LITERATURES ABOUT ASSET PRICE BUBBLES AND MONETARY POLICIES

BABAEI SEMIROMI - MOHAMMAD REZA[1]

Abstract

Bubbles arise when assets consistently sell at prices in excess of what is deemed an asset's fundamental value. Some researchers have defended the idea that it is possible that asset price bubbles moderate the effects of financial market frictions, like credit constraints and improve the allocation of investment, despite the occasional busts. Since asset prices affect the real allocation of an economy, it is important to understand the circumstances under which these prices can deviate from their fundamental.Strong regulatory and supervisory institutions are always the best line of defense. In this context, maintaining the credibility and reputation of the central bank so that it will be able to carry out its core function maintaining macroeconomic stability is essential.

JEL codes: E31,E52,E60.

Key Words: Asset price bubbles, monetary policies, expectations, Macroeconomic.

1 Introduction

Stories of speculative bubbles and the ensuing crashes are fascinating. When reading through, for example, extraordinary popular delusions and the madness of crowds by Charles Mackay (1980) one is left with the overwhelming thought, 'how could rational people behave so?' Cautionary tales based on the Dutch tulip mania are well known, yet bubbles continue to occur. Each generation seems to believe that 'this time it will be different'. Railways, electricity and the Internet are all great technological advances that spawned great speculative excess. The main purpose of this paper is discussing about theoretical, historical and macroeconomic non-efficiency of asset price bubbles. In this paper don't follow any empirical or real data and evidenced about bubbles. The main sections of this paper are definition of bubbles, some famous bubbles and the effect of bubbles on monetary policies.

2 Bubbles in economic

2.1 What's a bubble?

A bubble is the difference between an asset's fundamental value and its market price. The fundamental value is the amount of discounted future dividends and the price of the asset when it is sold in infinite future. This is the price that we would expect in a economy that consists of rational individuals with infinite horizons. If the price deviates from this level, the deviation is called a bubble.

According to Larsen(1997), A bubble on an asset may arise when the market values an asset more because it previously has increased in value. The traders believe that since the asset has increased before, it will pay off to hold it for a limited period of time. The previous increase promises a continued increase in the future. This is often called a self fulfilling prophecy, since the increase in itself leads to a higher demand for the asset and hence a further increase in the price. Other reasons for the market to expect a future increase in the bubble are possible too, but this is often used as a plausible explanation.

An important feature of the bubble is that if the participants in the market are rational, a bubble will normally not arise if the market consists of rational individuals with infinite horizons and there are a finite number of individuals in it. People having infinite horizons will never buy an asset for more than what they consider the fundamental price, and hold it forever. If they do, they will decrease their utility today by more than the utility that they will receive later as future income (the dividends). Therefore everybody knows that no one will hold such assets infinitely, expecting a price drop in the future. If the price drop is expected, you will make a sure profit by selling the asset as soon as its price is above the fundamental value, thus making a bubble impossible. A similar argument can be made in the case of a negative bubble if this is allowed. According to Harman and Zuehlke (1994), The recurrence of speculative excess in widely differing environments suggests that it is, at base, a product of human nature. As such, Australia has had its fair share of speculative excess. This paper will examine three occasions when Australia has experienced asset-price bubbles: the land bubble in Melbourne in the 1880s; the Poseidon nickel bubble of 1969–1970; and the stock and property market bubbles of the late 1980s. These episodes cover property markets, mining stocks and stocks more generally; as such they provide a diversity of experience that a study of episodes in the stock market alone would miss. Mining stocks, for example, behave very differently to those of stocks more generally because of the inherent riskiness of the activity. The property market is different again.

The term speculative bubble is often used to describe persistent market overvaluation followed by market collapse. Bubbles arise when assets consistently sell at prices in excess of what is deemed an asset's fundamental value. Prior research has employed a number of methods to test for speculative bubbles in asset prices. One method, employed by McQueen and Thorley (1994), is based on the statistical theory of duration dependence. Their theoretical model suggests that if security prices contain bubbles, then runs of positive abnormal returns will exhibit negative duration dependence (decreasing hazard rates). That is, the conditional probability of a run ending, given its duration, is a decreasing function of the duration of the run.

2.2 Are asset price bubbles dangerous?

The question in the title of this section is not a rhetoric one. The answer is not so straightforward as one might tend to believe. Certainly not all asset price booms are dangerous. Booms are likely to be costly if associated with high leverage, which is, for example, usually the case in housing price booms. Economists have argued since long that it is conceivable that a boom-bust cycle

[1] - Mazandaran Payam-e-Noor University - Iran (PNU), e-mail: mreza_babaei@mpnu.ac.ir , mrezababaei@hotmail.com

ridden development could potentially exhibit a stronger rising trend growth path than one would observe for a notoriously boom-free country.

For example, some researchers have defended the idea that it is possible that asset price bubbles moderate the effects of financial market frictions, like credit constraints and improve the allocation of investment, despite the occasional busts. Of course, one cannot exclude that it could be beneficial for long run growth to ease borrowing constraints, but it should not be at the expenses of a stable financial system, which favours an efficient allocation of capital and it is thus intrinsically related to the good performance of the economy and its resilience to shocks. A different but related argument claimed by the literature is that the optimal degree of vulnerability to banking crises must not be zero. Under certain conditions it can be optimal not to be fully insured against liquidity crises in the banking system, in order to spur financial intermediation, Increase the amount of credit available for investment and thus foster growth in the long run. Each of these theoretical findings is clearly derived under special assumptions, but nevertheless they provide food for thought. I mention these examples in order to remind us of being prudent in calling for policy makers' corrective actions when some risk of financial fragility is detected. Even if the existence of a bubble would be generally acknowledged - an unlikely situation in light of what I mentioned in the previous section - the policy maker's response - if any - has to be carefully devised, especially with regard to its long run effect on the working of the financial system.

