

The Psychodynamics of Speculative Bubbles: An Empirical Perspective

Richard Taffler, Warwick Business School

Xijuan Bellotti, independent

15.1.2018

ABSTRACT

Between June 2005 and October 2007 when it peaked the Chinese stock market rose five-fold becoming, for a short time, the third largest stock market in the world; it then went into free fall losing 70% of its value over the following year. A very similar trajectory was played out between July 2014 and September 2015 with the Chinese stock markets losing no less than \$4.5 trillion from peak to trough, equivalent to over 40% of China's GNP. The economics and finance literatures have great difficulty in explaining such dramatic events as investors and markets are assumed to behave "rationally". This paper explicitly recognizes the powerful emotions unleashed during market crises of this nature. It seeks to provide an original explanation for speculative asset-pricing bubbles by explicitly considering the role emotions and unconscious desires, fantasies and needs play in driving investor behavior, and that of markets more generally. Specifically, drawing on psychoanalytic theory, we first develop a novel path-dependent five-stage theoretical model of asset-pricing bubbles which we then test directly empirically using Chinese data. We report clear evidence consistent with investors experiencing a range of different highly-charged emotions in different phases of the bubble. Inevitably, such asset-pricing bubbles have eventually to burst leading to blame, denial, and interestingly, subsequently, amnesia, as well as heavy financial loss. Such issues are not explored in conventional economic and financial theories of asset-pricing bubbles.

Corresponding author: Richard Taffler, Finance Group, Warwick Business School, University of Warwick, Scarman Road, Warwickshire CV4 7AL. E-mail: Richard.Taffler@wbs.ac.uk; tel: +44 (0) 2476524153

Second author: Xijuan Bellotti, CEO AspiringPi Solutions Ltd. E-mail: angelbellotti@aspiringpi.com, tel: +44 (0) 7955111927

Earlier versions of this paper have benefited from the comments of numerous individuals including Niamh Brennan, Arman Eshraghi, Rob Gray, Andreas Hoepner, Mike Jones, Gulnur Muradoglu, Paul Ryan as well as participants at the British Accounting and Finance Association Conference, University of Aston, April 2011, the Financial Reporting and Business Communications Conference, University of Bristol, June 2013, the Behavioral Finance Working Group Conference, Queen Mary London, December 2013, the Discourse Approaches to Financial Communication Conference, Ascona, Switzerland, February 2014, the Discourse Studies in the Social Sciences Conference, University of Warwick, March 2014 and at staff research seminars at The University of St. Andrews in February 2011, The University of Leicester Institute of Finance in February 2012, Middlesex University January 2013 and The University of Edinburgh March 2016. The authors wish to acknowledge the invaluable research support provided by Ren Zixin and Linglu Li..

1. Introduction

In just over two years from July 2005 to its high in October 2007 the Shanghai Stock Exchange Composite Index (SSECI) increased no less than fivefold with a rise of 60% alone in the last three months before it peaked. The market then imploded going into freefall losing 70% of its value over the following year with investors losing no less than \$3 trillion during this short period.¹ The dramatic trajectory portrayed in figure 1 bears a remarkable resemblance to that of the Dow Jones Internet Index during dot.com mania only a few years previously when investors only lost \$750bn when the dot.com bubble burst. Figure 2 highlights this directly. At its peak the nominal market capitalization of the Chinese stock market placed it as the third largest in the world, even larger temporarily than of Japan, and with average PE ratio of 73 compared with under 20 for the S&P (Yao and Luo, 2009). The Chinese stock market then significantly underperformed international capital markets until around June 2014, in fact losing over 30% in the previous five years, with investors showing very little interest despite the very strong performance of the Chinese economy. The market then suddenly took off replicating the trajectory of the earlier bubble in the more compressed time frame of less than 15 months with the SSECI increasing by 150% in less than a year, then crashing dramatically a second time.²

How can we make sense of asset pricing bubbles of such a magnitude occurring in one of the largest economies in the world and taking place over such a short period of time with no apparent learning from experience? Traditional financial and economic theories find great difficulty in explaining speculative bubbles in any convincing way (for summaries of attempts see e.g., Brunnermeier and Oehrike, 2013; Scherbina, 2013). Even the definition of what a bubble is cannot be agreed upon (e.g., O'Hara, 2008). Many economists, in fact, make strenuous efforts to deny bubbles exist, despite clear evidence to the contrary. Eugene Fama, the joint 2013 Nobel Laureate in Economics, for example, used his award address to argue against the existence of asset pricing bubbles, although in a less than convincing way (Fama, 2014).³ In traditional economic and finance theory bubbles should not occur!

