The Economics of Euphoria:
Financialization and the US Bubble

Prepared for the Political Economy Research Institute Conference
On Financialization of the Global Economy

By

Robert Parenteau

First Draft: November 28, 2001

The framework for this analysis has developed out of a deeply collaborative research effort with Frank Veneroso begun in the fall of 1998. Many of the ideas discussed within are joint products of our efforts, if not originated by Veneroso. In particular, the first section of this paper is an edited excerpt from an unpublished manuscript co-authored in February 2000 with Veneroso. However, the opinions expressed in this paper are mine alone, and do not necessarily reflect the views held by my current employer or by Veneroso. Any errors and omissions are also mine alone.

Summary
I examine one of the more striking aspects of the financialization of the US economy during the past decade, namely the emergence of an extreme equity market bubble. I first sketch some of the key changes in individual investor behaviors and institutional investor practices that amplified equity bubble dynamics. I next identify transmission channels between the equity bubble and growth and distribution trends in the US economy. I show how the equity bubble led to severe financial imbalances in the private sector, fueled by an unprecedented spree of household and corporate deficit spending. Fiscal policy and foreign exchange policy are shown to have played a key role in aggravating the private sector financial imbalance as well. I explore why a normal policy stimulus response is likely to be thwarted by these imbalances. I investigate the curious reversal in monetary policy towards asset price bubbles late in the past decade. This reversal in part prolonged the bubble, and so allowed the financial imbalances to deepen. This analysis suggests equity bubbles introduce lingering macrofinancial risks to the economy, which in turn begs the question of how to best dampen asset price bubbles as a preventative measure in the future. More direct intervention in financial markets, as well as more unorthodox coordinating functions may required of the central bank to avoid disruptive asset bubbles. I discuss evidence that such practices are already under consideration, and take a look at possible uses of asset based reserve requirements, security transaction taxes, and capital controls in the containment of asset bubbles and financial imbalances.

Section 1: Introduction

In the following paper, I will explore one vector of the financialization of the US economy, namely the emergence, persistence, and collapse of an equity asset price bubble that has recently destabilized US macrodynamics. Since equity bubbles do not emerge all the time – they are a latent tendency - I will first outline some of the changes in individual behaviors and institutional practices which amplified and prolonged the equity bubble. Because the financial relations of the US economy are held up as the paragon for the rest of the world, it is important to understand how the behavioral pathologies that fed the recent bubble emerged. Next, I will argue, rather than being a mere financial sideshow, a prolonged equity bubble can influence private sector portfolio preferences and expenditure decisions in ways that ultimately increase the financial fragility of an economy. Rising asset prices can act as a financial accelerant on investment spending and a financial depressant on the desired household savings rate. This shifts the investment accelerator function and the consumer expenditure multiplier enough to fuel boom conditions in the economy, which in turn further validate and inflate the asset price bubble. A self-amplifying feedback loop is introduced, taking portfolio positions and the economy far from a sustainable dynamic equilibrium path.

To wit, rapid asset price appreciation creates room for a massive swing to private sector deficit spending. A rapid accumulation of private debt finances private spending in excess of private income. However, the emergence of financial fragility requires a certain type of economic set up. In a private closed economy, for example, the Keynes/Kalecki profit equation shows any attempt by corporations to deficit spend on capital equipment because of an equity bubble would be greatly thwarted the faster the household savings rate fell. A boom in the profit share of GDP would accompany rising capacity utilization. This in turn would lead to an improvement in the internal funds available to nonfinancial firms for servicing financial obligations and fueling future capital accumulation. Overindebtedness could arise within one particular segment of a sector, but very little in the way of a build up in financial obligations between sectors would arise. The more households increases their proclivity to spend during an equity price bubble, the more intended deficit spending by capacity expanding firms would be thwarted by a profit boom.

Once we remove the unrealistic condition of a private closed economy, it is possible for both households and corporations to build up their debt loads at the same time. More specifically, when an economy with a high income elasticity of import demand and some degree of automatic fiscal stabilizers implements economic policy preferences in favor of currency appreciation and fiscal restraint during an equity bubble, the macro profit equation identified by Keynes and Kalecki underlines why the nonfinancial corporate sector is likely to be locked into a path of rapid debt accumulation. The profit share falls away, despite an investment boom, as fiscal policy becomes more restrictive and the current account balance erodes. When an asset price bubble also reduces household savings preferences, as they tend to do, this policy configuration additionally insures an external private debt burden is generated. Net deficit spending by firms and households is bled off to foreign producers profits and to public debt reduction. Rising trade deficits

and rising fiscal surpluses are leakages from the circular flow that can dampen corporate profitability even during an investment boom. In this manner, the private sector as a whole can, through persistent deficit spending, amass a heavy debt load. Moreover, a highly indebted private sector can then become susceptible to the debt trap dynamics more frequently applied to developed nation public sectors or developing nation external debt.

In addition to these damaging fiscal policy preferences, the increasingly asymmetric response of monetary policy to equity price momentum introduced a moral hazard element that perpetuated bubble dynamics. The rapid reversals in the fed funds rate accompanying equity price drops, plus the frequent cheerleading by the Chairman of the Federal Reserve of key economic and financial myths supporting the bubble, quickened the shift in portfolio preferences driving the equity bubble. Investor perceptions of risk and return were skewed by what became known as the Greenspan Put. While the responsibility for the bubble goes well beyond the Fed – the changes in incentives facing investors, and the endogenous change in investment practices played a large role that is detailed in the first section – there can be little question that many investors came to believe the Fed treated the equity market as if it fell under the "too big to fail" umbrella.

However, once bubble dynamics collapse in an equity market, traditional policy stimulus becomes less effective. The desired reduction of private sector deficit spending following a burst bubble in asset prices introduces a stiff headwind to monetary and fiscal policy stimulus. A more vigorous policy response than usual is required simply to close the private sector financing gap. Until household and corporate balance sheets are repaired, talk of a sustainable economic recovery on fiscal and monetary ease is premature if not thoroughly misguided. To avoid the type of prolonged economic stagnation that tends to follow burst asset bubbles, US growth may need to be reoriented toward public investment led initiatives, and the rest of the world may need to be reoriented toward domestic demand led growth initiatives.

To avoid future asset bubbles and their accompanying financial imbalances, a mix of unorthodox tools may need to be employed including ratcheted securities transaction taxes, asset based reserve requirements, capital controls, and possibly more direct intervention by monetary authorities in bubbling financial markets. While these proposals may sound utopian from the perspective of the policy debates of the past decade, the swift abandonment of the lock box perspective on fiscal policy may be instructive of the kinds of discontinuous shifts that become possible in a post-bubble environment. History suggests the revulsion with financial shenanigans by even those not directly defrauded by the bubble can lead to nonlinear changes in policy priorities and in the rules of the financing game. Nevertheless, it must be recognized a clean separation between manufacturing and financial interests becomes more difficult to imagine once stock options are widespread and nonfinancial firms are more deeply engaged in zaitech like financing roles. In addition, with the fall of Glass-Steagall, it becomes harder to separate commercial bank and investment financial interests. Fresh thinking about old cleavages and political alignments will be required to craft policies that can attract the political

inertia necessary to contain the excesses wrought by liberalized and globalized capital markets.

Section 2: The investor dynamics fueling the US equity bubble

Asset markets, conventional theory holds, allow investors to identify and fund those investment projects with the highest risk adjusted return. Financial markets are efficient in this task, at least in an informational sense, and will only produce distorted, suboptimal outcomes if there is any interference with their operation. While random mispricings of financial assets may occur from time to time, such mispricings are either quickly corrected, or they will average out over time. Capital allocation decisions, then, are best left to the unimpeded discovery process that evolves from each investor trying to maximize their own wealth.

This account of financial markets, while still the dominant view, has suffered numerous theoretical and practical challenges over the past two decades. It is beyond the scope of this paper to review the numerous theoretical challenges to the efficient market hypothesis (EMH) that lies behind this conventional view of financial markets described above (a separate paper is available upon request). The details of many of the empirical challenges to the EMH can be found in Campbell, Lo and MacKinlay, among other sources. As it turns out, not only is the EMH, in all its permutations difficult to test, but a variety of well established "anomalies" appear to fly in the face of EMH tenets. Given the volatility in asset prices, however, the amount of historical data required to get significant results in asset pricing models means this question may never remain well settled in an empirical sense.

On a more fundamental level, Sanford Grossman has found a contradiction at the heart of the EMH approach. If the EMH holds true, and asset prices accurately reflect all the available information, why, Grossman argues, should we expect investing agents to expend time, effort, and money actively trading in asset markets? That is to say, if the market is understood to be efficient, there is no incentive for investors to undertake the research and trading which enforces the very condition of efficiency. It is simply not worth their while. The state of efficiency in financial markets is apparently not self-sustaining.

Peter Bernstein has developed an even more damning variation on Grossman's theme, one with roots in Keynes' work as well. Bernstein notes the very liquidity in wealth holdings that financial markets are designed to provide in fact undermines the incentives investors have to act in a manner that reinforces efficiency conditions. If a financial asset can be readily sold within minutes or hours of its purchase, investors need not expend their efforts researching the long run return and risk characteristics of an investment project. Rather, all that investors in liquid financial asset markets need to anticipate is how other investors will perceive the value of the investment in the short term trading horizon ahead. The EMH, then, is contested on more than just the empirical fronts. Financial markets, by their very nature, appear to undermine conditions for efficiency to emerge.

While these theoretical and empirical contentions with the EMH have simply bred more convoluted variations of the EMH, there are enough flaws that have been exposed to leave its legitimacy as a ruling convention under serious question. When combined with the dramatic bubbles that have been demonstrated in asset markets over the past two decades – not the least of which includes the Japanese bubble in the late '80s and the US bubble in the late '90s – it is clear even highly placed policy makers have begun groping for a new understanding of how financial markets behave.

To find an example of this groping, we need look no further than the revelations of Andrew Crockett, General Manager of the Bank for International Settlements (and perhaps more relevant to this discussion, Chairman of the Financial Stability Forum) at the Fourth Hong Kong Monetary Authority Distinguished Lecture in February, 2001. Crockett's statement deserves to be read in its entirety, as it stands in marked contrast to what is loosely understood as "the Washington consensus" view of financial markets. Chairman Crockett has determined from his experience that financial markets display characteristics that distinguish them from orthodox descriptions of commodity markets. These unique characteristics of financial markets include:

> *"First, the financial industry is unlike other sectors in that the feedback mechanism from supply to price is less effective, or even perverse. In a traditional industry, an expansion of supply puts immediate downward pressure on price, squeezing profit margins, reducing the incentives to invest and encouraging exit from the industry. In the financial sector, the price that falls when the supply of credit increases is the interest rate. This has the effect of pushing up asset values and appearing to strengthen the balance sheet of borrowers and intermediaries alike. Rising asset values encourage leverage and credit expansion…*
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> *Second, fundamental value, the basis on which decisions to buy and sell, to lend and borrow are made, is extremely hard to assess…To an important extent value, like beauty, is in the eye of the beholder. Its assessment is subject to powerful waves of shared optimism or pessimism. Investors are prone to see new paradigms…individual stocks, even stock indices, can move by large amounts even in the absence of significant new information.*
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> *My third conclusion is that cyclical upswings are typically sustained by overly optimistic expectations and muted perceptions of risk…The fact is that financial intermediaries are better at assessing relative risks at a point in time, than projecting the evolution of risk over the financial cycle."*

This financial market exceptionalism makes achievement of EMH conditions highly unlikely. Crockett has identified some of the characteristics of asset markets which make them prone to departing into far from equilibrium territory. The Chairman of the

Financial Stability Forum has come to recognize bubble dynamics, where asset price changes are the primary driver of further asset price changes, are endemic to the structure of asset markets. That is not to argue financial markets are perpetually in a state of bubbling over. Rather, as Crockett openly acknowledges, bubble dynamics are a latent tendency of asset markets that can endogenously emerge under the right conditions. Chairman Crockett has in fact identified a characteristic of financial markets once isolated by Hy Minsky:

> *"in financial and capital asset markets in which speculative and conjectural elements are powerful, the principle of substitution does not always apply. A rise in the relative price of some set of financial instrument or capital assets may very well increase the quantity demanded of such financial or capital assets. A rise in price thus breeds conditions conducive to another such rise." (SUE, p. 106)*

Although Chairman Crockett appear to have rediscovered Minsky, he leaves aside some of the more salient characteristics of financial markets which make them prone to bubble dynamics. Prices in asset markets are formed with a view to future economic and financial market conditions, yet these conditions cannot be know with certainty. In a world constructed to more cleanly hue to efficient market designs, financial instruments could be designed with fixed contractual payouts rather than contingent payouts, the investing class could be restricted to those with sufficient entrepreneurial and financial experience to make relatively sound assessments about prospective returns, and the liquidity of financial commitments could be reduced enough that investors would be forced to evaluate long term risk and return. But even under these ideal conditions, future events influencing financial asset values cannot be perfectly foreseen, nor can the range of possible future events even be captured in a probabilistic sense. As Paul Davidson has noted, we have yet to figure out a way of taking samples from the future. Asset price formation is therefore tied up with how we attempt to cope with fundamental uncertainty about the future.

Given this fundamental uncertainty, some economists and practicing investors that have looked deeply into this question find that a very different game is being played in financial markets. Rather than endeavoring to build more accurate calibrations of possible payoffs under various financial market and economic outcomes, most investors will tend, as a mental short cut or rule of thumb, to assume their experience in the recent past is representative enough of the near future. They will construct portfolios on the basis of such extrapolation. Adaptive expectations, then, offer one way of coping with fundamental uncertainty. In addition, rather than attempting to position portfolios on the basis of the most accurate forecast of a fundamentally uncertain future, other more sophisticated investors will try to game consensus expectations about the future. Investor behavior becomes governed by speculations on the speculations of others. Under such conditions, strategic behavior unfolds to various degrees, and a proclivity towards bandwagon outcomes can emerge.

This orientation towards other regarding strategic behavior by investors can be especially accelerated during periods when model uncertainty arises. For the most part, we endeavor to form conceptual models of how the world works to guide us in making decisions today that require assessments of an uncertain future. But when the facts of experience begin to disagree with these mental models, we fall back on behaviors and practices which can breed asset price bubbles. When models grounded in conventional wisdom are disrupted by events which do not fit the model, we tend to follow the herd, assuming the herd collectively must have more insight into the new model than any one individual is capable of acquiring. Model uncertainty heightens the reliance on extrapolative, trend following behavior

This general understanding of financial market behavior can be applied to the recent equity market bubble. Changes in the behavior, practices, and incentives facing three general classes of investors will be examined. These three classes include less informed trend following individual investors, rationally destabilizing speculative investors, and relative performance institutional investors. On their own, the behavior of each class of investors fed equity bubble dynamics in the second half of the '90s. More importantly, the interaction of the behaviors of all three is crucial to understanding the strength and persistence of this recent equity bubble. Bubbles depend on interdependent feedback loops, and this one is certainly no different.

Individual investors: hopping on the caravan to the casino

"You do not need to know what the market is going to do! All you need to know is what the market has actually done! This is the key! Think about it for a minute. There is a fortune in this paragraph."

William O'Neill, "How to Make Money in Stocks"

Asset prices are conventionally viewed as the outcome of decisions made by millions of well-informed investors. Investors are believed, en masse, to be capable of assessing prospective returns and possible risks on the full menu of investment opportunities available to them. They are rational, and they form rational expectations on the basis of the existing set of information before them and the mental model they hold to be most accurate, and therefore must useful in interpreting information. Investors are viewed as capable of estimating the various possible paths of cash flows likely to be generated by a particular investment. They can identify the degree of risk associated with any investment, and use that information to derive a discount rate appropriate for estimating the present value of future cash flows from each investment. This is the basis of most conventional asset pricing models. Armed with this information, accepted theory suggests investors will combine assets in portfolios that will deliver the highest return for any given level of perceived risk they find tolerable.

Against this strictly rational and computationally intensive view of how financial markets operate stands another perspective arising from the practical experience of investors like Lord Keynes and George Soros. Both Keynes and Soros experienced (like Chairman

Crockett) a different type of marketplace than conventional economics described. In the real world of investing that Keynes operated in, the future was opaque. There was an irreducible uncertainty about future business prospects. Like the fog of war, there existed a fog in the business world where competitive destiny is not predetermined. This especially holds true for entrepreneurs who make so called crucial decisions regarding new plant and equipment investment on the basis of their best estimates of future profitability.

Keynes stressed the existence of fundamental uncertainty for all classes of investors in Chapter 12 of his General Theory when he wrote,

> *"The outstanding fact is the extreme precariousness of the basis of knowledge on which our estimates of prospective yield have to be made. Our knowledge of factors which will govern the yield of an investment some years hence is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory…amount to little and sometimes to nothing…"*

Keynes witnessed during the course of his lifetime an increasing separation between ownership and control in the world of business. With this increasing separation came a boost to the liquidity of trading equity titles to corporate assets as ownership was spread over more investors than the founding entrepreneur of a firm. But the price of this diffusion of ownership and improved liquidity was not trivial. New investors were unlikely to have the same depth of understanding of a business as an original proprietor or set of partners.

> *"With the separation between ownership and management which prevails today and with the development of organized investment markets, a new factor of great importance has entered in, which sometimes facilitates investment but sometimes adds greatly to the instability of the system…Thus certain classes of investment are governed by the average expectation of those who deal on the Stock Exchange as revealed in the price of shares, rather than by the genuine expectations of the professional entrepreneur." (GT, pp. 150-1)*

As proprietorships and partnerships were increasingly replaced with joint stock companies during Keynes' lifetime, capital constraints on large-scale production were dissolved while entrepreneurial risk was more widely shared. However, the very same equity market qualities conferring these liquidity advantages simply increased the likelihood that firms would be misvalued. The value of firms became subject to the judgments of the least well-informed owners, namely individual equity investors. The more seasoned judgements of entrepreneurial owner/operators became diluted by the views of a more spectator like public. Publicly owned firms became valued on the basis of the perceptions that a basically ignorant public held of the return and risk prospects facing a company. Rather than sharpening the valuation process, the increasing reliance

on such public markets for financing meant valuations were more likely to be in error, or at least less firmly grounded in fundamentals. Keynes captured this concern quite accurately when he wrote,

> *"As a result of the gradual increase in the proportion of the equity in the community's aggregate capital investment which is owned by persons who do not manage and have no special knowledge of the circumstances, either actual or prospective, of the business in question, the element of real knowledge in the valuation of investments by those who own them or contemplate purchasing them has seriously declined…"*

More bluntly, Keynes found the widening of the stock market produced the following curious characteristic of modern financial systems:

> *"the vast majority of those who are concerned with the buying and selling of securities know almost nothing whatever about what they are doing. They do not possess even the rudiments of what is required for a valid judgment, and are the prey of hopes and fears easily aroused by transient events and as easily dispelled. This is one of the odd characteristics of the capitalist system under which we live, which, when we are dealing with the real world, is not to be overlooked." (VI, p. 323)*

The expansion of liquidity accompanying the broadening of opportunities to own financial claims on firms introduced a dilution, Keynes found, of the information content of asset prices. As less informed players entered financial markets, it became less likely that asset prices could accurately reflect the prospects of the underlying businesses in which financial claims were being traded.

Keynes, then, identified a central characteristic of investor behavior in capitalist market economies with well-organized financial markets. Trend following behavior could be expected to eventually dominate financial market price formation as ownership became increasingly diffused among the public. The recent past would tend to be extrapolated into the future, even though the revolutionary nature of business innovation and the fundamental uncertainty surrounding future returns insured the recent past was at best an imperfect guide to the future.

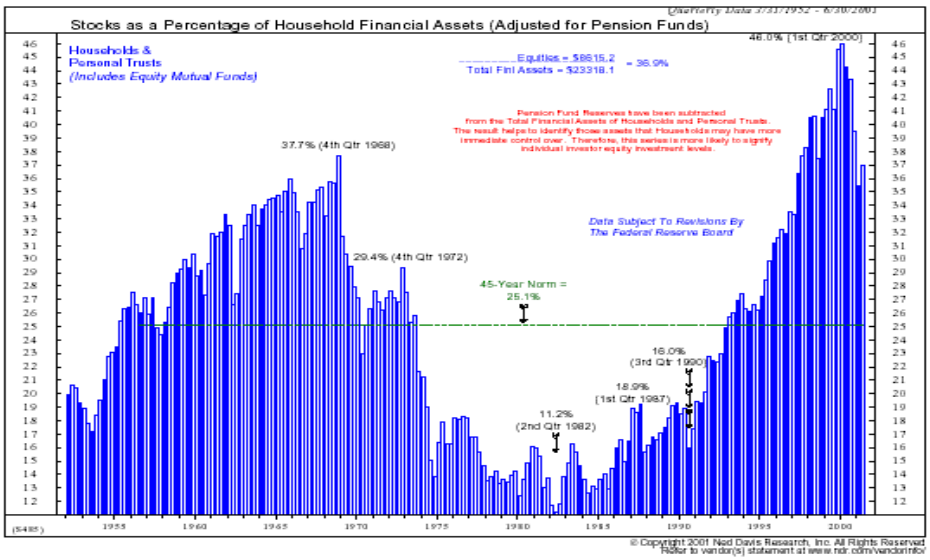
In the extreme, Keynes would bemoan during his pre-General Theory lectures that in asset markets so organized "railroad property is valued on the basis of last week's receipts". And in the General Theory itself, Keynes would notice "the shares of American companies which manufacture ice tend to sell at a higher price in the summer when their profits are seasonally high than in the winter when no one wants ice." Given the impossibility of calculating future returns from all presently available information - the "pretty, polite techniques made for a well paneled board room", as Keynes recognized from his own experience as an investment manager - investors turned to conventions based on the extrapolation of recent trends.

Warren Buffet has added his own corollary to Keynes' observations. Sustained bull markets, Buffet has noticed, have a funny tendency to change the behavior of investors along the way. They amplify the tendencies Keynes found embedded in the way stock markets are organized. For those individual investors who started out earnestly investigating the prospective cash flows and appropriate discount rates to be used in determining stock values, there is a less than comforting fate awaiting them as the bull market stampedes on. As Buffet described,

> *"Once a bull market gets under way, and once you reach the point where everybody has made money no matter what system he or she followed, a crowd is attracted into the game that is responding not to interest rates and profits but simply to the fact that it seems a mistake to be out of stocks. In effect, these people superimpose an I-can't-miss-the-party factor on top of the fundamental factors that drive the market. Like Pavlov's dog, these 'investors' learn that when the bell rings – in this case, the one that opens the New York Stock Exchange at 9:30 a.m. – they get fed. Through all this daily reinforcement, they become convinced there is a God and that He wants them to get rich."*

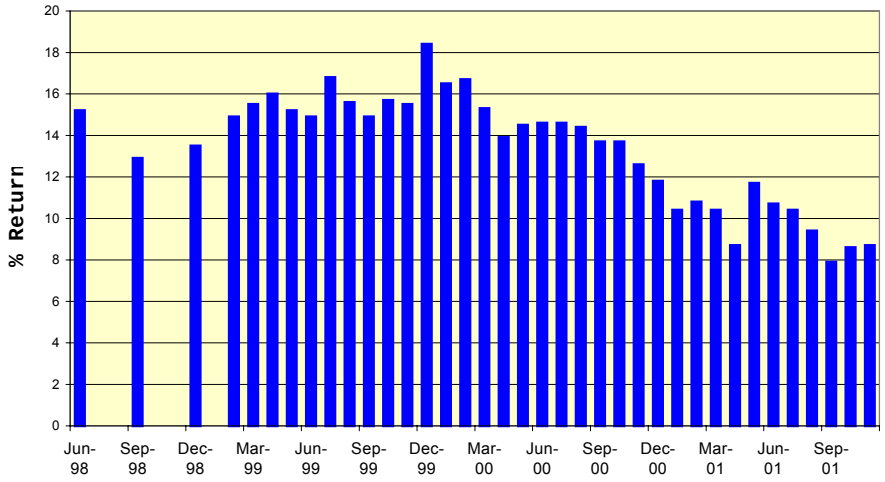
To Warren Buffet, one of the master investors of our time, even those agents who start out behaving along efficient marketeer lines will find a new type of training day in and day out as a bull market persists. This training has little to do with rational calculation, and everything to do with social dynamics that are easily recognized. Once a sustained bull market validates trend following behavior, and returns become viewed as an entitlement for engaging in trend following behavior, even a rat in a cage would know to abandon other forms of investment decision making.

Leaving Keynes' heyday behind, we can find further evidence contemporary individual investors continue to behave in the trend following manner he once observed. As the bull market begun in 1982 persisted with relatively brief interruptions into the mid-'90s, households have adapted their portfolio positions accordingly. 1998 saw nearly half of the households surveyed by the Federal Reserve holding stocks (directly or indirectly, as with employer sponsored retirement accounts), quite a leap forward from the 32% of households recorded at the end of the 1980's stock market boom. Equities as a share of total household wealth have exceeded the peak last seen back in 1968, another period characterized by economic good times and a robust stock market. By 1999, according to Federal Reserve data, discretionary equity holdings as a share of household financial assets had risen to 60% from 34% only a decade earlier.



In addition, expectations of future equity returns have been extrapolated from the recent past. While the long sweep of history available for U.S. equity returns suggests a nominal annual return in the range of 9-10% has prevailed (at least prior to the late 1990's boom), by 1999 households reported expectations of 19% annual returns for the next ten years. Of those households with five years or less of experience, a return of 21.7% was expected, not far from the 22.7% equity mutual fund return earned between 1997 and 1999. Such results are not unique to this survey, but are found in many such surveys of investor expectations during the late '90s. One survey performed for UBS Warburg on a more regular basis late in the decade shows the cresting of expected one-year returns on equities at an unprecedented height, and the subsequent halving of expectations as the bubble popped. The very recent past apparently serves as a guide to the future for many individual investors, just as Keynes suggested.

Expectations For Return On Own Equity Portfolio Over Next 12 Months



Perceptions of the risk involved in owning equities have likewise shifted, and households are increasingly comfortable leveraging their equity bets with margin loans or even home equity loans. The confidence individual investors have gained after the sustained bull market of the past five years is nowhere more visible than in their increasing use of margin debt in this cycle. Margin debt – the borrowing of money from stock brokers to purchase more stock, where the stockholdings themselves serve as collateral – soared by $88 billion in 1999. With the brief exception of the tail end of the go-go years and the run up to the sharp correction of October, 1987, margin debt rarely rose above 1% of personal disposable income. In the bad old '70s, when equity returns were depressed, margin debt as a share of income did fall below 0.5%. But for most of the three decades up to 1995, few departures from the 0.5% - 1.0% range can be found, and where they can, they are short-lived.

But as the high double-digit returns began to emerge in 1995, margin debt climbed consistently year after year until it had tripled to 3% of disposable income. As a percentage of GDP, margin debt has never been this high since the 1930's. Having hit the jackpot year after year in the equity market, individual investors projected more of the same for the foreseeable future, and turbocharged their returns accordingly by investing on margin. By late 1999, the practice of using leverage to finance equity investment positions had become so compelling that a $24 billion gain in margin debt was visible in November alone. Home mortgages collateralized by equity portfolios were not unheard of offerings at several brokerage houses by the height of the equity bubble, leaving users of this financial engineering to face a margin call with the power to literally displace them from their homes.

In explaining the dramatic decline in risk premiums required by equity investors to hold equities in their portfolio, Chairman Greenspan often argues the improved availability of financial information made possible by computerization has reduced the uncertainty investors face. Financial information is now more accessible and more plentiful than any time in the history of the human race. Daylong financial news networks run on TV like game shows. Websites update financial news minute by minute, while information seekers frequent stock chat rooms all hours of the day and night. Analyst recommendations for stocks can be downloaded, and so-called whisper numbers for earnings can be reviewed at will. Trades can be placed over home computers on after hours trading networks. What was once the privileged information flow and access of institutional investors is now available virtually to all. But what do these more informed individual investors do with this access? Do they calculate net present values of projected future earnings streams, as efficient marketeers would have us believe?