2.3 The Relationship Between Asset Price Bubbles and the Financial System

Kindleberger's (1989) detailed account of the history of financial crises suggests that any reasonable reading of economic history would conclude that speculative bubbles occur and inevitably lead to crashes. Moreover , he finds that asset price bubbles are often, although not always, related to banking crises and are typically fuelled by some form of monetary expansion. Kindleberger's findings are supported by empirical evidence that bank failures are inversely correlated with the business cycle.

A theoretical link between the behaviour of financial institutions and asset price bubbles is provided by Allen and Gale (2000) who argue that the existence of agency costs in the banking sector, combined with uncertainty about future credit expansion, determines the extent of asset price bubbles and subsequent effects on the real economy. In their model, agency costs between borrowers and lenders create an incentive for borrowers to take on riskier assets. The risky asset (such as property) is assumed to be in fixed supply, leading to increases in prices above fundamental values. The bidding up of prices of risky assets in fixed supply is magnified by credit expansion. As the price increase accelerates, there comes a point at which uncertainty about future credit expansion (even a contraction in the rate of growth of credit) becomes sufficient to trigger a crisis[2].

2.4 Bubbles and Agency Problems

In many recent cases where asset prices have risen and then collapsed dramatically an expansion in credit following financial liberalization appears to have been an important factor. Perhaps the best known example of this type of phenomenon is the dramatic rise in real estate and stock prices that occurred in Japan in the late 1980.s and their subsequent collapse in 1990. Financial liberalization throughout the 1980.s and the desire to support the United States dollar in the latter part of the decade led to an expansion in credit. During most of the 1980.s asset prices rose steadily, eventually reaching very high levels. For example, the Nikkei 225 index was around 10,000 in 1985. On December 19, 1989 it reached a peak of 38,916. A new Governor of the Bank of Japan, less concerned with supporting the US dollar and more concerned with Þghting inßation, tightened monetary policy and this led to a sharp increase in interest rates in early 1990 (see Frankel, 1993; Tschoegl,1993) . The bubble burst. The Nikkei 225 fell sharply during the first part of the year and by October 1, 1990 it had sunk to 20,222. Real estate prices followed a similar pattern. The next few years were marked by defaults and retrenchment in the financial system. The real economy was adversely affected by the aftermath of the bubble and growth rates during the 1990.s have mostly been slightly positive or negative, in contrast to most of the post war period when they were much higher.

Similar events occurred in Norway, Finland and Sweden in the 1980.s (see Heiskanen (1993) and Drees and Pazarbasioglu (1995)). In Norway the ratio of bank loans to nominal GDP went from 40 percent in 1984 to 68 percent in 1988. Asset prices soared while investment and consumption also increased significantly. The collapse in oil prices helped burst the bubble and caused the most severe banking crisis and recession since the war. In Finland an expansionary budget in 1987 resulted in massive credit expansion. The ratio of bank loans to nominal GDP increased from 55 percent in 1984 to 90 percent in 1990. Housing prices rose by a total of 68 percent in 1987 and 1988. In 1989 the central bank increased interest rates and imposed reserve requirements to moderate credit expansion. In 1990 and 1991 the economic situation was exacerbated by a fall in trade with the Soviet Union. Asset prices collapsed, banks had to be supported by the government and GDP shrank by 7 percent. In Sweden a steady credit expansion through the late 1980.s led to a property boom. In the fall of 1990 credit was tightened and interest rates rose. In 1991 a number of banks had severe difficulties because of lending based on inflated asset values.

The government had to intervene and a severe recession followed. Mexico provides a dramatic illustration of an emerging economy affected by this type of problem. In the early 1990.s the banks were privatized and a Þnancial liberalization occurred. Perhaps most significantly, reserve requirements were eliminated. Mishkin (1997) documents how bank credit to private non financial enterprises went from a level of around 10 percent of GDP in the late 1980.s to 40 percent of GDP in 1994. The stock market rose significantly during the early 1990.s. In 1994 the Colosio assassination and the uprising in Chiapas triggered the collapse of the bubble. The prices of stocks and other assets fell and banking and foreign exchange crises occurred. These were followed by a severe recession. How can bubbles and ensuing crashes such as those in Japan, Scandinavia and Mexico be understood? The typical sequence of events in such crises is as follows.

There is initially a financial liberalization of some sort and this leads to a significant expansion in credit. Bank lending increases by a significant amount. Some of this lending finances new investment but much of it is used to buy assets in fixed supply such as real estate and stocks. Since the supply of these assets is fixed the prices rise above their fundamentals. Practical problems in short

[2] - See Esho N. and Carmichael J. (2001).

selling such assets prevents the prices from being bid down as standard theory suggests. The process continues until there is some real event that means payoffs on the assets will be low in the future.

Another possibility is that the central bank is forced to restrict credit because of fears of overheating and inflation. The result of one or both of these events is that the prices of real estate and stocks collapse. A banking crisis results because assets valued at .bubble. prices were used as collateral. There may be a foreign exchange crisis as investors pull out their funds and the central bank chooses between trying to ease the banking crisis or protect the exchange rate. The crises spill over to the real economy and there is a recession.

According to Allen and Gale(2002), (In the popular press and academic papers, these bubbles and crises are often related to the particular features of the country involved. However, the fact that a similar sequence of events can occur in such widely differing countries as Japan, Norway, Finland, Sweden and Mexico suggest such bubbles and crashes are a general phenomenon.

3 Some evidences from the role of bubbles on assets prices

Bubbles are typically associated with dramatic asset price increases followed by a collapse. Bubbles arise if the price exceeds the assets fundamental value. This can occur if investors hold the asset because they believe that they can sell it at an even higher price to some other investor even though the assets price exceeds its fundamental value.Famous historical examples are the Dutch Tulip Mania (1634 -7), the Mississippi Bubble (1719-20), the South Sea Bubble (1720) and the .Roaring 20.s.that preceded the 1929 crash. More recently, internet share prices (CBOE Internet Index) surged to astronomical heights until March 2000, before plummeting by more than 75% by the end of 2000.

