

Mr. Greenspan testifies on private-sector refinancing of the large hedge fund, Long-Term Capital Management Testimony by the Chairman of the Board of Governors of the US Federal Reserve System, Mr. Alan Greenspan, before the Committee on Banking and Financial Services of the US House of Representatives on 1/10/98.

Mr. Chairman and other members of the Committee, I thank you for this opportunity to report on the Federal Reserve's role in facilitating the private-sector refinancing of the large hedge fund, Long-Term Capital Management (LTCM). In my remarks this morning, I will attempt to put into some perspective the events of the past few weeks and discuss some questions of importance to public policy makers that they raise.

The Federal Reserve Bank of New York's efforts were designed solely to enhance the probability of an orderly private-sector adjustment, not to dictate the path that adjustment would take. As President McDonough just related, no Federal Reserve funds were put at risk, no promises were made by the Federal Reserve, and no individual firms were pressured to participate. Officials of the Federal Reserve Bank of New York facilitated discussions in which the private parties arrived at an agreement that both served their mutual self-interest and avoided possible serious market dislocations. Financial market participants were already unsettled by recent global events. Had the failure of LTCM triggered the seizing up of markets, substantial damage could have been inflicted on many market participants, including some not directly involved with the firm, and could have potentially impaired the economies of many nations, including our own. With credit spreads already elevated and the market prices of risky assets under considerable downward pressure, Federal Reserve officials moved more quickly to provide their good offices to help resolve the affairs of LTCM than would have been the case in more normal times. In effect, the threshold of action was lowered by the knowledge that markets had recently become fragile. Moreover, our sense was that the consequences of a fire sale triggered by cross-default clauses, should LTCM fail on some of its obligations, risked a severe drying up of market liquidity. The plight of LTCM might scarcely have caused a ripple in financial markets or among federal regulators 18 months ago--but in current circumstances it was judged to warrant attention.

What is remarkable is not this episode, but the relative absence of such examples over the past five years. Dynamic markets periodically engender large defaults.

Events of the Past Few Weeks

LTCM is a hedge fund, or a mutual fund that is structured to avoid regulation by limiting its clientele to a small number of highly sophisticated, very wealthy individuals and that seeks high rates of return by investing and trading in a variety of financial instruments. Since its founding in 1994, LTCM has had a prominent position in the community of hedge funds, in part because of its assemblage of talent in pricing and trading financial instruments, as well as its large initial capital stake. In its first few years of business, it earned an enviable reputation by racking up a string of above-normal returns for its investors.

LTCM appears principally to have garnered those returns by making judgements on interest rate spreads and the volatility of market prices. In its search for high return, LTCM levered its capital through securities repurchase contracts and derivatives transactions, relying on sophisticated mathematical models of behavior to guide those transactions. As long as the configuration of returns generally mimicked their historical patterns, LTCM's mathematical

models of asset pricing could be used to ferret out temporary market price anomalies. Their trading both closed such price gaps and earned an extra bit of return on capital for them. But it is the nature of the competitive process driving financial innovation that such techniques would be emulated, making it ever more difficult to find market anomalies that provided shareholders with a high return. Indeed, the very efficiencies that LTCM and its competitors brought to the overall financial system gradually reduced the opportunities for above-normal profits. Indeed, LTCM acknowledged this when returning \$2¾ billion of capital to investors at the end of 1997. To counter these diminishing opportunities, LTCM apparently reached further for return over time by employing more leverage and increasing its exposure to risk, a strategy that was destined to fail. Unfortunately for its shareholders, LTCM chose this exposure just as financial market uncertainty and investor risk aversion began to rise rapidly around the world.

In that environment - so at variance with the experience built into its models - LTCM's embrace of risk on a large scale produced stunning losses. As we now know, by the end of August the firm had lost half its capital base. And as September unfolded, the bleeding continued. The firm, however, apparently did not unwind its positions significantly.

In our dynamic market economy, investors and traders, at times, make misjudgements. When market prices and interest rates adjust promptly to evidence of such mistakes, their consequences are generally felt mostly by the perpetrators and, thus, rarely cumulate to pose significant problems for the financial system as a whole. Indeed, the operation of an effective market economy necessitates that investment funds committed to capital projects that do not accurately reflect consumer and business preferences should incur losses and ultimately be liquidated. What value is left needs to be redirected to profitable uses - those that more accurately reflect market preferences. By such winnowing of inefficiencies, productivity is enhanced and standards of livings expand over time.