More often than not, such analytical activities are viewed as exercises in futility by retail investors, assuming the tools of fundamental investment analysis are even known in the first place. Individual investors would rather pick up the next hot rumor from the chat rooms, or use charts and technical analysis to identify future market moves based on price patterns of the recent past. The future is, in the Chairman's mind, less opaque and more predictable given the improved information flow to the average investor. Yet in reality, precisely the opposite has emerged. The improved information flows have been

grasped in a manner that reinforces extrapolative behavior by investors. Extrapolative expectations behavior undermines the very basis of the asset pricing models constructed by efficient marketeers.

It is no small irony that momentum investing has never proven so lucrative as it did during 1999. Isolating the top decile of price momentum stocks for 1997-9, researchers at Sanford Bernstein found this segment of the US equity universe beat the large cap market by 46% per year. This is more than double the prior relative performance peaks of the momentum stock surges of 1956, 1967, 1973, 1980, and 1991. While widespread adoption of computers and the Internet have surely democratized the tools for trading, such information has not led to more informed investment decision making by individuals. Rather, it has facilitated the identification of asset price trends, fostered momentum investing, and for a while at least, made momentum investing a self-fulfilling prophecy.

Individuals, of course, can choose to sidestep the shortfalls of their own ignorance and defer their investment decision making to mutual fund portfolio managers with more experience and investment knowledge. But mutual fund managers still must attract the attention of individual investors. Since individual investors make stock selections in a trend following manner, we have no reason to believe they would choose mutual funds in any different manner. The enormously lopsided inflows into aggressive growth and technology mutual funds in late 1999 and early 2000 certainly are testimony to this extension of trend following behavior.

Moreover, recent performance scores generally dominate mutual fund advertisements. Mutual fund ranking systems like Morningstar that are available to more discerning individual investors are frequently based on 1, 3, and 5 year historical performance records. This remains the case even though in the fine print of mutual fund ads one finds the admonition that past performance is no guarantee of future performance. Trend following behavior is therefore simply displaced onto the mutual fund manager – it still operates, but once removed.

Mutual fund managers face an absolute performance derby. They must deliver the highest possible returns in their product category or face net redemptions from their funds. This places an intense pressure on mutual fund managers to chase momentum. It can also lead to some rather odd redefinitions of investment styles as mutual fund managers try desperately to stay in the game.

For example, during the peak quarters of the equity bubble, it was possible to find value fund managers with track records that were beating the S&P 500 How do value managers pull off such a feat when already richly valued stocks soared to unheard of price/earnings ratios? By redefining value investing, value managers managed to stay in the game. It was not unusual to hear the quip from such chameleon like survivors that if a stock rises in price, it must have been cheap. In this fashion, the only operative value criteria left employed by such managers is the same one employed by momentum investors. If the stock is rising in price, it must be bought, because apparently enough people thought it

was cheap enough to buy, so it must have been cheap, ergo, a value stock. From such self serving sophistry, even those mutual fund managers whose valuation disciplines should have left them most immune to the equity bubble became active participants in the trend following behavior.

As the bull market that begun in 1982 persisted into the 1990's with relatively short-lived interruptions, households reacted in an adaptive fashion and raised the share of equities they desired to hold in their portfolios. Few individual investors make equity investments on the basis of sophisticated analytical tools like the varieties of discounted cash flow models understood by professional investors. More frequently, trend following behavior is adopted by less informed investors, or their proxies, mutual fund managers, as a way to piggy back on the bets of what are believed to be better informed investors. The reinforcement of adaptive expectations behavior and the increased trading activity of trend following individual investors provided conditions to propagate the equity bubble. From such simple shifts in investor behavior, massive financial manias are perpetrated. Financial markets, as currently structured, are at least efficient in this task of amplifying speculative dynamics. And perhaps, if Lord Keynes, Warren Buffet and Chairman Crockett are right, they are most efficient in this task alone.

Hedge funds: the rational destabilizing speculators

"*Americans are apt to be unduly interested in discovering what average opinion believes average opinion to be; and this national weakness finds its nemesis in the stock market…The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of laissez-faire capitalism---which is not surprising, if I am right in thinking that the best brains of Wall Street have been in fact directed towards a different object."*

Lord John Maynard Keynes, GT

One stream in conventional theory holds that asset bubbles are likely to be thwarted by a class of better-informed speculators who will guide asset prices back to their true intrinsic or fundamental value. Investors who are not building portfolios on the basis of sound financial analysis are, according to this point of view, destined to be relieved of their wealth over time. Once false investing premises are exposed by the passage of time and the disappointment of expectations held by less informed investors, those who were willing to position their portfolios on the basis of sound, fundamental analysis will be rewarded in the marketplace. For example, a better informed investor who has identified the true underlying earnings power of a stock, and correctly discounted that stream of future profits, will be willing to short sell stocks that have been bid up by more naive trend following investors. Over time, this speculative behavior rationalizes asset prices, and the less informed investor either learns a lesson, or gets fleeced, or both.

Now professional investment managers like hedge funds, in contrast to individual investors, should be better positioned to evaluate the profitability of firms, and should be

capable of investigating the valuation of securities issued by firms. They can afford to hire analysts steeped in the state of the art tools for evaluating the prospects of companies, and they can afford the rapid access to critical business and financial information which smaller investors cannot. Because they tend to follow high turnover and high leverage strategies, they get exceptional care and feeding by brokerage houses.

Yet once we introduce the presence of a large block of trend following individual investors, as we did in the prior section, the value of the analytical skills and informational advantage hedge funds can buy depreciates rapidly. Soros calls this process reflexivity, and describes it as follows:

> *"The future that market participants seek to anticipate consists primarily of stock prices, not of fundamentals. The fundamentals matter only insofar as they affect stock prices. When stock prices find a way to affect the fundamentals, a self-reinforcing process may be set in motion that may carry both the fundamentals and stock prices quite far from what would be the conventional equilibrium. This would justify trend-following behavior…" (Soros, The Crisis, 1998, p. 40*)

If the equity market has departed from fundamentals, under what Keynes viewed as "the mass psychology of a large number of ignorant individuals", then knowing the underlying value of an asset becomes less the object of the game than jumping on the trend. Investors who recognize this change may exploit it and end up driving asset prices further and faster away from any equilibrium price. Professional investment managers are unlikely to find it profitable to bet on a reversion to fundamental valuations when trend following behavior is especially strong and gaining adherents, as it will tend to do during a prolonged bull market. Better, it would seem, to cynically ride the trend while trying to stay one step ahead of the thundering herd, than to insist on an immediate return to more theoretically justifiable asset prices.

Keynes, having recognized the fertile field for trend following behavior among the less informed public, was quite alert to this risk. He concluded the more experienced investing agents could not be relied upon to play the invisible hand role of guiding asset prices back to their justifiable level. Keynes observed in this regard,

> *"It might have been supposed that competition between expert professionals, possessing judgment and knowledge beyond that of the average private investor would correct the vagaries of the ignorant individual left to himself. It happens, however, that the energies and skill of the professional investor and speculator are mainly occupied otherwise. For most of these persons are, in fact, largely concerned, not with making superior long term forecasts of the probable yield of an investment over its whole life, but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public. They are concerned, not with what an investment is really worth to a man who buys it 'for*

keeps', but with what the market will value it at, under the influence of mass psychology, three months or a year hence."

Hedge funds, like other professional investors, face a dilemma: they can bet against the trend, and risk losing money until the trend can be turned around, or they can exploit the trend by jumping on board and riding the appreciation already under way until it everyone is in and it exhausts itself. Rather than taking their rightful place in Panglossian economics as the enforcers of rational pricing, hedge funds will often opt to "ride the wave" and thereby push prices of assets further away from their intrinsic values. Hedge funds investors are a notoriously incestuous bunch, so it is not unusual for similar momentum based bets to race through the hedge fund community at the same time. On top of this, as hedge fund trading patterns become visible to traders at Wall Street brokerage houses, copycat trades are put on by the proprietary trading desks of investment banks and sometimes leaked to the trading desks of institutional investment managers as well. The potential for this behavior to amplify the influence of the original naïve leap on the bandwagon by individual investors is quite substantial.

Following the severe collapse in U.S. equity prices late in 1987, various models of this defection from efficient market behavior espoused by Panglossian economists were proposed by a number of leading academics. In a series of papers co-authored with his wife, Brad DeLong, Andrei Schleifer, and other prominent economists, Summers posited the presence of positive feedback traders in financial markets. Positive feedback trading was a central result of portfolio insurance, a counterintuitive asset allocation technique that required investors to raise the proportion of their portfolios in equities when stock prices were rising, and vice versa. This practice was widely believed to have contributed to the severity of the 1987 equity market collapse, and so financial theory needed to make room for this real world development.

With barely the tip of the hat to Keynes, Summers et al identified "extrapolative expectations resulting from biases in judgment under uncertainty" as "the most common form of positive feedback trading…" Not knowing the future with certainty meant investors could be expected to cling to "convention" – that is to extrapolate recently established trends, and allow such extrapolations of past experience to guide their views of future return prospects. Citing "striking" experimental evidence by the two economists Andreassen and Kraus in 1988, Summers and crew noted emergent asset pricing behavior that would have seemed all too familiar to Keynes. Summarizing the results, the authors noted,

"When over some period of observation the level of the stock price does not change very much relative to the period to period variability, subjects track this average price level: they sell when prices rise and buy when prices fall. If, however, prices exhibit a trend relative to the period to period variability, subjects begin to chase the trend, buying more when prices rise and selling when prices fall. Instead of extrapolating price levels to arrive at a forecast of future prices, subjects switch to extrapolating price changes. This switch to chasing the trend appears to

be a virtually universally phenomenon among the subjects that Andreassen and Kraus study. Interestingly, the switch to trend chasing behavior seems to occur only in response to significant changes in the price level over a substantial number of observations, not in response to the most recent price changes alone."

Summers reasoned rational speculators, knowing positive feedback traders are present, will respond to good fundamental news by buying more stock than the good news warranted. They would buy in the belief that less informed trend following investors would jump on board once they saw a stock price rise. As Summers put it, "trading by rational speculators destabilizes prices because it triggers positive feedback trading by other investors." Knowing this is so, rational destabilizing speculators will bid prices higher than justified. The invisible hand is driven past the point of convergence with equilibrium prices, and no agent is immediately positioned to self-correct this mistaken asset pricing. Hedge funds, acting in this rational destabilizing speculative mode, would tend to turbocharge rather than smother trend following behavior.

Following suit, Jeffrey Frankel has captured why someone as intelligent as Soros found this approach to investing so compelling. The rationality of this seemingly irrational and certainly cynical behavior could not be denied, Frankel recognized. In a particularly insightful passage from his April 1999 Foreign Affairs review of Soros' latest book, Frankel came to the following devastating conclusion:

"To be sure, the shift away from fundamentals is not wholly irrational on the part of the individual speculator. Investors are reasonably responding to a market rise that has repeatedly proven fundamental models wrong and technical analysis right. Every month that the fundamentalists' predictions of doom go unrealized, the more their importance diminishes. It is not that investors necessarily decide that the market is correctly valued; it is that they lose money if they do not follow the herd. There is little use 'being right' if everyone else persists in being wrong – and makes a profit."

Frankel's insight can be summed up in a statement heard frequently from professional investors, and which may best captures the state of the art of Panglossian economics: if it makes money, it must be right. Or perhaps the trading desk version is more to the point: the bears make sense, while the bulls make money. To hold out from cynically speculating with the trend just because the fundamentals do not support the trend over the long run is to take a losing position. Furthermore, when fundamental models do not appear to be working, who is to say what is the correct, fundamentally justified price of a security? Why not "let the trend be your friend" and let the market tell you what to do? Hedge funds believe they strike the wrong bargain in the competitive prisoner's dilemma they face when they ignore emerging bandwagons. It exposes them to the longest jail sentence around: they face the risk of delivering inferior absolute returns to their clients, which eventually can force them to exit the business and concede their market share to more aggressive hedge funds.

Or, as Soros noted,

> *"The important point to realize is that trend-following behavior is not necessarily irrational. Just as certain animals have good reasons to move in herds, so do investors. Only at inflection points will mindless trend followers get hurt and if they are alert enough they are likely to survive. By the same token, lone investors who hitch their fortune to the fundamentals are liable to get trampled by the herd." (p. 50, The Crisis..)*

Ironically, hedge fund investors have the resources to place a patient bet on a return of asset prices to levels justified by fundamentals. But this behavior merely ends up placing the assets under their management in harm's way. They will risk standing in the path of the thundering herd, and so they face a good chance of being crushed. Better, it is perceived, not to waste the opportunity to cynically ride the wave of less informed investors, and thereby push asset prices to a deeper position of disequilibrium.

Institutional investors: chained to the relative performance game

Individual investors have neither the time nor the knowledge to perform the kind of serious assessments of investment prospects that efficient market theory assumes. Instead, most individual investors will prefer to take a mental short cut, and extrapolate a period of economic good times and an equity bull market into the future. They tend to invest in a trend following manner. Hedge fund managers have the time, knowledge, and money to fulfill the dream of efficient market theory, but they have a found a more lucrative racket than fighting the tape until asset prices return to fundamentally justified values. Hedge fund managers prefer to amplify the trend following behavior of the individual investor, taking asset prices further from equilibrium. The longer a bull market runs, the deeper ingrained are these extrapolative behaviors and practices.

Into this mix comes a third type of investing agent, institutional investment managers. The field of institutional investment management bloomed shortly after the ERISA legislation was passed in 1974 to reduce abusive practices with respect to pension fund investing. ERISA assigned a fiduciary duty to trustees of private employment benefit plans. This fiduciary duty cannot be delegated, which has led to the breeding of what amounts to a rather large protection racket. The CFO of a firm hires someone (usually an entire staff) to oversee the details of administering the company's pension fund. If the pension fund fails to meet its return and risk objectives, the CFO can fire the delinquent staff. The corporate staff (known as plan sponsors) hires a pension fund consultant to help them find institutional investment managers that can invest the pension fund on their behalf. The consultant can be fired if their recommendations go awry. But long before the consultant gets fired, the consultant will encourage the company staffers to fire an underperforming investment manager. The underperforming investment manager can then fire the portfolio manager that was investing a part of the pension fund portfolio. But long before the portfolio manager gets fired, he will fire the analyst in the investment management firm who was feeding bad investment ideas into the portfolio. The food

chain does not cease there, but the obvious nature of the game is to lay off the risk of making bad investments to other agents outside of the original corporate entity.

As this crazy game developed over the years, consultants managed to somehow maneuver their way closer to the top of this food chain. Consultants were capable of aggregating and analyzing the performance data across investment managers. They could assess the strengths and weakness of investment management firms. This was crucial information to corporate plan sponsors, and it was information no one investment management firm had any incentive to accumulate. Especially when it came to representing investment performance, a relatively impartial third party was required if due diligence was to be accomplished.

Out of this role evolved several unintended consequences which would end up facilitating asset bubble dynamics. While investment management firms would still be selected on the basis of long-term records, consultants began to help clients monitor the performance of their stable of investment managers by aggregating quarterly performance results. As competitive pressures built in the highly profitable investment management business, this quickly evolved into a quarterly performance derby. While no investment manager would be fired for weak performance in any one quarter, a year's worth of bad performance would get you on a watch list, and if it persisted, it would get you fired. Since a year is but four quarters long, the natural tendency was for the time horizon of investment managers to collapse as well. Despite the long dated nature of the liabilities in corporate pension funds, consultants facilitated the herding of investment managers into an absurdly short investing time horizon. Since investment prospects sometimes take a long time to pay off, the incentives for investment managers to ignore or abandon fundamental analysis in favor of more short-term technical tools became quite high.

It is worth noting a second development that encouraged this shift toward technical analysis and chart following beyond the collapse of time horizons. Analysts at investment management firms tend to rely heavily on the work produced by brokerage house equity analysts. This includes everything from relying on accounts of conversations brokerage house analysts are able to get with senior management to cribbing spreadsheets for earnings forecasting purposes. With the deregulation of brokerage commissions back in the '70's, the role of the brokerage house equity analyst began to shift. Rather than earning his keep by providing in depth fundamental analysis of the competitive and financial position of a company, the "sell side" equity analyst function became one of facilitating investment banking business. In this fashion, brokerage house equity analysis became less disciplined and more oriented towards serving the needs of dealmakers on the investment banking side. As one investment manager was quoted observing,

> *"Equity research is a loss leader in most firms. What it does is oil the pipeline so you have a good relationship with clients, so when you do deals you have a good distribution channel. Because the money you make on IPO's is so much greater, the increased pressure from investment banking makes research dysfunctional." (NYT, 11/19/01)*

With the pressure to tout IPO's and to facilitate M&A activity – that is, to help investment banking deals get done, and so pay their way – the quality of sell side research has degraded over the past two decades. Since analysts at investment management firms have come to rely on this research to guide them, there is a push away from fundamental financial analysis that accompanies the pull away from fundamental analysis with the collapsing of institutional investor time horizons.

A second byproduct of the ascendancy of pension fund consultants was the proliferation of benchmarks used to gauge institutional investor performance. If the quarterly performance derby was to be run correctly, consultants needed an adequate yardstick to measure the success of investment managers. In addition, one variant of the EMH that arrived on the scene about the same time as ERISA was that very few if any active investment managers should be able to beat the market on a consistent basis. The alternative for a corporate plan sponsor to active portfolio management was to passively replicate an equity index at a much lower fee. So the need to measure institutional investors against benchmarks was pressed to the fore with an unintended consequence. To win the quarterly performance derby, investment managers needed to beat the benchmark. They became relative performance players. But the companies inhabiting the benchmark were not necessarily the ones an institutional investor's disciplines would have led them to own. Not only were time horizons shrunk inappropriately, but investment disciplines had to be skewed to eliminate large divergences between portfolio performance and benchmark performance. In effect, the introduction of relative performance investing led active institutional investors over time to look more like the benchmark. Benchmarks served an unintended purpose in coordinating the bets of active institutional investors to the point that they started looking more like passive indexers. Benchmarks herded professional investors into looking at the same stocks.

But with the various styles of investment management that arose as institutional investors tried to promote product differentiation to justify their fee structures, there came a proliferation of benchmarks. Each niche of the equity market had its own style of investing, from large capitalization growth down to small cap value, and so each needed its own appropriately skewed benchmark. As benchmarks proliferated, consultants in the institutional investment management world facilitated a kind of division of labor. Consultants could help corporate plan sponsors find and monitor the best large cap growth stock managers, the best small cap value managers, and everything in between. Investment managers would be free to pursue those investment approaches at which they excelled. But with this increasing specialization came two related unintended consequences. The asset allocation decision was drawn away from the institutional investment manager toward the pension fund consultants, and cash positions in equity portfolios became highly restricted. In the absence of discretion over asset allocation or even cash positions, relative performance investment managers had only one way to win the quarterly performance derby, and that was to chase the hottest stocks in the benchmark.

One last but crucial distortion was introduced to the institutional investing game by consultants. As benchmarks proliferated, as relative performance became the name of the

game, and as asset allocation decision making was captured by the consultants, the measure of risk taking consultants used to monitor institutional investors also changed. Gone was the use of standard deviation as a measure of portfolio risk. In its place, given it had become a benchmarked world, consultants introduced tracking error (or active risk) as the sole measure of risk. Should the weightings of stocks in an institutional investor's portfolio differ greatly from those of a benchmark, consultants would be quick to call the portfolio off base. Corporate plan sponsors would be notified that a portfolio manager was departing too far from the benchmark, perhaps in an attempt to change investing styles, or perhaps in an attempt to bet the ranch if he was behind in the relative performance derby. Through this risk policing function, consultants significantly enhanced the odds of herding dynamics arising amongst institutional investors. With tracking error risk as the critical constraint on portfolios, institutional investors were consigned to the task of grinding out returns 1-2% ahead of the benchmark year after year, regardless of the absolute returns delivered by the benchmark, and regardless of the investment opportunities outside of the stocks in the benchmark that their fundamental disciplines might have surfaced.

The pattern that can be observed over time in the institutional investment business is as follows: investment time horizons collapsed, investment performance became defined relative to a benchmark or index portfolio, asset allocation and market timing skills were made obsolete by a monomaniacal focus on stock selection, and risk became defined solely in relation to departures made from benchmark weightings. Each of these consultant sponsored moves had the unintended consequence of enhancing herding dynamics among institutional investors. But when the changes in behavior of individual investors and hedge fund managers are joined with the changes in institutional investment practices, the likelihood of equity bubble dynamics emerging spontaneously from this mix is greatly enhanced.

To see how explosive this mix can be, consider the following scenario. A period of prolonged economic growth, punctuated by relatively mild recessions or growth recessions, lowers the risk perceptions of individual investors. A persistent bull market in equities, punctuated by relatively short episodes of falling stock prices, raises the return perceptions of individual investors. The preferred share of the portfolio devoted to equities rises amongst households, and households, who are relatively less informed investors, bid up stocks they are told by the financial press or the brokerage community have improving earnings prospects. Stock prices begin to rise beyond the price suggested by dividend discount models which individual investors do no use to evaluate equity investment opportunities. Hedge funds cynically jump on the momentum introduced by trend following individual investors, taking stock prices even further from equilibrium. They are rational to act as destabilizing speculators knowing the trend following behavior of individual investors will carry prices even higher. Relative performance institutional investors suddenly face a lost quarter in the relative performance derby. A sector of hot stocks in their benchmark has moved well beyond price levels their analysts determine a discounted cash flow model could justify. Furthermore, the weight of the sector of hot stocks in their benchmark is rising, and the longer they listen to their analysts with their fundamental models, the more tracking error they take on. The calculus is simple: the

models are ignored (or refashioned) by institutional investors, and a third set of agents feeds the self-fulfilling bandwagon effects in the equity market. The incentives faced by the institutional investor require nothing less.

What is left is a perpetual motion machine (or at least so it seems for a time) of mindless investing that bears no relationship to the fables of efficient market theory. Over time, these endogenous feedback loops are enhanced as speculative behaviors are rewarded and reinforced. Among hedge funds and institutional investing firms, a Darwinian selection process culls all but the most rabid trend followers from the thundering herd. Asset prices are taken far from fundamentals, and this departure of financial markets from reality in turn encourages the build up of macrofinancial imbalances in the real economy which are examined next.

Section 3: Macrodynamics and the equity bubble

Oddly enough, mainstream macroeconomics has tended to leave financial considerations to one side when examining macrodynamics. Many of the early forays into macro during the early part of the 20th century concentrated on credit cycles, and so were intimately concerned with financial influences on growth, distribution, and business cycles. Once Hicks' compact caricature of Keynes' economics in the IS/LM framework became popular, financing questions were for the most part shunted aside. That this was a departure from the economics of Keynes is all too apparent. The immediate papers following the publication General Theory dealt with controversies over financial aspects of his model. In addition, Keynes spent the remainder of his life after the General Theory wrestling with practical financing questions like "How to Pay for the War", and how to arrange postwar global financial relations in the Bretton Woods agreement.

Curiously, the interest rate variable in these conventional IS/LM models always seemed to refer to public debt instruments used to finance public deficits. In the early multiplier/accelerator based models of Klein, Samuelson, and others, private investment spending was deemed to be the driver of economic growth, but the financing of an expanding capital stock remained opaque. The product market equilibrium embodied in the IS curve seemed to imply household savings financed corporate investment, omitting any role for the internal finance made available from retained earnings out of corporate profits. Profits themselves seemed to mysteriously vanish in macroeconomics – they were assumed to be paid out in their entirety as the so-called corporate veil was pierced. Households held the ultimate claim to corporate cash flows, as firms were accepted as legally constructed fictions. But the nature of this household based financing was left implicit, with perhaps the exception of the occasional jaunt off to loanable funds diagrams.

Taken literally, with no room for corporate profits or retained earnings, the canonical mainstream macro model implied all investment by firms was a 100% externally financed with bank debt. LM diagrams dealt with money market equilibrium, while bond (and more generally, financial asset) market equilibrium was taken to be solved by default given product and money market equilibriums. Asset valuation questions were a subject

fit for business schools, and not so much for macroeconomics. In the excitement to build national income accounts, to explore national income identities, to fashion business cycle models out of linear differential equations, and to form growth equations out of real variables like productivity and the time preference of consumption, not only were financial flows left aside, but the balance sheets describing portfolio positions virtually disappeared from sight.

A framework for understanding the many ways financial conditions influence macrodynamics can, however, be retrieved. After the financial instability wrought by Volcker's draconian tightening, several schools began to construct models depicting the suppressed linkages between financial markets and the real economy. Structuralists explored social accounting matrixes that integrated stock/flow interactions, Post Keynesians pushed forward debates on savings, investment, and finance, both schools developed explicit Minskian models, and New Keynesians developed a lending channel literature, much of it borrowed from Minsky without attribution, yet twisted into the dominant general equilibrium framework. In the following analysis, I will use three relatively simple tools to investigate the effects on US growth and distribution of the recent equity bubble. The first tool is the Keynes/Kalecki profit equation which will help illuminate why the investment boom accompanying the financial mania was eventually met with a falling rather than a rising profit share. The second tool is the sector financial balance equation (perhaps more accurately described as a net nominal savings balance equation – or more intelligible to some as a budget or financial constraint equation) which will help identify how changes in expenditure plans inspired by the financial mania led to a surge in private sector debt loads. The third tool is a conventional debt trap equation, normally applied only to the public sector or to the external finance of developing nations. The debt trap equation underlines the longer run risk of allowing an asset price bubble to distort expenditure and financing decisions in an economy. Not only does this tool expose the unsustainability of asset bubble driven growth, but it also points to some of the dangerous Fisherian debt-deflation dynamics which can be unleashed in a post bubble environment. These tools will be used to understand the dynamics driving growth, profitability and macrofinancial balances during the bubble, and to elucidate the challenge economic policy faces following the rupture of the equity bubble.

Before employing these analytical tools, three points of contact between the equity bubble and the economy need to be explored. There are reasons to believe the equity bubble distorted the propensity of firms to invest in capital equipment, warped the propensity of households to save, and displaced the foreign exchange value of the dollar, which in turn led to an unprecedented trade deficit. Each point of contact will be examined in turn.

Investment spending decisions by firms are perhaps some of the most complex decisions made in a capitalist economy given the fundamental uncertainty that surrounds future demand and cost conditions, not to mention future technological innovations, or even strategic responses of competitors. Models of investment spending usually involve some measure of expected profitability, the cost of financing, the availability of internal and

external financing, the degree of capacity utilization, or other variants of accelerator effects, to name a few of the more common explanatory variables.

Equity prices can reflect a number of the elements involved in capital expenditure decisions, including the cost of capital and expected profit rates. Equity prices should, in theory, bear some relation to expectations of future profits, discounted back into their present value. Since equity issuance is one form of raising external finance, equity prices should also influence the cost of capital incurred when funding an investment project. Keynes, in his Treatise on Money, operated along these lines in devising what Minsky would resuscitate as his two-price model of investment spending, and what Tobin would refer to as the q ratio. By describing the current market value of equity claims on the existing capital stock of the corporate sector as the demand price for investment, and taking the current replacement cost of the same capital stock as the supply price for investment output, Keynes would introduce an arbitrage condition he believed would be exploited by entrepreneurs. Keynes explained his two-price model of capital stock accumulation as follows:

> *"But the daily revaluations of the Stock Exchange, though they are primarily made to facilitate transfers of old investments between one individual and another, inevitably exert a decisive influence on the rate of current investment. For there is no sense in building up a new enterprise at a cost greater than that at which a similar existing enterprise can be purchased; whilst there is an inducement to spend on a new project what may seem an extravagant sum, if it can be floated off on the Stock Exchange at an immediate profit."* (GT, p. 151)

Keynes recognized as long as the financial market valuation of the capital stock exceeds its replacement cost, any savvy entrepreneur could boost the net worth of his firm by simply by putting new capital in place. Minsky also made this arbitrage condition a key element in his financial theory of investment, which then provided the basis for his investment theory of the business cycle. Minsky wrote,

> *"In a corporate capitalist economy with a stock exchange, the market valuation of a firm's capital assets and market position substitutes for the price of capital assets." (SUE, p. 186)*

> *"Whenever the price of capital assets exceeds the cost of investment, an implicit capital gain is realized at the moment an investment project is fully assimilated to the stock of capital assets. Such capital gains serve as a lure that induced investment activity." (SUE, p. 214)*

Indeed, for Minsky, financial conditions were a ubiquitous element in the various calculations that inform capital spending.

