its intricate supervisory and liquidity regulations that vary from country to country are an example of how regulatory differences across countries can lead to systemic problems.

Macey remarked that the problems of development in countries that are potential recipients of IMF or World Bank funds are not matters of technology, but of protecting intellectual and property rights and developing a cultural-legal infrastructure in which people are willing to engage in value-enhancing transactions because the fear of ex post appropriation has gone away. Macey cited the work of Robert Putnam and Francis Fukiyama as examples of the growing belief that cultural and legal issues are path-dependent. A country's laws that stem from certain cultural influences are difficult to change.

In October 1987, the stock market suffered its deepest short-term plunge since the Great Depression, a searing event for investors. This first in a series of annual volumes on the financial services industry from the Brookings Institution and the Wharton School at the University of Pennsylvania examines the 1987 crash, its aftermath, and its implications for today.

"This volume is an important contribution to understanding how we learn from experience. The Brookings-Wharton alliance represented here promises to be a major source of timely and insightful analyses of financial issues in the coming years."

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