Financial markets operate efficiently only when participants can commit to transactions with reasonable confidence that the risk of non-payment can be rationally judged and compensated for. Effective and seasoned markets pass this test almost all of the time. On rare occasions, they do not. Fear, whether irrational or otherwise, grips participants and they unthinkingly disengage from risky assets in favor of those providing safety and liquidity. The subtle distinctions that investors make, so critical to the effective operation of financial markets, are abandoned. Assets, good and bad, are dumped indiscriminately in circumstances of high uncertainty and fear that are not conducive to planning and investment. Such circumstances, were they generalized and persistent, would be wholly inconsistent with the functioning of sophisticated economies supported by long-term capital investment.

Quickly unwinding a complicated portfolio that contains exposure to all manner of risks, such as that of LTCM, in such market conditions amounts to conducting a fire sale. The prices received in a time of stress do not reflect longer-run potential, adding to the losses incurred. Of course, a fire sale that transfers wealth from one set of sophisticated market players to another, without any impact on the financial system overall, should not be a concern for the central bank. Moreover, creditors should reasonably be expected to put some weight on the possibility of a large market swing when making their risk assessments. Indeed, when we examine banks we expect them to have systems in place that take account of outsized market moves. However, a fire sale may be sufficiently intense and widespread that it seriously distorts markets and elevates uncertainty enough to impair the overall functioning of the economy. Sophisticated economic systems cannot thrive in such an atmosphere.¹

The scale and scope of LTCM's operations, which encompassed many markets, maturities, and currencies and often relied on instruments that were thinly traded and had prices that were not continuously quoted, made it exceptionally difficult to predict the broader ramifications of attempting to close out its positions precipitately. That its mistakes should be unwound and losses incurred was never open to question. How they should be unwound and when those losses incurred so as to foster the continued smooth operation of financial markets was much more difficult to assess. The price gyrations that would have evolved from a fire sale would have reflected fear-driven judgements that could only impair effective market functioning and generate losses for innocent bystanders.

While the principle that fire sales undermine the effective functioning of markets may be clear, deciding when a potential market disruption rises to a level of seriousness warranting central bank involvement is among the most difficult judgements that ever confronts a central banker. In situations like this, there is no reason for central bank involvement unless there is a substantial probability that a fire sale would result in severe, widespread, and prolonged disruptions to financial market activity.

It was the judgement of officials at the Federal Reserve Bank of New York, who were monitoring the situation on an ongoing basis, that the act of unwinding LTCM's portfolio in a forced liquidation would not only have a significant distorting impact on market prices but also in the process could produce large losses, or worse, for a number of creditors and counterparties, and for other market participants who were not directly involved with LTCM. In that environment, it was the FRBNY's judgement that it was to the advantage of all parties - including the creditors and other market participants - to engender if at all possible an orderly resolution rather than let the firm go into disorderly fire-sale liquidation following a set of cascading cross defaults.

As President McDonough has detailed, officers of the Federal Reserve Bank of New York contacted a number of creditors and asked if there were alternatives to forcing the firm into bankruptcy. At the same time, FRBNY officers informed some of their colleagues at the Federal Reserve Board, the Treasury, and other financial regulators of their ongoing activities. The troubles of LTCM were not a complete surprise to its counterparties. After all, LTCM's earlier statements regarding its August losses were well known, and sophisticated counterparties understood the difficulties in closing out large losing positions. In addition, the commercial banks among its creditors had already begun taking normal precautionary measures associated with exposure to counterparties whose condition is deteriorating. Still, creditors as a whole most likely underestimated the size and scope of the market bets that LTCM was undertaking, an issue that is currently under review.

On September 23, the private sector parties arrived at an agreement providing a capital infusion of about \$3½ billion in return for substantially diluting existing shareholders' stake in LTCM. Control of the firm passed from the current management to a committee determined from the outside by the new investors. Those investors intend to shrink LTCM's portfolio so as to reduce risk of loss and return the remaining capital to the investors as soon as practicable. I do not rule out the possibility that the new owners of what is left of LTCM may decide to keep part of it in business. That is their judgement to make.