Since asset prices affect the real allocation of an economy, it is important to understand the circumstances under which these prices can deviate from their fundamental value. Bubbles have long intrigued economists and led to several strands of models, empirical tests, and experimental studies. Asymmetric information bubbles can occur in a setting in which investors have different information, but still share a common prior distribution. In these models prices have a dual role: they are an index of scarcity and informative signals, since they aggregate and partially reveal other traders. aggregate information (see e.g. Brunner Meier (2001) for an overview). Unlike in the symmetric information case, the presence of a bubble need not be commonly known. For example, it might be the case that everybody knows the price exceeds the value of any possible dividend stream, but it is not the case that everybody knows that all the other investors also know this fact. It is this lack of higher-order mutual knowledge that makes it possible for it bubbles to exist under certain necessary conditions (Allen, Morris, and Postlewaite (1993)).

First, it is crucial that investors remain asymmetrically informed even after inferring information from prices and net trades. This implies that prices cannot be fully revealing. Second, investors must be constrained from (short) selling their desired number of shares in at least one future contingency for. Nita bubbles to persist. Third, it cannot be common knowledge that the initial allocation is interim Pareto efficient, since then it would be commonly known that there are no gains from trade and hence, the buyer of an overpriced .bubble asset .would be aware that the rational seller gains at his expense (Tirole (1982)). In other words, there have to be gains from trade or at least some investors have to think that there might be gains from trade. There are various mechanisms that lead to gains from trade. For example, fund managers who invest on behalf of their clients can gain from buying overpriced bubble assets, since trading allows them to fool their clients into believing that they have superior trading information. A fund manager that does not trade would reveal that he does not have private information. Consequently, bad fund managers churn bubbles at the expense of their uninformed client investors (Allen and Gorton(1993)). Furthermore, fund managers with limited liability might trade bubble assets due to classic risk-shifting incentives, since they participate on the potential upside of a trade but not on the downside risk.

3.1 The Internet bubble (an real example)

In the more recent Internet bubble there were many features similar to the railway mania and 1929 bubble. The new economy and the benefits of new technology were touted. As documented by Cooper, Dimitrov and Rau (2001), the simple addition of dot com to a company's name was sufficient for it to become the object of speculation. According to Chancellor (1999, p 194)

The unusually long expansion through the 1990s was taken as evidence that the business cycle had been tamed. Indeed, some people claimed that, over the long run, shares were a safer investment than bonds an idea that had also been in vogue just before the 1929 crash. The rise in tech-stocks was frequently justified by claims that the old rules of business no longer applied to these firms a surprisingly familiar refrain. In particular, because few of the firms involved had ever paid a dividend, traditional valuation methods could not support the prices being paid for the stocks. Companies with the vaguest business plans were floated on stock exchanges at huge premiums to the underlying capital. Tech stocks generally reached remarkably high prices was valued at US$26 billion at the end of 1999, approximately 10 times the combined value of their traditional 'bricks and mortar' competitors, Borders and Barnes and Noble.

The clearest measure of the bubble is given by the tech-heavy NASDAQ stock index. Graphing the NASDAQ against the S&P 500 index shows that both grew at around the same rate from 1995 to late 1998. Figure 1 suggests that the bubble may have started around the beginning of 1999 and enjoyed its greatest growth from November 1999 to the middle of March 2000, over which time the NASDAQ index grew by 70 per cent. Because the S&P 500 included a number of tech stocks it would also have been affected by the bubble. Thus, this figure should not be seen as quantifying the size of the bubble in any way.

The collapse of share prices from March 2000 was fairly rapid and, as with 1929 before, there was no obvious real trigger for the collapse. (Ofek and Richardson (2003) suggest that the collapse was triggered by the expiration of lock-up clauses that allowed insiders to finally sell their stock).

By March 2001 the NASDAQ was again level with the S&P index and has remained there since.

Fig 1. US Share Price Indices , (3 january 1995=100)

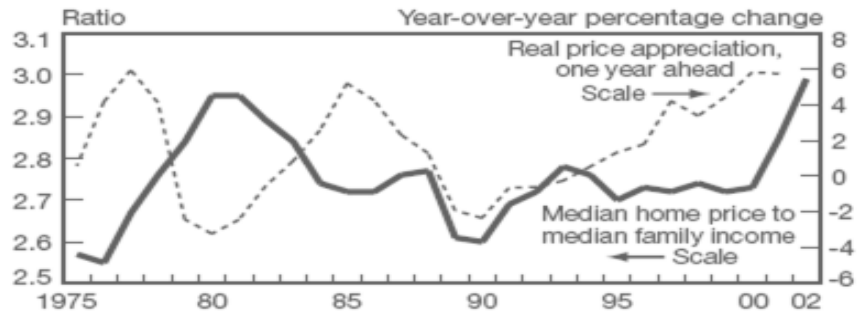
3.2 Evidence of a Bubble in U.S. Home Prices

Before discussing the existence of a bubble, we need to define the term. We subscribe to the definition from Stiglitz (1990): If the reason the price is high today is only because investors believe that the selling price will be high tomorrow when "fundamental" factors do not seem to justify such a price then a bubble exists. Accordingly, the key features of a bubble are that the level of prices has been bid up beyond what is consistent with underlying fundamentals and that buyers of the asset do so with the expectation of future price increases. Although some press accounts treat the rapid rate of increase in national home price series as prima facie evidence of a bubble, our definition dictates that such increases alone are necessary but not sufficient evidence. Additional evidence that relates current home prices to their fundamental determinants is required to solidify any claim of a bubble. Two such measures that have been widely used to support claims of a bubble are home prices relative to household income and home prices relative to rents. Beyond this,some commentators have pointed to the high turnover rate of the housing stock, although this rate has been high for some time.

