Reflexivity, Business Cycles, and the New Economy

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Reflexivity

Finance is a popular academic discipline, but it is first and foremost a profession. Financial practice generally mirrors financial theory, but there are significant divergences. One such divergence pertains to market theory.

Financial theory holds that markets are *efficient*, which means market prices reflect information instantaneously. There are three forms of market efficiency: *weak-form efficiency* wherein the market price reflects "the information contained in the record of past prices;" in *semi-strong efficiency* the market price reflects "not just past prices but all other published information, such as you might get from reading the financial press"; and *strong-form efficiency* wherein the market price reflects "all the information that can be acquired by painstaking analysis of [a] company and the economy" (Brealey and Myers 2000, p. 358).

In strong-form market efficiency, which is the most academically popular of the three forms, it is not possible to earn a return greater than the general market return over time. According to Brealey and Myers (2000, p. 362), the

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I would like to thank Larry DeLorenzo, Armel Desir, Jeffrey Herbener, Dave Landry, Scott Lane, Rob Lingle, Lauchlan Mackinnon, Bob Mulligan, Mike Palmieri, Claude Ronzitti, Carl Rossetti, Sandeep Samal, participants at the 9th Austrian Scholars Conference, and two anonymous referees for their comments, discussion and/or suggestions on earlier drafts of this paper. The usual caveat applies.

academic evidence in support of strong-form efficiency, "has proved to be sufficiently convincing that many professionally managed funds have given up the pursuit of superior performance. They simply 'buy the index'."

Financial practitioners have strenuously disagreed with theoreticians on this point. For example, Warren Buffett argued in the *Berkshire Hathaway 1988 Annual Report* that the investing track record he, Benjamin Graham, and other value-investors achieved is proof the market is not always efficient. He goes on to say:

> the disservice done students and gullible investment professionals who have swallowed EMT [efficient market theory] has been an extraordinary service to us and other followers of [value-investing founder Benjamin] Graham. In any sort of a contest—financial, mental, or physical—it's an enormous advantage to have opponents who have been taught that it's useless to even try. From a selfish point of view, Grahamites should probably endow chairs to ensure the perpetual teaching of EMT.[1]

George Soros (1994a, p. 47), however, has delivered perhaps the most intense practitioner criticism to EMT:

> The [efficient market] theory is manifestly false—I have disproved it by consistently outperforming the averages over a period of twelve years. Institutions may be well advised to invest in index funds rather than making specific investment decisions, but the reason is to be found in their substandard performance, not in the impossibility of outperforming averages.

Soros goes beyond merely criticizing the EMT by propounding a market theory of his own, which he calls *reflexivity*. The theory of reflexivity holds, contrary to EMT, that the market process is not a one-way phenomenon; it does not proceed from information to market price. Rather, it proceeds via an interactive, two-way feedback loop between information and market pricing (Soros 1995). Soros (1994a, p. 42) illustrates this interaction through the use of two interrelated functions, the *cognitive function* [$y = f(x)$], which pertains to fundamental information, and the *participating function* [$x = \Phi(y)$], which pertains to market behavior. Thus, market behavior is not limited to strictly discounting the fundamental data, it is also value determinative (Soros 1994b); meaning, the marginal investment decisions of market participants influence firms' fundamental (revenue, cost, capital, etc.) decisions, and as a result future performance. According to Soros (2001):

> What should now be clear is that the so-called fundamentals that supposedly determine stock prices are not independently given. Instead, they are contingent on the behavior of financial markets. There are, indeed, myriad ways in which stock prices affect the fortunes of companies: they

[1] See Appendix One for more information on Buffett's thoughts of the EMT.

> determine the equity cost of capital; they decide whether a company will be taken over or acquire other companies; stock prices influence a company's capacity to borrow and its ability to attract and reward management through stock options; stock prices serve as an advertising and marketing tool. In other words, when financial markets believe a company is doing well, its "fundamentals" improve; when markets change their mind, the actual fortunes of the company change with them.

The reflexive influence in shaping the fundamentals distorts the valuation process inasmuch as that process seeks to value, in part, the very performance of the people who are doing the valuing. As Soros (1994b) has indicated, the "financial markets cannot possibly discount the future correctly because they do not merely discount the future; they help shape it."[2] For example, Copeland et al. (2000, p. 52) observed that:

> If you create lots of value in the real market . . . but don't do as well as investors expect, they (your investors) will be disappointed. Your task as a manager is to maximize the intrinsic value of the company and to properly manage the expectations of the financial market.

In other words, managers must produce fundamentally solid performance *and* manage the market's expectations of that performance to ensure it is priced properly. Likewise, market participants must evaluate and price a firm's fundamentals properly because the firm being valued is going to base its future performance decisions on how well their prior performance was priced. According to Soros (1998, pp. 7-8):

> The essence of investment is to anticipate or "discount" the future. But the price investors are willing to pay for a stock (or currency or commodity) today may influence the fortunes of the company (or currency or commodity) concerned in a variety of ways. Thus changes in current expectations affect the future they discount.

The constant interactive feedback of reflexivity ensures market behavior relatively reflects the fundamentals, and vice versa, as the future unfolds. However, there are times when the reflexive feedback loop can close thereby widening a gap between market pricing and the fundamentals. If such a situation is allowed to continue it will exacerbate boom-bust market behavior,[3]

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[2]Put another way, "Buyers and sellers in financial markets seek to discount a future that depends on their own decisions. The shape of the supply and demand curves cannot be taken as given because both of them incorporate expectations about events that are shaped by those expectations" (Soros 1997).

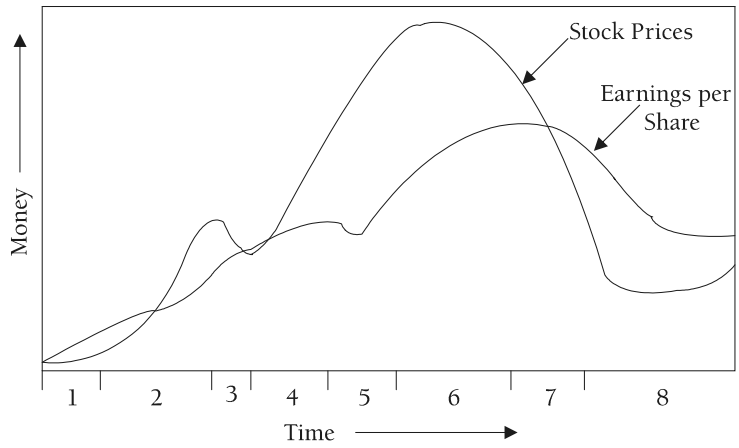
[3]This is my interpretation, not Soros's. In fact, he uses the term reflexivity to describe both the market feedback loop and boom-bust behavior, which even he admits is confusing (Soros 2003, p. 11).

thereby generating large price discrepancies, which are of particular interest to financial practitioners because of the profit opportunities they present.[4]

Business/Boom-Bust Cycles

Soros observed business/boom-bust cycle market behavior (hereinafter I will use the terms business cycles and boom-bust cycles interchangeably) to such an extent that as his investment career unfolded he formulated a graphical model of it, which is reproduced below:

Chart 1
Soros's Boom-Bust Model



Source: Soros (1998), p. 52.

