For release on delivery
1 p.m. EST
December 28, 1988

Remarks by

Alan Greenspan

Chairman, Board of Governors of the Federal Reserve System

before a

Joint Meeting

of the

American Economic Association

and the

American Finance Association

New York, New York

December 28, 1988

It is a pleasure to be here this afternoon. Judging by the turnout at this luncheon and the convention, the ranks of economists are continuing to grow. Fortunately, there are more than enough unsolved problems and unexplained phenomena to keep us all busy. Last year's stock market crash, for example, was an event some thought impossible in our era. It exposed gaps in our understanding of market processes, and will undoubtedly provide raw material for a steady flow of doctoral dissertations for years to come. Already we have a large number of excellent studies, including some produced shortly after the crash with voluminous minute by minute data on the course of developments. And we've had hearings by several congressional committees seeking to identify shortcomings in market structures or regulations that need to be addressed. Now, having had more time for reflection, what have we really learned? What can we carry away from this experience?

One thing, certainly, is that a sharp break in stock prices doesn't necessarily engender a major economic contraction. Why didn't the market undermine the economy more? The reduction in household wealth and the residual nervousness associated with such an extreme price shock both argue for more saving and less consumption. And, of course, lower stock prices should raise the cost of capital to firms and discourage investment.

In the event, the economy has remained strong, propelling us to the highest levels of resource utilization in many years. There are several factors that, I believe, largely account for the economy's ability to withstand the stock market shock. The effects of the crash on consumption were partially masked by the strength of the economy heading into the crash, which was not fully appreciated at the time. The personal saving rate did jump as had been expected following the crash, but consumer incomes and spending were buoyed by growth in investment and net exports. Moreover, the decline wiped out capital gains accumulated only since the beginning of 1987. A not insignificant part of the loss was in portfolios of pension funds and other intermediaries who had not attempted to leverage the recent surge of unrealized gains. Hence, the decline had little effect on their economic decisions. Finally, interest rates fell, and with them, the dollar's exchange rate. That offset stock price effects on the cost of capital and helped boost foreign demand for our output.

History teaches us that central banks have a crucial role to play in responding to such episodes of acute financial distress. Before the founding of the Federal Reserve, the early stages of stock market crashes or their equivalent were usually compounded by a sharp escalation of short-term interest rates and a reduction in credit availability. For example, during the Panic of 1893, rates on call loans to brokers in New York City reached as much as

74 percent per annum; the rates on prime commercial paper were quoted at 18 percent. Interest rates during the Panic of 1907 were similar.

These rates were a product of natural market reactions to the dramatic increases in uncertainty that accompanied such episodes. Fearful people tended to withdraw; they pulled back; they endeavored to become safer and more liquid by disengaging from markets, especially those involving risk-bearing instruments. Since equity markets are, on balance, net long, disengagement meant falling share prices, and it also meant reduced inclination to make credit available to private borrowers. At the same time, some private borrowers found that their credit needs had been enlarged, especially the securities dealers who needed to finance a larger inventory of equity shares acquired from a panicky public. Others tended to increase their borrowing just to have a larger cushion of cash on hand, given the financial uncertainties. Short-term interest rates rose sharply, compounding the crisis and increasing the damage to the economy and financial markets.

There was certainly a rational component underlying the heightened demand for liquidity and increased reluctance to lend to private borrowers. A stock market crash can patently increase the credit risk involved in lending to certain borrowers, such as those dealers holding large inventories of equities relative to their capital, or firms planning to retire debt by selling shares of stock, or

companies that may experience reduced demand for their products as a result of the decline in equity prices. But there was an exaggerated market reaction as well, based on little hard evidence, that built on itself and ultimately affected borrowers whose credit-worthiness had not been materially impaired by the drop in equity values. This irrational component of the demand for liquidity reflected concerns that the crisis could affect the financial system or the economy more generally, spreading beyond the individual participants directly involved. It also could have been a strong reaction to heightened uncertainties, before firm information had become available on which potential borrowers had been weakened and which were still sound.

The irrational aspect of the flight to liquidity and quality is similar in some respects to a run on a bank that is fundamentally sound. In the days before deposit insurance, banks attempted to fend off such runs by putting cash in the front window. By reassuring depositors that ample supplies were on hand, the run might be discouraged from even beginning.

In a sense, the Federal Reserve adopted a similar strategy following October 19, 1987, one aimed at shrinking irrational reactions in the financial system to an irreducible minimum. Early on Tuesday morning, October 20th, we issued a statement indicating that the Federal Reserve stood ready to provide liquidity to the economy and

financial markets. In support of that policy, we maintained a highly visible presence through open market operations, arranging System repurchase agreements each day from October 19th to 30th. These were substantial in amount and were frequently arranged at an earlier time than usual, underscoring our intent to keep markets liquid.