The ratio of the median home price to median household income is one frequently employed measure of home ownership affordability. If this ratio is relatively high, then households should find both down payments and monthly mortgage payments more difficult to meet, which should reduce demand and lead to downward pressure on home prices. In fact, the median home price, based on the OFHEO index, is now about three times median household income, surpassing the previous peak in the late 1970s and early 1980s, when there was arguably a bubble in the housing market (Fig 2.). Moreover, and of relevance to our analysis, home prices experienced a sizable decline in real terms over the few years following that previous peak. Another common way to evaluate home price fundamentals is to compare them with the implicit rents that homeowners receive from owning their homes. Implicit rent, or owners' equivalent rent, is defined as the rent a homeowner would have to pay to rent a housing unit similar to his home, or equivalently, the rent a homeowner could receive if she rented her home to a tenant. As such, implicit rent is a return to the homeowner from owning her home, much like a dividend is a return to the stockholder from owning stock in a company. Therefore, the ratio of the owners' equivalent rent index from the consumer price index (CPI) to the OFHEO home price index is often treated as the real estate equivalent of a dividend-to-price ratio for corporate equities. A low rent-toprice ratio suggests that the return on the housing asset for homeowners is low relative to other assets that they could hold and thus is unlikely to persist. For the return to rise to a level comparable with returns on competing assets, home prices would have to fall.(See Campbell and Shiller (2001) for a discussion of this mechanism in regard to the dividend-to-price ratio for corporate equities).

Recently, this homeowner's dividend-toprice ratio reached an historic low (Fig 3.). Even though they may not describe the current situation as a bubble, some analysts have used these same measures to argue that the rate of home price appreciation will slow dramatically in the near future. See, for example, Hatzius (2002). The last time the ratio fell below its long-run average—the late 1980s—real home prices subsequently declined significantly[3].

Fig 2. Ratio of median Price of Existing Homes Sold to Median Family Income

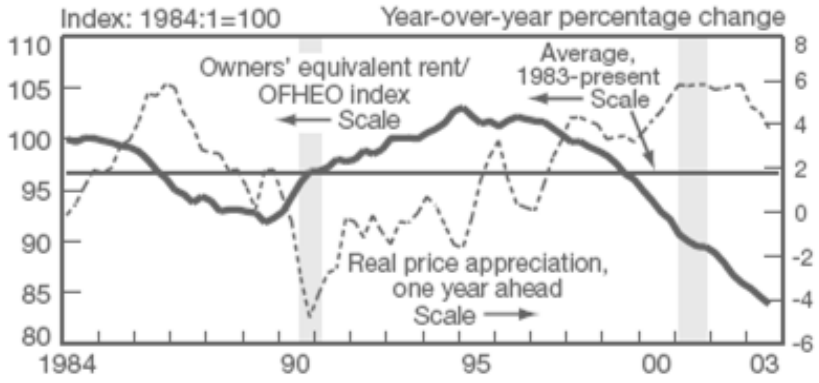


Sources: Office of Federal Housing Enterprise Oversight; U.S. Department of Commerce, Bureau of Economic Analysis; National Association of Realtors.

[3] - See McCarthy J and Peach R.W (2004).

Notes: The ratio is calculated by dividing the median sales price of an existing home by median family income. Median family income for 2002 is based on an estimate from the National Association of Realtors

Fig3. Ration of Equivalent Rent to OFHEO Index.



Sources: Office of Federal Housing Enterprise Oversight (OFHEO); U.S. Department of Labor, Bureau of Labor Statistics.

Note: Shaded areas indicate periods designated national recessions by the National Bureau of Economic Research.

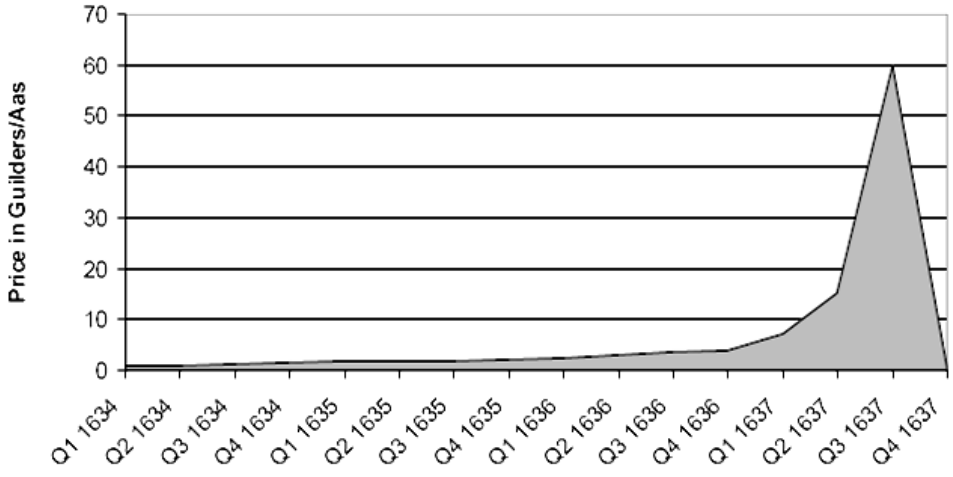
3.3 The Dutch Tulipmania

One of the earliest examples of market mania leading to an asset price bubble occurred in Holland from 1634-37. It is often quoted as an example of how a fad or fashion for a particular commodity can hype valuations to absurd levels and how speculators neither owning nor desiring the produce itself exacerbate market fluctuations. The Dutch had a long history of trading in tulip bulbs, but in the early 17th century the rarer varieties became prized by aristocrats and wealthy merchants in Holland and other parts of Europe. Their fashionable allure arising precisely because of their beauty, fragility and difficulty in propagation, they became a status symbol for the wealthy; rather like a couture dress today that might sell for tens of thousands of pounds. Rising prices through fashions demands attracted non-professionals into the tulip trade from 1634. The fact that the Dutch operated an early kind of futures market in bulbs, where trades could be made on bulbs still in the ground, encouraged speculative investment - similar to what happens today in agricultural commodities like potatoes, wheat, oranges and coffee. (See Fig.4.)