Soros's model illustrates a typical boom-bust cycle through the use of two variables: earnings per share (EPS), which represent the fundamentals, and stock prices, which represent market behavior. The boom wave of a business cycle is characterized by an explosive price up-trend and dramatic price-earnings expansion, and the subsequent bust wave is characterized by a powerful price downtrend and price-earnings contraction.[5]

Soros (1995, p. 73) describes the individual phases of a boom-bust cycle only generally. For example, the *initial phase* is characterized by a price trend

[4]Graham and Dodd (1934) stress the importance of price discrepanices numerous times, as does Mises (1998).

[5]Soros (1994a, pp. 58-60) presents three examples of past boom-bust cycles to support his model. Interestingly, Graham and Dodd (1934, p. 2) present a chart of the business cycle that occurred in the United States stock market during the 1920s that is remarkably similar to Soros's model. These examples caused me to research business cycle investing further, which evolved into this paper.

and market participants' bias that reinforce each other. The trend will then be tested, and will enter a *period of acceleration* if it passes the test. During the *moment of truth*, which is possibly the most interesting stage, "the divergence between belief and reality becomes so great that the participants' bias comes to be recognized as such." In the *twilight period* the boom makes its final run and tops out. At the *crossover point* the trend changes from up to down leading to a crash.

Soros does not specify the cause of boom-bust cycles, but he commented in Gimein (2003, p. 139) that the business cycles he speculates on, "always [have] a political element." Political interference as the cause of business cycles has been written about extensively in the Austrian School, which Garrison (1990, p. 7) cogently summarizes:

> In the broadest terms the Austrian [business cycle] theory is a recognition that an extra-market force (the central bank) can initiate an artificial, or unsustainable, economic boom. The money-induced boom contains the seeds of its own undoing: the upturn must, by the logic of the market forces set in motion, be followed by a downturn [or bust].

By synthesizing Soros's boom-bust model, Austrian business cycle theory (ABCT), practical finance theory, and my own thoughts, I developed specific criteria for each of the eight stages of a business cycle as depicted in Soros's model. I also comment on the nature and extent of the post boom-bust recovery. Significant insight into business cycles can be gained by utilizing these criteria, as will be shown in an analysis of the most recent business cycle popularly known as the "new economy."

The Eight Stages of a Business Cycle

Stage One of a business cycle presents a classic political market dilemma. The fundamentals (as illustrated in Soros's model by EPS) are much stronger than the market's valuation of them (as reflected in the stock price), and therefore it is perceived the market is not performing optimally. Political representatives interpret this situation as a threat to their elected positions, and strive to rectify it before they are voted out of office. They have a number of alternatives available to stimulate market behavior such as tax cuts and budgetary discipline, but most politicians are reluctant to use their "political capital" to resolve dilemmas. Instead, they frequently look to regulators, judges, or in the case of financial markets, to central banks to make policy changes whenever possible.

As ABCT postulates, central banks stimulate market behavior by lowering interest rates below the market-determined rate of interest. The artificially low interest rates lead to over-consumption and artificially low discount rate calculations, which in turn lead to artificially high valuations, or *valuation inflation*, and *malinvestment*, or investment along wrong lines (Mises 1998, pp. 546–47, 556; Rothbard 1969, p. 86).

During *Stage Two* of a business cycle the powerful marginal buying, and ever-strengthening fundamentals—driven predominantly by revenue growth—

reflect favorably on the credit expansion. This entire stage is one of powerful price appreciation, which has the obvious effect of pleasing both market participants and the politicians who claim credit for it.

In *Stage Three*, the market forms a short-term price top as the inevitable *correction* of the prior stage's powerful price appreciation occurs. A correction in this context means a temporary price reversal, or downswing, to a price level that more closely reflects the fundamentals. The short-term price top made during this stage is a critically important graphical, or technical, benchmark to monitor throughout the business cycle, as will be demonstrated below.

Up to now, and despite the central bank's credit expansion, market behavior has been fairly typical; arguably depressed prices had a run-up that ended in a correction. However, during *Stage Four* market behavior becomes anything but typical. Given the strong fundamentals generated by the credit expansion—driven predominantly by revenue growth—the probability of the market price recovering from the Stage Three correction is substantial. Therefore, intense focus is directed to that stage's short-term top. If market behavior pushes the market price above that top with significant momentum it will signal technically oriented investors that a powerful trend has begun, causing them to buy aggressively.[6]

Toward the middle of *Stage Five* the fundamentals begin to weaken, and as a result the boom is in danger of not only ending, but also reversing. To prevent this from occurring market participants can close the reflexive feedback loop.[7] Shiller (2001, p. 3) describes this phenomenon as follows:

> The essence of a speculative bubble is a *sort of feedback*, from price increases, to increased investor enthusiasm, to increased demand, and hence further price increases. The high demand for the asset is generated by the public memory of high past returns, and the optimism those high returns generate for the future. The feedback can amplify positive forces affecting the market, making the market reach higher levels than it would if it were responding only directly to these positive forces. (Emphasis added)

The most common way the reflexive feedback loop is closed is through the widespread use of *fundamental substitutes*,[8] such as:

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[6]Buying a stock as it makes a new high is a technical entry tactic that many successful traders such as O'Neil (1995, p. 25) advocate.

Technical analysis pertains to the study of price action irrespective of the fundamentals. In practice, many investors utilize both fundamental and technical analysis in their decision-making. This is probably one of the reasons why the "CANSLIM" investment method (O'Neil 1995) is so popular.

[7]This is my interpretation, not Soros's.

[8]This is also my interpretation.

- Performance measures that rely on creative accounting methods (Graham and Dodd 1934, p. 365);[9]
- The exaggerated use of alternative profit measures and pro forma statements at the expense of traditional earnings and cash flow analysis; or
- The use of highly theoretical and/or overly complicated valuation techniques.