¹ The SSECI stood at 1012 on July 11 2005 and climaxed at 6092 on October 16 2007. By November 4 2008, its lowest point, it was back down to 1708, the same level as 28 months earlier.

² The SSECI stood at 2048 on June 30 2014 and peaked at 5166 on June 12 2015 before collapsing, falling to its low point of 2927 10 weeks later on August 26.

³ His co-Laureate Robert Shiller used his Award address to argue just the opposite (Shiller, 2014) demonstrating just how contentious this issue is to economists.

There is an extensive literature in Economics and Finance of a highly mathematical nature attempting to explain speculative bubbles. Such theoretical models revolve around stylized ideas of herding, informational cascades and the “greater fool” Ponzi-type scheme (see e.g., Hirshleifer and Teoh, 2003). Shiller (2015, chapter 10), among others, provides an epidemiological perspective drawing on concepts from social psychology. He postulates bubbles develop through word of mouth communication; investing ideas can spread like epidemics. Shiller (2014, p. 1487) defines a bubble thus:

“A situation in which news of price increases spurs investor enthusiasm which spreads by psychological contagion from person to person, in the process amplifying stories that might justify the price increases and bringing in a larger and larger class of investors, who, despite doubts about the real value of an investment, are drawn to it partly through envy of others’ successes and partly through a gambler’s excitement.”

The key components of his definition are epidemic spread, the emotions of investors, and the nature of the news and information media. Shiller argues that bubbles are not about the “craziness” of investors but how they are “buffeted *en masse* from one superficially plausible theory about conventional valuation to another.”

However, Shiller’s definition of a speculative bubble does not mention anything about its bursting and subsequent collapse, which Kindleberger and Aliber (2015) stress is just as much an integral part of a bubble as its initial inflation. Nor does Shiller attempt to go into any of the underlying psychological processes at work in any detail either at individual investor or market level that might be at work.

In this paper we argue that if we are to understand what really drives speculative bubbles we need to enter the realm of the real and very visceral experiences of investors as the bubble unfolds. We have to go beyond broad social psychological descriptions and epidemic metaphors based on social dynamic theories and explicitly recognize the key role unconscious fantasy and market psychodynamic processes play in driving repeated asset pricing bubbles. Specifically, we draw on the rich realm of psychoanalytic theory to help explain some of the unconscious processes driving individual investment decisions and market behaviors and how they play out in financial markets. We suggest that acknowledging the role of unconscious fantasy in all human activity can help us explore aspects of investor and market behavior which cannot be explained using more traditional approaches, as here in the case of stock market bubbles. In particular, such a perspective can help us make sense of the drivers of the recent Chinese stock market bubbles and their different stages as they unfolded.

In an attempt to understand the underlying nature and drivers of speculative market bubbles more generally we focus here on the massively destructive Chinese stock market bubble of July 2005 to December 2008 as an illustrative case study. Specifically, we observe what actually happened as the bubble evolved *inter alia* using contemporaneous media reports as our lens into investor emotions and the underlying market psychodynamic processes at work.

Interestingly, the most recent bubble constitutes a direct re-run of the earlier one a few years later with very similar characteristics. Most importantly, there is no apparent evidence of any learning from the enormously painful experiences of market participants when the earlier one imploded. Investors again became equally carried away in the belief there was no tomorrow and the party would never end with commentators pointing out the true nature of the bubble equally ignored and derided. It is almost as if, on one level, investors have a need to believe in magic and deny underlying reality.

We ask, in particular, how did investors and market commentators acting as cheer leaders become caught up in such unconscious and powerful fantasies that they put all caution aside in such a manic and ultimately destructive way despite all the warnings being given as the bubble rushed to its peak? We argue, and our evidence suggests, that the belief in the existence of, and search for, “phantastic objects”, the unconscious fantasy of being able to generate enormous wealth without effort and with any notion of underlying reality repressed and denied, was at the heart of the Chinese stock market bubbles and investor behavior. Satisfying market psychodynamic processes allowed investors to collude in this idealized and magical fantasy world until rudely awakened from their reverie when external events could not be prevented from intruding any longer. The search for such potential excitement is always present in financial markets and is an integral part of the human psyche waiting to be awakened.