In the final stages of the mania foreign investment flooded Holland and people of all classes liquidated other assets in order to trade in tulip bulbs. True futures markets emerged in 1636 where buyers neither possessed the cash to purchase bulbs in the future nor did the sellers possess the bulbs to deliver. Futures contracts themselves were traded wildly in a frenzy of speculative gambling.

At the height of the mania a single Semper Augustus bulb was sold for 5500 guilders, equivalent at the time to the price of a substantial house, and hundreds of thousands of investors were gambling their entire fortunes on futures contracts or the bulbs themselves which had minimal real value. As always with manias; the frenzy died almost overnight in February 1637. The specific reason remains unknown, although it is likely that large traders simultaneously tried to cash in on their good fortune (aware of the folly of the crowd), flooding the market with tulip bulbs and causing prices to spiral downwards. Prices quickly fell by 90%, and Holland was mired in an economic slump as thousands of individuals apparent fortunes vanished.

Fig.4. Gouda Tulip Bulbs (1634-1637)



Source: Elliot wave international

3.4 The 1980's worldwide property boom

The Dutch Tulipmania occurred during the origins of modern capitalism, and the 1920's represented the zenith of unrestricted commerce. Modern markets are much better regulated, and so surely such collective folly couldn't happen in modern times? Mackay

had observed the crowding behaviour before the Victorian era, yet since then there have been numerous instances of manias leading to asset price bubbles. Our own era is no exception; the psychological drivers behind crowd behaviour remain the same, they come from primal instincts developed in a distant epoch. Mans psychological evolution has not had time to catch up with our technological development, so consequently manias and bubbles are just as common in the modern world. The 1980's saw a property boom which ended in tears and bankruptcy for many, and which was characteristic of a classic asset price bubble in its conception and growth. David Dreman best describes how the eighties boom took hold, the similarities to today are prescient, for 'third world loans' just substitute 'internet stocks'.

'In The Graduate, a guest at Dustin Hoffman's graduation party takes him aside and whispers one word to him – plastics. That's where fortunes would be made in the 1960's. In the 1980's it was to be commercial real estate. The beginnings, as they often are, were sound enough. The remarkable boom in real estate was triggered by its impeccable performance in the past. Real estate had a solid record of appreciation since the war.because it had only gone higher in the past 40 years, it was inevitable, the smart money believed (and all money thinks it is smart), that it would continue to soar.' According to Dreman (1998): 'Big bucks flowed into commercial real estate. Banks, after losing heavily on third world loans, eagerly poured money into real estate. With prices ratcheting up, savings and loans ,insurance companies, and other financial institutions increased their commitments, while the nation's gargantuan pension funds entered this market, many for the first time. In Japan after a tenfold increase in property values through the 80's, banks were agreeing to finance speculative projects at 100% of their proposed value; and at the same time the launched the 100 year inheritable mortgage for desperate first time buyers.

These practices were deemed wise as Japanese property as well as Japanese stocks, would of course 'never fall in value'. The reality proved rather different, both property and the Nikkei index are still well below their 1989 peaks in Japan some 16 years later. According to Hamilton (2005), In the West the easy availability of finance fuelled a building boom leading to a huge increase in the amount of vacant office space. Paradoxically the same financial institutions providing the money for the development were cutting back on their own space requirements due to greater efficiencies. Between 1980 and 1992 office vacancy rates soared in New York from 2.9% to 17% and in London from 2% to 20%. Because of the long time scale on large developments, just as many of these developments came to market in the early 90's, rents were falling and their highly geared developers were in trouble. The Reichmann brothers lost billions on London's Canary Wharf, and in the US Donald Trump filled for bankruptcy.

4 Price Bubbles and monetary policies

In the last two decades, countries around the world have seen significant and persistent movements in asset prices. One important issue for central banks is whether the monetary authority should respond to asset prices to stabilize output and inflation variability. Conventional wisdom suggests that soaring asset prices and their collapse--behavior often thought of as the telltale signs of an asset price bubble--should have important consequences for output and inflation. According to Filardo A..J. (2001), When asset prices soar, consumers increase their consumption because wealth rises, and businesses increase investment because the cost of capital falls. In addition, this increase in aggregate demand is supposed to put upward pressure on inflation. In such an environment, a monetary authority interested in keeping inflation stable would generally have to tighten policy as asset prices rise and ease as asset prices fall.

4.1 Some stylized facts about asset price boom periods and monetary policy

Let me now turn to present some empirical stylized facts about asset price bubbles. My goal is then to focus on the link to monetary policy. A number of researchers have devoted some efforts to analyzing historical boom-busts cycles in asset prices in order to detect regularities with regard to the costliness of booms, and to assess the potential for identifying dangerous booms at an early stage. Different studies emphasize different aspects, and use different methodologies. However, they coincide on pointing out a range of characteristics, and I would like to call your attention to some of them.

A recently conducted IMF study acknowledges the importance of housing price booms and compares equity and housing bust periods. It reaches the conclusion that although housing price busts are overall less frequent, they are more likely conditional on the existence of a boom. Historically, housing price booms have been followed by busts about 40 percent of the time, while equity price booms are followed by busts only 25% of the cases. Housing price peak to trough periods are longer on average, and, despite the fact that the decline in prices is somewhat smaller, the associated output losses are notably bigger. The output losses incurred during a typical housing price bust amounts to 8 percent of GDP, which is double the average loss during an equity price bust. The reason is a different exposure of the banking system to mortgages than to shares. In this respect, bank-based financial systems incur larger losses than more market-based financial systems during housing price busts, while the opposite is true for equity price busts. This finding is corroborated by the fact that all major banking crises in industrial countries during the post-war period coincided with housing price busts.