This agreement was not a government bailout, in that Federal Reserve funds were neither provided nor even suggested. Agreements were not forced upon unwilling market participants. Creditors and counterparties calculated that LTCM and, accordingly, their claims, would be worth more over time if the liquidation of LTCM's portfolio was orderly as opposed to

being subject to a fire sale. And with markets currently volatile and investors skittish, putting a special premium on the timely resolution of LTCM's problems seemed entirely appropriate as a matter of public policy.

Of course, any time that there is public involvement that softens the blow of private-sector losses - even as obliquely as in this episode - the issue of moral hazard arises. Any action by the government that prevents some of the negative consequences to the private sector of the mistakes it makes raises the threshold of risks market participants will presumably subsequently choose to take. Over time, economic efficiency will be impaired as some uneconomic investments are undertaken under the implicit assumption that possible losses may be borne by the government.

But is much moral hazard created by aborting fire sales? To be sure, investors wiped out in a fire sale will clearly be less risk prone than if their mistakes were unwound in a more orderly fashion. But is the broader market well served if the resulting fear and other irrational judgements govern the degree of risk participants are subsequently willing to incur? Risk taking is a necessary condition for wealth creation. The optimum degree of risk aversion should be governed by rational judgements about the market place, not the fear flowing from fire sales.

The Federal Reserve provided its good offices to LTCM's creditors, not to protect LTCM's investors, creditors, or managers from loss, but to avoid the distortions to market processes caused by a fire-sale liquidation and the consequent spreading of those distortions through contagion. To be sure, this may well work to reduce the ultimate losses to the original owners of LTCM, but that was a by-product, perhaps unfortunate, of the process.

I should add that, in order to keep incentives working in their favor, the creditors of LTCM apparently also understood the importance of some cushioning of the losses to the owners and managers of the firm. The private creditors and counterparties in the rescue package chose to preserve a sliver of equity for the original owners - one tenth - so that some of the management would have an incentive to stay with the firm to assist in the liquidation of the portfolio. Regrettably, the creditors felt that, given the complexity of market bets woven into a bewildering array of financial contracts, working with the existing management would be far easier than starting from scratch.

Some Questions for Policy Makers

Without doubt, extensive study will be required to put the events of the past few weeks into proper perspective. As a member of the President's Working Group on Financial Markets, I support Secretary Rubin's call for a special study on the public policy implications of hedge funds. While the affairs of LTCM are by no means settled, I would like to pose some tentative questions that may have to be addressed.

First, how much dependence should be placed on financial modelling, which, for all its sophistication, can get too far ahead of human judgement? This decade is strewn with examples of bright people who thought they had built a better mousetrap that could consistently extract an abnormal return from financial markets. Some succeed for a time. But while there may occasionally be misconfigurations among market prices that allow abnormal returns, they do not persist. Indeed, efforts to take advantage of such misalignments force prices into better alignment and are soon emulated by competitors, further narrowing, or eliminating, any gaps. No matter

how skilful the trading scheme, over the long haul, abnormal returns are sustained only through abnormal exposure to risk.

Second, what steps could counterparties have taken to ensure that they had properly estimated their exposure, particularly in markets that are volatile? To an important degree, the creditors of LTCM were induced to infuse capital into the firm because they failed to stress test their counterparty exposures adequately and therefore underestimated the size of the uncollateralized exposure that they could face in volatile and illiquid markets. In part, this also reflected an underappreciation of the volume and nature of the risks LTCM had undertaken and its relative size in the overall market. By failing to make those determinations, its fellow market participants failed to put an adequate brake on LTCM's use of leverage. To be sure, sometimes decisions are based on judgements about the soundness of borrowers that are accepted from third parties or, possibly in this case, that are founded on the impressive qualifications of LTCM's principals. In some cases, such truncated risk appraisals may be accurate, but they are not a substitute for a rigorous analysis by the lender of the borrower's overall credit worthiness and risk profile.

