Appendix 14.1

Greenspan's Fed on Stock Market Valuation

Commentary on Stock Market Valuation by Greenspan Era Fed: Excerpts

December 5, 1996: Greenspan's speech

Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade? And how do we factor that assessment into monetary policy? We as central bankers need not be concerned if a collapsing financial asset bubble does not threaten to impair the real economy, its production, jobs, and price stability. Indeed, the sharp stock market break of 1987 had few negative consequences for the economy. But we should not underestimate or become complacent about the complexity of the interactions of asset markets and the economy. Thus, evaluating shifts in balance sheets generally, and in asset prices particularly, must be an integral part of the development of monetary policy.

July 22, 1997: *Monetary Policy Report*

The run-up in stock prices in the spring was bolstered by unexpectedly strong corporate profits for the first quarter. Still, the ratio of prices in the S&P 500 to consensus estimates of earnings over the coming twelve months has risen further from levels that were already unusually high. Changes in this ratio have often been inversely related to changes in long-term Treasury yields, but this year's stock price gains were not matched by a significant net decline in interest rates. As a result, the yield on ten-year Treasury notes now exceeds the ratio of twelve-month-ahead earnings to prices by the largest amount since 1991, when earnings were depressed by the economic slowdown. One important factor behind the increase in stock prices this year appears to be a further rise in analysts' reported expectations of earnings growth over the next three to five years. The average of these expectations has risen fairly steadily since early 1995 and currently stands at a level not seen since the steep recession of the early 1980s, when earnings were expected to bounce back from levels that were quite low.

February 24, 1998: *Monetary Policy Report*

Despite the strong performance of earnings and the slower rise of stock prices since last summer, valuations seem to reflect a combination of expectations of quite rapid future earnings growth and a historically small risk premium on equities. The gap between the market's forward-looking earnings-price ratio and the real interest rate, measured by the ten-year Treasury rate less a survey measure of inflation expectations, was at the smallest sustained level last year in the eighteen-year period for which these data are available. Declines in this gap generally imply either that expected real earnings growth has increased or that the risk premium over the real rate investors use when valuing those earnings has fallen, or both. Survey estimates of stock analysts' expectations of long-term nominal earnings growth are, in fact, the highest observed in the fifteen years for which these data are available. Because inflation has trended down over the past fifteen years, the implicit forecast of the growth in real earnings departs even further from past forecasts. However, even with this forecast of real earnings growth, the current level of equity valuation suggests that investors are also requiring a lower risk premium on equities than has generally been the case in the past, a hypothesis supported by the low risk premiums evident in corporate bond yields last year.

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Commentary on Stock Market Valuation by Greenspan Era Fed: Excerpts

January 28, 1999: Greenspan, testifying on Social Security before the US Senate's Budget Committee

[U]doubtedly some of these small companies which are—stock prices are going through the roof will succeed. And they very well may justify even higher prices. The vast majority are almost sure to fail. That's the way the markets tend to work in this regard. There's something else going on here, though, which is a fascinating thing to watch, and it's, for want of a better term, the lottery principle. What lottery managers have known for centuries is that you could get somebody to pay for a one-in-a-million shot more than the value of that chance. In other words, people pay more for a claim on a very big payoff, that's where the profits from lotteries have always come from. And what that means is that when you're dealing with stocks—the possibilities of which are either it's going to be valued at zero or some huge number—you get a premium in that stock price which is exactly the same sort of price evaluation process that goes on in a lottery. So the more volatile the potential outlook—and indeed, in most of these types of issues, that's precisely what is happening—you will get a lottery premium in the stock. But the answer to the question is, is there some hype in this? Of course there's some hype. There's hype in lots of things. But there is at root here something far more fundamental, and indeed it does reflect something good about the way our securities markets work. Namely, that they do endeavor to ferret out the better opportunities and put capital into various different types of endeavors prior to earnings actually materializing. That's good for our system. And that in fact, with all of its hype and craziness, is something that at the end of the day probably is more plus than minus.

June 17, 1999: Greenspan, testifying on monetary policy and the economic outlook before the US Congress' Joint Economic Committee

The 1990s have witnessed one of the great bull stock markets in American history. Whether that means an unstable bubble has developed in its wake is difficult to assess. A large number of analysts have judged the level of equity prices to be excessive, even taking into account the rise in "fair value" resulting from the acceleration of productivity and the associated long-term corporate earnings outlook.

But bubbles generally are perceptible only after the fact. To spot a bubble in advance requires a judgment that hundreds of thousands of informed investors have it all wrong. Betting against markets is usually precarious at best.

While bubbles that burst are scarcely benign, the consequences need not be catastrophic for the economy.

The bursting of the Japanese bubble a decade ago did not lead immediately to sharp contractions in output or a significant rise in unemployment. Arguably, it was the subsequent failure to address the damage to the financial system in a timely manner that caused Japan's current economic problems. Likewise, while the stock market crash of 1929 was destabilizing, most analysts attribute the Great Depression to ensuing failures of policy. And certainly the crash of October 1987 left little lasting imprint on the American economy.

This all leads to the conclusion that monetary policy is best primarily focused on stability of the general level of prices of goods and services as the most credible means to achieve sustainable economic growth. Should volatile asset prices cause problems, policy is probably best positioned to address the consequences when the economy is working from a base of stable product prices.