According to Trichet (2005) Other studies recently confirmed that developments in the monetary aggregates and credit play an important role for the development of asset price boom episodes. Although the issue of empirical causality between asset prices on the one side and money and credit developments on the other side is a complicated one, the potential role of credit and money as driving asset prices is straightforward. A bubble is more likely to develop when investors can leverage their positions by investing borrowed funds. One would expect to see similar developments in credit and money as credit is the main counterpart to money. Furthermore, a high money stock might signal large amounts of liquidity waiting to be invested in potentially higher yielding opportunities, which could then fuel a bubble once a trend has been triggered and herding behavior sets in. Further on, a high level of outstanding debt will increase the negative effects of asset price declines, through the forced liquidation of leveraged positions and possible defaults, which in turn put additional pressure on asset prices. In this respect it should not be surprising that both money and credit variables have recently been found to be pertinent indicators to predict financial crises and identify costly asset price boom episodes.

For example there is evidence that during - and already in the two years before - asset price booms, real (broad) money growth has been about two percentage points higher in those booms that led to serious recessions than in those that did not. More recent

evidence along the same lines, seems to suggest that it is equally useful to monitor real residential property price growth and real investment growth rates in order to detect potentially costly asset price boom periods at an early stage. Actual consumer price inflation is not a good early indicator to distinguish costly asset price booms from more benign booms. Only in the last boom year is inflation significantly higher in high-cost than in low-cost booms.[4]

4.2 The Role of Public Policy

Given the difficulty of identifying asset price bubbles, the natural follow-up question is: What should be the role for policymakers? While knowing when to "deflate" an asset price bubble may be beyond the ability of economists, are there other policies that policymakers should pursue? To answer this question, we need to delve into the source of an asset price bubble—the mispricing of assets. Having taught at the University of Chicago for more than a decade, I understand quite well that the issue of asset pricing—and their mispricing—is serious business. Standard finance theory offers several ways to think about how markets incorporate information into asset prices. The weak-form market efficiency criteria state that market asset prices reflect only information contained in the history of prices or returns themselves; the semi-strong market efficiency criteria state that market asset prices reflect all information known to all market participants (all public information); and strong-form market efficiency criteria state that market asset prices reflect all information known to any market participant (all public and private information). It is through this theoretical lens that policymakers can evaluate the appropriate responses to concerns about whether assets are being efficiently priced.

We can conceptualize these micro foundations of asset pricing by reflecting on the thought process that an investor undertakes when she sees that a firm's stock price has risen. The higher price has two possible explanations. The price could be the reflection of improved "fundamentals"—that is, new information about the firm's better prospects quickly embedded into its price. Alternatively, the higher price could be the reflection (at least in part) of "irrational exuberance" about the firm's prospects. This irrational exuberance creates a bubble, since the stock price does not reflect fundamentals alone. The investor's puzzle or inference problem is to determine which of these two possibilities is most likely correct and, therefore, whether to buy or sell that company's stock. A public policy implication is that better information, easily accessible to all investors, makes bubbles more difficult to form and to be sustained. Reconsider our individual investor, attempting to infer (fundamental) information about a company's stock price.

Improved public information has two reinforcing effects. First, the individual investor (or her financial advisor) can examine the firm's financial statements and Securities and Exchange Commission (SEC) filings and make a judgment about the firm's prospects compared to the current stock price. Second, the individual investor can be confident that she is not missing relevant information that is available to other market participants. When a price seems to outstrip fundamentals, an investor logically asks whether it is a bubble or whether she does not have access to important information about fundamentals. So it is important that information is available not only to select individuals, but to the general public.

Recent academic work suggests particular avenues through which public information can prevent bubbles from forming. For example, Allen and Gale's paper (2002) for this conference, building on their earlier work, identifies the agency relationship as a key transmission mechanism in the formation of bubbles. The authors' core agency example is that banks lend funds for projects without being able to observe the riskiness of the investments made by the project manager.

Because of limited liability (in case of default), the agency problem initiates bubbles; the price of the risky asset can be driven above its fundamental value because the project manager does not fully bear the downside risk. Another application Allen and Gale offer is to the stock market. Here a major agency issue is that investment choices are largely made by institutional investors or other intermediaries. Indeed, the incentives for risk-taking by mutual fund managers due to the agency problem have been documented by Chevalier and Ellison (1997). More broadly, the agency problem arises from an asymmetry of information. In Allen and Gale, for example, the project manager, acting as an agent of bank investors, has unobserved information and takes an unobserved action that affects investors' returns. In the current policy environment, the agency problem is exacerbated because of uncertainty about valuations due to well-publicized problems with accounting standards. If banks lack trust in the accuracy of the accounting standards, then the agency problem grows[5].

4.3 Implications of Bubbles for Monetary Policy

According to Hunter et al. (2003), There is general consensus that asset prices offer at least some information that might be useful for monetary policymakers in the short term, but there are mixed views on whether asset prices have any significant relationship to output gaps and commodity inflation forecasts— the primary indicators for monetary policymakers. Therefore, the most important question is whether monetary policy should target asset prices. In "Asset Prices in a Flexible Inflation Targeting Framework," Stephen G. Cecchetti, Hans Genberg, and Sushil Wadhwani argue that central bank action may be effective in certain circumstances in affecting asset prices. However, it is very difficult to apply, and yet should not be ruled out. Cecchetti, Genberg, and Wadhwani argue that a buildup of asset price misalignments can lead to macroeconomic imbalances, misaligned exchange rates, and lost competitiveness. When there are shocks in asset markets, a policy of "leaning against the wind" of asset price changes may balance outputs. Cecchetti, Genberg, and Wadhwani qualify their support for central bank action. Central bank responses to asset price misalignment yield beneficial results only in very limited circumstances. Macroeconomic performance has improved after policy has reacted modestly to asset price misalignments when these misalignments are due to financial shocks. However, policy responses have not been useful when productivity shocks or a change in fundamentals are the underlying determinants.