> *"Investment outputs must be financed while being produced. Furthermore, ownership of (or positions in) capital assets must be financed. As a result,*

financing terms affect the prices of capital assets, the effective demand for investment, and the supply price of investment outputs." (SUE, p. 171)

Until sufficient investment had occurred to either raise the supply price (as production bottlenecks and lender risk rose) or lower the demand price (as expected returns fell with the decreasing scarcity of capital equipment or rising borrowers risk) to a point of parity, entrepreneurs would continue to expand the capital stock. Since investment expenditure flows are a fraction of the total outstanding capital stock, closing this arbitrage opportunity usually takes some time.

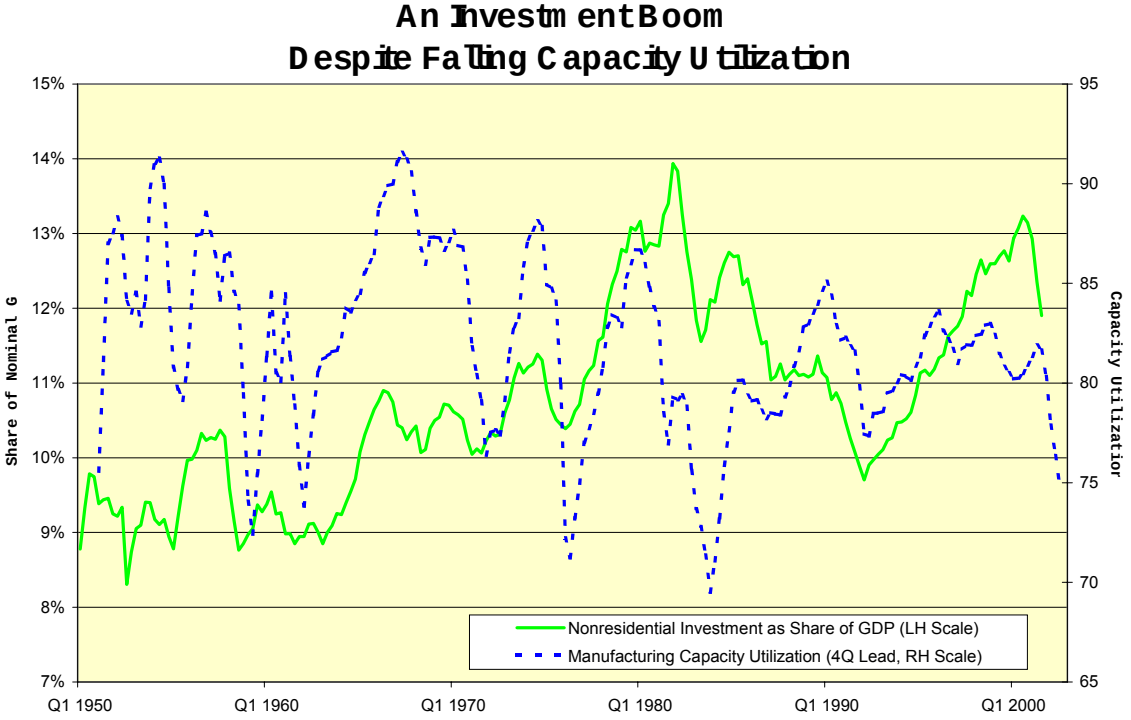
As clear as the logic of Keynes' two-price theory may be, econometric investigations of the power of all types of q ratios have not proven particularly encouraging. In part, the excessive volatility of equity prices may make entrepreneurs less certain about the true value of q. More likely, the separation of ownership and control within firms may have made corporate managers less sensitive to stock market assessments of their progress, and more attentive to their own desire to build corporate empires by increasing market share at all costs.

However, considering the increasingly widespread use of stock options as an integral part of the compensation of corporate management, it is entirely plausible that equity prices played a larger than usual role in perpetuating the investment spending boom of the '90s. Beginning with the LBO waves of the '80s, an increasing effort has been made to close the gap between stockholder interests and management interests. Agency problems have been recognized. It is believed one way to address diverging interests is to require an increasing share of corporate management compensation in stock option form. Where the two-price model may not have been very explanatory of investment spending behavior during the age of corporate empire building that characterized the US economy during the first two decades of the "organizational man" following WW II, the relevance of this approach is less questionable the closer we get to the '90s, when management's ownership role is on the rise.

One other key element may have further enhanced the influence of equity valuations on investment spending in the past decade. The pace of technological innovation was perceived to be fast enough that the concept of a New Economy emerged by the middle of the decade. Clay Christiansen, for one, popularized the notion of disruptive technologies that could be used to unseat existing franchises and open up entirely new market "spaces". As the Internet became a leading example of this disruptive technology notion, manager uncertainty over future profitability – both downside risks to existing franchises and the upside potential to new start-ups or early adopters – may have risen. In such an environment where old business models were thrown open to question, managers may have come to rely upon stock prices as a guide to the profits to be expected from their various investment spending initiatives. In the extreme example, dot com firms were being valued on their ability to capture mindshare and gather eyeballs while they still showed no revenues, never mind any profits. The collective judgement of equity investors may have served as a validation of capital spending decisions made in the face of the increasing uncertainty introduced by cutting edge technologies, new business lines,

and new business models. For example, it was not unusual to see stock prices bid up in an almost totemic fashion when management embraced various new technologies or e-business techniques, setting up an interesting feedback loop.

As will become evident shortly, the corporate sector was clearly not forming its profit expectations on the basis of recent profit results. As will also become evident, cash flow and accelerator effects must also be dismissed as primary drivers of the investment boom. Corporate cash flows were squeezed with profits in the latter half of the '90s, and while sales growth was solid, most of the acceleration belonged to the first half of the decade. Capacity utilization fell for most of the second half of the '90s, yet the investment share of GDP rose to a new postwar high. Nor was the low cost of equity capital (created by surging equity prices) an element in the capital spending boom, as shares were net repurchased, not net issued, by the corporate sector. Any serious explanation of the investment boom, then, must at least in part turn to the role of equity prices in signaling future profit conditions, and the growing relevance of the arbitrage condition highlighted in the Keynes/Minsky two-price theory as corporate managers increasingly gained ownership shares in firms.



Household savings decisions are somewhat less complex, but still difficult to model. Conventional theory holds that savings are a function of the time preferences of consumption, and so desired savings should be interest rate elastic. Keynes contested this theory on the hidden assumption of a fixed level of income. Keynes attempted to replace this view by making the level of savings a rising function of the level of income. Keynes held to a "fundamental psychological law" where households are "disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income". Given a marginal propensity to consume of less

than one, increases in income should be accompanied by an increasing average savings rate, which to Keynes' mind, would prove to be a stabilizing influence on the economy.

Upon closer inspection, this income based model of desired household savings is not the only consideration Keynes placed on the table. On several occasions in the General Theory and the Treatise on Money, Keynes was willing to admit a significant role for changes in the value of household wealth. As he noted in the Treatise,

> *"Who can doubt that a man is more likely to buy a new motor car if his investments have doubled in money value during the past year than if they have been halved? He feels far less necessity or obligation to save out of his normal income, and his whole standard of expenditure is raised. For their paper profits and their savings out of current income are not kept by most men (as perhaps they should be) in entirely separate compartments of the mind." (ToM, vol. II, p. 197)*

That a similar passage appears in the General Theory suggests this strand was more than a passing thought. In his chapter on the trade cycle, Keynes introduces a very important but widely ignored interaction between a shift in his marginal efficiency of capital schedule, which is accompanied by a sharp fall in equity prices, and a shift in the propensity to consume. Keynes observed,

> *"Now, on the class who take an active interest in their Stock Exchange investments, especially if they are employing borrowed funds, this naturally exerts a more depressing influence. These people are, perhaps, even more influenced in their readiness to spend by rises and falls in the value of their investments than by the state of their income. With a 'stock-minded' public, as in the United States today, a rising stock market may be an almost essential condition of a satisfactory propensity to consume…" (GT, p. 319)*

Two empirical observations suggest Keynes' emphasis on wealth effects was not misplaced. Contrary to his main hypothesis, the gross household savings rate has not consistently risen in the postwar period. Starting about the same time as the equity bull market, and despite demographic pressures to the contrary, the household savings rate has fallen on a fairly consistent basis to levels last seen in the Great Depression. Furthermore, the pattern of the gross household savings rate is somewhat ambiguous over the course of postwar business cycles, contrary to the procyclical pattern suggested by Keynes. But when the household savings rate is compared to the ratio of household net worth to disposable income, a fairly reliable inverse correlation is revealed. Changes in household wealth, especially sharp or persistent changes, appear to influence the rate of household savings out of disposable income.

The logic of this relationship may be relatively simple. In the face of fundamental uncertainty about future household income flows and future consumption preferences, many households may engage in a form of satisficing behavior. They may target levels of

wealth for various purposes like home purchases, college education for children, and retirement funds. When equity price appreciation is above average and persistent, households may recognize their existing stocks of wealth are approaching their target levels faster, and so reduce the amount of savings out of income flows. It was not unusual to hear investors claim "the equity market is saving for me" before the bubble burst. In part, this substitution effect, where asset price appreciation substitutes for savings out of income flows, may explain the difficulty of finding reliable evidence of any strong positive interest elasticities of savings.

Given the concentration of wealth in the US, with over one third of households holding less than $10,000 in financial assets according to the 1992 Survey of Consumer Finances (FRB, Elmendorf, p. 11), and the likely concentration of savings out of income flows in the higher income cohorts, one way of examining this point of contact between financial asset prices and the real economy would be to investigate what has happened to the savings rate at the higher end of the income distribution during the bubble years. This data is notoriously difficult to assemble, but the recent work at the Fed by Maki and Palumbo is instructive. By 1998, the top 20% of the disposable income distribution held 74% of all mutual fund assets, 74% of all equity in noncorporate business, 83% of all publicly traded corporate equity, and 89% of all closely held corporate equity. The savings rate of this upper quintile of households by income distribution is also the one that fell most dramatically between the 1992 and 2000. While the savings rate for all households surveyed dropped from 5.9% to 1.3%, the top quintile savings rate plunged from 8.5% to –2.1%. So at least during the most recent equity bubble, there is some evidence this substitution effect exists between the rate of return on the stock of existing financial assets and the rate of savings out of income flows.

The third point of contact between the equity bubble and the real economy can be found in the foreign exchange market and its influence on the balance of trade. Early advocates of flexible exchange rates espoused the view that not only would persistent ex post balance of payments imbalances be prevented with the abandonment of the quasi-fixed rate regime of the Bretton Woods system, but trade imbalances would be more likely to self-correct if currencies were free to float. As the US balance of payments position ran an increasingly chronic deficit during the postwar period, with net capital outflows being met with a slide towards current account deficits, it became clear the growing claims emitted by the US were not going to remain covered by the gold and foreign exchange assets held by the US. The paradox Triffin identified early on in the fixed rate regime was correct, and the attempt by the US monetary authorities to paper over the Triffin paradox by sterilizing foreign reserve losses ultimately became unacceptable to foreign central bankers. The arguments in favor of flexible exchange rates accordingly won the day, yet the subsequent experience has revealed fatal flaws in the logic behind this regime shift.

Hidden beneath the self-correcting theme of the flexible exchange trade argument was an assumption that trade or current account flows would dominate capital flows. While this may have been a relatively safe assumption at the time Bretton Woods was abandoned, as capital markets were yet to be liberalized and globalized, this assumption became increasingly out of date. To see this, consider what happens when a shift in the expected

profitability of the US capital stock induces a shift out in the IS curve against a fixed LM. At the resulting higher income level, given the high income elasticity of import demand, imports should increase faster than exports, and the current account balance should decay. At the resulting higher interest rate level, foreign investors should be attracted to US debt instruments, and capital inflows should improve the capital account balance. Under limited global capital mobility, however, the current account deterioration is likely to exceed the capital account improvement, leading to an ex ante decline in the balance of payments. Under a flexible exchange rate system, this net decline in demand for dollars results in a depreciation of the dollar. With the depreciation of the dollar, imports to the US become more expensive, and US exports become cheaper to the rest of the world. The current account imbalance should accordingly self-correct.

Once the hidden assumption of limited capital mobility is dropped, no such self stabilizing property can be found. In fact, in the current world of hypermobile financial capital, some perverse destabilizing dynamics become quite apparent, especially when we consider the perspective of international equity investors. The initial improvement in perceived profitability used in the scenario above changes the portfolio preferences of foreign wealth holders. It attracts speculative capital inflows as expected returns on US equities rise in tandem with higher expected earnings growth. Because the change in US profit expectations has encouraged a shift in the desired share of the stock of US equities in foreign portfolios, it is likely to swamp any changes in the net flow demand for dollars associated with the current account imbalance. Foreign balance sheets are a multiple of any one-year's trade balance in the US. Changes in desired stocks of assets tend to overwhelm income related flows. Assuming foreign investors are no less immune to adaptive expectations behavior than US investors appear to be, during an equity bubble, the shifts in foreign portfolio preferences will not be small. The dollar subsequently appreciates on this ex ante balance of payments surplus, even though the current account deficit is widening.

More importantly, as bandwagon effects take hold, foreign investors not only recognize appreciation of their existing US equity holdings, but they also begin to experience currency gains on top of their capital gains (assuming foreign portfolios remain relatively unhedged). The shift in foreign portfolio preferences is to a certain extent self validating as returns are turbocharged by the bidding up of the dollar in the race to stuff foreign portfolios with US assets. The inevitable result is dollar appreciation despite a widening current account deficit, an outcome that in fact aggravates the current account imbalance even further.

In summary, asset price bubbles can occasionally be self-contained spectacles. The froth within one particular financial market may not spill over into other asset markets, or into the real economy. A bubble may be too short lived, or the asset market breeding the bubble may be too obscure. This, however, tends to be the exception more than the rule. Expectations and behaviors that inform real economic activity can be changed by financial manias. As a general rule, an asset price bubble encourages spending by the private sector in excess of money income – that is, deficit spending, as will be explored in a moment. In the recent US case, the equity bubble acted as an accelerant on the

propensity of firms to invest. The bubble also depressed the propensity of households to save – especially among high income households where equity holdings are concentrated. Finally, with both households and firms increasing their propensity to spend at a pace in excess of their income growth, the dollar appreciation associated with the US equity bubble insured the trade deficit would deepen. The first two channels of equity market influence were US GDP growth enhancing, while the last channel was supportive of GDP growth abroad. During the '90's, the US became the de facto global spender of last resort. With these three transmission channels between the equity market bubble and the real economy in mind, it now becomes possible to explore why the longest business cycle expansion in US history was accompanied by a large squeeze on profits.

The macro profit equation and equity bubble dynamics

The Keynes/Kalecki profit equation offers a useful framework for understanding the influence of equity bubbles on corporate profitability. It is also a tool that can be used to open up the question of the financing of private investment, a question which mysteriously disappeared from the IS/LM rendition of Keynes. As such, this simple relation can help isolate the preconditions for financial instability, and can thereby help identify ways in which the equity bubble, along with some poor policy choices, placed the US economy in an imperiled state.

Keynes tripped across the macro profit relation while removing the fixed output assumption that appeared to be required in the fundamental equations in the Treatise on Money. At the time he encountered this macro relation, he was on his way to the General Theory, and no doubt much under the influence of the Cambridge Circus. While Keynes was prone to the dramatic, upon recognizing this relation, he exclaimed:

" any man who has thoroughly grasped the truism delta Q equals delta I plus delta F minus delta E [the change in quasi rents or profits equals the change in investment expenditures minus the change in household saving, or the difference between payments to factors of production and their expenditures] and has allowed this colorless and in itself inoperative liquid to enter his marrowbones, will never be, in his outlook on the practical world, quite the same man again!" (CWJMK, vol. 29, pp. 40-1, cited in the Rymes notes for May 2, 1932, p. 32)

Keynes appears to have buried this relation in his early drafts of the General Theory, but Kalecki, in his own independent discovery, was able by 1933 to build the macro profit equation up from the building blocks of national income and expenditure identities. In a private closed economy, total income must equal total expenditures. If income can be partitioned into profits and wages, and expenditures can be divided into investment and consumption, then simple algebra reveals an interesting identity:

Income = Expenditures

Profits + Wages = Investment + Consumption

Profits = Investment + Consumption – Wages

Assuming no income is distributed to households from corporate sector profits, then household savings can be introduced into the profit equation as follows.

Household Savings = Wages – Consumption

Profits = Investment – Household Savings

Since profits are a residual income claim, one determined after factors of production have been paid and produced goods or services have been sold, it is appropriate to view this identity with profits on the left hand side, and to understand this identity as more than a truism. Investment expenditure can be viewed as an injection to the circular flow of income through the corporate sector, while household savings may be viewed as a leakage from this circular flow. Wages paid out to households working in the corporate sector must be recovered by sales of consumer products to the household sector. The more income the household sector manages to save, the less corporations are able to recoup their labor expenses within any accounting period.

When this simple profit relation is combined with the two-price theory of investment, strong recursive dynamics can result. For example, after a period of tranquil economic expansion, portfolio preferences may shift toward less liquid financial assets as risk and uncertainty fades. With equity prices rising, Tobin's q rises, encouraging a rise in investment expenditure. Higher capital goods outlays, via the profit equation above, suggest higher profits, assuming savings remains unchanged. Internal funds increase with this profit surprise, as do equity prices. With higher net worth, nonfinancial firms increase their apparent creditworthiness and their capacity to attract external funds. The means and the incentives to expand investment further are in place, and a cumulative and self-sustaining upward path is set in motion for both the economy and the equity market.

Minsky explored this cumulative causation in some detail. Rather than investigating the stagnation tendency emphasized by Hansen and others, Minsky found this potential for upward instability especially intriguing. Entering this positive feedback dynamic after the profit surprise, Minsky described this upward instability as follows:

> "*A deviation of quasi-rents, Q, from what was expected affects not only the way investment impinges upon the balance sheets of firms; it also affects the price level of capital assets. If actual quasi-rents are greater than anticipated, the excess of profits over expected profits will raise Pk (the demand price for capital goods), increasing the gap between the Pk and Pi (the supply price of capital goods)…This situation implies an increase in investment demand relative to the ability of internal finance. Profits in excess of those anticipated therefore increase the demand for investment by improving the flow of internal funds, raising the (implicit) price of capital assets and increasing borrower's willingness to finance externally." (SUE, p. 194)*

By leaving household savings behavior to the side, however, Minsky's financial instability theory was left somewhat incomplete. In addition, Minsky tended to rely upon rising interest rates on rising inflation and liquidity pressures to disrupt this positive feedback loop. While appropriate to many of the business cycles Minsky lived through, this approach imposes unnecessary limitations on the theory of financial instability. Specifically, it reveals a bias towards the loanable funds fallacy that appears to lurk in the background of Minsky's work, and it leaves cycles that do not terminate in escalating inflation unexplained. Once the macro profit equation is expanded, however, and reasonable assumptions are introduced about the behavior of the fiscal and trade balances during the late expansion phase of the cycle, it becomes possible to show how a profit squeeze can develop endogenously. This endogenous profit squeeze, following Minsky's insights, should increase the financial fragility of firms and eventually disrupt the bullish spiral of equity prices. Together, these provide sufficient reason for firms to pull back their investment spending plans, thereby marking the reversal of the upward instability dynamics as profits fall short of expectations on lower investment expenditures.

Returning to the simpler form of the profit equation, in a private closed economy, household savings behavior makes a big difference in financial instability dynamics. If equity bubbles induce a higher propensity of firms to make investment expenditures and a lower propensity of households to save out of income flows, then this stripped down form of the profit equation tells us there is little chance of financial instability developing. The investment boom and the household savings drought insures explosive realized profits. Retained earnings will be robust enough to fund much of the investment boom, and households with falling savings intentions will not be rapidly accumulating corporate liabilities. External finance requirements for the corporate sector will be minimal. In a two sector economy, it is not possible for one sector to be net issuing debt liabilities, unless another sector is net accumulating these debt claims in its portfolio holdings.

However, if households operated in a more standard Keynesian mode, such that desired savings rose with household disposable income, profits would tend to fall increasingly short of investment expenditures as an expansion progressed. The corporate sector would need to fund this shortfall with an increasing issuance of liabilities to the household sector. In cases where the liabilities issued were equities, the equity bubble fueling the higher investment and income levels would be likely to get smothered by an ever rising tide of new equity issues supplied. In cases where the liabilities issued were bank loans or corporate bonds, the conditions for financial instability would be bred over time.

Note also the difference in household savings behavior would have a distributive influence. The macro profit equation can be restated in profit share terms. In this format, the profit share of income should equal the difference between the investment share and the household savings share of income in a private closed economy. In a private closed economy, the magnitude if not the direction of change in the profit share of income during an asset bubble led expansion differs between the two savings regimes. If household savings desires are driven primarily by income gains, the household savings rate will tend to rise during an economic expansion. Since the investment share should

also be rising under the influence of the equity bubble, but generally less so than the household savings rate, the profit share would tend to fall as the expansion progresses in an income driven savings regime. Under a wealth driven household savings regime, as the investment share rises while the household savings rate falls, the profit share should rise over the equity bubble led expansion. As an aside, the first regime tends to be more consistent with traditional Keynesian stability conditions, while the second is suggestive of an upwardly unstable economy of the sort Minsky frequently highlighted (but one, ironically, without much in the way of the debt accumulation necessary for the financial instability conditions Minsky analyzed).

Replacing the restrictive assumption of a private closed economy with a more realistic open economy that includes a public sector, the Keynes/Kalecki equation can be expanded as follows:

Profits = Investment – Household Savings – Fiscal Budget Balance + Net Exports

With this expanded version transformed into a profit share variant, a rising fiscal deficit and a rising trade surplus as a share of GDP would tend to support a rising profit share. Conversely, a rising fiscal surplus and a rising trade deficit would tend to smother the profit share of income. For the corporate sector to earn profits, it must earn revenues in excess of its costs. Fiscal deficit spending and trade surpluses both allow firms to realize revenues from sales to the public and foreign sectors, while the spending power of either of these sectors is not directly related to production expenses of the corporate sector.

Minsky was aware of these effects on profits, and believed the US, with its high income elasticity of import demand, would be consigned to a twin deficit policy strategy. If profit squeezes were to be avoided in the course of a US expansion, fiscal policy would have to take on a perverse procyclical character. Budget deficits would have to be tailored by policy makers to offset the drag on profits from a rising trade deficit. Minsky noted,

> *"Because a balance of trade deficit tends to constrain profits, an economy in which imports react strongly to income – as is now true of the United States – will experience constrained increases in profits when the domestic economy expands. This effect weakens the expansion and increases the investment and government deficit needed to achieve and sustain full employment." (SUE p. 150)*

In fact, this curious combination of an increasing budget deficit alongside an increasing current account deficit was the mix characteristic of the early Reagan years. It would be mistakenly identified as the "twin deficits", supposedly born of an inability of households to engage in proper savings behavior. As the '90s combination of an improving fiscal balance and a deteriorating trade balance demonstrated, the twins were by no means Siamese. More likely, the twins were a case of mistaken identity born of an incomplete understanding of sector balance dynamics over the course of business cycles.

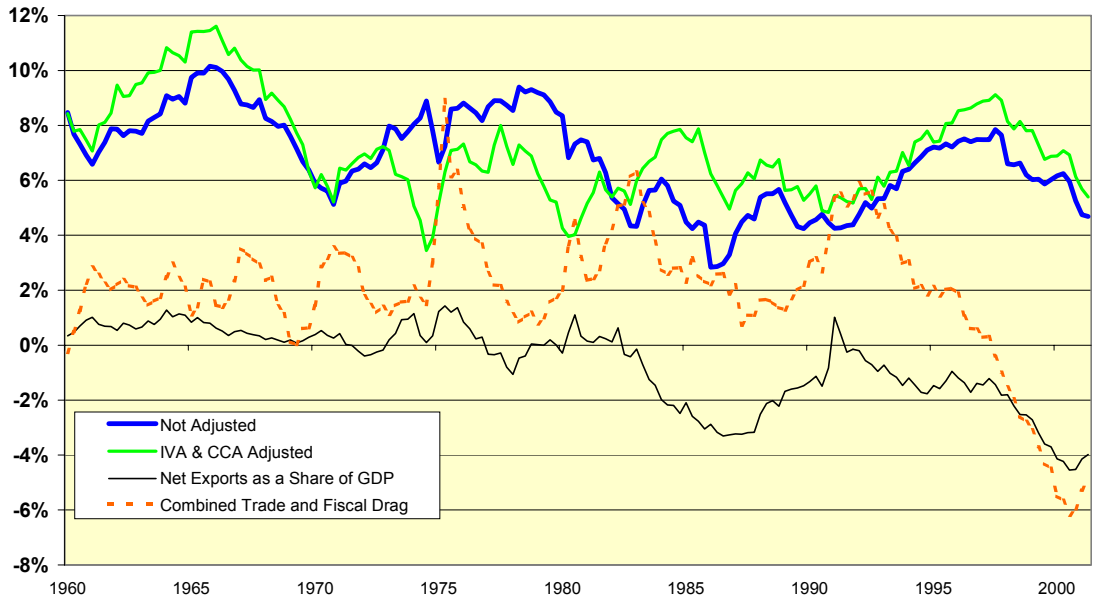
An equity bubble with a profit squeeze

With this expanded variant of the Keynes/Kalecki profit equation, a richer set of income distribution and sector financing dynamics can arise. For example, the wealth driven household savings regime can now produce the conditions for financial instability, unlike the private closed version. In an equity bubble led expansion, as discussed above, the propensity of firms to engage in capital spending and the propensity of households to consume is rising. In an economy characterized by some degree of automatic stabilizers in fiscal policy, and a high income elasticity of imports, the growth in private incomes will be dampened by these two leakages from the circular flow. If these effects are strong enough, they may swamp the private sector spending boom and produce a profit squeeze as the expansion progresses. The pressure on profit margins is likely to be aggravated by any bias in fiscal policy towards public debt reduction. A bias in the foreign exchange stance towards domestic currency appreciation would further crimp profit margins. As imports become cheaper and exports become more expensive, the trade deficit will deepen accordingly. Thus it becomes possible for both households and corporations to deficit spend in an ex post, not just an ex ante sense.

For example, an investment boom accompanied by profit pressures means internal finance will come up short. The corporate sector will be required to issue liabilities to other sectors to fund its capital spending. Since household savings rates will fall in a wealth driven savings regime, households are unlikely to be accumulating corporate debt. Rather, foreign investors must be willing to accumulate claims on US firms. If a household gross saving falls below the level of residential investment, foreign investors must also be willing to accumulate claims on US households. In a capitalist economy, the public sector is unlikely to be an accumulator of private sector liabilities. Rather, any surplus realized on the fiscal balance will be used to pay down existing public sector debt. Foreign investors end up funding a domestic private credit binge.

This configuration describes much of the second half of the ‘90s New Economy era in the US. The swing to an unprecedented fiscal surplus and current account deficit (in part endogenous to the booming private sector spending, but also in part policy enhanced) killed profit margins and the rate or profit of the US economy during the peak years of the equity bubble.

After Tax Nonfinancial Corporate Profit Share and the Fiscal and Trade Drag



Specifically, on an after tax basis, nonfinancial corporate profits as a share of nonfinancial GDP peaked in the middle of 1997 at a 7.8% reported and 9.1% adjusted level. Profit margins this high had not been seen since 1980 on a reported basis and 1967 on an adjusted basis. Up until the middle of 1997, the bull market inspired surge in the investment share of GDP and the precipitous drop in household savings rates had swamped the mild deterioration in net exports and the sharp improvement in the government fiscal balance. Profitability was supported by this combination. From its trough in 1992 to the middle of 1997, the nonresidential investment share rose of nominal GDP rose from 9.7% to 12.9%, while household gross savings as a share of nominal GDP fell from 6.7% to 3.3%. Meanwhile, in terms of leakages from the circular flow over the same period, the budget deficit improved from –6.1% of nominal GDP to –1.5% while net exports fell from –0.6% to –1.2% of nominal GDP. Consequently, the private sector spending boom was, up until the middle of 1997, sufficient to overwhelm the profit drags imposed by fiscal rectitude and a weakening trade balance. It was easy, with New Economy cover stories showing up on the likes of Business Week, and a Fed less prone to offer "irrational exuberance" sermons (but more prone towards an evangelical view of productivity trends), to extrapolate such trends far into the future. Yet such an extrapolation proved inappropriate.

