

The Problem of Irrational Bubbles in Financial Markets

Aleksandar Zaklan – Socrates

Much writing on the stock markets is based on the efficient market hypothesis, which assumes that all actors act rationally. Aleksander Zaklan challenges this hypothesis, using recent examples to prove his case. He decides that the USA's stock markets show characteristics of a bubble. He then goes on to analyse how the Fed could intervene to lessen the effects of a bursting bubble. He concludes that the best method of intervention is not entirely clear.

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. J.M. Keynes – The General Theory: 159

Introduction

Financial markets are at the very centre of the Anglo-Saxon economic world. They are supposed to allocate capital where it can be employed most usefully, being an impartial judge of the value of investments performed through it. Therefore, they are to be let their free will, as they will care for valuations equal to the assets' fundamentals. They will do so through the rational nature of its participants that earn profits by keeping the assets at their fundamental values or bringing them back there, thereby crowding out participants acting contrarily to this. This assumption has led to the Efficient Markets Hypothesis, stating that all available information is contained in the assets' prices.

Recent literature, however, challenges this view, suggesting that departures from fundamentals, called bubbles, are possible and eventually result in a collapse of asset prices that can spill over into the real economy and cause a severe recession. I shall attempt to find out about the possibility of the occurrence of financial bubbles, describe their manifestation and find reasons for their development.

If one accepts the possibility of such a bubble, the question should be posed whether it is possible for the central bank, as the anchor institution, in any one economy to take measures against it, since in that case the market would not be able to do so. I shall examine this problem in the context of the American stock markets during the 1990s and therefore the possible role of the Federal Reserve System. I chose the American stock markets because of their size and influence on the rest of the world's financial system. Also, there has been enormous growth in its assets' value over the past decade.

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More specifically, this paper is organised as follows: a literature review on financial bubbles, empirical evidence on historical bubble developments and the situation in US stock markets during the 1990s, a review of the central bank's scope of action and an application of this scope to the specific situation in the US during the past decade. A conclusion follows.

ARE BUBBLES POSSIBLE?

Arguments against

The most prominent propagator of financial market efficiency is Milton Friedman.¹ He admits that some market participants might invest too heavily in certain assets so that these depart from their fundamental values. However, these always have rational investors betting against them, knowing that the asset prices are not justified. These rational agents make profits by returning asset prices to their fundamentals, thereby making irrational traders lose money and eventually forcing them out of the market. According to this, speculative bubbles are not possible, as any such movements are corrected immediately. From this line of argument follows the Efficient Markets Hypothesis, stating that the current price of assets represents all available information concerning them.

Another explanation for a supposed non-existence of financial bubbles is by Garber (2000). He sees a bubble as the manifestation of irrationality. He states that if financial behaviour results in a pricing of assets that only *ex post* turns out to have been too high, but at the time of pricing could have been expected to be true, it was not irrational. Therefore, a bubble is *per definitionem* excluded. To me, this is like describing a simple economic model, excluding certain important factors by definition and then claiming that because they have been excluded in the model they do not exist in reality.

Arguments for

There is a bulk of literature challenging the view that markets are rational. Different factors are being identified that may exert influence towards a deviation from asset pricing according to fundamentals and thus induce the development of a bubble. One approach concentrates on the characteristics of human nature itself.

¹ ...in his 1953 paper "The Case for Flexible Exchange Rates"

Keynes (1936) is taking this stance. For him, there is a tendency to move in a crowd, leading to short-sightedness, overreaction to news and distorted estimation of risk. This led him to conclude:

The actual, private object of the most skilled investment [...] is to outwit the crowd, and to pass the bad, or depreciating, half-crown to the other fellow. [...] We [...] devote our intelligences [sic] to anticipating what average opinion expects the average opinion to be (Keynes, 1936: 155-156).

Shiller (1998) gets more specific, referring to certain psychological and sociological concepts describing human behaviour to explain inefficiencies in financial systems.