Therefore, responding mechanically to all asset price changes can produce worse outcomes than not responding to any at all. Cecchetti, Genberg, and Wadhwani also note that several factors may constrain the effectiveness of monetary policy actions—for example, the resiliency of the financial system, the openness of the economy, and the role of the banking sector In "Interest Rate

[4] - See Detken and Smets (2002) and Adalid and Detken (forthcoming, 2005).
[5] - see Randall S. Kroszner (2004).

Policy Should Not React Directly to Asset Prices," Marvin Goodfriend takes the view that asset price fluctuations provide useful information. But in his opinion there should be no presumption of a correlation between asset price movements and real short-term interest rate movements; a relationship between these variables may be positive or negative. He argues that attempts to target asset prices may be counterproductive and that the downside risks of inappropriate action outweigh the potential benefits of useful intervention.

His discussion of asset bubbles and monetary policy highlights several practical problems that constrain central banks. First, the information is not perfect. Markets do not capture all available information, central bank information is drawn from imperfect measurements, and contradictory signals can come from different asset prices such as exchange rates, housing prices, and stock values. Monetary policymakers cannot hope to identify and address all inflation and output misalignments. Second, as Goodfriend points out, there is a credibility issue: Central banks rely heavily on reputation and credibility, both of which are jeopardized by inappropriate, unnecessary, or poorly executed policy actions. Shocks are often too hard to identify as misalignments, which increases the risk of selecting the wrong policy and losing credibility. With weakened credibility, central banks are even less capable of performing their core function maintaining financial stability. In conclusion, he is skeptical about the usefulness of asset price information for influencing exchange rate or interest rate policy.

In "Comments on Implications of Bubbles for Monetary Policy," Benjamin M. Friedman is equally skeptical that univariate, mechanical extrapolations from asset prices are useful, given the risks of poor measurement and misinterpretation. Friedman captures the time constraint succinctly: "What did they know? When did they know it? What could they do about it?" Referring to the Central Bank of Japan in the late 1980s, Friedman notes that asset prices did not provide useful information in real time.

5 Conclusion

Being sufficient to build a policymaker's confidence. Identifying asset price bubbles is quite difficult both *ex ante* and *ex post*. Kindleberger (1996), for example, maintained that asset price bubbles are often defined by their time series behavior. An asset price that soars and then subsequently crashes is the standard example of what many think of as bubble behavior. To motivate how such pattern recognition creates problems for policymakers, I prepared a few charts with which to play the game that I would like to call "Is it a Bubble?" We will look at a chart without its labels and try to guess whether it represents an asset price bubble. For example, figure 1 is a flat line. Is it a bubble? Most economists using the chartist view of bubbles might disagree that this is *prima facie* evidence of a bubble.

So, the clear policy lesson to be drawn from this literature is the importance of improving transparency. Better public information diminishes these agency problems, especially by reducing information asymmetry and uncertainty about the economic environment. With more accurate and complete information, heightened competition among intermediaries would enhance incentives to align the intermediaries' interests with those of their clients—the individual investor—and, therefore, lead to a more successful assessment of the risks taken with their clients' funds.

The traditional questions associated with asset price bubbles continue to interest policymakers today. The economics literature on asset price bubbles, however, does not offer many convincing answers. Economists still have much research to do in order to improve our understanding of this phenomenon and its implications for public policy. The conference organizers should be commended for tackling an important, and vexing, policy issue. A fundamental problem for policymakers in the past, the present, and probably the future is the ability to identify asset price bubbles ex ante, or even ex post. Without confidence that bubble conditions exist, policymakers must be wary about responding to an apparent asset price bubble because the response may result in more harm than good. This does not mean that there is no role for the public policymaker. As we have seen with the president's recent proposals, such as the 10-point plan for financial disclosure and reforms of rules governing 401(k) retirement accounts, public policies can help remove barriers to the effective exchange and provision of information, thereby strengthening markets and reducing the likelihood of asset mispricing. According to Hunter et al.(2003), If any policymakers should take to protect against bubbles or mitigate their impact. However, several recurring themes and messages are emphasized:

Asset price bubbles are very difficult to identify ex ante, because policymakers are constrained by imperfect information, limited effectiveness of policy instruments, the downside risks of misusing instruments, and time constraints. Although many bubble collapses are followed by crises, not all crashes lead to crises that destabilize the financial system; financial systems that have strong supervisory and regulatory institutions and macroeconomic stability before the onset of a bubble tend to weather a bubble's collapse better than systems that do not. Bubbles and crashes occur with greater frequency in emerging, rather than developed, economies because they are more likely to occur when financial markets are opaque, when regulation and supervision are poor, and when lending is based on collateral rather than expected cash flow due to poor accounting standards.

Countries that suffer from longer, costlier, and more systemically destabilizing crashes tend also to suffer from poor transparency, weak macroeconomic policies, and microstructural weaknesses in advance of the asset price bubble. This suggests that even more important than the effort to identify bubbles is the effort to establish an effective prudential regulatory regime that will buffer the financial system against the impact of crisis.

Transparency minimizes information asymmetries and potential agency problems. Development and enforcement of accounting and auditing standards, including the quality of disclosure and the frequency and means of dissemination, are desirable.