Under the influence of the equity bubble, corporations took the nonresidential investment share up to a 16-year high by Q2 2000. Households similarly took their gross savings share of nominal GDP down to a low last see in the Great Depression. The private sector spending boom did not let up after the profit margin peak in 1997 – if anything, it accelerated in the household sector. However, at the same time, under the influence of

rising incomes, rising realized capital gains, and a rising dollar, the government fiscal balance swung into a 1.6% surplus while net exports ran deeply into a 4.5% of nominal GDP deficit. With private income flows being drained off to pay down public debt and siphoned abroad to bolster foreign profits on tradable goods and services, US corporate profit margins were squeezed just as the Keynes/Kalecki profit relation would suggest. Ultimately, the domestic spending boom fueled by the equity bubble bred its own demise - it drove the fiscal balance deeper into surplus and the trade balance deeper into deficit, thereby smothering profits.

In this fashion, the cumulative feedback loop of higher equity prices – higher investment spending – higher profits – higher equity prices which Minsky identified as central to his vision of the upward instability of the economy can be derailed by endogenous leakages from the circular flow of income that end up crimping realized profits. Exogenous shocks are not required to disrupt this process, nor is an inflation or liquidity inspired interest rate spike required to break the chain. Minsky's depiction of the upper turning point dynamics so central to his financial instability theory can be opened up to accommodate these endogenous leakages. Depending upon the size of the automatic stabilizers and the income elasticity of import demand, the effects of fiscal and trade balance leakages on profits will be binding to different degrees in different economies. To the extent that policy biases lead to a preference for fiscal surplus or a strong domestic currency, an endogenous profit squeeze will emerge sooner and stronger in any asset price inspired private sector spending boom. Minsky's theory can thereby be placed on a more generalized footing, and one that is less dependent upon central bank behavior, commercial bank liquidity preference, or random but ill timed disturbances to the ability of a large borrower to meet a financial commitment.

Nevertheless, with profit margins under increasing pressure from the rising budget surplus and the deepening trade deficit from the middle of 1997 on, the question remains as to how such explosive equity returns could have been earned during the late 1998 to early 2000 period. Why were profit expectations so immune to actual profit developments? Even with an adaptive or extrapolative expectations orientation, how could so many investors have remained so ignorant about underlying profit conditions for so long?

The obfuscation of corporate earnings

Before completing this depiction of how the private sector spending boom introduced by the equity bubble led to severe financial imbalances, it is worth asking the question why the equity bubble persisted in the face of this profit squeeze. It is of the nature of financial manias that euphoric perceptions feed on themselves and become increasingly detached from reality. But it is not always appreciated the degree to which promoting this cognitive dissonance is greatly in the interest of speculators and financiers. Galbraith has captured this "vested interest in error that accompanies speculative euphoria" in the following passage:

> *"Those involved with the speculation are experiencing an increase in wealth…No one wishes to believe that this is fortuitous or undeserved; all wish to think that it is the result of their own superior insight or intuition. The very increase in the values thus captures the thoughts and minds of those being rewarded. Speculation buys up, in a very practical way, the intelligence of those involved…" (p. 5)*

In even stronger terms, Galbraith diagnosed the following source of the cognitive dissonance which presents itself in every asset bubble:

> *"To summarize: The euphoric episode is protected and sustained by the will of those who are involved in order to justify the circumstances that are making them rich. And it is equally protected by the will to ignore, exorcise, or condemn those who express doubts." (p.9)*

This aspect of asset bubbles corrupts the discovery process investors are supposedly engaged in (at least as depicted by mainstream theory) when they search out investment opportunities. But the likelihood of such corruption of the information processing ability of financial markets is taken to an even higher level when those initial providers of financial information, namely stock option laden managers of firms, face unusually large rewards for distorting financial information, and very low risks of being charged and convicted with such disreputable acts. In other words, the attempt to reduce principal/agent conflict by compensating managers with stock options introduces an enormous moral hazard.

One illustration of this moral hazard behavior is apparent in the increasing obfuscation of earnings information delivered by companies (arguably the most important information desired by equity investors) during the bubble years. This growing practice of redefining earnings conventions can in part be traced back to the LBO days of the '80s, when LBO's were the preferred tool for aligning shareholder and management interests. In the latter half of that decade, EBITDA, or earnings before interest, taxes, depreciation, and amortization became the preferred way of gauging the debt carrying capacity of an as yet unlevered firm. With the increasing shift to stock option compensation for management, the incentives to redefine and distort earnings in order to attract shareholder interest grew too strong to ignore. Simply put, the mechanism that was designed to align shareholder and management interests ended up encouraging management to try to fool shareholders into believing in an earnings growth trajectory that was to some extent engineered with accounting tricks.

The most glaring example of earnings obfuscation comes, ironically, with the treatment of stock options themselves. In a renowned battle between high tech executives and the Financial Accounting and Standards Board (FASB) in 1994, the issuance of options as a form of compensation was given a unique status. Options, it was decided, would be characterized as a non-expense expense. The ability to cover a compensation expense in a manner that would not have to be recognized on an income statement would clearly bolster reported earnings. In effect, the more employees that were compensated by stock

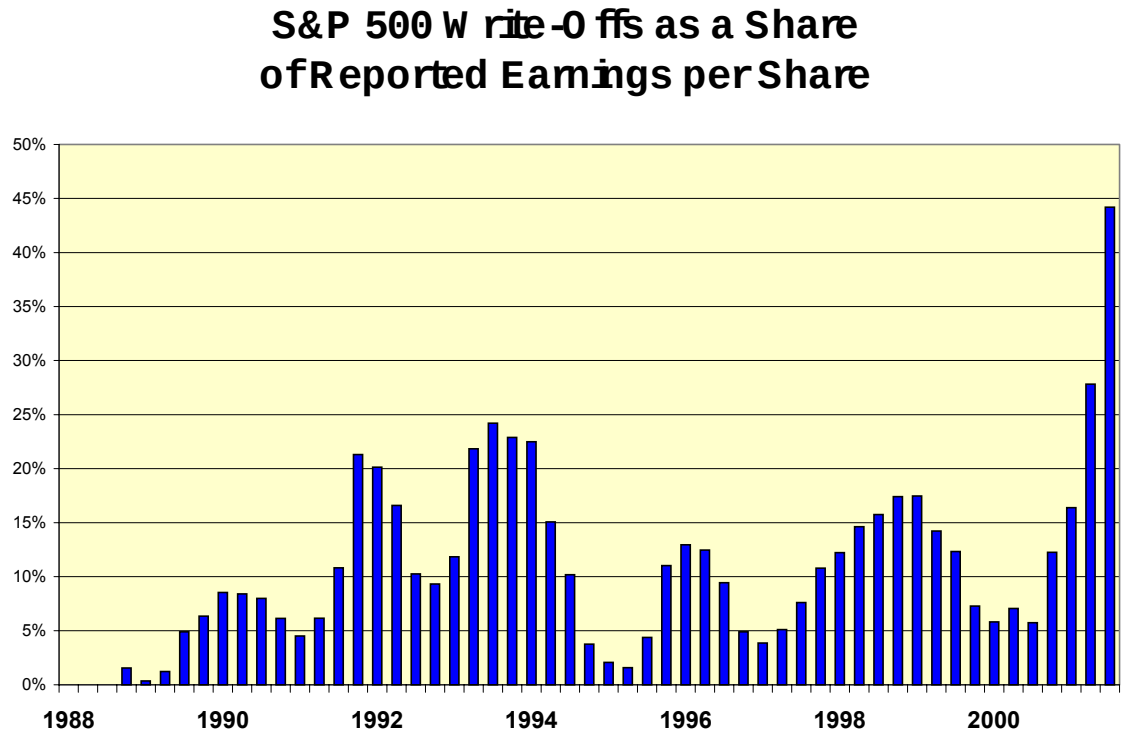
options, the more the apparent cost of labor to a firm was reduced, and so the more the bottom line was bolstered. This amounted to what one renowned Morgan Stanley investment strategist referred to as a practice that verged on fraud, yet it became a practice that spread well beyond the original foresighted advocates of option based compensation in the technology sector.

The earnings distortion introduced by stock options is large, but just how large remains a subject of some dispute. The Fed's own research found an increase in the value of options of 138 firms had risen from 4% in 1994 to 10.5% in 1998. Independent economists at Smithers and Company found a slightly higher cost of covering options, with 12% of earnings of 167 companies coming from this non-expense expense. Not surprisingly, Wall Street accounting operations found a smaller contribution, with Bear Stearns, for example weighing in at 6% for 1999, not too different from the Goldman Sachs estimate. Quantitative analysts at Sanford Bernstein, widening the net to the largest 2000 companies, found a somewhat less sanguine distortion. The value of options granted amounted to an after tax value of 4.4% of net income in 1995, but by 2000, this value had ballooned to 19.5%. By their calculations, the growth rate of earnings in the technology sector, accounting for some 60% of the option grants by 2000, would drop for the period 1996 to 2000 from 20% down to 8%. The use of option compensation as a way of enhancing apparent corporate earnings was hardly trivial, especially in that segment of the economy designated as the seedbed of the New Economy.

This was not the sole manner in which stock options distorted earnings. Enormous stock repurchase operations were undertaken by the corporate sector during the past decade to provide the shares required by this compensation program. Wall Street analysts and professional "buy side" equity analysts are paid to guess the amount of earnings per share that companies can deliver. Since shares outstanding appear in the denominator of the earnings per share calculation, anything that involves shrinking the number of shares outstanding will tend to boost earnings per share. Not only did option based compensation boost the numerator of the earnings per share calculation, it also reduced the denominator.

Beyond the distortions introduced by the accounting treatment of and provisioning for options compensation packages, a more nefarious drift in the very definition of earnings per share occurred during the bubble years. Although the 1989-91 recession was relatively light by historical standards, the write-offs by banks were quite high as loan losses from the LBO and commercial office building binge of the late '80s went sour. In most cases, these write-offs were claimed to be nonrecurring expenses or noncash charges. Analysts were encouraged by management to add them back in to arrive at an operating earnings number more reflective of true cash flows. The standard of earnings measurement has subsequently migrated from reported earnings to so called operating earnings over the past decade as nonrecurring write-offs have turned out to be a recurring event. Ostensibly, equity analysts are led to believe operating earnings represented a more accurate reflection of the underlying profitability of firm.

By the end of the decade, however, widespread disagreement on what constituted a valid non-recurring expense had developed, with each company driving its preferred definition down into the ranks of analysts. Citigroup, for example, has gotten away with treating firing expenses as a one time non-recurring charge. Intel, eager to have analysts include capital gains on sales of its holdings from its in house venture capital operation, was quick to arm twist analysts into ignoring subsequent capital losses after the equity bubble popped. As of the second quarter of 2001, a 15% gulf has opened up between operating earnings as calculated by Standard and Poors, and those reflected by Wall Street analysts in tabulations by First Call. In part this is indicative of the success of management in getting First Call, the unofficial accumulator of earnings forecasts, to act as their enforcer. Noting one recalcitrant analyst at Raymond James who could did not agree that layoff charges were not a normal cost of doing business, "Unless I'm willing to conform to their EPS number, they will refuse to show my estimate." First Call counts more than 260 companies where the majority of analysts have been convinced to ignore GAAP accounting when offering earnings estimates.



This was not quite far enough into the grey zone for management however. Particularly with the arrival of the dotcoms, who often had nothing in the way of earnings to show, and occasionally had nothing even in the way of revenues to show, a new, more accurate earnings standard emerged called pro-forma earnings. With the advent of this new convention, any pretenses of sticking to generally accepted accounting principles (GAAP) were tossed aside. Press releases and earnings guidance from management have increasingly been oriented around this "just say anything" standard, and woe to those

analysts who refuse to hue to the earnings definition du jour served up by management. As Warren Buffet put it,

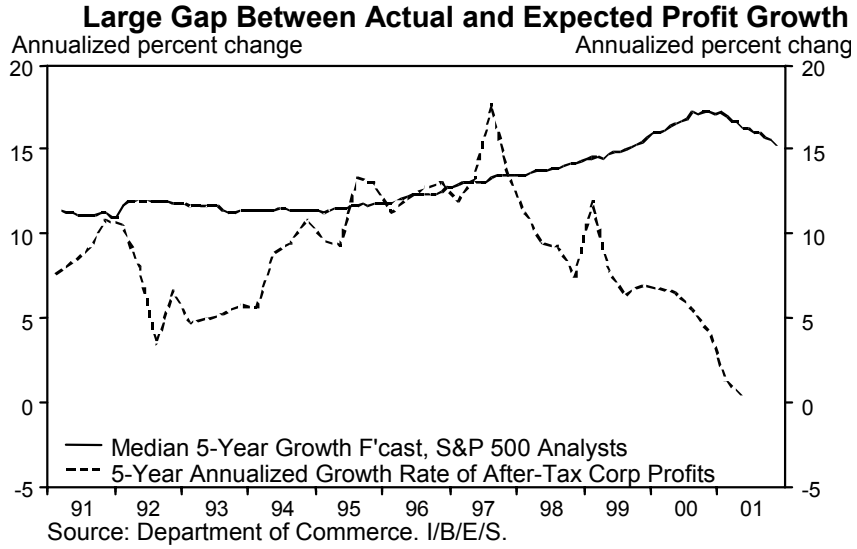
> *"A significant and growing number of otherwise high-grade managers – CEOs you would be happy to have as spouses for your children or as trustees under your will – have come to the view that it's okay to manipulate earnings to satisfy what they believe are Wall Street's desires. Indeed, many CEO's think this kind of manipulation is not only okay, but actually their duty."*

For example, Yahoo, one of the early adopters of proforma reporting managed to report earnings results 35% better than GAAP earnings in January 1999 by excluding certain costs related to the acquisition of Internet companies. Amazon has been caught classifying equity holdings it has in other firms as cash under pro forma practices. Losses are miraculously transformed intro pro forma earnings gains, as at Computer Associates. Training seminars for CFO's like those offered by the National Center for Continuing Education promise to teach financial professionals "50 tricks and traps of managed earnings that you need to know to excel at your job and stay out of trouble." It is as if football teams had convinced their fans to let them reset the goal posts at the start of each quarter. The abuse has gotten so bold an blatant that former SEC Chief Accountant Lynn E. Turner took to renaming pro forma earnings as "EBS – Everything but Bad Stuff", noting "they seem to be used to distract investors from the actual results". FASB officials claim there is nothing to be done about the ongoing redefinition of earnings. Companies are allowed to claim any earnings definition they wish in press releases, as long as they file financial statements that are in accord with GAAP accounting.

That earnings standards have eroded in a country that prides itself on transparency in its financial markets is no small irony. But this chicanery, when aggregated up to earnings expectations for the market as a whole, has produced absurd results. Management, in their single minded attempt to enhance shareholder value now that they too are shareholders, have learned how to take the management of Wall Street analyst expectations to a higher level as well. With the evolving campaigns to obscure earnings, it is no surprise that analyst earnings expectations came to bear no relation to the sinking profitability visible in the national income accounts during the latter half of the '90s. Cognitive dissonance is much easier to breed in the fog of a disinformation campaign.

More alarming is the logical absurdity of long-term earnings expectations that began developing mid-decade. These are a crucial input to the discounted cash flow models that equity analysts are supposed to use to value stocks. For most of the history of this survey, long run earnings growth forecasts aggregated up from individual company earnings forecasts by Wall Street analysts varied between 11-12%, as displayed in the Goldman Sachs chart directly below. By the height of the bubble, S&P 500 earnings expectations had flown up to 18%, despite the nose dive in trailing five year annualized growth of corporate profits as measured in the national income accounts. The quip among Wall Street strategists at the time was that the S&P 500 was not your father's index anymore. The sliver of truth to this claim had everything to do with the bubble itself. Technology

stocks had some of the most extraordinary long run earnings growth forecasts. Because the S&P 500 is a capitalization-weighted index, the share of tech earnings in the S&P rose as the tech bubble inflated. This is yet another example, as in the discussion of relative performance investment managers, of how capitalization weighting introduces a self-reinforcing dynamic to equity bubbles. Accordingly, a higher long run earnings growth forecast for the stock market sounded reasonable to portfolio managers and analysts.



A quick back of the envelope calculation reveals the absurdity of the long run earnings growth rate forecast by analysts in the aggregate. Even during the booming New Era of the '90s, S&P 400 revenue growth averaged closer to 4%. Assuming this sales pace could be sustained indefinitely into the future, the 18% expected long run profit growth implied not just a frictionless economy by 2022, but a thoroughly costless economy as well. Profit margins would reach 100% in two decades under these assumptions. Management, apparently, would no longer be the only factor of production receiving stock options as compensation. That such expectations took hold just as realized profit margins were getting squeezed is ironic.

For an impartial observer of the US macroeconomic data, it is very difficult to fathom how an equity bubble could have been sustained given the profit margin squeeze that was underway in the latter half of the decade. New Era convictions ran high, but how could the earnings reality have been ignored for so long? Even for those who believe earnings expectations are fashioned in some extrapolative fashion, it is something of a puzzle to understand why so many highly paid analysts and investment managers could have been so wrong. This ignores the conscious campaign to obscure earnings results during the bubble years, a campaign made most urgent by the alignment of management interests with shareholder interests intended by the granting of stock options as management compensation. An enormous moral hazard was created along the way, one that produced nothing short of a "vested interest in error". Consider, for example, the impact of overstated earnings on valuation ratios like the price to earnings ratio. Not only did a rubber yardstick approach to earnings allow stock option laden managers ample

opportunity to misrepresent their company's earnings growth, but it also helped them make their stocks look cheaper.

It is this realpolitick of financial markets that explains the enormous cognitive dissonance generated over corporate profits during the bubble years – a realpolitick all too often obscured by the blinders worn by market fundamentalists in the idealized descriptions of investor behavior. It comes as no surprise then, following the bursting of the equity bubble, that companies like Enron and JDSU are massively restating their earnings histories. In 2001 alone, nearly $125b in charge-offs is expected to accumulate. Nor does it come as any surprise that the financial press has begun reporting on the "earnings mirage" of the late '90s.

The financial balance equation

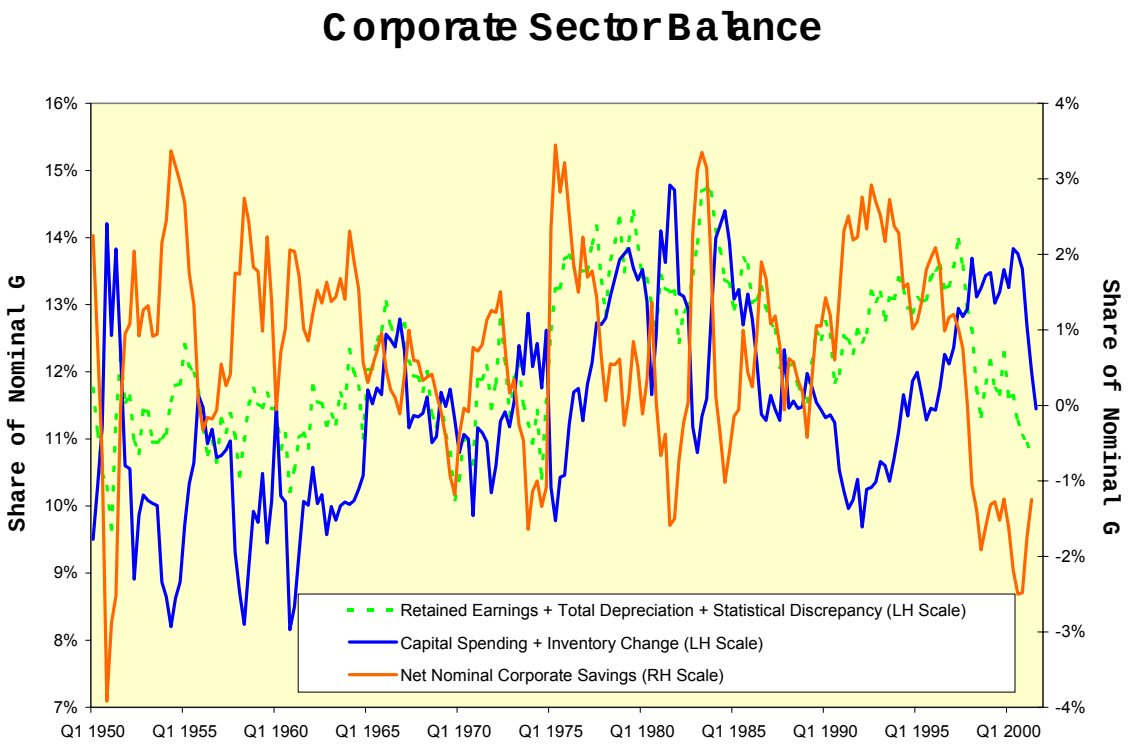
Leaving behind the management of earnings expectations that played a role in obscuring the profit squeeze for most investors, it is important to turn to the financial imbalances wrought by the equity bubble. The financial balance equation simply requires the net nominal savings of all macro sectors to sum to zero. From the elementary principle that for every net borrower there must be a net lender, it is clear that the sum of net borrowing by deficit spending sectors must equal the sum of net lending by net saving sectors.

Returning to the expanded form of the macro profit equation, it is possible to segue to an analysis of the sector financial balances in four easy steps. First, the fiscal budget balance and the net export balance must be moved to a net savings basis. Government investment must be subtracted from the fiscal budget balance to arrive at the financial balance for the government sector, and adjustments for net investment income and unilateral transfers must be made to net exports to arrive at the financial balance for the foreign sector. Second, depreciation must considered for the capital stock held by firms and the government to move the analysis to more of a cash flow basis. Third, by dividing investment into residential and nonresidential (including inventory change) components, the financial balances for the corporate segment of the private sector can be isolated as follows

Profits – Nonresidential Investment = Residential Investment – Household Savings – Government Financial Balance + Current Account Balance

Under the simplifying assumption of no payouts from profits to household income, the left-hand side of this expression captures the net nominal savings activity of the corporate sector. If capital spending (and inventory accumulation) by the corporate sector exceeds profits in any accounting period, the corporate sector is deficit spending. To deficit spend, a sector must issue financial claims to another sector. Since the corporate sector was incentivized during the equity bubble years to put new high tech equipment into place at a rapid pace despite the profit squeeze, the corporate sector was spending more than it was earning. From a peak of 2.9% of nominal GDP in late 1992, the corporate sector financial balance decayed steadily until the end of 2000, when it troughed at 2.5% of

nominal GDP. The persistence of this flow of deficit spending meant the corporate sector was increasing its stock of financial liabilities on its balance sheet.



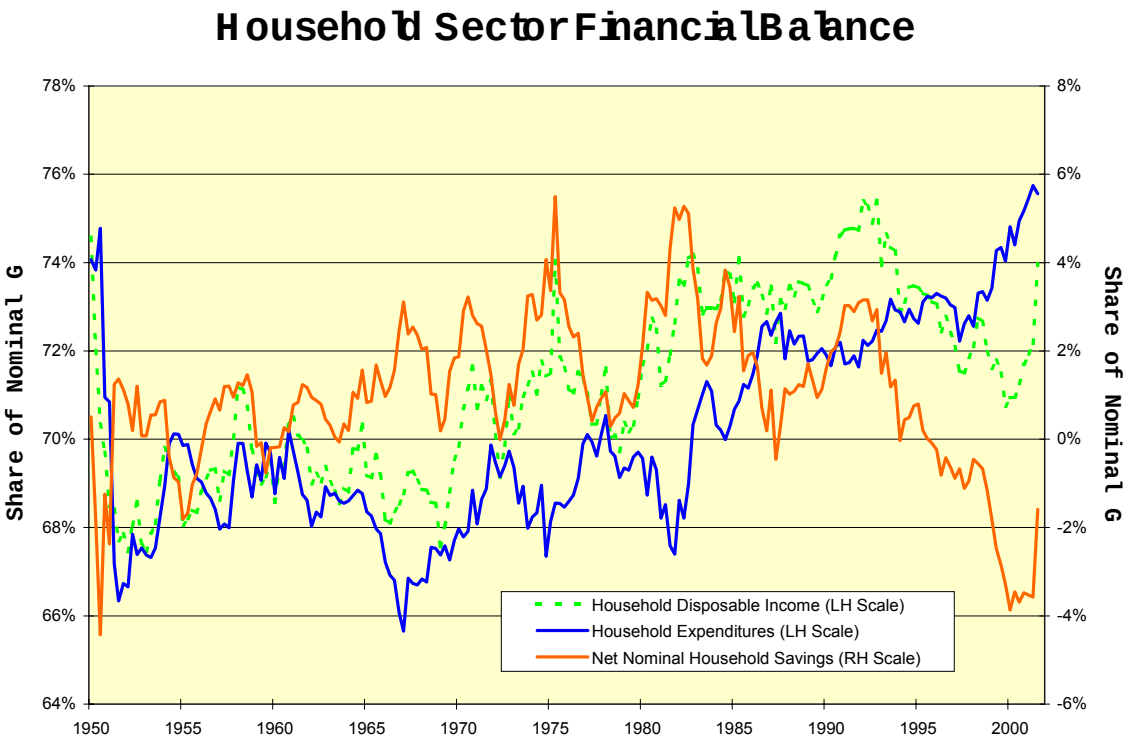
Since the equity bubble had encouraged companies, against the dictates of cost of capital or Tobin's q consideration, to repurchase shares (in part to increase management's ownership, and in part to paper over the profit squeeze by distorting earnings), the liability accumulating on corporate balance sheet during the bubble years was corporate debt, not new equity issuance. This debt load from persistent corporate sector deficit spending was made even heavier by the debt issued to finance share repurchases for option schemes. Despite the recent lesson of "credit headwinds" earlier in the decade, the corporate sector, under the influence of the equity bubble, was building its financial fragility up through the latter half of the '90s. The liabilities of the US corporate sector surged from $6tr in 1995 to $9tr in 2000.

The fourth and final step required in moving from the macro profit equation to the sector financial balance equation is to shift the household sector items to the left side of the equation as well. The expression now appears as:

(Profits – Nonresidential Investment) + (Household Savings – Residential Investment) = Current Account Balance – Government Financial Balance

When household consumption outlays exceed their disposable income, gross savings in the household sector is negative. Earlier, the gross savings rate of the household sector was shown to fall during periods of asset price appreciation. When residential investment

expenditures exceed gross savings, the household sector is deficit spending. The net savings rate of the household sector decayed from a peak of 3.2% in the middle of 1992 to a deficit of 3.9% in early 2000.



In order to deficit spend, households must emit, and these liabilities must be accumulated by other sectors that are net saving. Since households cannot issue equity, household sector debt loads must increase the longer deficit spending persists in the sector. Under the influence of the equity bubble, the household sector increased its leverage despite the memory of the distress wrought by the ‘80s consumer debt binge. Financial fragility increased not only in the corporate sector, but in the household sector as well.