Prospect theory suggests that people exaggerate or underestimate probabilities for the occurrence of certain effects, leading to departure from rational expectations towards more non-linear types of behaviour. The concepts of regret and cognitive dissonance lead to incorrect market timing, inducing individuals to sell at only moderate gains in order to avoid errors and to keep depreciating stocks in order not to finalise an error previously made. Overconfidence leads to excessive extrapolating of trends and gambling behaviour. A famous example of gambling behaviour is that of Sir Isaac Newton, who during the South Sea Bubble first made a profit of 7,000 Pounds, then bought in again and lost 20,000 Pounds (Kindleberger, 1989). The phenomenon of anchoring states that market participants have different price backgrounds at the beginning of their market involvement to which they intuitively refer when making decisions about investments, thus having different perceptions of fair asset valuations. The disjunction effect describes the habit of waiting for information, even if it is completely irrelevant to the individual investment decision. This could explain low trading volumes and low market volatility before press announcements and high values in both categories afterwards. This pattern does not only manifest itself in the case of shares for which meaningful information can actually be expected, which would be understandable, but is evident across the market (Shiller, 1998).

According to Sachs (1998), beliefs can lead to self-fulfilling prophecies, resulting in mass dynamics, causing either boom or bust. An example for this would be the common belief that the US economy will have a soft landing. If most of the market participants think so, they will keep their volume of investment steady. This in turn might lead to a stabilising of the economy, which quite strongly depends on

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the state of its financial markets.

Shiller (1999) questioned institutional investors and individual investors and constructed indices of their bubble expectations. The expectation indices exposed many short-term oscillations. This seems to confirm the observation of overreaction to market news and anchoring (Shiller, 1998). Other authors concentrate on informational imperfections. Shiller (1995) states that limitations of time and natural intelligence make individuals follow the behaviour of a group of leaders. From this, a herd externality can be inflicted upon markets.

This herd behaviour is modelled explicitly by Banerjee (1992). In his model individuals ignore own information, relying upon signals received through the behaviour of others that have moved earlier. As a result of this behaviour the stream of information is narrowed and individuals start moving as a herd. To me, the model, even if somewhat artificial and constrained in its set-up, is a plausible explanation for the possibility of a bubble development.

Today, many investors rely on certain media for information, instead of conducting original research. Garber (2000) even sees it as a sign of rationality. However, the main market participants' technically sophisticated asset valuation models are based on certain assumptions and may lead to a false sense of accuracy, being potentially wrong in predicting asset price evolution and additionally preventing the users from consulting other sources of information ("Turbulence..., ???")². Even a crisis with relatively light consequences for lending financial institutions, such as the Russian debt default in 1998, can have severe consequences through the simultaneous use of the same risk management techniques by financially potent actors like banks. These risk management techniques may suggest the same actions that can result in a market breakdown, if sufficient financial power is involved.

Some authors suggest the possibility of a rational bubble, in which higher returns can be achieved due to the higher risk that the bubble might burst. Even rational investors might get locked into such a situation, as they would lose money if they were to just stand aside and watch the development (West, 1988, Frankel & Froot, 1990). The key issue in most of the modern research is the role of so called noise traders that do not act according to fundamental predictions of values, but try

² Unfortunately I have to refer to this article in this imprecise manner, as neither the author nor the year of publication was evident from it.

to “outwit the crowd”, thereby amplifying the crowd’s movements and taking the trade away from the fundamentals.

This stream of research raises a number of issues surrounding the supposed controlling of noise traders through rational speculators who supposedly bet against them and thus bring asset prices to fundamentally justified levels. Cutler *et al.* (1991) see price movements as a result of the speculative process itself, with changing noise trader sentiment being better able to explain variations in asset returns than changing risk factors.

De Long *et al.* (1990a)³ developed a model showing that noise traders increase the systemic market risk through exaggerating price movements. Rational investors cannot control them adequately because of this increase in systemic risk and due to the fact that their time horizons are limited. The impact of noise traders is even greater if a group of passive traders is included. To me this model seems reasonably realistic, if you picture noise traders as being large, highly leveraged mutual funds and passive investors being individual long-term investors or holders of passive index funds.

De Long *et al.* (1990b)⁴ use the model of De Long *et al.* (1990a) and set out to explain the recurring development of feedback bubbles over time. They state that noise traders tend to chase the trend by extrapolating price changes instead of price levels, a development that is not sustainable over time. For example, it should be fairly impossible for an industry to grow at an annual rate of more than 50% for much longer after its infancy, such as seen with US dotcom companies. This statement seems to fit with Shiller’s (1998) observation of overconfidence in investors. According to De Long *et al.* (1990b), rational investors seem to trigger actions by noise traders, which lead to a destabilisation of prices.