Broader, more diversified financial systems spread risks and weather the storm of post-bubble collapses better than more narrow, less diversified systems. Promoting the development of risk-transfer instruments, such as securitized assets, index funds, stock borrowing, lending, and short-selling regimes, and regulated futures and derivatives market to allow for heterogeneity of opinions and allow investors to bet against bubbles is warranted.

Strong regulatory and supervisory institutions are always the best line of defense. In this context, maintaining the credibility and reputation of the central bank so that it will be able to carry out its core function maintaining macroeconomic stability is essential. In banking systems, a number of authors prescribe efforts to maintain mandatory capital ratios that are high enough, to conduct obligatory "stress" tests of banking systems and individual banks, to regulate the loan/value ratio (as in the Hong Kong Monetary

Authority), as well as to regulate banks to prevent concentration of lending to real estaterelated sectors. Several preventive measures are cited in the capital markets: build the capacity of the technical skills of regulators and financial practitioners; promote investor education; conduct surveillance of concentrations and illicit activities and share information between regulators; institute prudential reporting and dynamic requirements geared to safe and sound clearing and settlements; redesign loan-loss provisioning rules to be less pro-cyclical; assign investigatory and intervention powers and clear legal definitions for different species of property; and design effective disciplinary, civil, and criminal remedies against perpetrators of stock fraud.

6 References

Allen F. and Gale D.(2002), Asset Price Bubbles and Stock Market Inter linkages, Financial Institutions Center Press, Wharton School University of Pennsylvania.

Allen, F. and D. Gale. (2000). Bubbles and Crises, The Economic Journal, 110, 236-255.

Allen, F., and G. Gorton (1993): Churning Bubbles,.Review of Economic Studies, 60(4), 813-836.

Allen, F., S. Morris, and A. Postlewaite (1993): .Finite Bubbles with Short Sale Constraints and Asymmetric Information,. Journal of Economic Theory, 61(2), 206.229.

Brunnermeier, M. K. (2001): Asset Pricing under Asymmetric Information: Bubbles, Crashes, Technical Analysis and Herding. Oxford University Press, Oxford.

Campbell, J. Y., and R. J. Shiller. 2001. "Valuation Ratios and the Long-Run Stock Market Outlook: An Update." NBER Working Paper no. 8221, April.

Capital.. In S. Takagi, ed., Japanese Capital Markets: New Developments in Regulations and Institutions, pp. 21-77 (Blackwell, Oxford).

Chancellor E (1999), Devil take the hindmost: a history of fi nancial speculation, Farrar, Straus and Giroux, New York.

Chevalier, J., and G. Ellison, 1997, "Risk Taking by Mutual Funds as a Response to Incentives,"Journal of Political Economy, December.

Cooper MJ, O Dimitrov and PR Rau (2001), 'A rose.com by any other name', Journal of Finance, 56(6), pp 2371–2388.

Drees, B. and Pazarbasioglu, C. (1995). .The Nordic Banking Crises: Pitfalls in Financial Liberalization?., Working Paper 95/61 (International Monetary Fund, Washington, DC).

Dreman, D (1998) Contrarian investment strategies: The next generation. Simon & Schuster, New York.

Esho N. and Carmichael J. (2001), Asset Price Bubbles and Prudential Regulation , Australian Prudential Regulation Authority Working Paper 3, September 2001.

Filardo A.J. (2001), Should Monetary Policy Respond To Asset Price Bubbles?Some Experimental Results,Research Division Federal Reserve Bank of Kansas City.

Frankel, J. (1993). .The Japanese Financial System and the Cost of

Hamilton A.(2005), Asset price bubbles and manias. How much was the property boom driven by collective psychology and herding behaviour?,This report is submitted as part of the requirements for the award of the MA Property Valuation and Law degree 2004-05.

Harman Y.S. and Zuehlke T.W.(1994), Duration Dependence Testing for Speculative Bubbles,, Department of Finance, Miami University Pub.,Oxford.

Hatzius, J.(2002). "Housing and the U.S. Consumer: Mortgaging the Economy's Future."Goldman Sachs Global Economics Paper no. 83

Heiskanen, R. (1993). .The Banking Crisis in the Nordic Countries Kansallis Economic Review, vol. 2, pp. 13-19.

Hunter W.,Kaufman G. and Pomerleano M.(2003), introduction to Asset Price Bubbles: Implications for Monetary, Regulatory, and International Policies, Proceedings from the World Bank and Federal Reserve Bank of Chicago conference on Asset Price Bubbles,Chicago, Illinois.

Kindleberger, C.P. (1989). Manias, Panics, and Crashes: A History of Financial Crises, Basic Books.

Larsen,E.S.(1997); Theories and tests for bubbles, Norges Fiskerihøgskole,Working papers of Universitetet i Tromsø,pp17-19.

McCarthy J and Peach R.W (2004),Are Home Prices the Next "Bubble"?, FRBNY Economic Policy Review, December.

McQueen, Grant R. and Steven Thorley. (1994). "Bubbles, Stock Returns, and Duration Dependence."Journal of Financial and Quantitative Analysis 29: 379-401.

Ofek E and M Richardson (2003), 'DotCom mania: the rise and fall of Internet stock prices', Journal of Finance, 58(3), pp 1113–1137.

Stiglitz, J. E. 1990. "Symposium on Bubbles ." Journal of Economic Perspectives 4, no. 2 (spring): 13-8.

Tirole, J. (1982): .On the Possibility of Speculation under Rational Expectations,. Econometrica, 50,1163 -1182.

Trichet J.C (2005),Asset price bubbles and monetary policy, Speech by Mr Jean-Claude Trichet, President of the European Central Bank, at the Mas lecture, Monetary Authority of Singapore, Singapore, 8 June 2005.

Tschoegl, A. (1993). .Modeling the Behaviour of Japanese Stock Indices In S. Takagi, ed., Japanese Capital Markets: New Developments in Regulations and Institutions, pp. 371-400 (Blackwell, Oxford).