

Introduction to NBER Symposium on the October 1987 Crash

Sanford J. Grossman
University of Pennsylvania

The stock market crash of October 1987 led to a boom in conferences, commissions, and studies of the stock market. In almost each case, the participants would try to understand the events of October 1987 by a detailed analysis or description of events during the particular days of high volatility. Of course, to us economists there was nothing qualitatively unusual about October 19, 1987; the stock market moved, and we have no model that succeeds in explaining the magnitude or sources of *daily* stock market volatility for that day or any other day. When asked by the National Bureau of Economic Research to organize yet another conference on this subject, I decided that it was time to put these events in a historical perspective and try to understand them in the context of longer time periods and broader models. The papers collected in this symposium issue admirably succeed in broadening our understanding of market volatility and consequently deepening our understanding of the events of a few important days.

To develop some perspective for the papers in the symposium and impose my own prejudices on the reader, it is useful to partition the sources of stock price movement.¹ First, the price of equity can change for purely informational reasons related to the market receiving news that changes its perception of the pay-off stream to holding equity (e.g., the expected dividends or volatility of the dividend may change). Sec-

¹ See my paper entitled "An Analysis of the Implications for Stock and Futures Price Volatility of Program Trading and Dynamic Hedging Strategies," *Journal of Business*, 1988, 61, 275-298.

ond, the price of equity may change because of changes in the marginal investor's tolerance for risk. Obviously, equity risk tolerance can change because of the arrival of information about prospective consumption changes which may be correlated with changes in equity payoffs, so that the above distinction can be cloudy.

In a world of heterogeneous information, some individuals will not be able to disentangle a price move caused by information about equity payoffs from one caused by a shift in the risk tolerance of other investors. The fact that price movements normally contain information about payoffs will itself exacerbate the impact of a price move caused by a shift in some investors' risk preferences.

In addition, markets are not perfectly liquid in the sense that the allocations achieved in each instant are not those which would have been achieved if everyone in the economy participated in a giant Walrasian auction at that instant. Imperfect liquidity is created by the fact that continuous market participation is costly for most people. Intermediaries take positions on their own account to bridge the gap in time between the arrival of final buyers and final sellers. An increase in risk aversion by a small fraction of equity holders can lead to a large volume of trade in a particular instant, which causes a large increase in the required inventory of intermediaries. Equilibrium requires that the price fall to raise the expected return to intermediaries for the extra risk they are bearing. In a world of heterogeneous information, the fall in price initiated by an increase in risk aversion of a small proportion of equity holders, and which has been exacerbated by the above imperfect liquidity of markets, rationally will be viewed as negative information about future equity payoffs by those investors ignorant of the source of the price move. These uninformed investors therefore decrease their demand for equity, and this puts further pressure on intermediaries leading to a further fall in equity prices. The reader can easily add the possibility of clearinghouse and bank failures to the above feedback loop.

One of the characteristics of the October 19, 1987, crash was the fact that it was worldwide. King and Wadhwani attempt to explain this by emphasizing the informational role of prices and the extent to which participants in one country's stock market rationally infer information about the value of their equities from observing the price of foreign stocks on foreign stock markets. They provide some remarkable empirical evidence consistent with their hypothesis, such as the fact that the London stock market generally moves at the time in which the NYSE opens.

The Brady Commission attributed much of the volatility associated with the crash to aspects of market microstructure and intermediation. It suggested that "circuit breakers" that would close markets in times

of high volatility might decrease stock volatility. They made this suggestion even though there was a circuit breaker from the close of trade on Friday, October 16 (a day on which there was a 5 percent fall in the price of equities) to the open of trade on the morning of October 19, 1987, in which "the system could have settled down." Although I am aware that life is full of externalities, I have always been suspicious of closing markets because doing so merely prevents consenting adults from carrying out their desires on the floor of the stock exchange. The article by Stoll and Whaley shows that the open-to-open stock market volatility (for NYSE stocks) is higher than the close-to-close volatility. The opening of trade occurs via an auction, after a "circuit breaker" that lasts from the close of trade the previous day to the opening of trade in the morning. The fact that reopening markets creates volatility should be kept in mind as one of the costs of following a rule that closes markets because of the occurrence of a price move that makes regulators nervous.²

The article by Schwert analyzes a century of stock market volatility. He shows that the October 19, 1987, crash was remarkable not only for its size but also for the extent to which stock volatility returned to normal within a few months of the crash.

The article by Black assumes that the interest rate, the volatility of wealth, and the risk premium depend on wealth and time. He is able to choose parameter values such that the risk premium falls as wealth rises, risk falls as wealth rises, and consumption varies less than wealth.

Barro shows that stock prices have substantial explanatory power for U.S. investment. Fortunately, the stock market did not predict accurately after the crash of October 1987. He also finds that the U.S. stock market forecasts Canadian investment better than does the Canadian stock market.

Bernanke examines clearing and settlement during the crash. He argues that the clearinghouse function of exchanges is analogous to the intermediary function of banks and insurance companies. The clearinghouse is the guarantor of trades, and if market participants doubt the solvency of the clearinghouse, then they will attempt to liquidate rapidly their existing positions and refuse to initiate new positions. This will further decrease the liquidity of markets and hence increase the market's sensitivity to changes in desired equity holdings initiated by a small proportion of equity holders.

² Some have suggested that after a large price move we close the SEC and the CFTC until the regulators have calmed down.

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