Overall, a common pattern in the development of a feedback bubble seems to be observable. Firstly, there is an accumulation phase with rational investors, so

³ Please note that I named the articles by De Long *et al.* 1990a and 1990b, without themselves being marked in this way. 1990a refers to: J. Bradford De Long, A. Schleifer, L.H. Summers, R.J. Waldmann. “Noise Trader Risk in Financial Markets.” *Journal of Political Economy*. 98.4 (1990).

⁴ See J. Bradford De Long, A. Schleifer, L.H.Summers, & R.J. Waldmann. “Positive Feedback Investment Strategies and Destabilizing Rational Speculation.” *Journal of Finance*. 45.2 (1990).

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called smart money, buying into assets. Then noise traders appear on the scene, leading to a wider distribution of assets and inflation of asset prices. The third and last step is a liquidation of the assets in which smart money makes profits and uninformed noise traders mostly lose out. This process repeats itself over time. New bubble situations seem to differ from previous ones, as the development can span several years and therefore is not immediately recognisable as a bubble. This may be due to noise traders' limited horizons and their failure to learn from past actions (Shiller, 1998).

Overall, the approaches of De Long *et al.* (1990a) and De Long *et al.* (1990b) could be united towards the conclusion that rational investors could be steering the development of bubbles, resulting in a redistribution of capital from "stupid" to "smart money" via the bubble mechanism. Kindleberger (1989) also follows this approach, stating that through this mechanism professional insiders part outsider amateurs from their money.

Mishkin (1991) presents an asymmetrical information approach to explaining the emergence of financial crises. According to him, there is a common pattern in most of the crises he analyses, for which he proposes the following transmission mechanism. Falling prices in corporate equities increase the danger of moral hazard, as then poorer entrepreneurs have less to lose by engaging in fraud. Therefore uncertainty in principal-agent relationships rises, expressing itself in an increase in the spread between interest rates on high quality corporate bonds as opposed to low quality ones. Finally, banks restrict their lending by raising the interest rate. This broader approach complements Friedman & Schwartz's (1963) notion that a contraction in the money supply best explains financial crises. Mishkin's (1991) approach illustrates the possible spill-over process from the bursting of a financial bubble towards a recession of the real economy.

The material examined so far clearly suggests to me that financial bubbles can indeed exist. Also, in my opinion some of the above-presented approaches to explaining bubbles can be applied to the situation in the US during the 1990s. Now I shall proceed to back this intuition up with empirical evidence.

Evidence on bubble developments

According to Frankel & Froot (1990), the ratio of noise traders to rational investors is an important indicator of the overall extent of speculation in a market and thus the possibility of a bubble development. In their discussion they try to

explain the huge appreciation of the US Dollar in 1984 and 1985. They suggest that this appreciation might have been influenced through noise trading and that for this reason the US Dollar overshot its equilibrium exchange rate. They find that this development might have been influenced through a switch from forecasting based on fundamentals to technical analysis by most financial institutions, which account for about 95% of the total trading activity in the currency market. In 1978, from twenty three analysed forecasting services in total only 3 institutions conducted technical analysis and nineteen preferred forecasting based on fundamentals. In 1988, however, from thirty-three in total, eighteen used chartist techniques and only seven stuck to fundamental analysis, while six used both approaches. The overvaluation of the Dollar compared to the Euro in 2000 might be explained by the same factors.

This conclusion seems to be consistent with the observation of excessive extrapolating of trends by speculators that might lead to a bubble situation (De Long *et al.* (1990a); De Long & Schleifer, 1991; Shiller, 1998). Friedman & Schwartz's (1963) analysis concludes that real recessions are caused by a contraction in the money supply. This leads me to the conclusion that this contraction may well have been caused by the collapse of a previously emerged financial bubble, through which the money supply might have been over-expanded.

Mishkin (1991) analyses several financial crises in the US spanning the period from 1857 to 1987. In almost all of them there was a common constellation of falling asset prices, rising interest rate spreads and rising interest rates at the onset of a recession in the real economy. Like in the case of Friedman & Schwartz, I interpret Mishkin's (1991) results as evidence of a bubble that has burst shortly before and is then spilling over into the real economy. If the asset market was in a sound state, why should the problems described by Mishkin (1991) have happened in the first place?