Fundamental substitutes are utilized to justify and perpetuate a boom, which is the result of politically motivated credit expansion that market participants misinterpret as the "wealth effect" of some new economic condition (Hazlitt 1996, p. 158). That misconception results in the market participant preference for the seemingly economically free boom driven prosperity to continue.[10] Therefore, as the fundamental data will no longer support the boom during this stage, market participants replace fundamental analysis with fundamental substitute analysis that will support the boom (Graham and Dodd 1934, p. 54). Significantly, the fundamental substitutes market participants adopt are consistent with the perceived new economic condition driving the perceived wealth effect (Graham and Dodd 1934, p. 312).[11]

The boom's powerful price appreciation thus resumes, which in turn stimulates further overconsumption and malinvestment. Such stimulation quickly causes the actual fundamentals to recover—due predominantly to revenue growth—as the boom proceeds, but it does so in an environment in which the fundamentals and market behavior no longer reflect each other. This is vividly illustrated in Soros's technical model by the ever-widening price to earnings expansion, i.e., by the strongly growing divergence between stock prices and EPS.[12] The duration of the boom is now limited because a

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[9]Mises (1998, p. 546) notes that a consequence of credit expansion "is that it falsifies economic calculation and accounting. It produces the phenomenon of imaginary or apparent profits." Likewise, Hayek (1970, p. 95) observed that credit expansion, "upsets the reliability of all accounting practices and is bound to show spurious profits much in excess to true gains."

[10]Misconceptions play a significant role in boom market behavior, as Soros (2003, p. 30) has noted.

[11]To sum up, market participants replace fundamental analysis with fundamental substitute analysis due to the belief that traditional fundamental analysis is incapable of capturing the drivers of the "new" economic condition. Therefore, it is replaced with financial substitute analysis they believe is capable of capturing it. Once again, this is my interpretation, not Soros's.

[12]Dramatic P/E expansion has long been known as a good technical indicator of a boom, even in mainstream academia. For example, the dramatic P/E expansion of the mid to late 1990s convinced Robert Shiller that the new economy was a boom. That belief evolved into writing the book *Irrational Exuberance*, which was published in March of 2000 just as the new economy boom topped out (Fox 2002).

market cannot continue without fundamental feedback indefinitely; the reflexive feedback loop must eventually reopen or the market will crash.

With the closure of the reflexive feedback loop the momentum of marginal buying increases dramatically, which generates positive news reports that, in turn, generate even more buying,[13] which has been referred to as *irrational exuberance* (Greenspan 1996). Irrespective of the popularity of Fed Chairman Greenspan's coined term, irrational exuberance is not a new phenomenon. For example, in 1852 Charles Mackay wrote the following in the Preface to that year's edition of his popular book, *Extraordinary Popular Delusions and the Madness of Crowds*:

> We find that whole communities suddenly fix their minds upon one object, and go mad in its pursuit; that millions of people become simultaneously impressed with one delusion, and run after it. . . . Money, again, has often been a cause of the delusion of multitudes. Sober nations have all at once become desperate gamblers, and risked almost their existence upon the turn of a piece of paper. (Mackay 1980, pp. xix–xx)

As indicated above, closing the reflexive feedback loop during this stage of a business cycle will reignite the boom's momentum, which will significantly increase the value of every portfolio that is aligned with it. Momentum is a value multiplier that has made those who have exploited it extremely wealthy, e.g., Buffett and Soros. Therefore, the desire of market participants to exploit a boom's momentum for as long as possible is not "mad."

However, momentum is a short to intermediate term phenomenon because the over-consumption and malinvestment that generate it cannot last forever. Unfortunately, market participants usually do not make this distinction during a boom because they have come to believe the boom is the result of the "wealth effect" of some "new" economic condition that will continue forever. That misconception results in the widespread failure of market participants to formulate investment exit strategies, which is irrational and ensures that deep portfolio losses will be incurred in the coming bust. This temporal disconnect is a byproduct of the credit expansion that appears to generate wealth producing economic growth when in fact it is politically leveraged growth, which has all of the short-term pluses and long-term minuses of debt (Hazlitt 1996, pp. 177–78). I therefore refer to this phenomenon as the boom's *leverage effect*, and acknowledge the momentum it generates over the short to intermediate term will yield abnormally high portfolio returns.[14] However, as those returns are being realized market participants would do well to keep the following *Trader's Riddle* in mind:

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[13]As Soros (2003, p. 8) explains, "people base their actions not on reality but on their view of the world, and the two are not identical."

[14]My interpretation.

> *Question*: What's the difference between bull markets and smart money managers?
>
> *Answer*: Bull markets make money managers look smart; smart money managers know this.[15]

Soros (1998, p. 52) refers to the business cycle's next stage, *Stage Six*, as the "twilight period." Given the exuberance of market participants, as well as the sheer power and duration of the boom, the last remaining marginal investors buy in. Such buying coupled with the virtual absence of selling powerfully fuels the market price to even greater heights,[16] but this is the boom's final hurrah. As the added money fueling the boom makes its way through the economy over-consumption causes prices to rise (Mises 1998, pp. 409, 420), which the politicians who initiated the boom must deal with in order to divert a market crash. Such a response will most likely be the reversal of the interference that caused the boom, and "Whenever the central bank reverses its monetary stance, a stock market bust is set in motion" (Shostak 2000). The rise in interest rates slows the pace of consumption, and increases discount rates, which causes valuations to decline thus halting further malinvestment. And with no new buying and malinvestment to fuel further price appreciation, the market hits an *inflection point* and starts to reverse. An inflection point is a technical change in trend from boom to bust that occurs due to the reversal of the market interference that caused the boom.[17]

In *Stage Seven*, the actual fundamentals begin to decline due to the lack of buying, which in conjunction with the rising interest rates causes the fundamental substitutes to deteriorate, which in turn generates increasingly intensive investment liquidation, and marginal short selling. This market behavior feeds off itself thus perpetuating a *bust*, or the dynamic reversal of the boom wave. As the bust wave proceeds its market behavior generates an *irrational despondency* that results in mass selling. Just as the euphoria of a boom exacerbates investors' preference for making abnormally large returns, a bust exacerbates the despondency of suffering deep portfolio losses.

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[15]Thanks to Rob Lingle for passing this riddle along. It is attributed to Ed Seykota, one of the traders Schwager (1989) profiled.

[16]There obviously can not be buying without selling. However, when there are more buyers than sellers prices are "bid up." During a boom, credit expansion causes prices to be continously bid up to until they eventually "top out," after which they fall because they are continously offered lower.

[17]While ABCT is clear that the central bank reversal will cause the boom to end, the exact moment it will end is impossible to predict. For example, Soros (2003, p. 35) indicated that he lost money in the new economy, "by short selling Internet stocks too soon." Rather than trying to time the exact moment of the market turn, one could strategically invest in a boom-bust cycle. For example, Sperandeo (1991, p. 110) indicated that as his investment career progressed, he "began to see the profit potential of riding the government bubble in the initial stages of inflation, jumping off early, and being on solid ground when the bubble bursts, waiting to pick up the pieces."