We make a number of contributions to the extant literature. First we take a psychoanalytic lens to the Chinese stock market explicitly recognizing the vital role unconscious fantasies and group processes play in investment markets which are particularly salient in speculative bubbles. Second, we develop a novel explanatory theory of bubble market dynamics which seeks to explain the different stages in the underlying path-dependent trajectory and which has potential broader application outside the immediate Chinese environment.⁴ Finally, we present empirical tests of this theory drawing on contemporaneous Chinese media reports

⁴ For example, very similar patterns of market behavior were manifest during dot.com mania (e.g., see Tuckett and Taffler, 2008).

adopting formal content analysis approaches which involve developing rich Chinese language dictionaries to measure the salience and dynamics of different investor emotions between 2005 and 2008. The results of our analysis are consistent with our underlying theoretical model and suggest that directly acknowledging the key role “irrational” investor emotions play in such market episodes can shed considerable light on the drivers of these extreme events.

In the next section we describe what was happening between 2005 and 2008 in Chinese financial markets and demonstrate the essentially emotional nature of the associated bubble. Section 3 develops the underlying theory we draw on and introduces the concept of the “phantastic object” as a description of the unconscious *emotional* meaning Chinese stocks seemed to have represented for investors until the bubble burst when they became hated. Section 4 describes the different stages of the path-dependent emotional trajectory of asset pricing bubbles we develop which is then tested formally in the following two sections; our associated hypotheses are also laid out here. In the first of these we describe our content analysis method and how we develop our emotion categories and derive our keyword dictionaries. Then, in section 6, we provide formal empirical tests of our hypotheses. Section 7 discusses our contribution and concludes.

Investors, it seems, are always seeking phantastic objects; their unconscious needs, fantasies and drives can often determine their behavior. The predictable and potentially destructive both short-term and longer-term consequences when market environments implicitly encourage such unconscious fantasies to be acted out, as illustrated directly in the case of the Chinese stock market, need to be formally recognized by policy makers and market regulators. A proper understanding of the psychodynamics of bubbles and the associated unconscious forces driving them may well be the best way to tame them! Asset pricing bubbles are not at all inevitable as many economists appear to argue when the key role unconscious fantasy plays in driving them is properly recognized!

4. The Chinese stock market bubble – an emotional journey

Background

The Shanghai Stock Exchange and Shenzhen Stock Exchange were both founded only at the end of 1990 by the Chinese Government in an attempt to provide an environment where new capital could be raised, and both local and foreign investors could trade stock. However, their development lagged significantly behind China’s economic reforms. By mid-2005 the Shanghai Stock Exchange Composite Index (SSECI) had been hovering not much above the

1000 mark for almost 4 years after collapsing from its previous high of over 2200 in 2000. In contrast, Chinese GDP had been growing at an annual rate of 8-10%, and the stock markets of the other three main developing economies, Brazil, Russia and India, had all been booming. Commentators rationalized the poor investment performance of Chinese equity markets as largely due to the general lack of government interest in the capital markets and the fact that two-thirds of the market value of the Chinese exchanges was accounted for by the stocks of listed state-owned enterprises (SOEs) which were non-tradable.⁵ The lack of linkage between China's capital markets and economic progress was a continuing paradox.

Taking off

It is difficult to identify exactly when an asset pricing bubble takes off, and this is equally true in the case of the Chinese stock market bubble. What seemed to constitute the awakening of awareness of the potential opportunities offered by the Chinese stock market to investors towards the end of 2005 appeared was made up of a combination of different things. Government policy towards the capital markets had clearly changed; there was now obvious commitment to market reforms, which it started implementing towards the end of 2005. These included encouraging state-owned enterprises to list their non-tradeable shares and allowing them to raise new capital on the Chinese exchanges, as well as opening up the local Chinese stock markets to international investors, and sent a strong positive message about a revitalized investment environment.