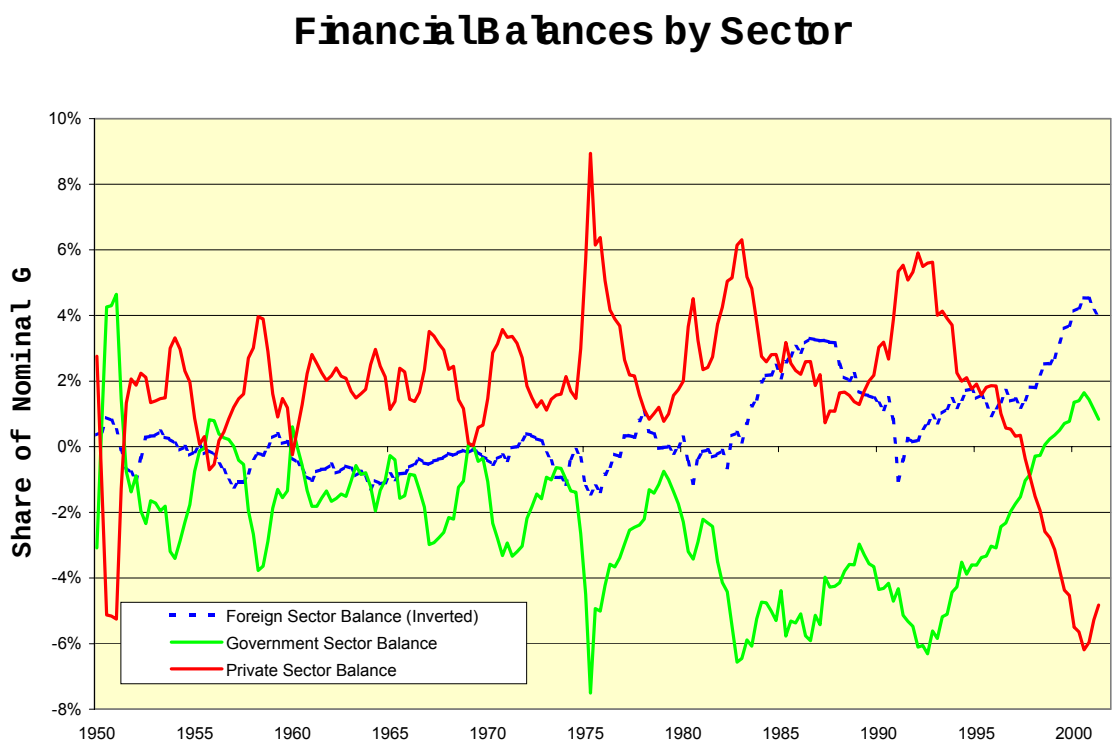
The two left-hand side expressions can be combined into the private sector balance, yielding the following financial balance equation:

Private Sector Balance = Current Account Balance – Government Financial Balance

Ex post, the deficit spending and net saving activity of the private, public, and foreign sectors must balance. For each sector that is net borrowing, there must be a net saving sector that is voluntarily accumulating the financial liabilities being issued by the deficit spending sectors. This relation can be made more explicit by placing all the terms on the left side, and realizing that for the foreign sector, the capital account balance equals the inverse of the current account balance.

Private Sector Balance + Capital Account Balance + Government Financial Balance = 0

If the propensity of foreigners to net save is high, and the propensity of fiscal policymakers to net save is high, such that a fiscal surplus is realized alongside foreign capital inflows, then it is clear from the financial balance equation above that the private sector is consigned to a path of persistent deficit spending. This, in turn, will increase the private debt load over time. In the case of the US, the private sector balance decayed from a 5.9% of GDP surplus in Q1 1992 to a trough of 6.2% of GDP in Q3 2000. Two thirds of this shift can be accounted for by the swing in the government balance from –6.1% to 1.6% of GDP over the same period. The remaining one third is attributable to the decay in the current account balance from –0.2% to –4.5%.



Using a variation on these relationships known as the "New Cambridge" equation, Godley and Martin have simulated the sector balance trajectories that would have been associated with a 5% per year stock price rise over the 1995 through mid-1999 period. Private net savings remains just below a 1% surplus, the current account improves from a 1.5% deficit to a 0.5% deficit, and the budget deficit shrinks from 2% to 1.5% of GDP. Real GDP growth comes in at half the actual 3.5% pace. The results of this counterfactual simulation, although dependent upon the reliability of the parameters in the "New Cambridge" model, strongly suggests the stock market bubble played a very large role in encouraging private sector deficit spending.

While deficit spending is something most people are used to associating with the public sector, it is not a practice reserved for governments only. Flow imbalances can lead to balance sheet disequilibria in the private as well as the public sector. In fact, the pursuit

of fiscal balances in excess of current account balances insures a deficit will show up in the private sector.

Accordingly, the sector financial balance relationship highlights an extraordinary irony of the push toward fiscal surpluses begun early in the Clinton Administration at the behest of Rubin and Greenspan. The political rhetoric of fiscal austerity was often couched in woeful analogies to family budgets. It was frequently argued that just as any one family cannot keep spending beyond its means without eventually finding itself bankrupt, so to the government budget must be kept within its means. With the financial balance equation above, it is plain to see in a country like the US that tends toward a chronic current account deficit position, a persistent push towards higher fiscal surpluses can eventually bankrupt the private sector.

From this simple principle based on double entry book keeping, it is quite apparent that the rhetoric of the Concord Coalition is myopic at best, and perverse in the extreme. Yet this fatal flaw in "fiscal surpluses as far as the eye can see" view seems to remain unrecognized by most policy makers and the orthodox economists they consult. The Rubin Doctrine of ever rising fiscal surpluses and a strong dollar is perhaps one of the most effective methods for financially destabilizing the private economy that could have been concocted. But along this path to financial instability, it must be remembered, there were enormous fees and attractive spreads to be earned by Wall Street investment bankers, commercial bankers, and various other financial intermediaries as the private sector issued more and more debt to finance a deficit spending spree.

From financial imbalances to debt traps

Financial flow imbalances, if allowed to persist, lead to stock disequilibria on balance sheets. From such stock disequilibria, major financial market dislocations can be triggered. In the case of the flow imbalances generated by the push of bubble induced private deficit spending, and the pull of misguided fiscal and foreign exchange policies, these flow imbalances show up in overly leveraged US household and corporate balance sheets on the one hand, and in foreign portfolios saturated with financial claims on US assets on the other.

Should income flows to households or firms be disrupted, the ability of the private sector to meet its prior financial commitments becomes jeopardized. Alternatively, should foreign portfolio preferences change, perhaps as comfortable risk and return perceptions of US assets are disturbed, the level of US interest rates, equity prices, and foreign exchange value of the dollar held would also have to change to insure these assets remain held voluntarily. When a sector of the economy has a high existing debt load relative to income, and it continues to deficit spend, a fall in rate of income growth relative to interest rates can trigger a surge in the debt to income ratio. However, once it becomes apparent to creditors that a sector of the economy is entering an explosive debt path in this fashion, credit rationing is generally not too far behind. Since income growth depends to a certain extent on net new credit creation in a monetary production economy, the end result of these debt trap dynamics is not an explosive growth of debt, but rather a

collapse of income generation, which leads in time to the invalidation of prior debt claims.

Debt trap equations have been used for some time by World Bank and IMF officials to monitor risks in developing nations. By the late '70s, these debt trap equations were also applied to the public sector in developed nations in some of the more sophisticated attacks on persistent fiscal deficit spending. But debt trap equations are rarely produced for the private sector. In part, this may reflect a rational expectations or efficient market bias, as private sector actors are assumed to make sound calculations when financing their expenditures. Given the unprecedented US private sector deficit generated during the equity bubble, the biased application of debt trap equations is wholly inappropriate.

In one of its simpler variants, the debt trap equation can be summarized in discrete time terms as follows:

Future Debt/Income Ratio = (1 + Interest Rate – Income Growth Rate) x Current Debt/Income Ratio – Sector Primary Financial Balance /Income Ratio

Since interest expense grows as a function of the interest rate times the existing debt load, and the income growth rate determines how fast the denominator in the debt/income ratio grows, all that is needed is a measure of the financial balance excluding interest expense (the primary balance) for any sector to determine the future debt/income ratio. In a sector where the interest rate is outrunning the income growth rate, and a primary deficit is likely to persist, the conditions for explosive debt trap dynamics are engaged.

Most debt trap simulations are run using long run potential GDP growth and long run interest rate forecasts to identify how various fiscal balance targets influence public debt/GDP ratios over longer run planning horizons. There is no reason, however, why this same equation cannot be used to explore the possible near term path of US corporate debt loads.

To apply the equation to the nonfinancial corporate sector, several steps are necessary. First, Since the objective is to capture the debt load relative to the ability of nonfinancial corporations to service debt, income must be properly defined. Nominal GDP for the nonfinancial corporate sector is not the appropriate income concept, as employee compensation and net interest expense must be subtracted from this aggregate to arrive at corporate profits. Corporate profits then must be moved to a cash flow basis, so dividend and tax payments must be subtracted while depreciation and the inventory valuation adjustment must be added back. To complete the income measure, gross after tax interest expense needs to be added back to this cash flow basis to establish a pre-interest expense cash flow series. Effective tax rates backed out of pre-tax and after-tax nonfinancial corporate profits are used in this step. The level of the resulting pre-interest expense cash flow series can be used in the debt to income ratio and the primary balance to income ratio, and the growth rate of this series can be used in the first term of the equation. Second, an implicit interest rate series can be constructed using the gross interest expense for any one year divided by the nonfinancial corporate debt level at the end of the prior

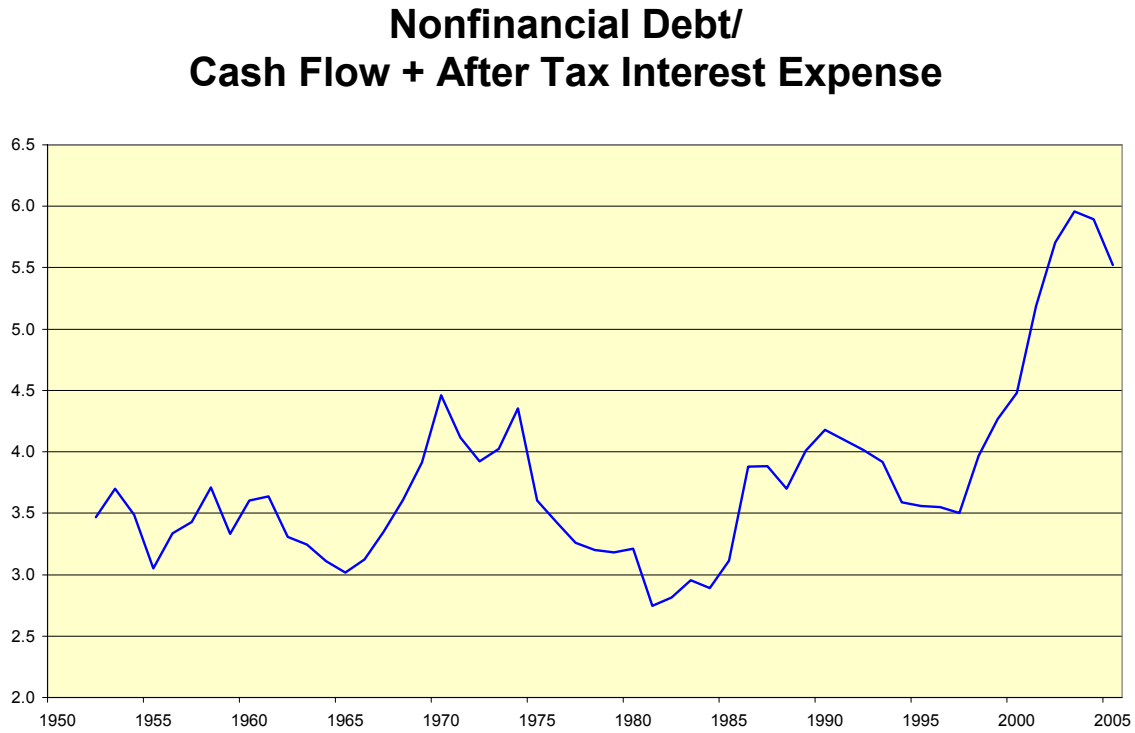
year. Third, the primary surplus series can be constructed by adding the nonfinancial corporate sector financial balance and the gross after tax interest expense.

With these adaptations in mind, a five year forward simulation can be used to assess the sustainability of the nonfinancial debt load. The following base case assumptions will be made:

- the average interest rate on the outstanding stock of nonfinancial corporate debt will fall 100 basis points per year for the years 2001-5;
- the growth rate of nonfinancial corporate cash flow will migrate steadily back to the 6% average of the past decade;
- the primary balance as a share of nonfinancial corporate cash flow will move steadily back to the 12.5% surplus averaged over the past decade.

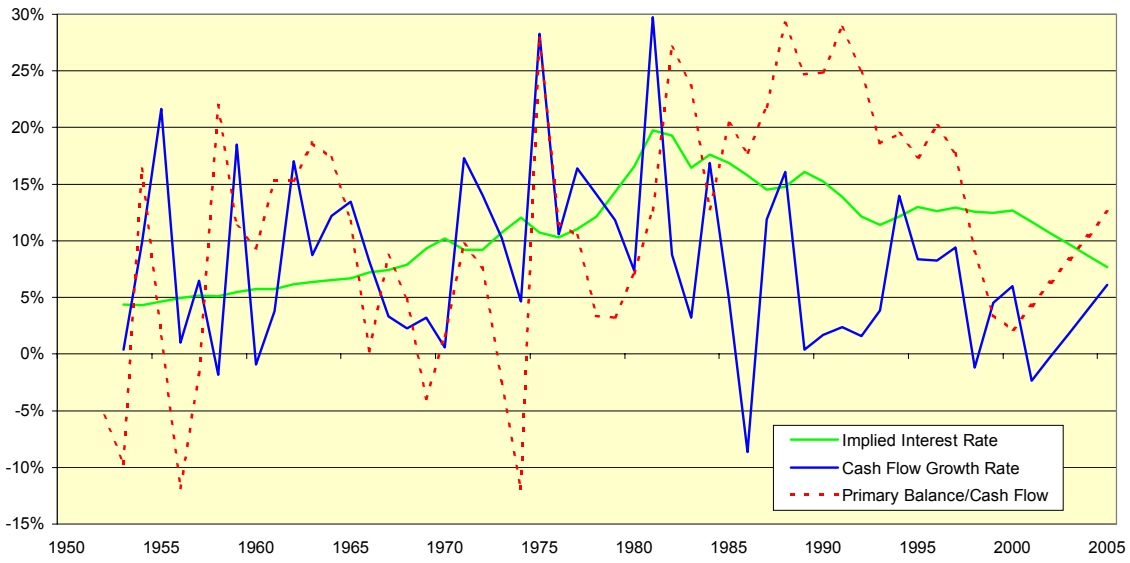
These are fairly generous assumptions. Interest rates are allowed to fall despite a return to the average cash flow growth. Average cash flow growth is achieved despite a large rise in the primary balance. This in turn implies firms are reducing their investment expenditures relative to their income without disturbing profitability – something possible, under the Keynes/Kalecki profit equation, only if the households sector is running down its gross savings rate, the public sector is deficit spending, or net exports are climbing out of their deficit. The base case scenario may be internally inconsistent,

When the simulation is run out to 2005, the following debt/cash flow ratio for the nonfinancial corporate sector results:



The debt to cash flow ratio surges from the 450% level to a peak of 650% by 2005. Nonfinancial corporate debt loads start higher than the last recession, at the 1970 high of the past half-century, and they simply explode. The problem at hand is not the financing gap per se, which has been assumed to improve of the five year simulation, but the persistent gap between the implicit interest rate on the stock of outstanding debt and the growth rate of the pre-interest expense cash flow series.

Nonfinancial Corporate Sector
Inputs to the Debt Trap Equation

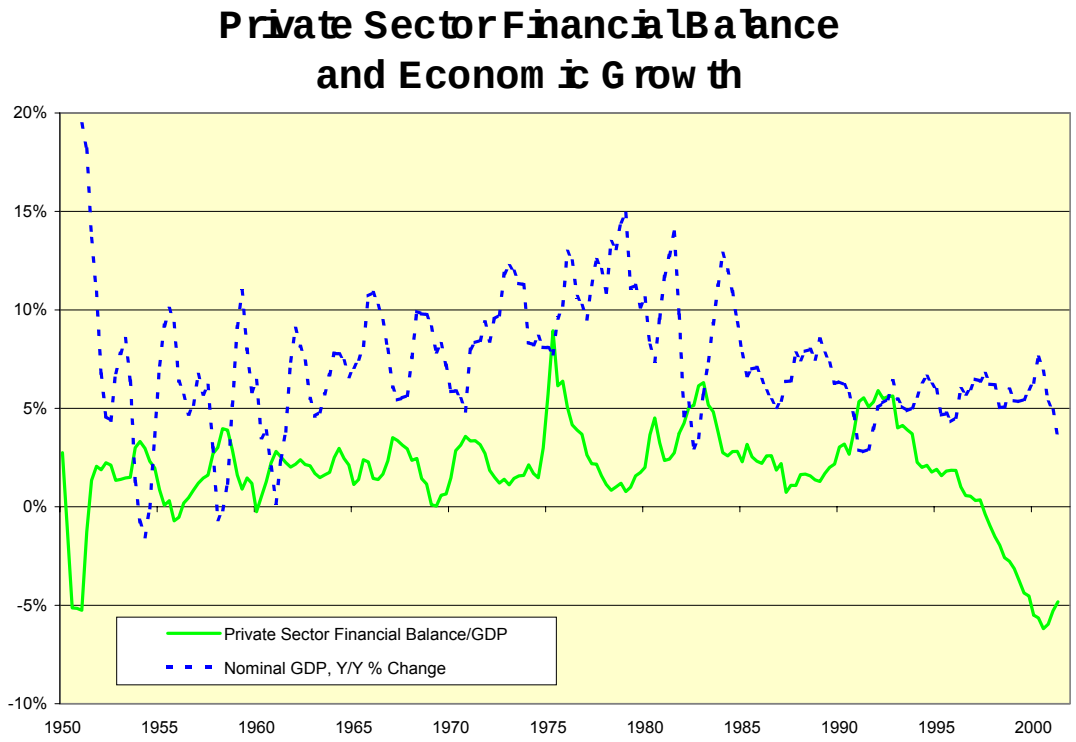


Since the draconian interest rate shock imposed by Volcker, the cash flow growth rate has, except for brief moments, tended to remain well below the implicit interest rate on corporate debt. While corporate bond yields have fallen since the Volcker shock, with Baa corporate yields down around 8%, it is important to recall not all corporate debt is callable, and so not all outstanding corporate debt is refinanced down to the spot yield each year. Although the implied interest rate appears high, and deserves further investigation, it may reflect the rising share of high yield debt in the corporate debt stock that began to accumulate with the LBO boom in the middle of the ‘80s. Regardless, the critical issuing facing the nonfinancial corporate sector in the ‘90s is that the primary surplus has been eroded as the financing gap has opened up to $300b per year of late, some eight times the average of the ‘80s financing gap. The primary surplus has ceased to be large enough to offset the explosive debt dynamics inherent in the gap between the implicit interest rate and the pre-interest expense cash flow growth rate. That means any economic recession that follows an expansion in which the corporate financing gap has been allowed to significantly widen leaves the corporate sector poised on an explosive debt path.

Plausible simulations for the private sector debt/income path, not just the nonfinancial corporate sector path, have been performed by Godley, Martin, and others with similar results. Given the private sector financial imbalances that developed in the long expansion of the '90s, there does not appear to be an easy way out. Unless private sector income growth can be driven higher by a program of sustained deficit spending by the public sector and a persistent improvement in the current account balance, and unless private market interest rates can be brought down without setting off a private spending boom, debt trap dynamics will be provoked. More likely, as mentioned above, once this perilous path becomes evident, credit will be quantity rationed to the private sector by risk averse lenders, and the resulting financial constraint on income growth will place the US economy into a debt deflation mode reminiscent of Japan's most recent "lost decade".

The downside risk of a Fisher style debt deflation

Equity bubbles tend to support private sector deficit spending, and sustained deficit spending eventually leads to balance sheet disequilibria. When equity bubbles pop, as they may do endogenously when profits are squeezed by rising fiscal and trade imbalances during the boom years, private sector flow imbalances will tend to correct. The ex ante willingness of households and firms to deficit spend will wither away with falling asset prices. As equity prices fall, for example, households will try to rebuild their saving rate since the stock market is no longer "saving" for them by providing double-digit capital gains. Firms will no longer find as attractive an arbitrage opportunity in capital spending if the market value of capital goods (embodied in stock prices) falls relative to their replacement cost. Investment spending will be pulled back within the bounds of internal finance, if not further. As desired net private saving increases, household and corporate expenditures are cut back, and an inverse correlation between income growth and the private sector financial balance emerges.



Accompanying these attempts to redress flow imbalances by cutting expenditures are changes in portfolio preferences. As household and corporate net worth declines with falling stock prices, their preferences will increasingly tend towards reducing their debt loads. Adjustments will be attempted to the liability side of their balance sheets. In addition, liquid assets will be built up on these same balance sheets. Equity holders may view the disruption of their euphoric return expectations as a reason to reduce the weight of stocks in their portfolios. Creditors, in addition, will require a higher premium to hold the increasingly risky debt of the private sector. While each wealth owner will prefer to reduce their exposure to the riskiest liabilities issued by the corporate and household sectors, in the aggregate, someone must hold all outstanding debt until it is repaid. Asset prices, consequently, will need to fall further until all existing financial assets are willingly held.

The private portfolio preferences and spending responses to a burst asset bubble can introduce one of the greatest threats to capitalist economies, namely debt deflation. As Irving Fisher described in his seminal 1933 Econometrica article, just as the economy can be susceptible to a certain upward instability as asset price advances encourage higher spending preferences, so too can a vicious cycle be unleashed when falling asset prices lead to less deficit spending and a lower preference for debt. Fisher noticed a degree of over-indebtedness accompanied the “over-investment and over-speculation” during the boom times associated with asset bubbles. Once the asset bubble popped, the leverage taken on during the boom years became inappropriate if not unserviceable. As some agents paid off bank loans, Fisher recognized bank deposits would shrink in tandem. Given his equation of exchange, a fall in product prices would ensue, and this could only

further disrupt business profitability and net worth. The fall in profits meant output plans would be revised down, employment would shrink, and some firms would enter bankruptcy proceedings. With the damage to confidence and expectations, hoarding of currency would further shrink bank deposits and slow money velocity. A recursive process of falling loans, falling product prices, rising currency demand, falling deposits, falling product prices, and further credit revulsion would take hold, leaving behind a perverse rise in real interest rates as economic activity collapsed.

Keynes and other economists investigating credit cycles at the time were not ignorant of these effects. Indeed, concerns about possible debt deflation dynamics may have been one reason he found the reparations negotiated for WWI so unacceptable. Keynes warned,

> *"For since 1914 an immense burden of bonded debt, both national and international, has been contracted, which is fixed in terms of money. Thus every fall of prices increases the burden of this debt, because it increases the value of money in which it is fixed." (Great Slump of 1930, EiP, p. 138)*

Keynes took these dangers seriously enough that he realized debt deflation was something more than just a theoretical problem. Writing at the onset of the Great Depression, Keynes spelled out the consequences of debt deflation in no uncertain terms:

> *"In such a situation it must be doubtful whether the necessary adjustments could be made in time to prevent a series of bankruptcies, defaults, and repudiations which would shake the capitalist order to its foundations. Here would be a fertile soil for agitation, seditions, and revolution. It is so already in many quarters of the world. Yet, all the time, the resources of Nature and men's devices would be just as fertile and productive as they were." (Great Slump 1930, EiP, p. 139)*

For these two economists, all pretenses about the neutrality of money, or at least the neutrality of financing, were off under conditions of debt deflation. Minsky carried this strand forward by combining Fisher's insights with Keynes' framework. Fisher's equation of exchange was discarded, and the Keynes/Kalecki profit equation was given a more central role. Minsky argued a break in asset prices would tend to damage investment spending enough to curtail profits. More generally, asset prices and financial conditions played no small role in influencing spending decisions. Keynes, in his brief discussion of the trade cycle in the General Theory, had made it equally clear that:

> *"a serious fall in the marginal efficiency of capital tends to affect adversely the propensity to consume. For it involves a severe decline in the market value of Stock Exchange equities." (GT, p. 319)*

As spending fell off, so to would income and pricing power. The ability to meet financial commitments, Minsky noted, would diminish as a consequence.

> *"A decline in the sum of investment, government deficit, balance of trade surplus, and consumption out of wages and profits decreases the validating cash flows. Investment spending, the balance of trade surplus, and consumption ratios of households are all sensitive to financial market developments." (SUE, p. 166)*

Each of these expenditure categories was a key element in the profit equation. Profit shortfalls would lower asset prices further. Increasing signs of financial distress would lead to even more restrictive financing conditions. Eventually, outright asset sales would be required to service debt commitments, forcing asset prices even lower. In Minsky's opinion, this vicious spiral could only be reversed by spender and lender of last resort responses by the government. There could be no illusions about the self-corrective nature of the market under these conditions. As Minsky wrote,

> *"Instead of a disappointment of expectations setting up forces that correct the disappointment, the financial consequences of a shortfall of profits make the achievement in the future of results that validate the cost structure more difficult." (SUE, pp. 165-6)*

Keynes was conflicted on this subject, as his central concept of a marginal propensity to consume of less than one implied households would tend towards deficit spending as a recession deepened. Household expenditure falling less than income meant eventually, household spending would be in excess of income. Under the Keynes/Kalecki profit relation, falling household savings could, everything else being equal, improve profits and so initiate recovery dynamics. In one of the early drafts of the General Theory, Keynes noted:

> "*We have argued …that a profit seeking organization of production is highly unstable in the sense that a movement from equilibrium tends to aggravate itself. We have argued that a point comes eventually when this ceases to be the case, namely as soon as a further reduction in earnings is attended by a less than equal reduction in disbursement...Thus, we may expect to reach a point at which, with saving declining and investment increasing, the turn of the tide comes, whereupon the recovery will feed on itself just as the depression had fed on itself, real and money incomes will rise and savings will rise thus supporting the higher level of investment..." (*Towards the General Theory, Chapter 10, pp. 394-5*)*

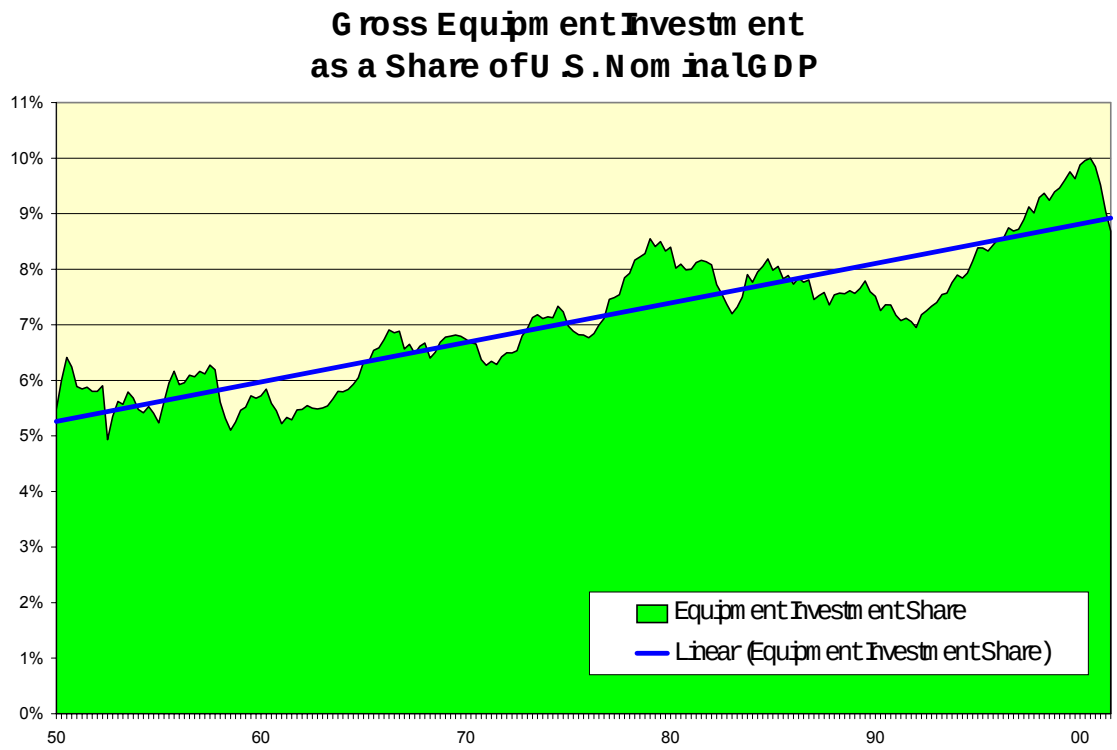
But this exit from the vicious spiral dynamics of debt deflation makes less sense if households, contrary to Keynes' income driven theory of personal savings, enter a business cycle downturn when they are already in a deficit spending position. In this instance, some other sector must be willing to deficit spend. Given the damage to profits done during recessions, the corporate sector could not be relied upon to spontaneously begin investing. Over time, depreciation would make the existing capital stock increasingly scarce, but time is of the essence when debt deflation forces are mounting.