At the moment, in the US the stock market prices have fallen considerably, marking a possible emergence of the asymmetric information problem described by Mishkin (1991).⁵ Interest rate spreads have risen to their highest level since the 1991 recession. The main difference between the situation described by Mishkin (1991) and today's situation in the US would be that in the US is not in a recession. The situation's peculiarity seems to be clear to the monetary authorities, judging from the swift and surprising interest rate cut by the Fed on January 3, 2001.

⁵ See the *Financial Times* from January 6th, 2001

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De Long & Schleifer (1991) analyse the stock market development in 1929 from the perspective of closed-end mutual funds. They state that the S&P index was overvalued by at least 30%. They find that although at the height of the stock market boom the fundamentals justified high values, the asset prices could not be explained by valuation models used at that time. Mutual funds were sold at a premium. More importantly, funds were pyramided on top of each other with new funds holding shares of previously launched ones as assets in order to "part fools from their money". De Long & Schleifer (1991) also find that the number of funds being launched was especially high when noise traders were very bullish, suggesting that rational agents profited from the speculators' excessive optimism.

They conclude that the market was determined by irrationality, with rational investors being unable to correct the development due to their short time horizons and uncertainty resulting from this. Together with economic vulnerability arising from the disproportionate importance of equity financing for investment purposes and the Federal Reserve's uncertainty about how to conduct monetary policy, this bubble laid the foundation to the world's worst economic contraction in modern times. For the following conclusions, I shall assume that De Long & Schleifer's (1991) observations can be applied to the whole stock market, not only to mutual funds, such as suggested by Shiller (1999).

During the 1990s, many companies used the stock market as a source of finance. Also, many funds were launched, suggesting a higher economic vulnerability through too much reliance on equity financing. These offerings coincided with a high degree of investor bullishness, which might point towards excessive optimism. The rise of the NASDAQ and the launch of the "Neuer Markt" in Frankfurt are impressive examples of the boom in Initial Public Offerings. So far, the parallels between the past decade and the late 1920s seem to be only too apparent. From this, I am inclined to conclude that a bubble has developed in the US stock markets during the 1990s.

Kähkönen (1995) presents evidence that the boom in the Japanese stock market from 1985 to 1990 had characteristics of a financial bubble. He states that fundamentals like the interest rate and the country's historical growth trend did not predict the dramatic rise in asset prices. He suggests that expectations might have been affected through the sharp rise in companies' profits during the period, although part of this rise was cyclical. This cyclical component should not have affected investors if they were entirely rational, but should have been taken into

account in their valuation models.

In my opinion, this point can be readily made about the US during the 1990s. There seems to be a parallel development concerning the stock market whose valuation seems to be increasingly unsustainable. The boom was largely driven by newly created Internet and technology companies or traditional companies that profited from the informational revolution that boosted their productivity. The potential for further increases of this extent seems unlikely.

Kähkönen (1995) also observed a wealth effect that increased Japanese household expenditure, although it was mostly explained through the dramatic rise in land prices, as the Japanese private households did not on average hold large quantities of equity. This wealth effect could have induced the households to spend more than they could sustain in case of asset price depreciation; therefore, it increased the economy-wide vulnerability through increasing the dependence of consumption on a functioning credit market. Private consumption was hit hard through the deterioration of land prices when the bubble burst and companies found themselves not being able to borrow cheaply any more, as the value of their main collateral was hugely diminished.

In case of the US, a stock-market-induced wealth effect is clearly observable, with households actually having a negative savings rate and basing consumption on credit, relying on ever-rising share prices. To me, this is clearly a sign of a bubble development.

In Japan, after the decline in asset prices in 1990, a high degree of leverage became apparent through the collapse of the asset side of many companies' balance sheets (Haffmaister & Schinasi, 1995). "Turbulence..." points out the vulnerability of the US credit market due to its long expansion during the 1990s, which resulted in an underpricing of risk and made the credit market more unsound. In case of a crisis, this situation, being the decisive factor (Friedman & Schwartz, 1963), might lead to a collapse in the money supply leading to a real recession. In 1998, only through the Fed's swift reaction to the crisis following the Russian debt default, lowering the interest rate and thus ensuring liquidity, was a slump in the money supply averted.

"Turbulence..." found that there was a considerable degree of leverage inherent in the portfolios of globally operating financial institutions that even a minor crisis like the one of 1998 nearly made whole system break down. According to "Turbulence...", it was largely unknown to market surveillance institutions and

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regulating bodies that such a degree of leverage was reached and only became visible through the crisis. This observation corresponds with Haffmaister & Schinasi's (1995) observations for Japan, saying that a bubble might be relatively difficult to detect in today's complex financial world before it has reached a very late stage.