Another signal of a new *zeitgeist* in China's equity markets was the high profile first IPO of one of China's large banks, China Construction Bank, floated on the Hong Kong Stock Exchange on 20 October 2005 raising \$9.2bn. Other large flotations were set to follow. The Chinese stock market now appeared to be "absolutely different", and had the potential to provide an appropriate environment in which the unconscious search for the phantastic object, to which investors are readily prone, looked as if it might be realized. In fact, by the end of 2005 there had been a 16% rise in the SSECI Index, and there was a renewed sense of optimism about its fate in the Chinese calendar year of the dog (2006), "man's best friend". Analysts were now predicting there would be a sustained recovery in asset prices.⁶ There was a common view that the government's market reforms were definitely a turning point, and had removed the uncertainty hanging over the mainland stock markets for a long time: "All these policies are boosting investors' confidence in the market."⁷ Concurrent with this the

⁵ Hangover cure? China's stock markets, *The Economist*, 13 August 2005.

⁶ Market insights: growing optimism in the Chinese stock market, *Financial Times*, 26 January 2006.

⁷ Stock market expected to see a bullish year, *China Daily – Hong Kong edition*, 24 January 2006.

SSECI started to take off, and by the beginning of April had passed the key level of 1300 points, the ceiling most analysts had set for the year, and succeeded in staying above it.⁸ The powerful rally offered hope to investors, and there was even a *Feng Shui Index* which projected investors in China would enjoy a relatively sustained run-up in 2006.⁹ By May the Chinese stock market had soared to a level more than 50% higher than a year previously, and in that month the Bank of China also listed on the Hong Kong Stock Exchange raising \$9.7bn, the world's largest public share offering in the previous 6 years. Other large listings were clearly due to follow, including in due course on the local stock markets, and, in fact, the Bank of China soon conducted a \$2.5bn IPO on the Shanghai bourse with shares rising 23% on its trading debut.¹⁰

The soaring market index demonstrated how successful the government's changed attitude to the capital markets, and its market reforms were perceived. Investors appeared to view government reforms as likely to lead to a continuing increase in share values, and that the stock market's longer-term trend would reflect better the continuing growth in GDP.

The usual cover story for an asset bubble taking off that "this time it is different" (Kindleberger and Aliber, 2015) was that the capital markets had completely changed. The excitement conveyed by the financial media and websites stimulated the desire of Chinese investors to invest in the stock market after its more than five years of stagnation. Everyone wanted a stake, and the government would ensure there was no downside risk. The fantasy associated with investing in the Chinese stock market took on the nature of a "one-way bet".

Boom (and denial)

The run of high profile IPOs of large state-owned enterprises gathered pace increasing investor excitement levels. In October 2006, the China Construction Bank raised a further \$11bn, and in the same month the Industrial and Commercial Bank of China (ICBC), the nation's largest lender, launched dual listings in Hong Kong and Shanghai raising \$21bn. This was the world's largest IPO in the history of capital markets, and meant that ICBC had surpassed Japan's Mitsubishi UFJ to become the world's fifth largest bank. By December 2006 the domestic market value of ICBC was \$250bn, representing more than 20% of the total market capitalization of the Shanghai Stock Exchange at that time (Yao and Luo, 2009).

⁸ Running with the bulls tests courage despite bitter memories of false dawns, Shanghai's soaring stock market is winning over sceptics as foreigners lead the way, *South China Morning Post*, 17 April 2006.

⁹ Advice for investors in China: consider an 11-month vacation, *The Wall Street Journal*, 28 February 2006.

¹⁰ China bets on blue chip IPOs to lay strong market foundation, *The Wall Street Journal Asia*, 10 August 2006.