Spurred on by the gloom of growing portfolio losses, investors undertake a flight to quality, which involves liquidating perceived risky investments in favor of government securities or precious metals to preserve the balance of their portfolios. That behavior will preserve what is left of their portfolios, however fundamentally sound investments are often liquidated with unprofitable ones thus creating a *value gap*, which astute investors can profit from (Greenwald et al. 2001, p. 3; Neff and Mintz 1999, p. 63).

The undeniable emergence of value gaps, and the equally undeniable results of those who exploit them, e.g., Warren Buffett, Mario Gabelli, John Neff, etc., reflects that they are a source of substantial profit. And as excessive selling causes value gaps, the opportunity costs of engaging in such selling are substantial (Greenwald et al. 2001, pp. 155–59). Unfortunately, this distinction is usually not made during a bust, which is the primary reason why the despondency of market participants during this stage is irrational. Such market behavior will eventually take the market price below the significant short-term price top formed in *Stage Three* thus giving the business cycle its distinctive and unmistakable *bubble* shape.

During *Stage Eight* the market is in a full-blown *reversal* as both market prices and the fundamentals decline below pre-bubble levels. The complete market reversal comes as a shock to most market participants, and that shock will in time reopen the reflexive feedback loop. Once the loop reopens malinvestment liquidation will begin thus enabling the market to recover from the business cycle's volatility.[18]

Recovery

Before recovery from a business cycle can be achieved all malinvestment must be purged from the market. That purging will once again reconcile the fundamentals (revenues, costs, capital, etc.) and market behavior (buying and selling) thus creating an environment conducive to economic growth. Unfortunately, this process usually entails delinquencies, defaults, bankruptcies, layoffs, and the inevitable scandal or two as the market recovers from the malinvestment of the boom. Recovering from these effects, and from the pervasive scope of malinvestment liquidation in general, will not occur quickly. As Mises (1936, p. 34) has indicated:

> The longer the period of credit expansion and the longer the banks delay in changing their policy, the worse will be the consequences of the malinvestments . . . and as a result the longer will be the period of depression and the more uncertain the date of recovery and return to normal economic activity.[19]

[18]My interpretation, not Soros's.

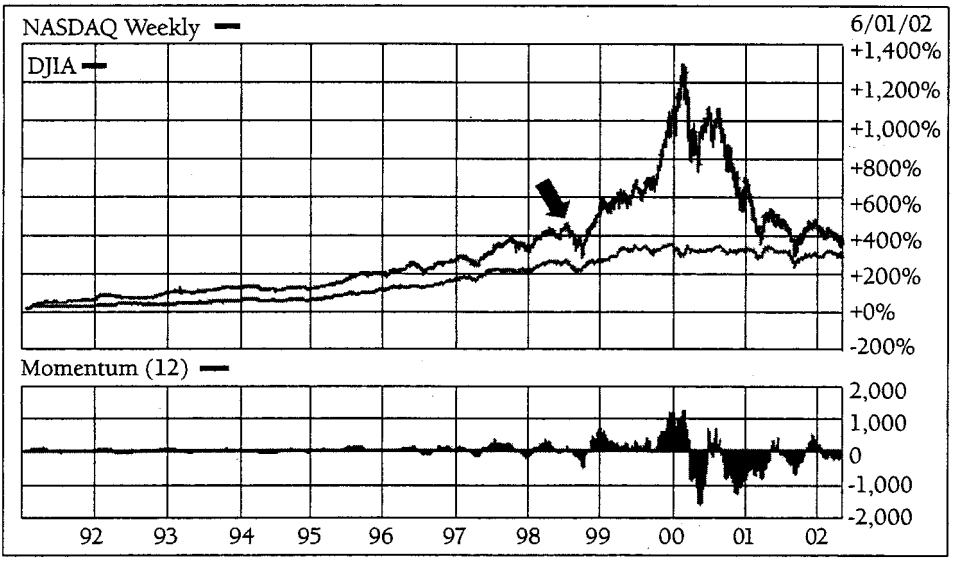
[19]Similarly, Soros (2003, p. 33) observed that, "the magnitude of the bust tends to be proportionate to the boom that preceded it."

Given the turmoil inherent in business cycle recoveries, politicians are understandably anxious to conclude them quickly. However, efforts other than tax cuts and budgetary discipline to "jumpstart" a recovery only exacerbate market volatility. Markets need time to recover from the interference that causes business cycles, not further interference. In fact, further interference in the market process is not only counterproductive but also dangerous to long-term market vitality (Rothbard 1969, pp. 86-88).

The New Economy Business Cycle

The "new economy" was unique in the sense that many new economy firms had weak fundamentals, i.e., they were not profitable, and thus EPS data for the NASDAQ Index are not available. Therefore, in order to perform a graphical comparison of the new economy boom-bust with Soros's model a reasonable proxy for EPS is needed. Such a proxy must be both a reasonable barometer of value and trend consistently with the NASDAQ as the new economy business cycle will be illustrated, in part, by the divergence between the NASDAQ and the proxy. The proxy chosen in the following analysis is the market value of blue chip stocks as reflected in the Dow Jones Industrial Average (DJIA). The reasons for choosing the DJIA as the proxy are outlined in Appendix Two below. A chart of the NASDAQ overlaid with the DJIA from 1991 to 2002 is presented below:

Chart2
The New Economy Business Cycle—1991 to 2002



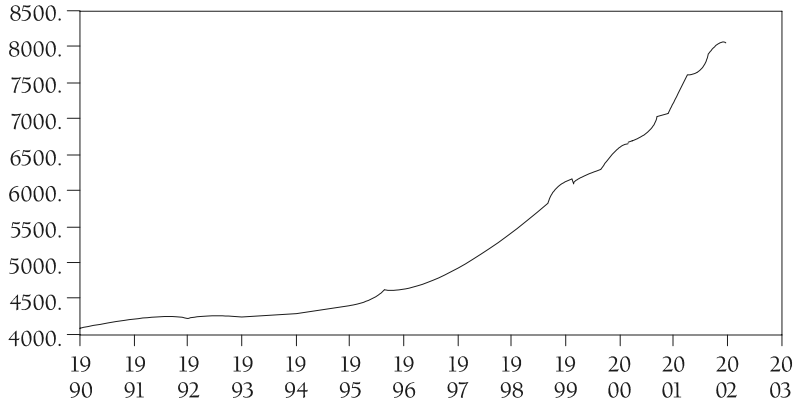
Source: BigCharts.com

The bottom panel of the above chart contains a 12 period momentum measurement, a common technical indicator.[20] The use of that technical indicator will be secondary to the analysis that follows, and will only be used to amplify that analysis.