Third, in this regard what lessons are there for bank regulators? Domestic commercial bank exposure to LTCM included both direct lending and acting as counterparties to the firm in derivatives contracts. A preliminary review of bank dealings with LTCM suggests that the banks have collateral adequate to cover most of their current mark-to-market exposures with LTCM. The unexpected surge in risk aversion and the dramatic opening up of interest rate spreads in August obviously caught LTCM wrong footed. Counterparties, including banks, continued to collect collateral for marks to market. What they were not collateralized against was the losses that might have occurred when prices moved even further and market liquidity dried up in a fire sale. Supervisors of banks and security firms must assess whether current procedures regarding stress testing and counterparty assessment could have been improved to enable counterparties to take steps to insulate themselves better from LTCM's debacle. More important will be the assessment of whether those procedures are adequate for the future. But this is an area in which much work has been ongoing. During the fourth quarter of 1997 and the first quarter of 1998, supervision staff of the Federal Reserve Bank of New York and the Board met with managers at several major New York banking institutions to discuss their current relationships with hedge funds, updating a similar study conducted 3½ years earlier.

Fourth, does the fact that investors have lost most of their capital and creditors may take some losses on their exposure to LTCM call for direct regulation of hedge funds? It is questionable whether hedge funds can be effectively directly regulated in the United States alone. While their financial clout may be large, hedge funds' physical presence is small. Given the amazing communication capabilities available virtually around the globe, trades can be initiated from almost any location. Indeed, most hedge funds are only a short step from cyberspace. Any direct US regulations restricting their flexibility will doubtless induce the more aggressive funds to emigrate from under our jurisdiction. The best we can do in my judgment is what we do today: Regulate them indirectly through the regulation of the sources of their funds. We are thus able to monitor far better hedge funds' activity, especially as they influence US financial markets. If the funds move abroad, our oversight will diminish.

In the first line of risk defense, if I may put it that way, are hedge funds' lenders and counterparties. Commercial and investment banks especially have the analytic skills to judge the degree of risk to which the funds are exposed. Their self-interest has, with few exceptions but including the one we are discussing today, controlled the risk posed by hedge funds. Banking

supervisors are the second line of risk defense in their examination of lending procedures for safety and soundness. We neither try, nor should we endeavor, to micro-manage bank lending activity. We have nonetheless built up significant capabilities in evaluating the complex lending practices in OTC derivatives markets and hedge funds. If, somehow, hedge funds were barred world-wide, the American financial system would lose the benefits conveyed by their efforts, including arbitraging price differentials away. The resulting loss in efficiency and contribution to financial value added and the nation's standard of living would be a high price to pay - to my mind, too high a price.

Fifth, how much weight should concerns about moral hazard be given when designing mechanisms for governmental regulation of markets? By way of example, we should note that were banks required by the market, or their regulator, to hold 40 percent capital against assets as they did after the Civil War, there would, of course, be far less moral hazard and far fewer instances of fire-sale market disruptions. At the same time, far fewer banks would be profitable, the degree of financial intermediation less, capital would be more costly, and the level of output and standards of living decidedly lower. Our current economy, with its wide financial safety net, fiat money, and highly leveraged financial institutions, has been a conscious choice of the American people since the 1930s. We do not have the choice of accepting the benefits of the current system without its costs.

Conclusion

For so long as there have been financial markets, participants have had on occasion to weigh the costs and, especially, the externalities associated with fire-sale liquidations of troubled entities against short-term assistance to tide the firms over for a time. It was such a balancing of near-term costs and longer-term benefits that presumably led J.P. Morgan to convene the leading bankers of his age - both commercial and investment - in his library in 1907 to address the severe panic of that year. Such episodes were recognized as among those rare occasions when otherwise highly effective markets seize up and temporary ad hoc responses were required. The convening of LTCM investors and lenders last week at the Federal Reserve Bank of New York could be viewed in that long tradition. It should similarly be viewed as a rare occasion, warranted because of the potential for serious disruptions to markets. We must also remain mindful where to draw the line at which public-sector involvement ends. The efforts last week were limited to facilitating a private-sector agreement and had no implications for Federal Reserve resources or policies.

Footnotes

1 At the same time, not all fire sales are without merit. The Resolution Trust Corporation earlier this decade chose to offer commercial real estate in what might be termed a fire sale because it was the only way an otherwise seized-up market could be galvanized. Some level of market prices had to be established - even if below "intrinsic" or longer-run value in order to re-establish a two-way market. This was a special case.