By November 2006 the SSECI exceeded its level in 2000, representing an increase of 74% since the beginning of the year, double its 8-year low in July the previous year. Investing was a brand new fashion and the “only way” to pass time. Commentators reported how college students, office workers, retirees, and even a pregnant woman in suede boots, all jostled into the brokerage houses eager to buy stocks or mutual funds, and wanting to buy them now with the simple goal “I want to get rich.”¹¹ One mutual fund even raised \$5bn in a single day. In Shanghai one of the most popular local television programs was “Stock Market Today”.¹² Everyone seemed to want a stock tip with a simple goal “want to get rich”. “When I go to the beauty salon even the girls who give me a manicure are talking about stocks!” reported a consultant in Shanghai who was worrying that inexperienced buyers could be cheated. “They ask me ‘what should I invest in?’ They say they are doing research.”¹³ Direct parallels with the manic excitement experienced in a similar phase of the dot.com bubble will be noted (Cassidy, 2002; Tuckett and Taffler, 2008). As well as investing in stocks, Chinese investors put large sums of money into the country’s mutual funds. Contributing to this capital migration were investors with bank deposits earning negative real interest rates looking for a more lucrative berth.¹⁴ In fact, by then, China was the world’s fastest growing mutual fund market with investors preferring brand new funds, in particular those with units of 1 yuan net asset value (around 15 cents) being perceived as “cheap”.¹⁵

There was enormous pressure to join in the carnival. Excitement was intense in all walks of life, and it was very difficult to resist being caught up. Not investing would make one feel eccentric and ostracized. The perceived promise was that if you wanted to be rich you only had to put money into stocks or mutual funds, and since everyone else appeared to be getting rich with no effort in this way, it was very painful to sit on the sidelines, even if, on one level, it was possible to recognize this manic excitement for what it was, and knew it could not last. Mutual funds sold themselves on the basis of their sophistication and company research expertise, as well as their specialized professionals. However, many Chinese investors appeared to view mutual funds as substitute speculative vehicles for stocks buying and selling them like individual stocks when they underperformed in the short-term. This led to a series of highly successful fund launches often followed a few months later by equally dramatic

¹¹ Chinese united by a common goal: a hot stock tip, *New York Times*, 30 January 2007.

¹² Op. cit.

¹³ Op. cit.

¹⁴ Warning of bubble in China’s stock market, *Financial Times*, 30 January 2007.

¹⁵ Equity funds face Chinese wall, *Financial Times*, 6 April 2007.

withdrawals of money.¹⁶ Returns had to be certain and quick; Chinese investors wanted these now!

The dramatic returns delivered by the Chinese stock market in 2006, more than doubling, were already creating concerns of a potential bubble as early as January 2007, with many important public figures issuing warnings about the bubble, and that investors should be concerned about the risk.¹⁷ During the same period concerns also emerged about China's neighbors including the bubble in Vietnam where stocks appeared singularly overvalued, and the Philippines and Indonesia where stocks appeared to be peaking.¹⁸ According to a survey by the *Chinese Securities Journal* at the beginning of 2007 about 70% of Chinese investors said they had made profits in 2006 with losers accounting for only for 16% of interviewees. Most people who bought stocks made (a lot of) money; why would such a wish-fulfilling fantasy not continue and why should anyone want to spoil the party?

Figure 3 plots the number of mentions in the financial media covered by Factiva of the keyword “bubble” in association with “China/Chinese” and “stock market” overlaid on the Shanghai Stock Exchange Index trajectory. As can be seen, a large number of articles were already pointing out that the Chinese stock market was experiencing a bubble by the first quarter of 2007. Needless to say this volume of warnings was dismissed by investors. IPOs were dramatically increasing in value on day one, and the number of individual investor trading accounts continuing to multiply at a phenomenal rate totaling 90 million by April 2007. In February 2007 the Vice-Chairman of the National People's Congress, China's highest legislative body, said 70% of domestically-traded companies were worthless and should be delisted. “We must force bad children out.” He also criticized investors swept up in the bull market. “Some people's brains are obviously starting to get hot.”¹⁹ Even Alan Greenspan, the then Chairman of the Federal Reserve, warned that China's stock market was heading for a crash and that “there is going to be a dramatic contraction as some point”. However, investors paid little heed to this and other warnings.²⁰ From this perspective China's bull market was almost like an unstoppable train, going faster and faster with all sorts of complicit arguments being made as to how this idealized and magical world could continue on forever.²¹

¹⁶ The China 20, *Institutional Investor – International Edition*, 22 October 2007.

¹⁷ Warning of bubble in China's stock market, *Financial Times*, 30 January 2007.

¹⁸ On China: China's loss is SE Asia's gain, *Financial Times*, 2 February 2007.

¹⁹ Hot and cold – China's stock market, *The Economist*, 10 February 2007.

²⁰ Investors pay little heed to Greenspan, *Bloomberg*, 25 May 2007.