By demonstrating openly our determination to meet liquidity demands, we could, in practice, reduce those demands to the extent they arose from exaggerated fears. Through its actions, the central bank can help to assure market participants that systemic concerns are being addressed and the risk contained and that isolated problems will not be allowed to infect the entire financial system.

The Federal Reserve's activities seem to have contributed to a calming of the extreme concerns generated by last year's stock market collapse. Gradually, risk premiums for private borrowers subsided, suggesting that the flight to quality had abated. However, there remained fear-based demands for liquidity, generated temporarily in the course of the financial turmoil, and there were also understandable and reasonable demands for excess reserves at depository institutions, whose reserve management turned appropriately more cautious. In addition, demand deposits bulged following the stock market fall, probably in conjunction with the surge in financial transactions. The Federal Reserve supplied extra reserves to accommodate these needs.

By helping to reduce irrational liquidity demands, and accommodating the remainder, the Federal Reserve avoided a tightening in overall pressures on reserve positions and an increase in short-term interest rates. Rather than the spikes in rates observed in panics earlier in our history, short-term rates actually declined after October 19, even on private instruments.

At the same time, it was important that our actions not be perceived as merely flooding the markets with reserves. Haphazard or excessive reserve creation would have fostered a notion that the Federal Reserve was willing to tolerate a rise in inflation, which could itself have impaired market confidence. We were cautious to attack the problem that existed, and not cause one that didn't.

A central issue through all the turmoil of 14 months ago and since has been the cause of the market collapse and especially the reasons for its suddenness. Only if we understand why it happened can we gain insights into how the structure of markets for equities and their derivatives can be improved. Not only was the stock price break very large, but it was compressed into a very short span of time. We can point to a number of price declines in our history of a magnitude similar to last October but none have been as rapid.

Prior to the drop, the market had run up sharply. Stock prices finally reached levels which stretched to incredulity expectations of rising real earnings and falling

discount factors. Something had to snap. If it didn't happen in October, it would have happened soon thereafter. The immediate cause of the break was incidental. The market plunge was an accident waiting to happen. Measures of real rates of return on equity investments indicated that such returns were at historically low levels during the summer of 1987--a situation that in the past has been restored to more normal levels either by a subsequent sharp increase in earnings or a pronounced drop in share prices. In the event, we got the latter.

Doubtless contributing to high share prices were efforts by investors previous to October 1987 to extend their cash equity positions on the thought that the availability of liquid markets for derivative instruments would enable them to trim their exposure promptly and limit losses should there be a sign of a turndown in prices. Many users of portfolio insurance strategies, especially those aggressive formal programs that were model driven and executed by computers, believed that they could limit their losses in a declining market, and hence were willing to be more than usually exposed in cash equity markets. However, the experience of the crash vividly illustrates that timely execution cannot be assured, especially under those conditions when it matters the most--when the markets are under heavy selling pressure. In essence, there was an illusion of liquidity that likely encouraged larger equity positions on the part of many investors. Of course, while

an individual investor can in principle reduce exposure to price declines, the system as a whole with rare exceptions cannot. Thus, strategies by so many investors to shed risk associated with a large decline in price were vulnerable in ways that had not been fully contemplated. The nearly simultaneous efforts of so many investors to contain losses pushed the system beyond its limits, exacerbating problems of execution and leading to portfolio losses that had not been envisioned when these strategies were adopted.

Modern technology coupled with the greater presence of sophisticated institutional investors undoubtedly contributed to the suddenness of the October drop. Through modern telecommunications and information processing, investors can follow events as they unfold and can react very promptly. What formerly took hours or days now can be done in seconds or minutes. Moreover, institutional investors have taken on a major role in the market for equities and derivative products--accounting for about two-thirds of trading volume--and these sophisticated investors are capable of reacting almost instantaneously to information as it becomes available; these investors also were heavy users of portfolio insurance programs that key off movements in market prices and reinforce buying or selling pressures.

Modern technology, along with major institutional presence in the market, implies that an enormous volume of buy and sell orders can be sent to the markets at any

moment, leading to very sudden pressures on prices. Furthermore, sharp downward price moves by themselves, such as those occurring in October 1987, can heighten uncertainty in the markets and efforts to disengage, thereby compounding selling pressures. Under these circumstances, many potential buyers become reluctant to enter the market as the sharp price move, outside the range of normal experience, leads to doubts about underlying values. In other words, a rapid decline in prices can act to raise the uncertainty premium in share returns, adding, at least for a while, to downward price momentum and pressures on execution capacity. In earlier periods of large market declines, such as the Panic of 1907, news of the initial drop reached investors more slowly, for many, the next day. As a consequence, price declines were spread over a longer period of time and some of the trauma caused by a sudden price break and the corresponding pressure on system capacity was thus avoided.