Instead, "loan expenditures", or deficit spending financed by new credit creation, would be required of the public sector. As Keynes noted in the Means to Prosperity, an article in which he showcased his marginal propensity to consume concept and the related expenditure multiplier,

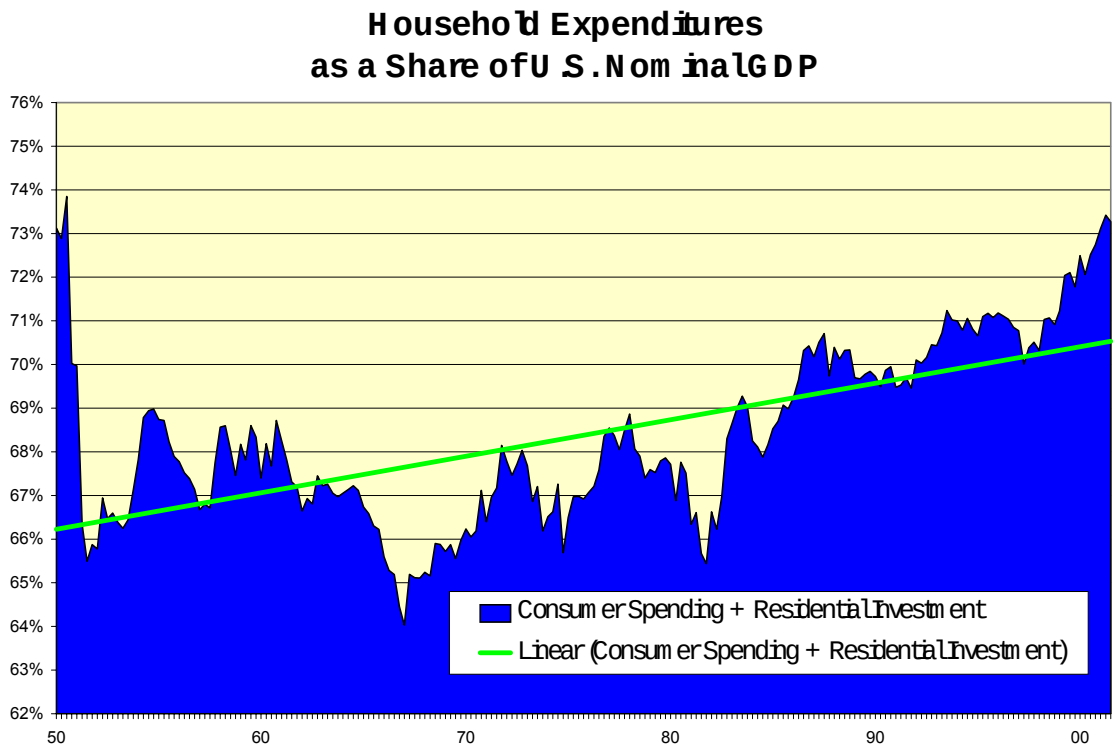
> *"…it is unlikely that private enterprise will, on its own initiative, undertake new loan expenditure on a sufficient scale. Business enterprise will not seek to expand until after profits have begun to recover. Increased working capital will not be required until after output is increasing …Thus the first step has to be taken on the initiative of public authority; and it probably has to be on a large scale and organized with determination, if it is to be sufficient to break the vicious circle…as firm after firm throws up the sponge and ceases to produce at a loss…" (MTP, p. 354)*

One of keys to defusing the debt deflation threat in any recession is to replace private sector deficit spending with deficit spending by the public or foreign sectors. If a fiscal deficit or a trade surplus (or both) can be achieved in a timely fashion, the private sector is able to reduce its expenditures without collapsing its income. Moreover, if government and foreign deficit spending persists, a net nominal saving is generated in the private sector to repair their balance sheets. Debt is not only be serviced, but repaid. In this manner, forced asset sales to service debt would not be required, relieving pressure on asset prices. With a swing towards fiscal stimulus and a trade surplus sufficient to overcome the collapse in private investment spending and the rebound in household savings rate, profits can revive, further bolstering asset prices.

Applied to the current situation, the break in equity prices has decisively driven investment expenditures into the ground. US investment spending growth crashed below zero within five months of the equity market peak. In Japan's bubble, investment spending crashed within eight months of the peak in the Nikkei. To date, the plunge in investment spending has brought the investment share of nominal GDP back to the trend of the past half-century. Roughly $100b decline in nonresidential investment expenditures has occurred in the past year, with another $94b in inventory destocking. Given the normal tendency for overshooting, the 7.5% decline in the level of nominal nonresidential investment expenditures from the Q3 2000 peak probably represents at best two thirds of the compression in capital goods spending that will eventually transpire.



Conventional expenditure multiplier relationships hold that lower capital goods spending implies lower investment production, lower capital goods employment, and so lower household income. Curiously, though, household expenditure as a share of GDP has yet to fall off. The pace of household spending is slowing, but not quite as dramatically as GDP growth is slowing. As unemployment rates rise further, as consumer credit distress becomes more visible, and less equity is left in homes from the frequent cash out refinancing waves and slower home price appreciation, it becomes increasingly unlikely that household expenditures as a share of GDP can remain near the high of the past half century. Were households to try to close their financing gap as of the end of Q3, and to return to the 1% of GDP surplus they have averaged over the past half decade, another $266b hit to the economy would be inflicted on top of the additional $50-60b in capital spending cutbacks yet to come.



Were consumers to get caught by credit rationing – an event not out of the question given the rising caution of senior bank loan officers and the distress already evident in subprime household credit firms like Providian – forced sales of liquid assets to meet financial obligations might be required. Deposits and money market holdings have been built up in the past year, but given the shift in liquidity preference, these assets might not be the first to go. Since the average share of equities in households is still above historical norms, it is conceivable that equity positions may be liquidated in order to meet debt commitments. Several bouts of mutual fund liquidation have emerged over the past year, suggesting households are no longer willing to suffer the travails of their self-professed buy and hold discipline. Barring a shift in favor of equity allocations by another sector – say corporate share repurchases or portfolio rebalancing by large institutional investors targeting fixed stock/bond weights – a recursive loop of forced equity sales, lower equity prices, lower household net worth, more equity sales could tip the economy into debt deflation dynamics.

Assessing the odds of such an outcome is not easy, especially when policy makers to keep equity prices aloft are executing various expectation management efforts. One element that mitigates a debt deflation path is the improvement to date in the private sector financial balance. Q3 2000 data is still preliminary, but the financing gap may have closed to $115b from a high of $615b one-year ago. While some of this improvement will be given back in Q4 as zero financing encouraged consumers to spend tax rebates they saved in Q3, assuming some further reduction in the current account deficit and the passage of a $75-100b fiscal stimulus package by year end puts the private sector on track to run a financial surplus in 2002. The shifts in the public and foreign balances

required to prevent a vicious spiral of lower household and corporate expenditures leading to lower private incomes are underway. The paradox of thrift may be avoided.

This path is not foolproof, as will be discussed in the next section. For example, to the extent the US trade balance is improving because imports are collapsing faster than exports simply means the US is exporting deflationary pressures abroad. In this fashion, the burden of the paradox of thrift is simply displaced onto the trading partners of the US. At the moment, the core personal consumption deflator is on the verge of joining the import price deflator and the nonresidential fixed investment deflator in deflation. Tradable goods prices are weak around the world. If there ever was a recession in the past four decades where deflation was a serious risk, this is surely it. Nevertheless, some solace can be taken from the policy shifts that are pushing the private financial balance back towards surplus. Should the lockbox mentality re-emerge as the public deficit grows, or should foreign nations refuse to go for domestic demand led growth, the odds of beating the treacherous dynamics of debt deflation in the US will have to be reduced.

Section 4: Macroeconomic policy and the equity bubble

Changes in the behavior and practices of investors prolonged the equity bubble. With the persistence of the equity bubble, the distortions the financial mania introduced to the real economy became increasingly dangerous. Flow imbalances led to private balance sheet disequilibria. Fiscal and foreign exchange policy choices exacerbated these distortions. The Rubin Doctrine - the push for a strong dollar and a fiscal surplus to pay down public debt – was precisely the opposite of what was required to avoid an unprecedented widening of private sector deficit spending during the equity bubble. But did economic policy have a hand in encouraging the equity bubble?

The tendency of monetary policy to react asymmetrically to equity market momentum may have introduced a serious moral hazard element to equity pricing. This bias was so evident to investors that it became known as the Greenspan Put on Wall Street. More importantly, sometime shortly after the infamous "irrational exuberance" speech, the Federal Reserve appears to have reversed its prior willingness to lean against asset price bubbles. The Chairman of the Federal Reserve moved, perhaps in part because of a backlash to his bold warning, from a skeptic to a true believer in the New Economy story. He effectively became a cheerleader for the equity bubble later in the decade. In addition, despite the rhetoric of vigilance, regulatory policy also fell short in controlling many of the suspect practices that emerged during the bubble. Regardless, the excesses wrought in the economy during the bubble years have made a normal, monetary policy response to recession ineffective.

If economic policy had a hand in exacerbating the bubble, and the bubble encouraged excesses not only in portfolios but also in the real economy, does policy have any role to play in reversing the damage done? It is conceivable policy will be used in an attempt to reflate the equity market bubble. In all likelihood, the unsustainable imbalances left by the bubble in portfolios and the economy, when combined with the portfolio and economic dynamics set off by the collapse of the equity bubble, make any bubble

reflation effort both a myopic effort and one bound to fail. Instead, a more multifaceted and prolonged recovery program will be required to overcome the headwinds introduced by the collapse of the equity bubble. Stimulative policy measures are likely to be initially dampened by private sector efforts to rebuild their balance sheets. Fiscal and monetary ease will need to be larger and more sustained than in prior recessions if the economy is to make the transition from balance sheet repair to renewed profitability and accumulation. Turning the economy around is only half the challenge, however. To reduce the risk of future asset bubbles, and hence future distorted states of the economy, a number of less conventional approaches to containing asset bubble dynamics should be openly debated. While these unorthodox approaches may seem politically incorrect at the moment, it is important to recall tectonic shifts in policy tend to occur when economic and financial systems are under prolonged stress.

The asymmetric monetary response and moral hazard

A review of the transcripts available from Federal Reserve Open Market Committee (FOMC) deliberations suggests equity market dynamics have generally played a minor role in the policy choices of the central bank. As in mainstream macroeconomics, the equity market has historically been treated as a curious sideshow in monetary policy discussions during most of the postwar era. As a lottery unto itself, the equity market has been viewed as having little to do with the anti-inflation goals of the Federal Reserve, and little to do with the transmission mechanisms of monetary policy.

In very general terms, the Federal Reserve has tended to place the interests of bankers and bondholders first. This is the constituency most frequently supported by the Fed when it weighs in on legislative matters, and it is most notably the constituency that tends to rally to the defense of the Fed's autonomy whenever Congress begins questioning the wisdom of central bank independence. For example, the draconian shift of monetary policy under Volcker beginning with the October Massacre of 1979 is understood to have in part reflected the need for creditors to end a confiscation of their wealth by high and rising inflation.

However, with the advent of the equity bull market in 1982, when Volcker was forced to depart from his restrictive stance in the face of the Latin American debt crisis, a new constituency arose in the financial arena. Under the bullish Reagan years, the interests of commercial bankers and the so-called Bond Gods began to be increasingly confronted by the interests of investment bankers and equity investors. Investment bankers, unlike their commercial banking brethren, depend upon a high volume of fee driven transactions to drive their profitability. These transactions include arranging initial public offerings of stock, arranging corporate debt issuance, and facilitating mergers and acquisitions, all of which tend to boom during periods of robust equity market performance. High and rising equity prices encourage more privately held companies to go public, increase the perceived debt carrying capacity of firms, and also provide an appreciation of the "currency" available to execute equity driven mergers. While investment bankers still welcome the steep yield curves favored by commercial bankers, investment bank profitability has less to do with high net interest margins, as positions are not carried for

very long on their books. Theirs is a trading culture. This more rapid turnover of asset holdings also means investment banks find their principal less damaged by periods of unanticipated inflation. There are no 30-year mortgage loans, for example, sitting on the books of investment banks, with the purchasing power of the loan principal getting eaten up by high and rising inflation during the term of the loan. Consequently, in very gross terms, the interests of investment bankers are more closely aligned with wealth holders owning equities than with commercial bankers per se.

The strength of the bull market in equities during the eighties was in no small part fueled by the LBO boom and the merger mania. But particularly in the case of the former, this presented an unsavory outcome for the Fed. With LBO's came a surge in corporate debt that was unrelated to the expansion of the capital stock. Firms were borrowing without building much in the way of new plant and equipment. Debt obligations were being piled on to an existing capital stock that was not much more productive than prior to the LBO boom. For prudent central banks like Volcker, this presented a clear and present danger. Eventually, the weight of an accelerating pace of financial commitments against little improvement in the means to increase corporate sector incomes would insure a state of rising financial fragility. To a central banker still smarting from the repercussions of the Latin American debt crisis on commercial bank profitability and on Fed policy options, this bout of domestic financial engineering was hardly a welcome development.

Short of jamming the federal funds rate higher to interrupt the equity bull market of the eighties, there appeared to be little the Fed could do to interrupt the LBO gravy train that was filling investment banking coffers. One unexpected opportunity did present itself in 1986, and the outcome is quite telling. A target of a buyout attempt, aware of the Fed's desire to find a way to regulate leveraged acquisitions, suggested using the Fed's authority over margin requirements in an unorthodox fashion. Since the acquirer sought to use the shares of the target company as collateral for the debt to support the deal, the target firm argued the Fed could restrict the acquirer's ability to borrow by applying margin rules to the transaction. Volcker was intrigued enough by the approach that he explored several variations on the margin requirement theme. Before long, he came up against an unexpected opponent. In a subsequent interview regarding this episode, Volcker reminisced about the ambush:

> *"Nevertheless, we played around with making a ruling to apply the margin requirement to the extent we could. Don Regan, then the Secretary of the Treasury, got practically every agency in the government to write to us saying that such a ruling would destroy America. Even the State Department wrote to us. And what the hell did the State Department have to do with it?…As a sheer political matter, I think it [the regulation of leveraged acquisitions] would have been almost impossible, even if you had more conviction than I had. The intensity of the political pressure sometimes startled me."*

Volcker at the time was probably second only to Ronald Reagan in political clout. Yet in an attempt to merely trip up some of the more excessive financial practices during the

leverage boom of the eighties, Volcker was outgunned by Wall Street, with the Treasury Secretary, a former Merrill Lynch executive, riding shotgun for investment bankers. The ascendance of a new bloc within the financial sector, one with a Wall Street axis instead of a commercial bank axis, was made very clear to the former Chairman of the Fed in this episode.

The diminutive role of equity market considerations in monetary policy changed with the arrival of Chairman Greenspan. In the very first FOMC meeting that Greenspan chaired, just before his first trial by fire in the October 1987 equity market crash, the Chairman made note of a curious omission in the course of the discussion. The equity market, the Chairman observed, ought not to be ignored by monetary policy makers in assessing the prospects for the US economy. Greenspan bemoaned,

> *"We spent all morning, and no one ever mentioned the stock market, which I find quite interesting in itself. I think it's important, in the sense that as an economic force, history tells us sometimes it works, and sometimes it doesn't." (p. 26)*

Accounts of the period also suggest one of the Chairman's first acts was to request contingency plans be drawn up for a variety of destabilizing events that might require monetary policy adjustments. Included in these events was a dislocation of equity prices. For most of the 1980's, policy discussions were single mindedly focused on money supply targeting, inflation reduction, and an occasional foray into foreign exchange considerations. But with the late October equity market crash, the goal of stabilizing financial market conditions took immediate supremacy. Publicly, on the day of the crash, the Chairman was quick to announce the Fed stood by prepared to inject all the liquidity required to keep the financial system from seizing up. On October 19th, the Fed reversed their September 4th rate hike, lowering the fed funds rate from 7.25% to 6.88% in an emerging intermeeting move. The following famous dictum was released on the 19th as well:

> *"The Federal Reserve, consistent with its responsibilities as the nation's central banker, affirmed today its readiness to serve as a source of liquidity to support the economic and financial system."*

Thus, the short term interest rates under the Fed's influence were immediately cut despite the fact the economy had been reaccelerating since the 1985-6 growth recession, despite the fact the dollar had been subject to depreciation and it was not clear the currency stabilization goal of the Louvre accord was going to hold, despite the fact net corporate debt issuance was accelerating in the LBO boom, and despite the fact inflationary pressures were already building. Other monetary policy objectives were cast aside in the effort to keep the equity market open. Equity investors got the message.

Out of the public spotlight, banks and brokerage houses were encouraged to do what was necessary to serve this goal with the understanding the Fed would be forthcoming with any required injection of liquidity. The message was clear: the equity market was too big

to fail, and the imperative of stabilizing the equity market was to be given precedence over other monetary policy objectives. A mysterious upsurge in the OEX index futures market in the day after the crash did not fail to capture the attention of investors. Market lore holds that the Fed directly, or indirectly through several large brokerage houses, organized the bid that turned the equity market around.

While this account remains mostly in the shadowy realm of rumor, two subsequent events lend more than a shade of credibility to this rendition. By March of the following year, President Reagan, and avowed free marketeer, issued the rather curious Executive Order 12631. This Executive Order set up the Working Group on Financial Markets. The Working Group was comprised of the Secretary of the Treasury, the Chairman of the Fed, the Chairman of the Commodity Futures Trading Commission, and the Chairman of the Securities and Exchange Commission. With the Treasury Secretary acting as the Chairman, the Working Group's goals include, as stated in the Executive Order, "enhancing the integrity, efficiency, orderliness, and competitiveness of our Nation's financial markets and maintaining investor confidence" through "policy coordination and contingency planning". The Working Group was encouraged to "consult, as appropriate, with representatives of the various exchanges, clearinghouses, self-regulatory bodies, and with major market participants to determine private sector solutions wherever possible."

These objectives and methods are odd to say the least, and could be written off as an overreaction by policy makers to the very alarming October crash. Under this interpretation, one might assume the purpose of the group had been fulfilled by the time the various commission studies on the 1987 crash had been filed, and that the group had subsequently been informally disbanded. However, in a February 1997 Washington Post article entitled "Plunge Protection Team", writer Bret Fromson described how vibrant the Working Group has remained. Quoting a former government official, Fromson captured the current operations of the PPT as follows:

> *"The government has a real role to play to make a 1987 style sudden market break less likely. That is an issue we all spent a lot of time thinking about and planning for. You go through lots of fire drills and scenarios. You make sure you have thought ahead of time of what kind of information you will need and what you have the legal authority to do."*

A "red book" has been produced out of this effort and is held at the SEC under the official name, the "Executive Directory for Market Contingencies", copies of which reside among the heads of each of the major US stock markets. The Working Group has also been informally expanded to include the president of the New York Federal Reserve, the head of the President's National Economic Council, the chairman of the Council of Economic Advisors, and the comptroller of the currency. Clearly, the public policy goals of maintaining financial market orderliness and investor confidence have remained urgent enough since 1987 to keep the Working Group working in earnest.

All of this could be dismissed as circumstantial evidence if it were not for comments made by Dr. H. Robert Heller upon his departure from the Federal Reserve. Dr. Heller

took exception with the Fed's stated response to the 1987 equity market meltdown. Injecting liquidity into the financial system, Dr. Heller argued, was a rather blunt instrument for containing a sharp decline in the equity market. Swamping the financial system with Fed injected liquidity was bound to produce unintended consequences in conflict with other monetary policy directives. In a 1989 speech before the San Francisco Commonwealth Club, and a late October Wall Street Journal op-ed article entitled "Have Fed Support Stock Market, Too", Dr. Heller suggested a novel alternative. As he noted in the Journal article,

> *"The stock market correction of Oct. 13, 1989, was a grim reminder of the Oct. 19, 1987 market collapse. Since, like earthquakes, stock market disturbances will always be with us, it is prudent to take all possible precautions against another such market collapse…In general, markets function well and adjust smoothly to changing economic and financial circumstances. But there are times when they seize up, and panicky sellers cannot find buyers. That's just what happened in the October 1987 crash. As the market tumbled, disorderly market conditions prevailed. The margins between buying bids and selling bids widened; trading in many stocks was suspended; orders took unduly long to be executed; and many specialists stopped trading altogether.*
>
> *These failures in turn contributed to the fall in the market averages; Uncertainty extracted an extra risk premium and margin-calls triggered additional selling pressures."*

After lauding the introduction of circuit breakers following the 1987 crash, and reminding readers of the Fed's ability to inject liquidity and manage margin requirements in order to contain "disorderly" financial market conditions, Dr. Heller revealed his call for "direct action":

> *"The stock market is certainly not too big for the Fed to handle. The foreign-exchange and government securities markets are vastly larger. Daily trading volume in the New York foreign exchange market is $130 billion. The daily volume for Treasury Securities is about $110 billion. The combined value of daily trading on the New York Exchange, the American Stock Exchange and the NASDAQ over-the-counter market ranges between $7 and $10 billion. The $13 billion the Fed injected into the money markets after the 1987 crash is more than enough to buy all the stocks traded on a typical day. More carefully targeted intervention might actually reduce the need for government action. And taking more direct action has the advantage of avoiding sharp increases in the money supply, such as happened in October 1987."*

More to the point, Dr. Heller suggested the nature of this preferred direct action was in concert with the Fed's legitimate and long practiced activity in other asset markets:

> *"The Fed already buys and sells foreign exchange to prevent disorderly conditions in foreign-exchange markets. The Fed has assumed a similar responsibility in the market for government securities. The stock market is the only market without a market-maker of unchallenged liquidity of last resort."*

Dr. Heller was even clearer about the vehicle for implementing his direct action solution:

> *"Instead, the Fed could buy the broad market composites in the futures markets. The increased demand would normalize trading and stabilize prices. Stabilizing the derivative markets would tend to stabilize the primary market. The Fed would eliminate the cause of the potential panic rather than attempting to treat the symptom--the liquidity of the banks."*

If, Dr. Heller mused, the Fed were to surgically pinpoint its intervention by buying up equity index futures during a cascading equity market, wouldn't it be possible to avoid the risk of an unintended general credit expansion and its attendant inflation pressures that would inevitably accompany the typical "flood of liquidity" response? Wouldn't such a targeted intervention allow the Fed to maintain its inflation fighting discipline while securing its goal of preventing the equity market from collapsing? Wouldn't direct the Fed's intervention directly via the futures market be a much cleaner solution? Dr. Heller's critique suggests, at a minimum, at least some debate over the appropriate tools for containing punctured equity market bubbles was going on inside the Fed during the late '80s.

While professional equity investors were suitably impressed by the Fed's too big to fail policy for the equity market after the 1987 crash, bankers and professional bond investors were subsequently impressed by the Fed's willingness to stand the yield curve up on end during the early '90s bail out of the US banking system. The leverage boom, which had worried Volcker enough to pick a fight with the Treasury Secretary over the application of margin requirements to LBO's, had come home to roost. Having shoveled their way out of the Latin American debt crisis (in no small part by participating through bridge loans and other financing vehicles in the LBO boom), banks were once again hoisted on their own petard as this lending binge went bust. S&L's deregulated in the '80s had gotten their hands so deep into the junk bond game (among others games like the commercial office overbuilding) that an enormous bail out was required. With the Fed's natural constituency once again on its deathbed, Chairman Greenspan could see only one way forward. By lowering the fed funds rate enough to deliver a large spread between the cost of overnight borrowing among banks and the yields available on Treasury bonds, the Fed orchestrated an enormous carry trade to revive bank profitability and rebuild tattered bank balance sheets. By keeping the fed funds rate low for the first four years of the '90s, ostensibly to fight the "credit headwinds" left over from the debt boom of the eighties, the Fed succeeded in rebuilding net interest margins at banks, thereby rescuing its core constituency.

An unintended consequence of this rescue effort by the Fed, however, was an enormous bubble in the Treasury bond market. Issuing short-term liabilities to position Treasury bond and note holdings became a very popular institutional trade in the early '90's. By 1994, Chairman Greenspan was worried about the emergence of a different bubble, one he feared was developing in the equity market. Since Greenspan's first battle scars as Chairman of the Fed had been earned while trying to contain the potential damage of an overvalued equity market, it is not unreasonable to suspect his greatest fears lay with a replay of the October 1987 melt down. Although a number of factors influenced the Fed's decision to begin tightening again by February 1994, it is quite clear from FOMC transcripts that containing what the Fed perceived to be an equity bubble at the time was one of its primary goals. This was not simply, as advertised at the time, a "pre-emptive strike" against inflation.

> *"When we moved on February 4th, I think our expectation was that we would prick the bubble in the equity markets...evidence of the dramatic shift in the economic outlook began to emerge after we moved and long-term rates began to move up...While the stock market went down after our actions on February 4th, it has gone down really quite marginally on net over this period. So what has occurred is that while this capital gains bubble in all financial assets had to come down, instead of the decline being concentrated in the stock area, it shifted over into the bond area. But the effects are the same. These are major capital losses, which have required very dramatic changes in actions and activities on the part of individuals and institutions."*

Chairman Greenspan was not willing to allow another equity bubble to emerge. But he was not entirely confident about the Fed's ability to control an asset bubble popping operation. It was not obvious to him that the Fed could finesse the other side of the operation – the necessary stabilization of the equity market after the bubble had been popped –like it had finessed his first trial by fire, the October 1987 equity plunge.

> *"So the question is, having very consciously and purposely tried to break the bubble and upset the markets in order to sort of break the cocoon of capital gains speculation, we are now in a position - having done that and in a sense succeeded perhaps more than we had intended - to try to restore some degree of confidence in the System. And that means we have to find a way, if at all possible, to move toward a policy stance from which we will not be perceived as about to move again in any short period of time...I'm worried that we could break the back of this financial system and find out in retrospect not only that this situation has the negative characteristics of some of the data of the 1920's, but we could also find out that the experience of the 1987 stock market crash, which was benevolent, is not something that is likely to be replicated."*

At the end of the day, the Fed was forced to realize that by doubling short rates between the end of 1993 and February 1995, the Fed was disrupting a number of highly leveraged

trades in the bond market. The bubble that needed to be popped was in the bond market, not the equity market. Yet by flattening the slope of the yield curve with its tightening, the Fed blew up a number of leveraged positions in the fixed income markets. This included the demise of Orange County's colorful Treasurer who had claimed to have been led astray by his Merrill Lynch bond salesman, and untold damage to other leveraged investors in the hedge fund community and on the proprietary trading desks of Wall Street firms. Goldman Sachs, for example, experienced on of its deeper losses in 1994 – one that was large enough to require a capital infusion from the Bishop Estate for a 15% interest in the then still closely held firm - mostly related to the carry trade that had been placed on US Treasuries.

This case of the mistaken identity of the true asset bubble would be less remarkable if it were not for a political ploy adopted in 1993 by one of the head bond traders at Goldman Sachs. In a famous exchange in 1993, Bob Rubin lobbied the recently elected President Clinton on his fiscal policy orientation. Clinton had campaigned on the informal challenge to President Bush, "it's the economy, stupid". Clinton was predisposed to break out of the jobless recovery imposed by the credit headwinds of the early '90s by implementing a program of public investment spending. Rubin, instead, introduced Clinton to the notion that he best not offend the Bond Gods by taking the fiscal balance any further into deficit territory, which such an infrastructure spending led program would surely do. Clinton's response reportedly was to ask who were these Bond Gods, and how could he possibly get reincarnated as one. Rubin was apparently forthcoming, and downright persuasive. The financial education of President Clinton had begun. The public investment led fiscal program was scotched as the Bond Gods were offered their pound of flesh.

When Chairman Greenspan went after what he perceived to be an equity bubble in 1994, and inadvertently ended up popping a bond bubble he had not been able (or perhaps willing) to detect, the Chairman made at least two political enemies. Rubin's ploy was imperiled if the Fed tightening was going to produce a rise in bond yields even though President Clinton had betrayed his election platform and pledged himself to the path of fiscal rectitude. In addition, a Business Week article reported "White House aides say Clinton threw purple fits when Greenspan raised rates seven times between 1994 and 1995". What is worse, the profits of the Wall Street firm in which Rubin was a partner were equally imperiled by the Chairman's move. This disruption of Rubin's ploy by Chairman Greenspan may have earned him enough enmity on Wall Street that many knives were sharpened for the next time the Chairman stepped out of line. That Greenspan persisted in the face of such opposition may also tell us something about his resolve at the time to combat asset bubbles.