²¹ Bubble economics, *Wall Street Journal Asia*, 14 February 2007.

Investors' wishful thinking was confirmed time and time again. Money raised from Chinese IPOs eclipsed that raised in all other markets.²² Overriding all warnings, some even bet their houses on the stock market.²³ The Chinese lunar New Year holiday in February 2007, also a stock market holiday, found the stock market being one of the major topics of discussion with people spending the week swapping stock tips.²⁴ For investors in a frenzy any news was good news. When Tianjin Global Magnetic Cards failed to report quarterly earnings its stock jumped 137%. After Shanghai Haixin Group reported that its chief executive was under investigation for "irregular activities", the company's share price doubled over the following two months. Simply mentioning a stock on the TV news led to excited activity in its shares. "I don't know how to choose a stock", a 60 year old retiree commented, "...some companies' names sound lucky to me so I choose to buy these stocks." Interestingly, despite presumably being backed by more sophisticated analysis, institutions were also piling in, and very few analysts were betting against the market. "You can't be a fundamental investor in China, you can only speculate. Fundamental investors make long-term cash projections. In China, there is not good information on corporate governance", reported one major investor. "Purchasing stocks is not an investment, it is gambling", a pharmaceutical company executive in Shanghai was interviewed as saying; "The only reason I stay here is I trust the government won't let prices go straight down."²⁵

Individual behavior was confirmed by collective behavior. Chinese investors were not the only optimists. Foreign investors were clamoring to buy into China's stock market, and wanting to invest ahead of Chinese investors who were taking money out of their savings accounts, selling their apartments and houses, and even taking out bank loans to get in on the stock-buying frenzy.^{26,27} The Chinese government indirectly reassured overseas investors by suggesting it might allow greater foreign investment in Chinese stocks, and would not impose capital gains taxes on their profits soon.²⁸

²² Market mania in China, *Business Week*, 19 March 2007.

²³ Chinese bet their houses on share prices going through the roof – brisk trade at the pawn shops points to a streak of recklessness, *Financial Times*, 3 February 2007.

²⁴ China's other celebration: Stocks holiday respite could spark even more buying, *The Wall Street Journal*, 16 February 2007.

²⁵ Where corruption is a buy signal millions of Chinese seek stocks amid "blind optimism", *International Herald Tribune*, 17 February 2007.

²⁶ Bae and Wang (2009) show that Chinese firms listed on US stock exchanges that had "China" or "Chinese" in their company names significantly outperformed their counterparts without such specific identifiers during the Chinese stock market bubble with an annualized abnormal return of 123%.

²⁷ Unworried investors buy again in Shanghai, *International Herald Tribune*, 1 March 2007.

²⁸ China shrugs off losses as market swings back, *New York Times*, 1 March 2007.

Like Chinese investors, foreign investors also appeared to believe that the US and Chinese markets were not connected, despite all evidence to the contrary, and that China could provide a safe haven for funds prone to the vagaries of the US stock market.^{29,30} The economy was growing at a rate of nearly 10%, and the underlying economic fundamentals remained strong, so the common view seemed to be that “since the economy is doing well there is no doubt the stock market will continue to grow over the next year or two”.³¹ Although the stock market had previously fallen as the economy grew, now the continuing rapid growth in GDP was being viewed as promoting a bull market run well into the future. The cover story for the investment fantasy moved from the stock market reforms to continuing economic prosperity.³² Excitement was rampant. For many in China’s shareholding class stock picking was more an art than a science. Mr Lee, for instance, couldn’t resist a bargain: “I like stocks that cost no more than 8 renminbi (\$1).” “I believe good codes will bring good luck”, said Mr Yuan, who spent most of his days in front of a trading screen at a Shanghai brokerage as a day trader. Indeed shares in Jilin Yatai (Group) Co., a cement company he bought, promptly tripled earning him about \$50,000. This investment success Mr Yuan attributed to the two ‘8s’ in the stock’s numeric ticker symbol which he considered a lucky combination. In contrast, investors appeared to get nervous when they see the number ‘4’ since its pronunciation (si) can mean ‘death’.³³ As additional proof of the destabilizing force of number 4, many pointed out that Chinese stocks began to “wobble” in early May, when the SSECI was trading around the 4000 level for the first time.³⁴

The Chinese authorities were unsure what to do to cool the market; they could act now to deflate the bubble or wait for the inevitable implosion.³⁵ Other commentators were also increasingly warning about the impending bursting of the bubble with mentions of the bubble in the financial media in the second quarter of 2007 as figure 3 highlights. In an attempt to calm the frenzy the Central Bank started to take action leading to a small fall in the SSECI but to little avail. Three months later the Shanghai Stock Exchange Composite Index was up

²⁹ Time to stop worrying and start investing, *Financial Times*, 6 March 2007.