Stage One: According to Woodward (2000, p. 15), in early 1994 Federal Reserve Chairman Alan Greenspan adopted the *soft landing doctrine*, which involved making a preemptive monetary policy strike against expected price inflation. The rationale behind that policy was to "take the top off the coming boom, moderate and stabilize the economy and prevent inflation–and recession." Woodward (2000, p. 118) reported this was accomplished with President Bill Clinton's blessing after Greenspan predicted economic problems in 1996, a presidential election year. Therefore, from early-1994 to mid-1995 the Fed Funds rate was increased by nearly 100 percent.[21]

As can be seen in Chart 2 above, the NASDAQ market behavior during that period of time was essentially flat. But as the below chart (Chart 3) illustrates, the Fed reversed its monetary policy in late 1995 by dramatically expanding credit to decrease interest rates. Shortly thereafter, consumer spending began to significantly increase through a new distribution channel, the Internet. For example, the purchase of collectibles from ebay.com, books from amazon.com, and travel accommodations, etc. from priceline.com would soon become all the rage. The boom that came to be known as the *new economy* had begun.

Chart 3
M3 Money Stock; Billions of Dollars; SA



Source: Economagic.com

[20]According to Murphy (1986, p. 277), "Momentum measures the rate of change of prices as opposed to the actual price levels themselves." Strong momentum is a sign of powerful (or sustainable) buying/selling, while low momentum is a sign of weak (or unsustainable) buying/selling.

[21]In January 1994 the Fed Funds rate was 3.05 percent, and by May 1995 it had risen to 6.01 percent. Data source: Board of Governors, Federal Reserve System.

Powerful price appreciation followed the Fed's credit expansion, which pleased both politicians such as Bill Clinton and market participants on Wall Street. For example, on August 9, 1995 Netscape, a firm that manufactured and *gave away* web-browsers that were used to navigate the then nascent Internet, issued stock through an initial public offering. The market behavior of that IPO drove the price of the then budding web-browser manufacturer up from $28/share to $75/share before closing at $58 1/4 a share. Entrepreneurs took note, and started forming a variety of technology or *dot.com* firms that were willingly funded by venture capitalists and capital market participants. According to Woodward (2000, p. 160), "Greenspan knew he had helped hand Clinton what he called 'a pro-incumbent type economy'"; *Stage Two*.

In *Stage Three*, which occurred in mid-1998, the market formed a significant short-term price top, which is identified in Chart 2 by the block down arrow. This top was significant for the following reasons:

- It occurred around the psychologically significant price level of 2000 (Murphy 1986, pp. 67-68);
- The upswing preceding the top occurred on low momentum, which suggested it was not sustainable;
- The correction or downswing immediately following the top occurred on strong momentum, which suggested it was sustainable;
- The correction significantly narrowed the spread between the NASDAQ and the DJIA; and
- The correction retraced more than 25 percent of the NASDAQ (the short-term top occurred at slightly higher than 2000 while the correction took the market down to slightly less than 1500), and was therefore statistically significant.

The fundamentals at this time were perceived to be quite strong even though many dot.com firms did not have earnings. That misconception was based on strong revenue growth in a supposed "new economy."[22] Therefore, the market's powerful price appreciation resumed after the correction bottomed out in late 1998, and its record high momentum at the time carried the NASDAQ strongly above the prior stage's short-term price top. Technically oriented investors took note and started buying, aggressively; *Stage Four*.

While the fundamentals did not weaken during this time as the technical model suggests (recall the general lack of earnings for new economy firms) it

[22]Soros (2003, p. 23) later commented that, "Investors valued top-line revenue growth disregarding that the business models could be sustained only as long as companies could sell stock at inflated prices."

can be estimated that the market's entry into *Stage Five* occurred in mid-1999 for the following reasons. First, during that period of time the divergence between the NASDAQ and the DJIA started to grow historically large. Second, it is the time period just prior to the NASDAQ's final, most powerful run. And finally, it is about the time two popular fundamental substitutes emerged: e*yeballs* and *real option* valuation.

Eyeballs is a term that was used to describe the amount of times an Internet Website was "hit" or visited by an individual Internet user. In eyeball valuation, each of these hits is assigned a monetary value, the sum of which was purported to be the value of the new economy firm. This technique is analogous to assigning a monetary value to every window shopper of a traditional "brick and mortar" store, and then using the sum of those values to determine the store's value. As incredible as this no doubt sounds at the present time, this theory was relatively well received at the time.

The second fundamental substitute was real option theory. Options are equity derivatives used predominantly for risk management and compensation. In the early 1970s, Professor Stewart Myers of MIT developed real option theory, or options on real assets. That theory was developed as a capital budgeting tool and it has proven extremely useful as such.[23] Indeed, both traditional option pricing and real option theory are valuable financial tools that have a role, sometimes significant, in both the theory and practice of modern finance. However, by comparing a direct investment, instead of a derivative investment, in a going concern with the purchase of a call option, and using real option theory to justify that investment, market participants abused real option theory.

Options are by definition a *wasting asset* for if they are not *in the money* by maturity they are worthless. This is significant to all investors inasmuch as option speculation is one of the surest ways of losing money; the lack of intrinsic value and the time erosion factor generally makes option speculating extremely unprofitable.[24] But more importantly, firms are supposed to be going concerns and thus have no maturity. Also, real option theory was never intended to replace, nor is it capable of replacing, fundamental equity valuation. Valuation methods such as the capital cash flow method (Ruback 2000), equity cash flow method (Luehrman 1994), or economic value added method (Stewart 1999; Laderman and Smith 1998) can be utilized to capture many of the dynamics real option analysis was allegedly adopted to capture. Moreover, each of these methods is consistent with the fundamental methodology of valuing going concern firms.

The arguments in favor of utilizing real option theory in the valuation of dot.com firms centered on the volatility and flexibility of certain intangible

[23]See, for example, Moel and Tufano (2000).