Let me conclude that there has indeed been a bubble development in the US stock markets during the last decade. I shall now examine whether the US Federal Reserve System, hereafter The Fed, in its roles as the supervisor of the banking system and the conductor of monetary policy, can control this bubble development.

The Central Bank's scope of Action

Preventive Measures

A sound banking system is widely held to be an important basis for stable economic development. Mishkin (1991) sees banks in the role of financial intermediators in business investments, solving agency problems through financial and informational power. However, banks can only fulfil this role, when they are standing on a firm basis and are not distracted by the struggle not to fail because they undertook too many risky investments themselves. The Fed, therefore, can and should impose (together with other regulating bodies) adequate reserve requirements and take care that banks are fulfilling them.

The current requirements⁶ are to hold a reserve of at least 8% of the bank's risk-weighted loans to the non-bank private sector, while for loans to non-OECD countries less is required to be held in reserve. Loans to OECD countries that are assumed to be risk-free, no reserves are required. With the sophisticated opportunities that financial markets offer, the banks can easily circumvent these requirements and expose themselves to more risk without having to keep adequate reserves.⁷ Thus, incentives are perverted, encouraging excessive risk-taking, which can harm the real economy, as bad loans turn sour, especially when the economy

⁶ These requirements have been implemented by the G10 in 1988

⁷ For example, a loan to a county like Russia, which currently muses on a renewed debt default, is per definitionem less risky than a loan to a company like IBM. Also, lending to nearly top credit-rated companies require the same amount of reserves as very low rated firms.

shows signs of a downturn, as it does at the moment. Thus, the banking system can get caught in a bubble development and be the first and most important cause of a severe economic contraction, such as described by Friedman & Schwartz (1963), Kindleberger (1989) and Mishkin (1991).

The Basle Committee on Banking Supervision in its report from January 16 suggests that banking regulation should be made much more sophisticated.⁸ It recommends that a minimum capital reserve should be ensured through either more sophisticated external risk measurement rules or internal risk assessment by banks, since it should be prudent for the banks themselves to ensure a proper risk management. The incentive to succeed in this is high, namely qualifying for reduced capital requirements. Secondly, disclosure is to be enhanced, especially necessary for the internal risk assessment to work properly. Also, it provides the central bank with wider foundations of knowledge on which to base its assessment of the degree of leverage inherent in the financial system. This is important to make crisis situations easier to forecast and avoid surprises like during the Russian debt default in 1998 ("Turbulence..."). Thirdly, banking supervision is to be strengthened to ensure that the individual banks are playing by the rules.

To implement and guard these rules is a very important task and should be pursued thoroughly by the Fed. In my opinion, this would be a very good approach to making the banking system, and through the various stages of the transmission mechanism the economy as a whole, more immune to financial bubbles.

Apart from banking supervision, the Fed can use monetary policy to ensure economic stability. Alexander (1996) observed that volatility in financial markets is affected by the monetary policy regime and depends on the credibility of the central bank. As for credibility, the Fed's chairman Alan Greenspan has built it through years of skilful steering of America's monetary policy. It is problematic to steer the real economy, which is its primary target, and the financial markets successfully at the same time, as financial markets are much more subject to other influences, such as stated above. A steady and reliable monetary policy does therefore not seem to suffice to ensure a stable development of the stock markets. Even under Mr. Greenspan's leadership, the Fed was not able to prevent the development of the bubble during the last decade. To me, tight banking supervision to avoid excessive risk-taking seems to be more promising as a preventive measure.

⁸ See *The Economist*, Vol. 358, No. 8205, January 20th -26th

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Interventionist measures

If there is a sign that individual banks do not comply with the laws, their banking licence can be withdrawn, as might happen in the case of Credit Lyonnais.⁹ Breaching of reserve requirements can also be penalised. At least this will be more likely when the new rules resulting from the Basle committee report are implemented in 2004. These individual interventionist actions follow largely from the Fed's supervisory duties. However, when a bubble has already developed, especially when it is about to burst or even has evolved into a full-blown crisis, these measures are more than unlikely to halt the panic, rather they would magnify it.