Regardless, as of 1994, the Greenspan Fed did consider asset bubbles a worthy object of monetary policy, and the Fed was willing to try to pop such bubbles. The damage done in the bond market, as exemplified by the Orange County snafu, and by the Mexican crisis at the end of 1994, were sufficient to send the Fed back into easing mode. Yet during the 1995 easing, passages from the FOMC transcripts indicate the Chairman remained ever vigilant against the re-emergence of an equity bubble. This worry would culminate in his

famous December, 1996 irrational exuberance speech, and it is at this juncture that Wall Street may have pulled out its well sharpened knives. The controversy set off on Wall Street by this remark was enormous, and it is not hard to imagine the rancor translated into a political uproar that dwarfed the storm Volcker faced during his bid to apply margin requirements to LBO's.

The Chairman's third performance on the moral hazard stage occurred with late 1998 LTCM/Russian bond crisis. On this occasion, the fed funds rate was cut from its 5.5% level (one that had prevailed since March of 1997) to 5.25% at a regular FOMC meeting at the end of September, a little over one week from SOMA manager Peter Fisher's first look at the LTCM books. Fisher found the positions "a lot bigger than anybody thought, and far more intricately interwoven with major markets and major players". The financial market shock waves rippling out from the Russian bond default and the LTCM unwind were enough to make Fisher sense a growing fear of "this layer cake becoming unglued". More specifically, echoing Dr. Heller's words in October 1989, "These shocks were, in their own way, not unlike what the stock market suffered in October 1987." The precedent of Greenspan's first trial by fire, was one not easily forgotten. The initial fed funds ease was followed by an intermeeting cut on October 15th to 5%, and another regular FOMC meeting cut to 4.75% in mid-November. As the minutes from the October 15th teleconference call reveal, the Fed felt the pressing need to contain what were becoming increasingly disorderly financial market conditions:

> *"Risk aversion in financial markets had increased further since the Committee's meeting in September, raising volatility and risk spreads even more, eroding market liquidity, and constraining borrowing and lending in a number of sectors of the financial markets…The members generally concluded…that the easing actions under consideration were more likely to help settle volatile financial markets and cushion the effects of more restrictive financial conditions on the ongoing expansion."*

Once again, the economy was accelerating, debt growth was rampant, and the unemployment rate was breaking through what at the time was believed to be the NAIRU constraint. The Fed tossed aside other monetary policy objectives, and was quick to place equity market stabilization and reversal efforts to the fore in their evolving policy reaction function. The message, once again, was not lost on investors.

As the second half of the '90s progressed, few references were made to the irrational exuberance Greenspan boldly warned of in late 1996. Instead, no doubt as part of his penance for introducing doubt about the legitimacy of the equity bull market so soon after his flawed 1994 attempt to pop a bubble, Greenspan's speeches increasingly began sounding like they were penned by Wall Street investment strategists. Odes to a productivity revolution built on the back of high tech innovation can be read in increasing volume and stridency across his speeches and testimony of the late '90s. By the time a July 14, 1997 Business Week cover story entitled "Alan Greenspan's Brave New World" hit the street, the Chairman's rethink was officially complete. Subtitled "He's not scared by faster growth. Why? Because productivity gains are keeping inflation in check", the

article describes how the Chairman required that his staffers create a new productivity series by "zeroing out" any industry showing falling productivity. "Reason? In this cost cutting era, he can't fathom any sector becoming less efficient". Judy Shelton, described as "a conservative scholar who meets with the Fed chief several times a year" provided the quote to frame the remainder of the decade: " He is very open to the possibility that we have entered a new economic age".

That the Chairman's sudden conversion to New Economy thinking within little more than half a year from his "irrational exuberance" faux pas was accomplished under political duress from Wall Street remains sheer speculation. What cannot be dismissed as speculation is an increasing acknowledgement by the Fed of the role financial markets were coming to play in the economy during the '90s. The Fed's growing sense that to be effective, it must try to manage investor expectations emerges from various speeches of the time. This expectations management role is most brazenly introduced in a 1998 speech by Peter Fisher to Asian currency traders right after the Asian crisis, and is also quite explicit in Larry Meyer's March 2001 speech on how monetary policy works. The Business Week article declaring the New Economy also touched on this shift in Fed orientation to financial markets:

> *"What's more, the Fed chairman is reaping the results of successful deficit reduction, something he has been advocating for decades. Without additional stimulus from profligate government spending, the Fed can afford to ease up on the monetary restraint it had to apply during the megadeficit 1980's and 1990's. And Greenspan is convinced that the financial market – which can react instantaneously to developments – are now playing much of the Fed's old role of stimulating or restraining the economy. That puts the central bank in the enviable position of simply playing referee – gently nudging rates up or down to prod the markets to do its work."*

The Chairman's conversion, then, involved a new orientation towards financial markets. Rather than fighting the judgments of a hundred million investors head on, the new operating procedure would involve influencing investor expectations in order to enhance the odds of Fed goals getting achieved. This orientation revealed a deeper respect for the whims of the market, and perhaps the need for the Fed to take cover behind financial markets for its moves after having strayed into the political crossfire one time too many.

The New Economy talking points embraced by the Chairman were widely held justifications for increasingly absurd equity valuations. The Fed was seen as essentially validating the euphoric expectations getting built into equity prices. The willingness of the Fed to let the economy run right through what were previously believed to be natural speed limits was taken by equity investors as a clear sign that the Fed was now well on board the New Economy bandwagon.

This embrace of the investing myths of the euphoric equity market, along with the Fed's willingness to backstop any equity declines, eventually came to be known as the

Greenspan Put. After the early January 2000 dip in the equity market, Paul Kasriel, the chief domestic economist at Northern Trust in Chicago, was openly writing in his column what every investor already knew:

> *``If you own stock, you should view this as a blessing because we know Greenspan always comes to the defense of the stock market when it sells off. So this would be a buy signal,"*

Around the same time, near the peak of the equity bubble, Merrill Lynch quantitative analyst Steve Kim issued a short piece in which the nature of the Greenspan Put was fully analyzed in the language of options trading. Kim determined that investors had correctly identified a free put on their assets, one that had been implicitly written by the Fed:

> *"Alan Greenspan's Fed, through its actions, has made a clear statement: under situations of systemic financial distress, the Fed is willing to step up to provide liquidity…Greenspan's Fed has been successful in implementing the policy, and as a result, investors' confidence in the Fed has grown exponentially…the Fed's consistent pattern of providing liquidity during financial crises seems to be conditioning investors to believe that the Fed is writing them free out of the money put protection on the market (and on other asset classes).*
>
> *We believe that such a perception would change investor behavior, and thereby influence market return-risk and valuation characteristics."*

Kim noted a particular characteristic of the Greenspan Put: there was a clear asymmetry to the resetting of the strike price of the put. He described this unique property as follows:

> *"the strike of the put resets as the market moves up. For instance, if the market moves up 20% over a year, then the market declines 20%, the Fed is likely to react to the 20% decline and not the 20% increase leading up to the decline. Such resetting target level results in relatively constant distance between the put strike and the underlying."*

In plain English, Kim determined the Fed was in effect offering insurance against the downside risk to equity investors without collaring any of the upside. The payoff is asymmetric, as is true of all simple option strategies by design. But the Greenspan Put included a novel feature, in that it is conveniently reset over time as the equity market appreciates. There is no time value wasting away at the value of the Greenspan Put – quite the contrary - but since investors receive the Greenspan Put protection gratis, courtesy of the Fed, this aspect is not terribly important. To bolster his case, Kim cited the curious reversal of the normal inverse relationship between the S&P 500 price/earnings multiple and the one year trailing volatility of the S&P 500 price index. This anomalous relationship between valuation and volatility began to appear in the early '90s. Kim interpreted this as consistent with option theory: higher volatility should raise the value of a put, with the multiple of the S&P 500 index on earnings representing the value in this instance. Kim placed into an option theoretic context what

equity investors had informally begun thinking early in the '90s with the memory of the '87 response fresh in their minds, and with the Fed's ongoing ease at the time aimed at reviving the banking system. No fault investing had arrived.

Curiously enough, Kim's conjectures may have been closer to the mark than he realized. In a September 1998 paper by esteemed Fed staffer Peter Tinsley entitled "Short Rate Expectations, Term Premiums, and Central Bank Use of Derivatives to Reduce Policy Uncertainty", a unique method for central bank intervention in financial markets was proposed. Tinsley, realizing that "policy transmissions to the real economy are influenced more by market perceptions of monetary policy than by the current actions of the central bank trading desk in the spot market for the short rate", tendered the innovative notion of a "policy put". Tinsley suggested "in times of unusual economic stress, policymakers may wish to consider policy use of more explicit contingent contracts in order to transmit unambiguous signals to markets". Tinsley felt such policy puts would be especially effective in influencing the shape of the yield curve when nominal short rates were too low to serve much of a signaling function to investors. By precommitting a central bank to make payoffs to private agents should the fed funds rate deviate above a certain level, the central bank could effectively and credibly signal its intentions to the private market place, thereby gaining some leverage over market expectations and so too the pricing of longer dated fixed income instruments.

While Tinsley's policy put was designed to influence fixed income market investors, he recognized it is an instrument easily transferred to expectations management efforts in other financial markets. Tinsley's conclusion is quite explicit in this matter:

> *"Discussion in this paper has been confined to policy use of derivatives on government securities. Subject to constraints on admissible central bank trading, it may be useful to explore the potential for policy derivatives to reduce other sources of uncertainty that may confront firms and households during periods of severe market stress, such as an unusual disruption of credit markets. The potential flexibility of options contracts suggests that policy derivatives can be a versatile addition to the toolkit of central banks."*

In fact, Tinsley noticed two properties about this instrument that spoke to its power and its appropriateness for central banks. First, policy puts would have a unique automatic self-correcting characteristic that would amplify their effectiveness. This would leave the central bank that was issuing policy puts relatively inactive – and so invisible - in asset markets. This welcome quality arises because option purchasers are likely to engage in what is known as "delta hedging" to maintain a consistent risk exposure over time. For example, should bond prices fall unexpectedly, raising the value of the put option, the owners of the put option will raise their bond holdings to hedge against the increased delta of the option position. The converse holds true as well: unexpected bond price increases will trigger bond sales by put option owners trying to delta hedge. As Tinsley noted, the self-stabilizing quality that delta hedging brings to these vehicles is quite useful, replacing the visible hand of the central bank with the self-interested invisible

hand of market traders. In his own words, "[t]hese actions have the same stabilizing effects on the relevant bond price as if the central bank trading desk were to buy or sell bonds of the appropriate maturities". Policy puts offered a powerful and discrete addition to the tools available for central bank intervention in asset markets.

Second, and perhaps more striking, is the unique position central banks have in issuing such policy puts to influence financial market expectations. Tinsley had tripped across a widow's cruse quality to this policy instrument:

> *"policy use of derivatives can alter the perceptions of economic fundamentals held by market agents. Given that the central bank has a monopoly on the supply of the domestic currency, it has the capacity to directly purchase or write options against any proportion of the outstanding Treasury debt. Private sector agents who exercise put options written by the trading desk are paid in the domestic currency".*

That is to say, such policy puts could be written in virtually unlimited quantity, as the ability of a central bank to meet any of its payout obligations would be constrained only by its ability to expand its own balance sheet. This is an especially attractive characteristic when a central bank is trying to halt and reverse a financial market panic. The credibility of central bank interventions would be very high under such conditions.

Kim's description of the Greenspan Put may not have been that far off the mark after all. And apparently, Dr. Heller's 1989 suggestion of a more surgical instrument to contain financial market disorder did not fall on deaf ears. It is noteworthy that one of the unique facilities set up to control for possible Y2K disruptions to the financial system included the issuance of such policy puts by the Fed. This novel tool, in other words, has long since left the academic drawing board and must be considered as part of the Federal Reserve's modern tool box. Given this backdrop, it is not surprising that investor convictions about the presence of a Greenspan Put rose as the last decade progressed.

The culmination of these moral hazard efforts can be found in an astounding policy planning exercise coordinated by the Council of Foreign Relations (CFR) following the 1998 LTCM/Russian bond scare. In the Fall of 1999, under the auspices of Roger Kubarych, a macro strategist from an investment management firm formed with Henry Kaufman's and a member of the Economic Intelligence Advisory Board to the Director of the Central Intelligence Agency, the CFR Financial Vulnerabilities Project was set up. Kubarych was assisted by Captain David Duffie, Commander Officer of the USS Simon Lake and former Joint Secretariat to the Chairman of the Joint Chiefs of Staff. The stated purpose of the Financial Vulnerabilities Project was to "examine the linkages between the financial markets and broader economic, foreign policy, and national security concerns" on the following premise:

> *"the most dangerous near-term threat to US world leadership, and thus collaterally to US security, would be a sharp decline in the US securities market. It would likely hobble the US economy at a time when the*

strength of the economy is critical to the economic prosperity and financial health of other nations, their political stability, and ultimately international security".

The apparent fusion of national security objectives with the already existing equity market stabilizing imperatives of the Federal Reserve could not have come at a more timely moment. Not only was the world to be made safe for Wall Street under the increasing liberalization and globalization of financial markets, but insuring the safety of Wall Street became related to insuring the safety of the nation if not world. The ultimate moral hazard conditions had been achieved, and not a moment too soon.

The Financial Vulnerabilities Project was run like a big war game exercise. Real policy makers were flown in from around the world to engage in full-blown simulation exercises of an equity market meltdown to hone the proper responses. A September 1999 Roundtable discussed the critical parameters of the financial war game exercises. This effort was boiled down into a January 2000 Policy Simulation which ended up bearing an eerie resemblance to events in the US equity market that would transpire in two months time.

Shortly before the policy simulation was prepared, on December 8, 1999, then Former Treasury Secretary Rubin had responded as follows to a question from Ron Insana of CNBC about what he thought of the stock market: " after a long period of good times markets become overly ebullient, lose discipline, underweight risks which lead to excesses which lead to unhappy endings". The Administration, it is safe to assume, had a strong interest in these peculiar proceedings - proceeding which normally one would have expected to have been conducted under wraps at very high levels of the government. By July 2000, a review of the exercise was opened up to "serious professionals from the financial markets, business, and the foreign policy and national security communities". Clearly, the CFR had designed a very thorough operation from start to finish, and an operation that was meant to be noticed by more than just the anonymous policy officials directly participating in the exercise. One can almost conceptualize the entire CFR Financial Vulnerabilities Project as a grand fire drill or training exercise of sorts meant to informally clue various players into their appropriate roles, and to reassure them should a real fire in financial markets start to burn.

Odder than the exercise itself, odder even than the stated premise of the exercise, is the account of the solution path that was proposed during the simulation. Most of the responses were predictable, but some required a willingness to forge deeply into legal grey zones, if not cross the line of legality entirely. A March 10th Euromoney article details some of the more curious recommendations coming from the likes of Ernie Patrikis and Peter Fisher of the NY Fed, Bob Hormats of Goldman Sachs, Jessica Einhorn, former Treasurer of the World Bank, and David Hale, economist at Zurich Financial Services, to name a few of the more prominent participants. The premise of the scenario reads as follows:

"A crisis has been brewing since April when the US stock market first started its decline. The trigger was the downturn in demand for IT hardware and software after Y2K proved such a non-event...

With uncertainties multiplying, the Federal Reserve issued a statement that it stood ready to inject whatever liquidity was required to protect the safety and soundness of the system, notwithstanding the recent lift in the rate of consumer price inflation to above 4% per annum. However, the European Central Bank [ECB] ended its scheduled policy meeting without a public expression of support for the Fed's action. Two members of the ECB privately told journalists that they were concerned about the potential moral hazard engendered by an 'asymmetric' policy toward asset prices, as seemed to be practiced by the U.S. central bank."

As the scenario progresses and the equity market contraction deepens while various complications spread, policy makers turn to unconventional approaches.

"The US financial regulators' first concern is the state of the US stock market. They wonder whether to intervene as the Hong Kong Monetary Authority did in 1998 and buy a proportion of the country's stock market."

While the regulators are considering the unthinkable – a direct acquisition of stocks by the central bank - the Fed publicly denies it is targeting asset prices. Along the way the Fed is forced by the decapitalization of the banking system to mention it will make "significant loans to institutions in trouble", to which one participant responded, "[t]he Fed hasn't done that since 1933. It's a highly complex thing".

The President is required to reassure the public on several occasions, but he needs a scapegoat. One participant exclaims, "[t]he president has to say how we got into this mess. It's not good enough to blame Greenspan and $33 oil.

The Fed, under such pressure, delivers enough panic eases to cut interest rates 300 basis points to 3%. In the meantime, the equity market decline is beginning to feed on itself, and mutual fund redemptions are becoming problematic. Once again, innovative policy responses are called for.

"Two of the biggest mutual funds have come to the SEC saying they are experiencing redemption rates that could be life-threatening. They need an injection of cash to meet the payments without having to dump their portfolio on the market at fire-sale rates...

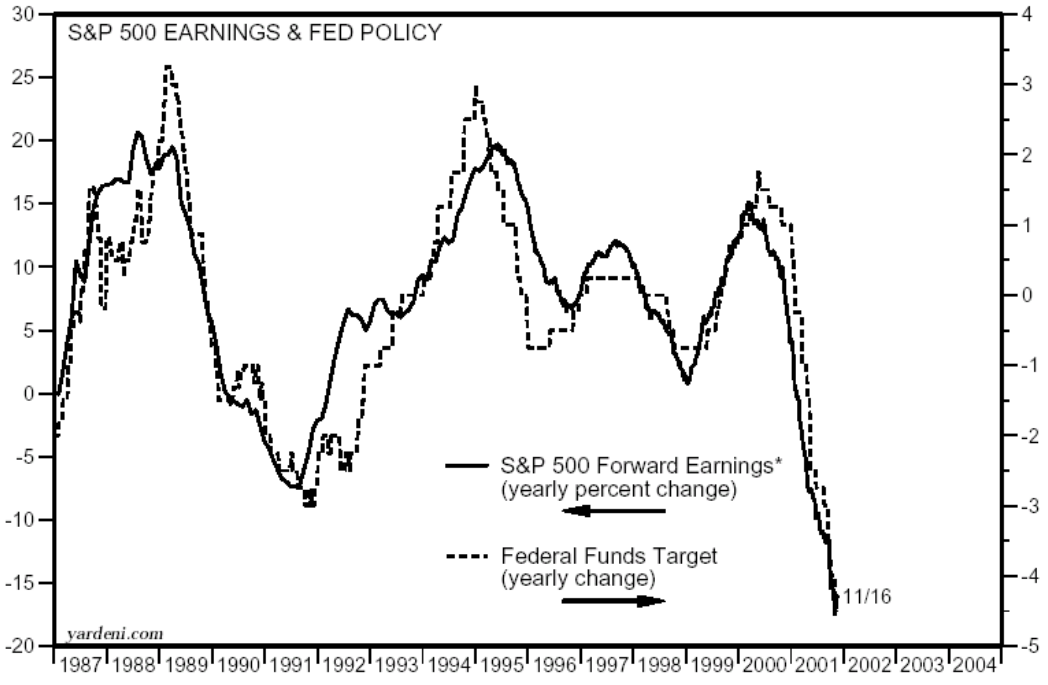
The Regulators approach blue-chip bank JP Morgan and discuss the Fed secretly guaranteeing a huge line of credit to the two funds. Morgan would take excess collateral, but it wouldn't be taking the credit risk of the mutual fund companies themselves. That would be borne by the Fed.

Fed chairman Greenspan is uncomfortable but he agrees to the deal.

'All the public will see,' says one regulator reassuringly, 'is that the Fed's volume of loans to banks has gone up'."

Under the pretext of a simulation run by a private organization, it is conceivable such things could be uttered and openly considered with relative abandon. That part of the solution would involve the Fed using its balance sheet to bolster JP Morgan's balance sheet in order to bail out a mutual fund complex experiencing a run by individual investors suggests, however, an extraordinary willingness on the part of the attending policymakers to cross many lines in assuring equity market stabilization. Given the precedent of Fed intervention to halt bank runs, and the possibility the financial excesses may be situated more in the equity market than in bank lending this time around, such lender of last resort operations for mutual funds via arms length arrangements like this are not out of the question.

If the CFR exercises are to be dismissed as the idle fantasies of overreaching policy makers engaged in a financial war gaming exercise they know is not real, it is less obvious the Fed ignores financial market expectations in their policy choices. While the Fed is widely believed to operate on an inflation standard, it may be the case that an earnings expectations standard plays a larger role than most observers of the Fed care to realize, at least during the Greenspan years. Observing the correlation between the changes in the fed funds rate and the changes in bottom up analyst aggregated S&P 500 earnings expectations for the next year, a remarkable coincidence is visible. It appears when analyst earnings expectations are decaying, the Fed is prone to be easing, and vice versa. This would suggest a profit or earnings expectations standard is in use, yet this relationship is rarely found in standard renditions of the Fed's policy reaction function.



* 52-week forward consensus S&P 500 operating earnings per share. Monthly through March 1994, weekly after.
Source: Thomson Financial

Perhaps the correlation between fed funds rate changes and analyst profit expectations is spurious. Perhaps analyst earnings expectations are formed adaptively with respect to the reported or anticipated pricing power of the corporate sector, and the Fed is simply leaning against the wind with respect to inflationary pressures. Or perhaps, because analyst earnings expectations are highly correlated with capacity utilization, and the Fed uses capacity utilization as a proxy for pricing pressures, this is a case of mistaken identity. Econometrically, variations in earnings expectations may get swamped by the output gap measure in traditional Taylor rule formulations. But practically speaking, that would leave the Fed's inquiries reported by Reuters at First Call, a private collector of Wall Street analyst earnings expectations, before the January and April surprise rate cuts somewhat inexplicable. In a profit driven capitalist economy, where equity prices matter to private expenditure decisions, and where Wall Street analyst earnings expectations matter to equity prices, the possibility the Fed is employing an earnings expectations standard may not be as far fetched as it first sounds. At least for the Greenspan Fed, something of this sort appears to be occurring.

To summarize, the trajectory that has been taken by Fed policy actions and discussions over the past decade and a half has involved increasing attention to the equity market, perhaps to the point of placing the Fed in a position as a lender of last resort during equity market meltdowns. Minsky once delivered a succinct assessment of the unintended consequences of these lender of last resort operations:

> *"Federal Reserve lender of last resort actions, directly or indirectly, set floors under the prices of assets or ceilings on financing terms, thus socializing some of the risks involved in speculative finance…such socialization of risks in financial markets encourages risk taking in financing positions in capital assets, which, in turn increases the potential for instability*" (Minsky, SUE, p. 43)

Whether Federal Reserve actions have actually been intended to extend lender of last resort operations or not, equity investors are so familiar with the Fed's asymmetric response that they have named it the Greenspan Put. Wall Street quants have analyzed it in option theoretic terms. It has come to be expected that equity market downdrafts, sooner or later, will be met by Fed ease, regardless of the state of the economy, or the pressures of other Fed policy objectives. Even some central bankers have come to recognize the nature of the Greenspan Put, how it can distort financial market behavior and how, in turn, it can undermine macroeconomic stability. As Fabio Scacciavillani wrote in the second Geneva Report on the World Economy while serving the European Central Bank,

> *"For example, investors might start buying stocks, not when they are confident that the economic outlook and hence prospects for companies have improved, but when they deem that the central bank would not tolerate any further slump in the stock index. This kind of speculative behavior could produce destabilizing effects that no economic model is suited to capture fully."*

That is not to place the blame for asset bubbles solely at the foot of asymmetric central bank policy responses. As was discussed in Section 1 of this paper, there were plenty of changes in investor behavior and investment practices which were to some extent endogenous to the recent equity bubble if not the evolution of the investment business itself. But if it is widely recognized that a one way response of central bankers to the equity market is not without it costs, one is left to wonder why this asymmetry remains tolerated.

Post bubble macro policy dilemmas

What are the possible policy responses to contain the economic damage done by the recent financial mania? Countries that have previously allowed financial imbalances of the size now found in the US have tended to find it difficult to return to an expansion path. That the normal business cycle recession policy response might prove ineffective seems to have been understood early on by some policy makers. The policy planning exercise under the auspices of the Council of Foreign Relations indicates some foreknowledge of possible difficulties once the equity bubble burst. In addition to several reports issued in 1999 and 2000 by the World Bank, the International Monetary Fund, and the Bank of International Settlements warned of the widening private sector financing gap in the US, and documented the difficulty other nations had faced trying to address such gaps.

At best, following the bursting of an asset bubble, the economy is left vulnerable to a prolonged stagnation trap as traditional monetary and fiscal responses are only sufficient to slow the fall of asset prices and to partially plug the upward shift in desired private sector savings. This stagnation outcome is similar to what we have witnessed in Japan over the past decade or in the UK at the turn of the prior decade – it is not simply a theoretical possibility.

Early models of the economic impact of the rising power of financial interests emphasized the stagnationary influence of high real interest rates. Financial interests, however, are more diverse than the simple rentier/coupon clipper characterization would suggest. A high real rate of interest may be a poor substitute for the more comprehensive objective of wealth holders, which is a high rate of return on financial assets held. This more comprehensive objective should to include the desire on the part of financial corporations and intermediaries not only to earn high net interest margin income, but also to earn high fee income. As commercial banks increasingly blend into investment banks, it becomes evident that the ultimate objective of financial interests is less to shove real interest rates up as high as they can, and more to germinate and perpetuate asset price bubbles. While the chronic influence of high real interest rates on capacity utilization cannot be ignored, the deleveraging of economies and portfolios that accompanies the ultimate bursting of asset bubbles can introduce a much more lasting and dangerous strain of stagnation that is not easily reversed by economic policy.

At worst, once an asset bubble pops, debt trap dynamics are unleashed, and the economy can pitch into a Fisherian debt deflation path. Post the Great Depression, the dual role of

government as the spender of last resort and the lender of last resort was aimed precisely at containing the risk of full blown debt deflation risk. For the most part, the relative success of post WWII policy responses allowed policy makers to forget this fundamental objective. However, following the popping of a bubble that has been accompanied by a build up in private sector debt, policy must be guided in the near term by the need to avoid this most severe degree of financial instability. In simplistic terms, this goal can be approached by 1) attempting to lower private market interest rates through central bank easing and expectations management, 2) improving private sector cash flows by lowering tax burdens, 3) executing public investment led deficit spending, by 4) devaluing the dollar in as orderly a fashion as possible, and by 5) coordinating efforts to strongly stimulate economies abroad.

Recent simulations performed by Godley and Izurieta using the financial balance framework reveal the nature of the stagnation trap at hand. Under the optimistic assumption that the private sector balance converges to a 0.5% deficit (instead of returning to or overshooting its postwar norm of a 1.8% surplus), with $100b per year in fiscal stimulus, and no further equity market decay, their model suggests a 1.7% real GDP growth pace would be the average annual rate obtained through 2006. The unemployment rate shoots up to 7% in two years and terminates at 8% five years out. Under a second simulation assuming the private sector balance overshoots its normal historical return to surplus, a 2% loss of GDP results in the first two years, with "no proper recovery after the 'technical' recession". Unemployment soars to 10% in this more normal adjustment scenario. In a third simulation produced two years earlier with a similar model constructed with Martin, Godley found a 30% real devaluation in the dollar plus a sustained 5% of GDP fiscal stimulus would be required to keep growth near 2%. None of these plausible outcomes appears to be discounted by financial markets or considered by the economic policy makers at the moment, as a return to above trend real GDP growth is widely expected by the second half of 2002.