[24]Options can, however, be ideal for hedging and other forms of risk management.

value drivers such as technological patents, different business models, etc. (Mauboussin 1999). However, similar arguments have been made and addressed in prior business cycles, for example:

> The "new era" doctrine—that "good" stocks (or "blue chips") were sound investments regardless of how high the price paid for them—was at bottom only a means of rationalizing under the title of "investment" the well nigh universal capitulation to the gambling fever. We suggest that this psychological phenomenon is closely related to the dominant importance assumed in recent years by intangible factors of value, *viz*., goodwill, management, expected earning power, etc. Such value factors, while undoubtedly real, are not susceptible to mathematical calculation; hence the standards by which they are measured are to a great extent arbitrary and can suffer the widest variations in accordance with the prevalent psychology. The investing class was the more easily led to ascribe reality to purely speculative valuations of these intangibles because it was dealing in good part with surplus wealth, to which it was not impelled by force of necessity to apply the old established acid test that the principle value be justified by the income. (Graham and Dodd 1934, pp. 11–12)

The above was written in 1934 by value investing founders Benjamin Graham and David Dodd in the first edition of their seminal work, *Security Analysis*, about the market behavior exhibited during the boom of the 1920s. And yet, if you substitute "new economy" for "new era" and "tech stocks" for "blue chips" you have a remarkably similar description of the market behavior exhibited during the new economy boom of the 1990s. Interestingly, the key fundamental substitute of the new era boom was the projected trend of earnings, which is a valid and useful methodology when used properly. However, as the 1920s progressed market participants abused that theory to justify and perpetuate the new era boom (Graham and Dodd 1934, p. 313), which is analogous to the abuse of real option theory during the new economy of the 1990s as the focus of both methods was expected future earnings rather than present sustainable earnings.[25]

Thus, the new economy boom adopted two significant fundamental substitutes. The first, eyeballs, was somewhat silly but the second, real option theory, was a valid theory that was simply abused. The new economy also embraced pro forma performance measures, and as everyone now knows some accounting chicanery, all of which carried the boom substantially higher. The following quote from a *Knowledge at Wharton* article describes the market behavior at the time:

[25]The similarities between the business cycles of the 1920s and the 1990s from both an academic and practitioner perspective are striking. Comparing Rothbard (2000) and Graham and Dodd (1934) to current economic events reveals many similarities between the two business cycles even though 70 years separate them.

> As more and more IPOs came to market, a steady valuation inflation took hold as each new IPO was valued by the most recent. "The second wave was valued off the first wave and it fed off itself." (Chris Hastings of Bear Stearns and Co.)

This quote closely tracks with Shiller's (2001) earlier quote, and is indicative of *Stage Five* behavior. Nevertheless, not all market participants were irrationally exuberant at this point in time. Specifically, one very distinguished investment mind saw problems with the new economy, and he carefully outlined his reasons why in a popular business magazine.

In November of 1999 the chairman of Berkshire Hathaway, Warren E. Buffett, wrote an article in *Fortune* magazine that indicated in part, "The inescapable fact is that the value of an asset, whatever its character, cannot over the long-term grow faster than its earnings do" (Buffett and Loomis 1999). In other words, growth creates value if, and only if, a firm is earning more than its cost of capital (Greenwald et al. 2001, pp. 134–35; Copeland et al. 2000, p. 68).[26] However, market participants in general neither considered the article nor incredibly even the man who authored it. A metaphor of the market's reaction was a *Money* magazine article published roughly two months after Buffett's article. It was titled "Buffett Hits a Bumpy Road," and contained the following subtitle, "The Technophobe Sees His Stock Tumble (McMillan 2000)." Thus, not even modernity's most successful and influential investor could temper the new economy boom, the power of which was nothing short of incredible.

As Chart 2 above illustrates, the divergence between the NASDAQ and the DJIA grew to be inordinately large. Additionally, the market's momentum reading was consistently positive, reflecting powerful marginal buying, from late 1998 to early 2000. Given the aggressive nature of the buying that fueled this boom, it was merely a matter of time before prices started to rise, which the Fed would be forced to respond to in order to avert a market crash. And as the chart (Chart 4) below illustrates, in mid-1999 that is exactly what occurred. The Fed identified price inflation and promptly reversed its monetary policy by aggressively increasing the Fed Funds rate;[27] *Stage Six*.

Predictably, the credit tightening slowed the pace of buying and malinvestment. Therefore, an inflection point was imminent, which occurred in March of 2000 after the NASDAQ surpassed the amazing price threshold of 5000. The record high momentum at the time (see the bottom panel of Chart 2 above) confirms this market behavior was indeed an *inflection*, or the market's final,

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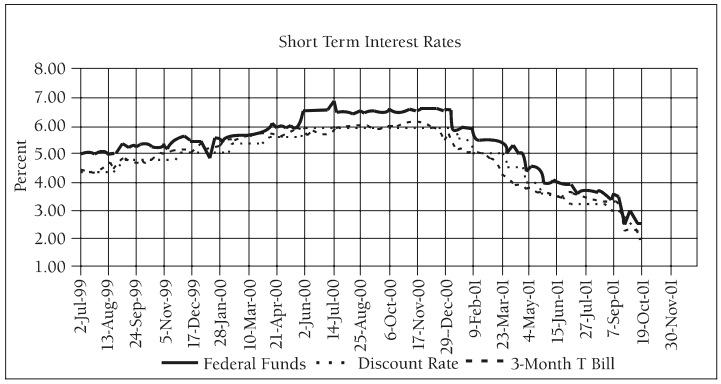
[26]Soros (2003, p. 30) observed that during the new economy, "stocks were valued at a multiple of revenues, not earnings, and growth was financed by selling stock, not by following sound business plans."

[27]From June of 1999 the progression of the Fed Funds rate is: 4.76%, 4.99%, 5.07%, 5.22%, 5.20%, 5.42%, 5.30%, 5.46%, 5.73%, 5.85%, 6.02%, 6.27% and 6.27%. Data source: Board of Governors, Federal Reserve System.

most powerful price run. The boom was over, just as ABCT indicated it would be, but not very many market participants thought so at the time.

Chart 4
Fed Tightening and Subsequent Easing–1999 to 2001



Source: Board of Governors, Federal Reserve System

Stage Seven and *Stage Eight* of the new economy bust were as amazing as the boom had been. The stunning bankruptcy of former energy trading giant Enron will possibly become the metaphor of the entire cycle. Enron was one of, if not the, darling of the new economy. A supposedly unique business model turned a sedentary energy company into a stock market powerhouse. At its peak, Enron stock was selling for greater than $80 a share against revenues of greater than $100 billion, making it the seventh largest company in the world.[28] But shortly after the NASDAQ hit an inflection point, Enron hit one as well. After suffering substantial losses in several malinvestments Enron could no longer conceal the fraudulent accounting practices and off balance sheet debt that funded it for so long.[29] Enron's bankruptcy was the largest in the history of the United States at the time. Less than one year after hitting its peak, Enron stock was trading for less than $1 a share, and the crisis threatened to plunge the firm's auditor, Arthur Andersen, into bankruptcy as well.

Andersen consultants allegedly helped set up Enron's fraudulent special purpose entities while Andersen auditors essentially looked the other way. To make matters worse, Andersen employees later illegally shredded documents after receiving governmental subpoenas. While Andersen's defense team attempted to shift the blame of this activity solely onto the shoulders of the Andersen partner responsible for the Enron account, David Duncan, it was very doubtful that strategy would be successful. Given the magnitude of the Enron collapse, as well as Andersen's past auditing indiscretions at Sunbeam, Waste Management and other firms, the risk of economic failure at Andersen

[28]Fortune.com (2001).