When the bubble has evolved, the central bank can try to deflate it by seeking to influence market sentiment and make the market participants aware of the danger of the situation. Mr. Greenspan's famous 1996 remark about the markets' "irrational exuberance" can be put into this category. This approach must be handled with extreme care in order to avoid panic and in the "irrational exuberance" case it has proved to be futile, as the upward trend in the markets went on for another half decade.

The standard method of steering the market development is through monetary policy measures. Changes in the interest rate affect the market interest rate and thereby the discount component of share valuation models. The problem about this technique has already been described in the above section. The effect of interest rate changes on the real economy becomes apparent with a considerable time lag of about one year. Stock markets, however, react very sensitively, especially when the change comes as a surprise, as can be seen from the Fed's rate cut on January 3, 2001, when the NASDAQ rose by 14 % in one day.

It is very hard to decide when the central bank should intervene by rising or lowering the interest rate in a stock market boom. Goodhart's law applies here, acknowledging the impossibility of finding a factor that still predicts an outcome correctly when statistical pressure is put on those aggregates. Even if the right moment for such an intervention was known, it might be a very unpopular move that could cause the panic it should help to avoid. Apart from setting the interest rate, the

⁹ See *The Economist*, Vol. 358, No. 8204, January 13th - 19th, regarding the duties of the Federal Reserve Bank of New York in the case of a proof of breaching the law by Credit Lyonnais

central bank can also direct the money supply through its monopoly on the creation of money. This instrument also functions with a delay. Economic conditions can change too rapidly as to use it to respond to current trends in this way.

The monetary instruments cannot be used without constraint or risk. They may be constrained by factors such as high government debt and currency exchange rates (Alexander, 1996). Another important factor is the wealth effect the rising share prices had for American consumers. With the savings rate remaining on a negative level and the private indebtedness therefore rising, the Fed cannot afford to let the market become too bearish without risking a fall in demand and a resulting recession that might set off a vicious circle.

These are just few examples to illustrate that the Fed is moving in a highly complex environment, which is currently characterised by extreme tension produced by a slowing economy, a still overvalued stock market and political uncertainty after the Presidential election. Such a situation may lead to a financial crisis that makes the bubble burst; then the market is in need of liquidity that is drying up as panic makes investors rush out of assets into money. This situation requires a lender of last resort in order to reverse the trend and prevent the banking system from collapsing, such as advocated by most writers on the topic. A credible central bank like the US Fed acting as lender of last resort can restore confidence and prevent a more severe crisis, such as seen in 1987.

The problem the central bank faces in this role is a problem of timing and the amount of liquidity it should pour into the financial system, with the timing being the especially tricky matter (Kindleberger, 1989). The question may be posed as to why a central bank should act as a lender of last resort in the first place, as it weakens the market mechanism punishing investors that have proved to be too prone to risk. In other words:

The ultimate result of shielding man from the effects of folly is to people the world with fools. (Spencer, in Kindleberger, 1989: 179)

Kindleberger (1989) and others state that the central bank should play this role nevertheless, as to protect sound investments from being destroyed through the panic triggered by some that may "deserve" to fail. The Fed should take care that a possible financial crisis does not spill over into the real economy and if it does, it should act towards making the recession as short as possible.

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I would partly agree with Mr Spencer, being convinced that investors should have to learn from their mistakes and not blindly rely on someone to help them out of the misery they might have brought themselves into. The Fed should provide the public good of the lender of last resort in well-measured doses. This would minimise the resulting free-rider problem of reckless investors relying on the central bank to help them without having complied with its standards previously.

Conclusion

To once more refer to the question posed at the beginning of this paper. Do American stock markets show characteristics of a financial bubble? Firstly, we had to answer the question if something like a bubble might exist at all, given the statement that markets are self-adjusting as to always reflect the assets' fundamentals. The answer to this question has been yes.

Then, the more specific situation could be tackled. Above, I had to answer this question with a clear yes as well. This yes has led to the disturbing notion that the financial markets might be inherently unstable, as suggested by Kindleberger (1989).

A positive answer to the following question about the potential of the central bank to control this instability was strongly desired. The answer to this question is not a clear yes. It can be said that the central bank can exert a fair amount of influence to stabilise the financial system. It can do so via banking supervision and monetary policy.

The Central Bank cannot fulfil this task without the assistance of prudent investors who ensure that their investments remain sound. If things get bad, the central bank can and should do a great deal to restore the investors' confidence and prevent that things get worse than they have to, but investors also have to go through a learning process and guard themselves against excessive greed.

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