³⁰ Taking stock in China, *The Wall Street Journal*, 6 March 2007.

³¹ A rapid rebound: Chinese stocks set record, *The New York Times*, 22 March 2007.

³² Bae and Wang (2009) show that Chinese firms listed on US stock exchanges that had “China” or “Chinese” in their company names significantly outperformed their counterparts without such specific identifiers during the Chinese stock market bubble with an annualized abnormal return of 123%. Apparently similar irrational investor sentiment was present at that time even in US markets.

³³ Na and Schneider (2010) in fact show how IPO prices set by issuers are 6x more likely to end in an 8 (sounding like the word meaning to become prosperous or rich), than in a 4.

³⁴ Chinese investors crunching numbers are glad to see 8s, *Wall Street Journal*, 24 May 2007.

³⁵ China’s stock market, *Financial Times*, 6 May 2007.

a further 20%. Nothing seemed to be able to stop its rise. In April the World Bank raised its forecast for China's economic growth in 2007, and emphasized that the nation's economy did not appear to be overheating, nonetheless there were other concerns: the pork price was sky rocketing and food prices had jumped 15%.³⁶ After the stream of continuing IPOs by August 2007 the Chinese stock market was now even larger in terms of market value than that of Japan.³⁷ The listing of Shenhua Energy, China's largest coal miner, on the Shanghai bourse at the beginning of October 2007, raising \$8.9bn in new money, valued it at \$172bn, making it the second most valuable mining group in the world. Almost 40 times oversubscribed it experienced a nearly doubling of its share price on its trading debut, and became the world's largest IPO in 2007 to date.³⁸ Very soon after, at the beginning of November, China's largest oil and gas producer, PetroChina, became the first company in the world to be valued at more than \$1,000bn, raising a similar amount of new money on the Shanghai Stock Exchange as Shenhua Energy, with its shares, 50 times oversubscribed, up 160% at the end of first day of trading. Its market capitalization was then more than double the value of the second largest company in the world, ExxonMobil, valued at just under \$500bn.³⁹ As the bubble reached its peak investors did not want to listen to any of the increasing number of siren voices.

Interestingly, soaring stock market prices were partly responsible for the announcement that the earnings of more than two thirds of the listed Chinese firms that published their results had increased by over 70% on average in the first half of 2007. However, around half of this growth was due to company investment gains on the stock market; it was not clear investors appreciated this.⁴⁰

Crucially, as the market continued to boom investors lost any vestige of risk aversion with even financial commentators seeming to give up on pointing out the acute risk of collapse in prices the Chinese stock market was facing. No one seemingly wanted to listen. In fact, as figure 3 shows, the number of media mentions of the bubble in Factiva fell to less than 20% of those in the previous three months between July and September 2007 despite the market rising by no less than 45% or 2½ times the rate of the previous quarter. Institutional investors were equally optimistic with 95% attributing the performance of the stock market to the government's effective stock market reforms.⁴¹ Despite Alan Greenspan's warning in February 2007 that the US economy might slip into recession by the end of the year, the

³⁶ Blame money not pigs, *Bloomberg*, 15 August 2007.

³⁷ Chinese stock market bigger than Japan's, *Financial Times*, 27 August 2007.

³⁸ Shenhua shares nearly double on debut, Richard McGregor, *Financial Times*, 9 October 2007.

³⁹ PetroChina first to reach \$1,000 cap, Jeff Dyer, *Financial Times*, 5 November 2007.

⁴⁰ Boom in Chinese earnings draws warning, *Financial Times*, 27 August 2007.