[29]See Appendix Three for further information.

was considerable. That risk increased dramatically in March of 2002 when the Federal government indicted Andersen for obstruction of justice. In fact, after Andersen was convicted of that charge on June 15, 2002, partners of the firm pointed to the indictment "as the death knell" (Bryan-Low 2002).

The subsequent bankruptcy announcement of another new economy icon, Global Crossing, was then the fourth largest such filing in history. Compounding the market's reaction to that bankruptcy was the fact that Andersen was also the auditor for Global Crossing (Lazaroff 2002). Thus, market participants sensed an impending accounting meltdown, which in turn generated an irrational despondency that fueled panic driven selling and increasingly intensive short selling characteristic of a bust. As Barry Hyman, the chief market strategist of Ehrenkrantz King Nussbaum was quoted as saying, "the [stock] market is getting irrational in believing the whole accounting issue is in question" (Taub 2002). Soon the irrational despondency spread to the bond market as Zuckerman (2002) reported in an article titled, "Ripples From Enron Accounting Woes Triggers Selloff in the Bond Market."

As the fundamental substitutes of the new economy started crumbling with the market price, market participants began taking a fresh look at traditional fundamental analysis, and its most ardent supporter. For example, in November of 2002, *Fortune* magazine ran a cover story that read, "The AMAZING Mr. Buffett—The world's greatest investor is back on top. Here's what he thinks now" (Serwer 2002). However, the new economy would not "officially" die until January 12, 2003 (Taub 2003). That was the day Steve Case tendered his resignation as AOL's chairman of the board. Case accomplished many things during his tenure as AOL's chairman, not the least of which was the acquisition of Netscape, whose IPO helped to usher in the new economy.

New Economy Recovery

As explained above, recovery from a business cycle is contingent upon the amount of time it takes the market to purge itself of malinvestments, which will once again reconcile the fundamentals (revenues, costs, capital, etc.) and market behavior (buying and selling). It was also explained that further interference in the market process would delay the business cycle recovery, not jump-start it. In light of the foregoing, the following circumstances do not bode well for a quick recovery from the new economy.

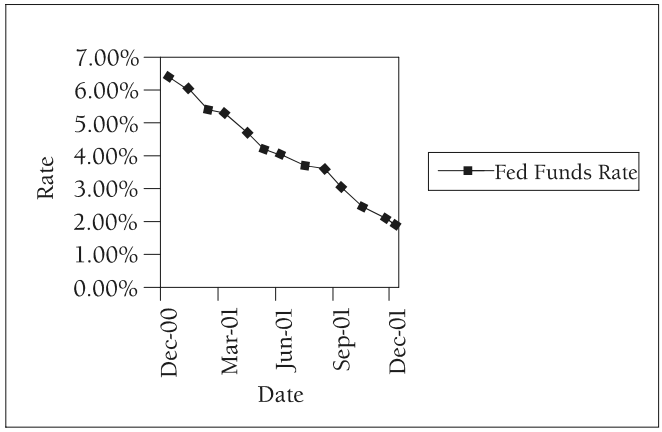
First, the level of post cycle market interference has been staggering. For example, since the March 2000 NASDAQ inflection point the money supply has continued to expand dramatically (see Chart 3 above) while the Fed Funds rate has been reduced to incredibly low levels (see Chart 5 below).

Given such aggressive post cycle interference, comprehensive malinvestment liquidation is going to be at best severely delayed, but at least it is proceeding. For example, as Ip (2002) has noted:

> The combination of heavy debts, falling revenue, and skittish investors as well as the rapid obsolescence of yesterday's technology are producing a tide of bankruptcy filings. *Forty percent* of the largest filings since 1980 have occurred since the beginning of 2001. . . . And recovery rates—what lenders

> can expect to get back after companies are restructured or their assets sold—were an estimated 21 cents on the dollar last year. (Emphasis added)

Chart 5
Fed Funds Rate—12/2000 to 12/2001



Data Source: Board of Governors, Federal Reserve System

However, corporate debt is closing in on $30 *trillion* or roughly triple GDP (McKay 2002), and the price to earnings ratio of various stock indices is still unrealistically high suggesting that the reflexive feedback loop has not yet reopened.[30] To make matters worse, the government imposed a 30 percent tariff on steel, which it fortunately later rescinded, and punitive duties on Canadian softwood thus provoking a worldwide trade war just as it fights a very hot war on terrorism (Bartley 2002; Laffer 2002; and Rockwell 2002). These are alarming actions for all investors because they clearly and unfortunately point to a protracted, and difficult recovery period. As Clements (2002) observed, "investors are facing a phenomenon unseen in 60 years: three consecutive years of stock market losses . . . the outlook for stocks isn't bright."

Conclusion

Markets are not efficient as that term is currently used in academic finance. Rather, markets are *reflexive* in that market behavior and the fundamentals reflect each other via a two-way, interactive feedback loop. Free markets remain reflexive unless market participants close the feedback loop, which they can do, and have done, to justify and perpetuate a boom.

Practical finance theory was clear on the market behavior boom-bust cycles generate, but it was silent regarding the cause of such cycles. Austrian

[30]On March 28, 2002 the P-E ratios for the S&P 500 and Dow Jones Industrial Average were 31.14 and 28.16 respectively. On January 2, 2003 the P-E ratios for the two indices were relatively unchanged at 33.78 and 23.23 respectively. Source: BigCharts.com.

business cycle theory, on the other hand, provides a clear theoretical explanation of the cause and effects of business cycles. By utilizing both theories in a unified manner it is possible to track each stage of a business cycle, which was demonstrated in an analysis of the recent new economy business cycle. Such an approach could be enormously beneficial to both academicians and practitioners during the next business cycle.

Appendix One

Buffett completed graduate studies in economics at Columbia University in 1951. That was where he met Benjamin Graham, the founder of what has come to be called "value investing," and began his now legendary investment career. As Lowenstein (1995, p. 319) indicates,

> Buffett seemed especially resentful about the [efficient market] theory's hold on his alma mater. He was willing to give a lecture at Columbia, and did so every year or two, but refused to donate money to it. John C. Burton, the business school dean, said, "He told me very frankly he didn't think education was enhanced by money and secondly that he didn't think business schools were teaching the things he wanted to support. He was very hostile to the idea of efficient market research."