July 1998 – July 2000: *Monetary Policy Reports*

[Focus on S&P 500 earnings yield vs. real US Treasury 10-year bond yield]

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Commentary on Stock Market Valuation by Greenspan Era Fed: Excerpts

February 2001: Monetary Policy Report

Some of the most dramatic plunges in share prices in 2000 took place among technology, telecommunications, and Internet shares. While these declines partly stemmed from downward revisions to near-term earnings estimates, which were particularly severe in some cases, they were also driven by a reassessment of the elevated valuations of many companies in these sectors. The price-earnings ratio (calculated using operating earnings expected over the next year) for the technology component of the S&P 500 index fell substantially from its peak in early 2000, although it remains well above the ratio for the S&P 500 index as a whole. For the entire S&P 500 index, share prices fell a bit more in percentage terms than the downward revisions to year-ahead earnings forecasts, leaving the price-earnings ratio modestly below its historical high.

March 26, 2002: Greenspan's speech

[*A*]*s we can see from recent history, long-term earnings forecasts of brokerage-based securities analysts, on average, have been persistently overly optimistic. Three- to five-year earnings forecasts for each of the S&P 500 corporations, compiled from projections of securities analysts by I/B/E/S, averaged almost 12 percent per year between 1985 and 2001. Actual earnings growth over that period averaged about 7 percent.*

Perhaps the last sixteen years, for which systematic data have been available, are an historical aberration. But the persistence of the bias year after year suggests that it more likely results, at least in part, from the proclivity of firms that sell securities to retain and promote analysts with an optimistic inclination. Moreover, the bias apparently has been especially large when the brokerage firm issuing the forecast also serves as an underwriter for the company's securities. ….

Not surprisingly then, with the longer-term outlook increasingly amorphous, the level and recent growth of short-term earnings have taken on especial significance in stock price evaluation, with quarterly earnings reports subject to anticipation, rumor, and "spin." Such tactics, presumably, attempt to induce investors to extrapolate short-term trends into a favorable long-term view that would raise the current stock price.

CEOs, under increasing pressure from the investment community to meet short-term elevated expectations, in too many instances have been drawn to accounting devices whose sole purpose is arguably to obscure potential adverse results. Outside auditors, on several well-publicized occasions, have sanctioned such devices, allegedly for fear of losing valued corporate clients. Thus, it is not surprising that since 1998 earnings restatements have proliferated. This situation is a far cry from earlier decades when, if my recollection serves me correctly, firms competed on the basis of which one had the most conservative set of books. Short-term stock price values then seemed less of a focus than maintaining unquestioned credit worthiness.

A change in behavior, however, may already be in train. The sharp decline in stock and bond prices following Enron's collapse has chastened many of the uncritical practitioners of questionable accounting. Corporate reputation is fortunately reemerging out of the ashes of the Enron debacle as a significant economic value. Markets are evidently beginning to put a price-earnings premium on reported earnings that appear free of spin. Likewise, perceptions of the reliability of firms' financial statements are increasingly reflected in yield spreads on corporate bonds. Corporate governance has doubtless already measurably improved as a result of this greater market discipline in the wake of recent events. ….

The failure to include the value of most stock-option grants as employee compensation and, hence, to subtract them from pretax profits, has increased reported earnings and presumably stock prices. This would be the case even if offsets for expired, unexercised options were made. The Financial Accounting Standards Board proposed to require expensing in the early to middle 1990s but abandoned the proposal in the face of significant political pressure.

The Federal Reserve staff estimates that the substitution of unexpensed option grants for cash compensation added about 2-1/2 percentage points to reported annual growth in earnings of our larger corporations between 1995 and 2000. Many argue that this distortion to reported earnings growth contributed to a misallocation of capital investment, especially in high-tech firms.

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Commentary on Stock Market Valuation by Greenspan Era Fed: Excerpts

March 26, 2002: Greenspan's speech (continued)

If market participants indeed have been misled, that, in itself, should be surprising, for there is little mystery about the effect of stock-option grants on earnings reported to shareholders. Accounting rules require that enough data on option grants be reported in footnotes to corporate financial statements to enable analysts to calculate reasonable estimates of their effect on earnings.

January 3, 2004: Greenspan's speech

Perhaps the greatest irony of the past decade is that the gradually unfolding success against inflation may well have contributed to the stock price bubble of the latter part of the 1990s.Looking back on those years, it is evident that technology-driven increases in productivity growth imparted significant upward momentum to expectations of earnings growth and, accordingly, to stock prices. At the same time, an environment of increasing macroeconomic stability reduced perceptions of risk. In any event, Fed policymakers were confronted with forces that none of us had previously encountered. Aside from the then-recent experience of Japan, only remote historical episodes gave us clues to the appropriate stance for policy under such conditions. The sharp rise in stock prices and their subsequent fall were, thus, an especial challenge to the Federal Reserve.

It is far from obvious that bubbles, even if identified early, can be preempted at lower cost than a substantial economic contraction and possible financial destabilization--the very outcomes we would be seeking to avoid.

In fact, our experience over the past two decades suggests that a moderate monetary tightening that deflates stock prices without substantial effect on economic activity has often been associated with subsequent increases in the level of stock prices.6 Arguably, markets that pass that type of stress test are presumed particularly resilient. The notion that a well-timed incremental tightening could have been calibrated to prevent the late 1990s bubble while preserving economic stability is almost surely an illusion.

Instead of trying to contain a putative bubble by drastic actions with largely unpredictable consequences, we chose, as we noted in our mid-1999 congressional testimony, to focus on policies "to mitigate the fallout when it occurs and, hopefully, ease the transition to the next expansion."

Source: Federal Reserve Board.