On top of these factors, system capacity became an influence on investor behavior. As investors came to recognize that the capacity of the system to execute trades was faltering, they sought to get out while they could. Indeed, the realization by investors that the system cannot simultaneously accommodate all the efforts to reduce long positions in stocks or their derivative instruments prompts still others to attempt to get out, as well. The confusion and uncertainty about execution in October 1987 likely

contributed to uncertainty premiums in share returns and thus to additional downward pressures on prices.

The emerging incoherence between the prices of stocks, stock index futures and options also contributed to uncertainty premiums and the downward pressure on prices. There is, of course, only one valuation process in these markets, that being the underlying value of the primary claims to corporate ownership. Index futures and options are claims on the primary claims and can have value only to the extent the underlying stocks have value. In fact, index futures and options merely gross up the demand and supply for equity-related products, the net position of which is, of necessity, a wash. Stocks, in contrast, reflect a net long position representing the total value of the combined equity and derivative products. In normal circumstances, when markets are functioning efficiently, arbitrage keeps the prices of these so-called derivative instruments in line with equities. But under the strains of October 1987, the individual markets for these instruments were fragmented, generating considerable price disparities. These disparities were able to persist for extended periods of time--adding to confusion and doubt--owing to a breakdown of arbitrage, associated with the withdrawal process and execution problems.

Other factors added to strains on the markets. The lack of coordination of margin collection and payment crimped the liquidity of some market makers and their

ability to maintain positions. Also, rumors and discussion of exchange closings and possibly insolvent clearing houses added to confusion in the markets and evidently encouraged some investors to liquidate portfolios before the markets shut down, further adding to strains on the system. In short, the initial rapidity of the price correction to an overvalued market, and a faltering execution capacity, sharply raised risk or uncertainty premiums, which contributed to the historic decline in prices.

While much of the attention given to the performance of the equity and derivative markets last year has been on the strains and weaknesses displayed, we did come through the crisis remarkably well, given what happened. No major brokerage firms failed, unprecedented margin calls by the futures clearing houses were met by their members, and stock prices reached a new trading range shortly after the plunge.

Nonetheless, the events of October 1987 revealed a number of problem areas, many of which have already been addressed and resolved. Disappointment about the ability of dynamic hedging strategies to protect portfolios against loss reportedly has led to a cutback in their use. More broadly, the memory of the crash likely has fostered this year's more sober market assessment of share values.

In the area of execution capacity and clearing and settlement, the exchanges have come to appreciate better the need to assure investors that trades can be completed

without disruption even under very extreme circumstances. In essence, there has been a recognition that systemic risk can be reduced by augmenting order capacity and strengthening the clearing and settlement process, and great strides have been made in that direction. Specialist capital requirements have been increased. And the exchanges and clearing houses have been working to improve trade reconciliation and to strengthen capital positions.

An area that has received a great deal of attention over the past year is margins, especially differences in margins that permit greater use of leverage in futures and options markets. Although this issue has been the focus of intense study and discussion, the fact is that margins simply do not appear to have been much of a factor in last year's market developments. There is still no persuasive evidence that margins damp speculative excesses or lower volatility. Changes in initial margin requirements have not been associated with predictable or significant changes in the levels or volatility of stock prices. Margins do have a role to play in protecting the solvency of brokers and clearing systems. In this regard, they worked reasonably well last year. There were relatively few solvency problems and no major failures.

The interdependence among markets, located here and abroad, particularly was dramatized by events last year. The cash and derivative markets in this country have become closely intertwined, and our markets have become

increasingly interrelated with those overseas. This means that policies that seem appropriate for one market, considered in isolation, may have undesirable consequences for other related markets and may interfere with investor trading strategies that involve multiple markets.

There is, therefore, a need for coordination of regulators, be they self-regulatory bodies or national authorities. More needs to be done, especially to increase the consistency of rules and procedures for markets located in different countries. Differences in market design and regulatory structure make the job difficult. But as integration of international markets increases--and that is inevitable--broader coordination will become all the more essential.

Taking last year's experience as a whole, I would say that it had its tense moments, but we survived it surprisingly well. While many lost a great deal, our economy continues to grow, and its financial infrastructure remains intact. We learned a lot more about how our markets function in a crisis, and fear of another one has provided the impetus to make some necessary changes. The changes made thus far have been cautious ones, the basic market structures have not been torn down. To do so would be an inappropriate response to an event that, from many perspectives, may turn out to be unique. The severity of the crash of October 19, 1987, was in a sense the outcome of a confrontation between dramatically advancing computer and

telecommunications technology on the one hand and ingrained human speculative psychology on the other.

The self-feeding dynamics of falling prices triggered an avalanche of sell orders which overloaded the execution systems and led to its near breakdown. This markedly increased risk premiums among investors, which in turn accelerated the bunching of sell orders.

In response, the various exchanges over the past 14 months have significantly augmented execution capacity and are in the process of improving clearing and settlements.

As a consequence, the likes of the October 19, 1987, market may not revisit us anytime soon. But history cautions forecasting humility.