Regarding Buffett's thoughts on the EMT, Bernstein (1993, pp. 143-43) relates the following:

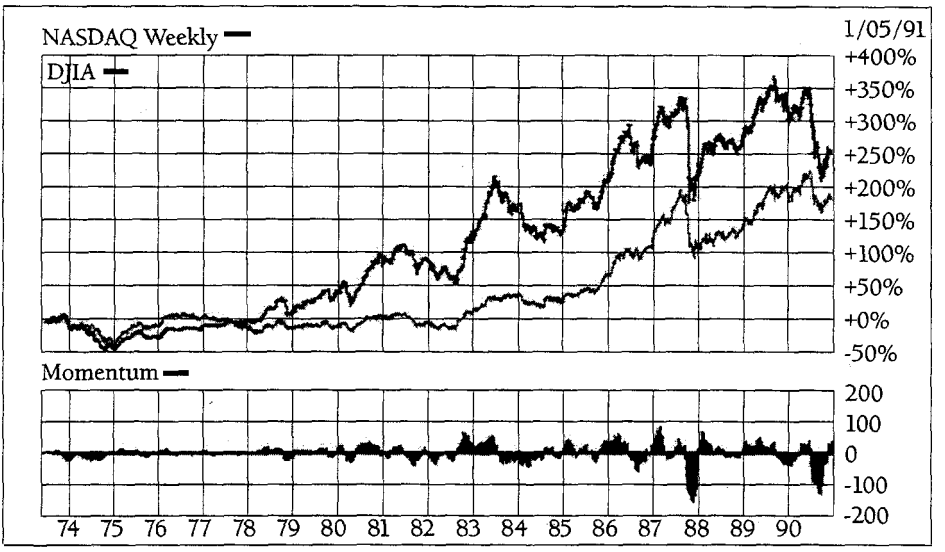
> Consider this set of coin-tossing possibilities, proposed by Warren [Buffett]. Suppose 225 million Americans all join in a coin-tossing contest in which each player bets a dollar each day on whether the toss of a coin will turn up heads or tails. Each day, the losers turn their dollars over to the winners, who then stake their winnings on the next day's toss. The laws of chance tell us that, after ten flips on ten mornings, only 220,000 people will still be in the contest, and each will have won a little over $1,000. After that, the game heats up. Ten days later, only 215 people will still be playing, but each of them will be worth over $1,050,000.
>
> [Buffett] suggests that this small group of winners will marvel at their own skills. Some of them will write books on "How I Turned a Dollar into a Million in Twenty Days Working Thirty Seconds a Morning." Or, they will tackle skeptical professors of finance with "If it can't be done, why are there 215 of us?" But, [Buffett] goes on to point out, "then some business school professor will probably be rude enough to bring up the fact that if [225] million orangutans had engaged in a similar exercise, the results would be much the same–215 egotistical orangutans with 20 straight winning flips.

Appendix Two

The purpose of Soros's technical model is to illustrate the eight stages of a business cycle through the graphical depiction of a speculative bubble. The

boom and bust waves of a business cycle are characterized by a *bubble-like* price pattern, and by the divergence between market behavior and the fundamentals. Soros chose stock prices and earnings per share (EPS) to represent market behavior and the fundamentals, respectively, in his technical model. As discussed above, an EPS proxy was needed to illustrate the new economy business cycle because earnings data for the NASDAQ are not available. The Dow Jones Industrial Average (DJIA) was chosen as the proxy for two reasons. First, the blue chip stocks that make up the DJIA are widely considered the value standard because of the ability of the corresponding blue chip firms to deliver consistently exceptional total returns to shareholders. The second reason pertains to the long-term trending consistency of the two indices, which is illustrated below:

Chart A1
NASDAQ Index and Dow Jones Industrial Average–1973 to 1990



Source: BigCharts.com

As can be seen, both indices trended over a relatively consistent range from 1978 through 1991. Chart 2 above shows this range remained relatively intact until the later part of 1998. At that time, the divergence between the two indices began to expand as the NASDAQ entered *Stage Four* and *Stage Five* of the boom. The divergence clearly illustrates capital flowing out of the "old economy" and into the "new economy." Correspondingly, Chart 2 illustrates how the divergence collapsed during the subsequent bust.

Admittedly, no proxy is perfect. I would much rather have EPS data to analyze this business cycle. However, the proxy chosen here does facilitate the analysis of the eight stages of the new economy business cycle even though an exact comparison with the technical model is not possible given the lack of NASDAQ earnings data.

Appendix Three

According to McLean and Elkind (2003, p. 81), Enron was short of cash "practically from the day Ken Lay created" the firm. Enron found a way around its cash needs via a financial device called the prepay. McLean and Elkind (2003, p. 81) describe the prepay as follows:

> Enron would agree to deliver natural gas or oil to an ostensibly independent offshore entity [or Special Purpose Entity] that was, in fact, set up by one of the lenders. . . . The offshore entity would pay Enron upfront for its future deliveries and promise to deliver natural gas or oil to the lender. The lender, in turn, agreed to deliver the same commodity to Enron. The company would pay a fixed price for those deliveries over a period of time.
>
> On paper these looked like separate transactions. But they weren't. The commodity trades in effect canceled each other out, leaving Enron with a promise to pay a fixed return on the money it has received–exactly like a loan with interest![31]

Enron used its cash to boost its earnings, and to fund a multitude of projects, many of which were malinvestments. For example, Behr and Witt (2002a) reported that Enron dealmakers, "flew around the world, overpaying for power plants in India, Poland and Spain, a water plant in Britain, a pipeline in Brazil, and thousands of miles of Internet cable. Enron accumulated 50 energy plants in 15 countries. Virtually none of them were profitable." Similarly, Behr and Witt (2002b) indicated that shortly after Jeff Skilling became Enron's CEO in August 2001:

> Enron abandoned a costly bid to become the leading supplier of first-run movies on the Web. Its other bright hope, retail electricity, was fading. . . . The company's costly power plant in India was mired in political controversy. Enron privately classified 45 percent of its $9 billion in international projects as "troubled" assets.

Furthermore, Enron deals were frequently backed by Enron stock ensuring a financial collapse if and when the stock collapsed (Behr and Witt 2002b). As Soros (2003, p. 30) observed:

> Enron, like many companies, used special purpose entities (SPEs) to keep debt off its balance sheets. But unlike many other companies, it used its own stock to guarantee the debt of its SPEs. When the price of Enron fell, the scheme unraveled, exposing a number of other financial misdeeds the company had committed.

Behr and Witt (2002a) conclude that this financial strategy:

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[31] See also Behr and Witt (2002a).

> worked well for the short term, when Enron needed a quick boost for its quarterly earnings. But as Enron's trading [businesses] expanded, its other businesses underperformed. Its debt and cash needs kept growing, so the company needed to make more and bigger "structured transactions" to keep the game going—pledging increasing amounts of [its] stock. Enron's strategy began to resemble what members of Congress would later call a high-tech Ponzi scheme.

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