A less complete analysis in 1999 by the IMF revealed a similar drag on domestic and foreign real GDP growth would emerge after the US equity bubble popped. While the December 1998 Interim Assessment had first taken note of the growing private financial imbalance, the 1999 World Economic Outlook held a more severe warning:

> *"the private sector saving-investment imbalance in the United States has deteriorated in recent years to a deficit of 5 percent of GDP, and it is projected to remain in this neighborhood in the medium term…Nevertheless, a deficit in private net saving of this magnitude has no precedent in the postwar period…suggesting that a drop in demand is a potential risk to US and world economies. An important question is how the private net saving rate might rise…"*

The IMF simulation assumed a 30% decline in equity prices would lead to a rise in the household saving rate, a 10% depreciation of the dollar, and a 15% decline in equity markets abroad. No investment spending repercussions appear to have been considered, so at best only half of the likely private sector response was estimated. US domestic

demand was knocked more than 3% off the baseline scenario for each of the first three years following the popping of the equity bubble. US real GDP was nearly 2% below the baseline in year 1, 1.5% in year two, and 0.8% in year three. World GDP was estimated to come in 1.2%, 0.8%, and 0.6% below the baseline over the first three years. A cumulative improvement in the US current account of $282b over the full five years of the simulation was also forecast, leading to a 2% improvement in the net private saving rate. That is to say, since the current account deficit was 3.2% of nominal GDP in the middle of 1999, and the private sector deficit was already 3.8% of GDP, the IMF simulation indicated private and external debt would continue to mount over the five year horizon of their simulation. Subpar economic growth in the post-bubble environment would only slow the rate of decay of private balance sheets.

The orientation of fiscal stimulus towards tax cuts should improve private sector cash flows, but may not improve economic growth until private sector balance sheets are repaired. For example, during the recent tax rebate, the household gross savings rate rose from 1% to 4.5% in a matter of three months. In macroeconomic terms, the multiplier collapsed as households took tax rebates and saved them for precautionary purposes or perhaps to pay down debt. Consequently, a more decisive shift towards public investment spending may ultimately be required to quicken the economy on the path to the next expansion.

If households are going to try to pull their spending behavior back in line with their income, and corporations are going to pull their investment expenditures back to the point where they can be covered by internal financing, the demand slump from the private sector will need to be offset by more aggressive public sector initiatives. At the height of the equity bubble, the private sector financing gap amounted to 6.2% of nominal GDP. That means roughly $615b in private sector expenditures needs to be cut before firms and households stop adding debt to their balance sheets. The tax cuts already enacted, along with passage of the current tax relief and spending bills under consideration, plus what is left of the automatic stabilizers, may get us a third of the way there. But that still leaves a large hole to plug, and assumes, unlike prior recessions, that the private sector will not try to return its financial balances to the normal 1% of GDP surplus required for any private debt pay down to occur. Even assuming improvement in the current account of 1-2% of GDP, a third fiscal package is likely to be required in early 2002. Godley and Izurieta estimate a $600b per year injection from US government outlays and exports will be required given the average tax rate and import propensity of the US economy.

In this respect, the adjustment path in the UK from the late ’80’s Lawson boom is instructive. While the UK asset bubble was centered more in property prices than in share prices, a remarkably similar profile of deterioration in sector financial balances can be found. In the second half of the ‘80s, the private sector financial balance fell from a 4.5% surplus of GDP to a 6% deficit. As in the US over the late ‘90s, the budget balance was pushed from a 4% deficit to a 1% surplus and the trade balance shifted from a slight surplus to a 5% deficit. From this nearly identical position, the public sector financial balance had to be pushed over the next three years to an 8% of GDP deficit in order to shift the private sector back into surplus and to restart growth. The UK trade deficit did

correct, but only stubbornly so, reaching balance by the mid-'90s after sterling was forced into a devaluation from the ERM in 1992.

The message from this episode is that no quick fixes are available for economies that allow large financial imbalances to accumulate. Not only is it difficult to restart economic recoveries when the private sector deficit is near its trough, but the amount of time it takes the private sector balance to reach its subsequent peak tends to be years, not quarters. In the case of the UK, it took five years from the 1989 trough before private net saving peaked as a share of GDP. Once in motion, efforts to rebuild private balance sheets remain in earnest for some time to come. Although the lockbox rhetoric in the US has been tossed aside following the September 11th attack, it is doubtful Congress or the Administration is prepared to advocate anything near the 8% of GDP budget deficit path that the UK pursued to allow the rebound of private net saving. Assuming a $75-100b stimulus package can pass Congress before year end, when combined with the $70b in tax cuts already programmed for 2002, and the normal deterioration in tax revenues that accompanies recessions, a 2-3% of GDP budget deficit is not out of the question in 2002. More than a few Congressmen and cabinet members are likely to turn squeamish on public deficit spending should this transpire. Hesitancy to go further into deficit spending territory may also arise with the partisan rhetoric of an election year. If the lesson of Japan has anything to offer, it is that such hesitancy in repairing private balance sheets through fiscal deficit spending can be extremely costly. In the Japanese case, fiscal stimulus was not begun until the middle of 1992, nearly three years after the Nikkei broke down and a year after the peak in private demand, when a 1.1% of GDP stimulus package was passed by August. Yet with Rubin having joined Greenspan in three closed door sessions in the three weeks following the September attack, the message to Congress has been to provide temporary relief to the economy in ways that will not jeopardize the long run path to zero public debt. Unfortunately, fiscal orthodoxy of this sort will only prolong the period of stagnation and private debt distress in the US economy.

A controlled depreciation of the dollar may help improve the trade deficit, but more important at this juncture is pro-growth policies among our major trading partners. At the moment, the nominal trade deficit is falling as a share of GDP, but only because import spending is collapsing faster than export spending. Meanwhile, the second largest economy of the world, Japan, is imploding in a deflationary spiral, while Germany has just entered a recession as well. This combination of an import collapse led US trade improvement, a Japanese implosion, and a European recession is a recipe for global deflation, with all of its attendant financial distress. Over the past two decades, foreign economies may have become too dependent upon an export led expansion orientation. While this orientation arose for a variety of reasons, the desire to avoid expansions cut short by domestic inflation pressures was surely one of the motivating factors. In a more deflation prone world, where the United States has become a large enough net debtor that it may not be able to play the role of global spender of last resort in perpetuity, a more domestic consumer led orientation to expansions abroad may be required.

The US faces external debt traps dynamics of its own given two decades of persistent current account deficits – a phenomenon that was not supposed to be possible in a

flexible exchange rate world. Robert Blecker has produced several papers simulating future US external debt paths under various plausible assumptions, and has soberly concluded,

> *"If present trends continue, the growth in US international debt will not be sustainable in the long run. No country can continue to borrow so much from abroad without eventually triggering a depreciation of its currency".*

In a December 2000 paper, the Fed's own research staff looked into prior periods of trade balance adjustments in industrialized nations that approached the 5% of GDP current account deficit level. Not too surprisingly, they found the following challenging patterns characterized the ensuing periods of trade rebalancing:

- Real GDP slid from a 4% pace in the two years prior to the trade deficit nadir down to 1% in the two years following, with a recession usually accompanying the downshift;

- A very large decline in the investment share of GDP accompanied the economic growth downshift, although the domestic savings rate remained relatively unchanged;

- Real exchange rates dropped 10-20%, while nominal exchange rates came off 40% on average, with a currency crisis not infrequently developing along the way;

- Most of the improvement in the trade deficit came from better export growth, not from an import implosion as the US is now experiencing.

More disturbingly, the Fed found on average, the improvement achieved in the current account balance during these episodes merely stabilized the net external debt position. While it is always possible foreign portfolios could become even more saturated with US equities and bonds, this seems an unlikely scenario now that the bubble has popped and the New Economy myth has been put out to pasture. Given the high income elasticity of US import demand, and the need for Japan not to lose its current account surplus, hence its need to not allow the yen to appreciate, it would appear Thirlwall's Law types of analysis suggests the only way forward is for the rest of the world to embrace pro-growth policies.

Although the impotence of monetary policy was predictable in light of the financial imbalances bred during the bubble, given the prevailing perception of Greenspan's infallibility, the crippling of traditional monetary tools in a post-bubble environment was not widely anticipated by investors and economists. Although it is true, as the CFR financial war games instructed, the Fed did not make the same mistake as the Bank of Japan with a 175 basis points of tightening in the official discount rate for a full year after the equity bubble popped, ten easings later, there is little to show for the Fed's heroic efforts. First, given the shocks to portfolios with the popping of the equity bubble, changes in portfolio preferences are likely to be long tailed. A rise in liquidity preference is already quite visible in the burgeoning money market fund and bank deposit data – a

shift occurring despite low nominal yields on these instruments. Under such conditions, the ability of monetary policy to drive illiquid asset prices higher by expanding its balance is thwarted. Even though various measures of the money stock have surged over the past year, the ratio of the market capitalization of nonfinancial corporations to M3 money stock has continued reverting to its mean value from a peak value in 2000 that was last seen in 1929. In part, the difficulty posed by a shift in liquidity preference may explain the blunt move by Treasury Undersecretary Fisher, formerly of the Fed, to cancel the 30-year Treasury bond auction. By lowering both short and long term interest rates, it may be the intent of policymakers to reduce yields on fixed income and money market instruments so much that equities once again appear attractive by default.

Second, with the enormous gap between private sector spending and income needing to be closed, household and especially business expenditures are less likely to be as interest rate sensitive as in the past. With overcapacity from the capital stock overbuild during the bubble years, lower costs of debt capital are not going to motivate already heavily indebted and profit margin squeezed firms to add more capital. In the June 1st San Francisco Fed Economic Letter, Senior Economist Simon Kwan noted as follows:

> *"To the extent that the current slowdown in the tech sector was caused by overinvesting in information technology, lowering interest rates is unlikely to revise business investment in IT quickly."*

Similarly, while 30 year lows in mortgages have spiked mortgage refinancing activity to all time highs, new mortgage purchase applications have remained sluggish, and the National Association of Home Builders buyers traffic survey has skidded to new lows. Lower interest rates do help private sector agents that can refinance their debt reduce their interest expense, but that relief is very small relative to the unprecedented financing gap that needs to be closed.

Finally, with respect to the third traditional transmission channel of monetary policy, exchange rates, the dollar has remained stubbornly high, although it is off its trade weighted peak in early July. This may also be an artifact of the influence of adaptive expectations on portfolio repositioning. Europeans were the last ones in on the US equity bubble, and so they may psychologically predisposed to have the hardest time admitting their mistake and taking their losses, which behavioral finance tells us is always difficult for investors to do.

Monetary policy stimulus, then, appears blocked along the three normal transmission channels – asset prices, interest sensitive demand, and foreign exchange – for reasons having everything to do with the bursting of the bubble. The Fed has admitted some surprise that ten easings in ten months worth 450 basis points - even more than the CFR scenario called for – have not delivered much punch. The Dallas Fed's CEO Bob McTeer expressed his shock in his characteristic down home fashion:

> *"I don't understand what happened…We were so enthusiastic and the Internet was going to be so wonderful and everybody was figuring their*

own way to make that work. And it just sort of fed on itself and went overboard. And so its going to be a while before they work off their inventories of unsold equipment in that sector."

McTeer, earlier in the year, had exhorted everybody to "just join hands and go buy an SUV and everything will be ok". That is to say, consumers, who are already up to their necks in debt, should go take on more debt to save the economy. Later in the year, McTeer as much as admitted the contradiction in his stance, but then waved it off with a bubble tipped magic wand:

"This slowdown's been very unusual. The thing that is saving us is the consumer. They've been doing something that's probably irrational from the point of view of the individual consumer because they all need to be saving more…But we'd be in bad trouble if they started doing that rational thing all of a sudden. We're happy they're spending. We wish they didn't have to run up a lot of debt to do it. But it's not something we're terribly worried about right now because their assets are high."

The Fed, recognizing it's impotence, has taken a tack of moral suasion to convince the US consumer to continue deficit spending at an even more rapid pace than he did all through the bubble years. This is an untenable and thoroughly irresponsible position. Yet it can be found in recent statements by McDonough at the New York Fed and even Chairman Greenspan in official testimony. For example, Chairman Greenspan recently gave his blessing to consumers willing to erode the equity in their homes in order to keep spending:

"even in a period when stock prices are falling, we're observing a rather remarkable employment of that so-called home equity wealth in all sorts of household decisions…the rise in home values – which if anything has accelerated during this period of rapid decline in stock prices – has created a very substantial buffer of unrealized capital gains, which are being drawn upon through the home equity markets, through cash outs…"

Such curious encouragement of deeper household deficit spending and deeper household indebtedness suggests the Fed has not properly diagnosed the nature of the disturbances that have derailed the US economy. There appears to be a blind spot with respect to financial imbalances in the private sector – one that never is present in discussions of public sector deficit spending. It is inconceivable that central bankers could take this absurd stance if they recognized the nature of the problem at hand. At best, the Fed may have decided embracing a path that requires deeper consumer indebtedness is the lesser of many evils.

Central banking orthodoxy holds that as long as monetary policy prevents the types of imbalances that could push inflation out of the 0-2% range, all other macroeconomic imbalances can be ignored. They are second order problems. Keynes, oddly enough, is often quoted as defending this view in the following quote:

> *"I should say, therefore, that a Currency Authority has no direct concern with the level of value of existing securities…but that it has an important indirect concern if the level of value of existing securities is calculated to stimulate new investment to outrun saving, or contrariwise…[This is the] main criterion for interference with a 'bull' or a 'bear' financial market…" (ToM, vol. 1, p. 257)*

It is true that in Keynes' fundamental equations of the Treatise on Money, investment in excess of savings was a condition for consumer product price inflation pressures, and so the conventional interpretation of this statement has some validity. But it is also true that investment spending in excess of savings is another way of defining deficit spending. Keynes may also have been warning with this passage that if asset prices rise enough to stimulate investment expenditures in excess of domestic private savings, financial imbalances will be generated by persistent deficit spending.

Regardless of Keynes' true meaning, recent experience has made it clear that monetary policy cannot limit itself to thwarting inflationary imbalances. The theoretical cover for this restricted role is often achieved by invoking the prevailing view that money is neutral with respect to real economic activity. Monetary policy, however, influences asset prices and financial conditions. The Fed, as Dr. Heller noted, already buys Treasuries and currencies directly in their open market and foreign exchange operations. These purchases influence asset prices. Asset prices and financial conditions, in turn, influence portfolio preferences and real economic dynamics. In this respect, finance is not neutral with respect to real economy outcomes. As Minsky put it, "monetary policy affects income and employment by first affecting asset values and the liquidity and solvency of firms, households, and financial institutions" (SUE p. 304).

Furthermore, since finance involves not just the intermediation of funds, but does, in modern monetary systems, also involve the creation of money, at least in the case of bank credit creation, the myth of money neutrality ultimately must be discarded in any real world economics. Financial imbalances can be debilitating once asset bubbles pop. They can introduce systemic risk. They therefore cannot be considered subordinate to inflationary balances in the conduct of monetary policy. After all, the Federal Reserve was born from the financial instability introduced with the fall of the Knickerbocker Trust in the financial panic of 1907. The need to contain financial instability, not the need to eliminate the emergence of high or accelerating inflation, is the stronger motivating force behind the establishment of most central banks. Chairman Crockett was quite clear on this issue in his February 13th speech at the HKMA:

> *"I have argued that excessive credit expansion during upswings has often contributed to the accumulation of financial imbalances, imbalances whose unwinding has been associated with bouts of damaging instability. If I am right in this, the question immediately arises of whether monetary policy should have as one of its objectives to limit the accumulation of such imbalances, or more simply put, to prevent the emergence of financial excesses. This has become a hotly debated subject of monetary*

economics in recent years, and the end of the debate is not in sight…The preservation of stability in the financial system requires an understanding of how macroeconomic developments interact with institutional behavior and prudential norms to support or undermine equilibrating tendencies. And the implementation of monetary policy requires an understanding of the fact that the consequences of monetary policy for economic behavior go much wider than their impact on the consumer price index."

Similarly, fiscal policy cannot be formed without consideration of its influence on macrofinancial balances. If the balance of political forces places public debt reduction as the priority of fiscal policy, the successful accumulation of a budget surplus in the government sector will require the private sector balance to remain below the current account balance. Since persistent deficit spending by the private sector will introduce increasing financial fragility into the economy, either public debt reduction efforts must be capped at a prudent level, or fiscal restrictiveness must be accompanied by policies that encourage a rising trade surplus. Ideally, this would be achieved by fiscal policy coordination, where our trading partners would be encouraged to pursue stimulative policies when we preferred to pursue contractionary fiscal policy. But in a world informed by a monocrop of mainstream theory, where public deficit spending is politically incorrect, where policy coordination has become an empty exercise, and export led expansions are viewed as the key to sustainable economic growth, this prescription remains somewhat utopian.

Policies to contain the next asset bubble

In the intermediate term, given that recent experience pierces the orthodox illusion of the neutrality of finance with respect to the real economy, a variety of unconventional measures should be explored for containing asset price bubbles as they inflate in the future. The intermediate term policy objective must be to prevent asset price bubbles from developing to the point where serious financial imbalances are allowed to emerge in the economy. Monetary policy, for example, cannot be solely focused on attenuating the risks of inflationary imbalances. Financial imbalances matter, and policy instruments need to be fashioned to allow monetary authorities enough tools to address potentially disruptive developments in both product prices and asset prices. Less orthodox policy approaches could reduce the risk of future financial manias running riot on the economy, and it is worth briefly reviewing some of the possible candidates.

With respect to monetary policy initiatives, there are obvious difficulties introduced by assigning the short-term interest rate managed by the central bank to several goals at once. This calls for the introduction of new tools. Asset based reserve requirements offer one possible solution to contain financing gaps that open up in the private sector during asset bubbles, although the fungibility of funds, and the sophistication of financial engineers, may make this a less effective tool than it might appear at first blush. Security related lending by banks could be subjected to higher reserve requirements as a bubble develops, for example. In addition, as an asset price bubble begins to distort borrowing activity in the real economy, higher reserve requirements could be implemented on bank loans to those segments in the private sector where deficit spending is beginning to get

out of hand. However, asset based reserve requirements may prove much harder to implement in a financial world characterized by securitization of bank loans, and the reunification of commercial and investment banking operations. The ability of nonfinancial corporations to play commercial and investment bank like roles with aggressive vendor financing and in house venture capital operations in the recent mania is another illustration of the possible limitations of this approach.

More direct intervention in asset market bubbles may be required on not just the downside, but symmetrically on the upside as well. As discussed in some detail above, central banks like the Fed have begun exploring vehicles other than interest rate adjustments for such unconventional intervention in equity markets. Asian monetary authorities have already been willing to use direct intervention in equity markets, but again, only after bubbles have burst. Dr. Heller's recommendation for pinpointed intervention directly in the equity index futures market, and Tinsley's policy option instrument could be used by central banks to disrupt momentum traders and thereby cap an asset price bubble. In a series of recent papers, the Fed has already begun to explore a fuller range of unorthodox policy capabilities should a zero nominal interest rate regime arrive in the current recession, or should public debt be paid down, requiring open market operations to be performed on private liability instruments. No doubt the lame duck example of the Bank of Japan has injected a creative fervor among the Fed senior staff. While at the moment the Fed would be more prone to use the Tinsley/Heller policy option approach to help maintain a floor on equity prices, thus reinforcing the perception of a Greenspan Put, now may also be the time to demand a more symmetrical use of this tool in the future.

It is also possible a securities transaction tax could play a role in this more direct intervention approach. Securities related transaction taxes are designed to reduce the volatility of asset prices, in part by increasing the cost of short term trading. The damage wrought by asset price bubbles, however, suggests the more relevant policy goal may be to disrupt persistent, self-feeding momentum in asset prices: asset price volatility is a second order issue relative to asset bubble dynamics. Securities transaction taxes could be designed to ratchet up in a rule based fashion when trend following behavior becomes very evident in an asset market. This intervention would be especially warranted when the autocorrelation of prices is not strongly supported by any definitive shift in the fundamental risk or return generating characteristics of the assets underlying the traded financial claims. Of course, that is not an easy task to perfect, but it not impossible either, except in the sense that strong political pressures would come to bear on any government body willing to openly wield such an instrument. Transaction taxes that ratchet up as the evidence of self-feeding asset price dynamics mounts could play a role in preventing asset bubbles from becoming too large to disrupt the economy.

Finally, since it is something of a contradiction to expect capitalist economies to be characterized by the state accumulation of private liabilities, foreign capital inflows are required if the private sector wants to deficit spend during asset bubbles. If the private sector is to deficit spend, households and firms together must issue liabilities to foreign investors. Capital controls that limit inflows would constrain the degree of indebtedness

the private sector could achieve. Capital controls that limit the liquidity of capital inflows – that encourage longer holding periods for foreign accumulators of US assets – would serve the same purpose to a lesser degree (less foreign capital would be attracted to liquid investments), but more importantly, could reduce the odds of a financial market disruptions during the work out phase for private sector debt which follows the bursting of an asset bubble. Foreign capital controls also could limit the self-reinforcing dynamics which can drive exchange rates into far from equilibrium positions during asset bubbles.

Endogenous adjustments in investment practices and policy regimes

Many of the changes in investor behaviors and institutional practices which fed asset price bubble dynamics may be, in part, naturally reversed. Following the bursting of a financial bubble, ultimate investors (pension fund beneficiaries, mutual fund holders, etc.) are bound to question whether investment managers have breached their fiduciary obligations. We cannot ignore the sharp changes in private and institutional behaviors, and the rapid changes in political directives with respect to financial markets, following the Great Depression. The ERISA legislation which guides much of the institutional investing world was in no small part born of the sharp bear market experience of 1973-4. Unfortunately, the prudent expert principle that informs most laws protecting investors tends to reinforce herding dynamics, rather than dampen these potential destabilizing behaviors. But we can expect enough cases will be found where sound portfolio management principles were openly ignored as the herd dynamics took charge. Securities class action suits against companies have surged this year – some 368 have been filed year to date – and so it is merely a matter of time before pension fund consultants and investment management firms are called on the carpet by their clients. For example, many portfolios became heavily concentrated in technology stocks, violating first principles of diversification. The Unilever case against Merrill Lynch (Mercury Asset Management) in the UK is illustrative of this type of litigation that may emerge, and thereby force a change in acceptable institutional investment practices. In fact, the CFR financial war games included consideration of this possible repercussion:

> *"Unlike some previous episodes when share prices of high tech companies started to slip, on this occasion their slide pulled down the broader market indexes. The Wall Street Journal published a report asserting that some attorneys had approached regulators in Washington to forewarn them that class action suits were being prepared against a number of the largest private pension funds in the United States for breaching fiduciary duties."*

Investment practices more in accord with what EMH advocates require may, by the carrot of market performance, and the stick of judicial proceedings, become more commonplace. Policy preferences and policy regimes tend to be most radically restructured following financial market crashes that impose long lasting economic costs on other than just the most hyperactive speculators.

Financial markets and financial agents cannot, however, be counted on to spontaneously self-correct their excesses. Bubbles die hard, and investors trained in the fast money games of speculation are rarely content to return to the nitty-gritty of serious financial analysis. If unorthodox policy initiatives are to be implemented, alliances will need to be built and cross cutting cleavages will need to be exploited in the political domain. Before this is accomplished, it must be recognized that old interests and old coalitions may have been displaced as the financial landscape was reshaped by the bubble years.

For example, given the high degree of financial operations and exposures one can find in the average nonfinancial firm – from stock option laden management to in house venture capital operations to off balance sheet derivative positions – the assumed cleavage between manufacturing interests and financial interests may not be as wide as in the past. The recent travails of Enron, a former energy producing company turned energy derivative market maker, may be one extreme example of this transformation. The rising share of financial operations in GE's bottom line is a second obvious example. Similarly, by dissolving the barriers between commercial banking and investment banking, the repeal of Glass-Steagall disrupts another cleavage within the financial sector itself. One culture has tended to favor steep yield curve environments that sustain high net interest margins on loans, while the other has tended to favor bull market environments where fees can be raked in on high deal and high transaction volumes. Since commercial bankers are an old power base of the Fed, and commercial banks have initiated most of the acquisitions of investment banks (mostly second tier firms), it is not out of the question that the policy reaction function of the Fed has also been influenced by the new set of profitability drivers combined commercial and investment banks face. Commercial banks have also become more fee based and transaction volume oriented institutions with the escalation of loan securitization. These shifts in the financial arena may be one element in explaining the Fed's willingness to prolong the last equity bubble. A deeper and fresher analysis of the political economy landscape left behind by the bubble years may prove instrumental in successfully pushing forward unconventional measures to contain future financial market excesses.

Section 5: Concluding Remarks

The influence of financial markets on the US economy, and the ascendancy of financial interests in US policy making, has been nothing short of striking over the past decade. This is beyond dispute. The relevant question is whether allowing the supremacy of financial interests has strengthened or weakened the US economy. While the generation and concentration of financial wealth in the US economy has captured the attention of the rest of the world, it has become increasingly clear that the recent prosperity was built on a house of cards. The complicity of macroeconomic policy makers in allowing the US economy to enter into a state of unprecedented financial fragility cannot be ignored. Ironically, while orthodoxy leaned on the need to get public finances in order, private financial balances were debauched. The ruling ideology of fiscal prudence at all costs was at best myopic, and at worst, part of a cynical attempt to make the world safe for Wall Street.

Although many private sector behaviors that fed equity bubble dynamics and the attendant financial imbalances are bound to reverse as the bubble unwinds, these adjustments make the policy goal of containing the damage done by the bubble more challenging. Since the policy response to date has been more rapid and more aggressive than usual, the US economy may as yet be able to avoid a full-blown debt deflation path. Early indications are that the swing in fiscal policy and the improvement in the trade deficit are proving sufficient to begin the necessary reduction of private sector deficit spending. This remains just an initial step in the right direction, as reduced private sector deficit spending only indicates the rate of debt accumulation on household and corporate balance sheets is slowing. For private balance sheets to be repaired, households and firms must run persistent surpluses by spending less than they are earning. Stocks of outstanding debt on balance sheets can only be paid down by several years, not several months, of rising net savings flows on private income statements.

Even then, we may find corporate and household balance sheet repair is not a sufficient condition for returning the US to a sustainable, robust expansion path. With the popping of the equity bubble, the rupture of the euphoric expectations for returns on financial and real capital is likely to have a lingering effect. Given the alarming underperformance of stocks relative to bonds since the bubble burst – an outcome not experienced since the Great Depression years – portfolio preferences could change for an entire investing generation. At a minimum, investor and lender risk perceptions of various asset classes are liable to have shifted for some time to come. With less euphoric portfolio preferences comes less euphoric asset prices, and also less available financing. If, as argued above, asset prices can influence the desired rate of capital spending and the household propensity to save, shifts in portfolio preferences are likely to weigh on the rate of income growth achievable in the post bubble economy.

More to the point, given the profound collapse in profit margins, the return on capital, and capacity utilization that has accompanied the private deficit spending reversal on the bursting of the equity bubble, private investment spending may well remain tentative for some time to come. The enormous overhang of capital stock financed during the bubble years will need to depreciate away before the profit expectations of entrepreneurs revive. It is true that some of the more high tech equipment put in place will depreciate quickly, and new technological innovations cannot be ruled out. Necessity, after all, is one of the frequent mothers of invention. But by way of the macro profit equation, it is evident that a falling or stagnant investment share of GDP leaves any rebuilding of US profit shares at the mercy of 1) a stabilization in household savings rates, 2) public investment initiatives that raise the fiscal deficit as a share of GDP, and 3) a reorientation of foreign economies away from export led strategies that is sufficient to reduce and reverse the US trade deficit as a share of GDP. These are not impossible tasks, but they are not likely to emerge spontaneously either.

The concerted effort to liberalize and globalize financial relations has proven misguided. The fatal flaws in this strategy, unfortunately, are now too plain to ignore. The fantasy of efficient financial markets and their ability to intelligently allocate capital is confronted by the reality of what Sir John Templeton, one of the great investors of our time, has

referred to as “the greatest financial insanity any nation has ever known”. The legacy of this failed experiment now resides in the debt loads weighing on private balance sheets, the 20-25 year lows in capacity utilization in many leading high tech sectors, the rising unemployment rate, and the growing deflationary pressures around the globe. Monetary and fiscal policy initiatives may help reduce the US private debt burden and plug the private financing gap over time, but they are unlikely to deliver the usual income growth response for some time to come. Fortunately, such challenging times open up room for creative initiatives that can speed the repair of the economy, as well as prevent future severe disequilibria from developing in the first place. In the wake of the disillusionment brought on by the bursting of asset bubbles comes the momentary opportunity to refoot financial relations on a more sound and sustainable basis. Such opportunities are indeed rare, but are rarely worth ignoring.