⁴¹ Chinese investors in a stock market survey report, *Xinhua News*, 3 August 2007.

beginnings of the sub-prime crisis, and the fall in the US market, the continuing rapid growth in the SSECI supported the “closed and safe stock market” fantasy, and the idea of the oxymoron of a “rational bubble”.⁴² The stock market was viewed as the mirror of the economy, and vice versa. In psychic reality the stock market was a phantastic object, and prices could never fall. To foreign investors the Chinese stock market was the ideal investment to hedge the risks of the sub-prime crisis.⁴³

According to a survey in July 2007 60% of investors, both institutional and individual, also believed the stock market would continue to boom until the 2008 Olympic Games.⁴⁴ According to another survey, 52% of Chinese investors were investing more than 40% of household assets into the stock market, while 15% had put more than 80% into it. The Shanghai Stock Exchange Composite Index peaked on October 16 at 6092; standing almost 6 times where it had been only two years previously. With Shanghai stocks then trading on a price/earnings ratio of more than 70, absurd valuations were being rationalized. Powerful cover stories were being used to deny reality. Not surprisingly, this situation was not ultimately supportable and the market went into freefall.

The collapse (and panic)

What actually burst the Chinese stock market bubble is arguable; there was not one particular event to which this can be attributed. Stock valuations were so unrealistic that not very much was needed, even though the market appeared resilient even to the actions of the Chinese government in an attempt to rein in market demand. One important component that appeared to trigger the pricking of the bubble seemed to be the deep concerns about the impact of the credit crunch in the US on East Asia. Perhaps, despite investors’ wishful thinking, stock markets were not disconnected after all? Towards the end of November 2007 the Chinese government issued a report warning that a US recession could be “devastating” to China’s manufacturing sector.⁴⁵ Also, more generally, anxiety about how long prices could continue to rise could not be repressed any longer, despite the belief among many key investors that China would not allow a stock market collapse until after the closing ceremony of the Beijing Olympics.⁴⁶ Just a few days after the SSECI peaked, the *Financial Times* penned an article

⁴² Growing debt crisis slams Asian markets, blurs outlook...how China continues to defy share slump; “rational bubble”, *Wall Street Journal Asia*, 20 August 2007.

⁴³ Asia safe as houses: China’s growing consumer spending power should protect the region from the fall-out of the sub-prime crisis, *South China Morning Post*, 25 September 2007.

⁴⁴ Chinese investors in the stock market survey report, *Xinhua News*, 3 October 2007.

⁴⁵ China’s market mood swing, *Time*, 22 November 2007.

⁴⁶ On Asia: how long can China remain in orbit?, *Financial Times*, 26 October 2007.

“China’s Bubble May Burst But The Impact Will Be Limited”.⁴⁷ The *International Herald Tribune* also pointed out the high risk of the bubble bursting.⁴⁸ Likewise Warren Buffet on October 24, after selling his entire stake in PetroChina and earning a seven-fold return in the process, urged investors to be cautious about the Chinese stock market: “We never buy stocks when we see prices soaring. We buy stocks because we are confident of the company’s growth.”⁴⁹ At the end of October 2007 Alan Greenspan again said China’s stock market was a speculative bubble that would burst.⁵⁰

Nevertheless, at the beginning, investment bankers remained determinedly optimistic. “It will all bounce back in the second quarter” and “Asia is still booming”.⁵¹ Denials continued; investors did not want to know. The World Bank forecast an increase in the Chinese growth rate for 2007, and a similar high figure for 2008, and viewed the consequences of a Chinese stock market “correction” to the wider economy as “likely to be fairly limited”.⁵²

However, the Shanghai Composite was down 21% from its peak by the end of November 2007 with weekly trading volumes falling from 17bn shares earlier in the year to 3.3bn.⁵³ Mainland Chinese equities had attracted huge amounts of overseas interest on the basis not only because of the two-year surge in share prices, but also the belief that the Chinese stock market was largely insulated from what was happening in global markets. This was demonstrably no longer true, if this idealized belief ever was. Movements in the SSECI were now highly correlated with those of other world markets despite the denials of many commentators.⁵⁴

Chinese investors entered into an explicitly anxious state of mind and began to panic. Once they believed market prices were no longer supportable any news which reinforced these feelings would be amplified, leading to a stampede for the exit. By January 2008 only a quarter of investors had an optimistic view of the market, even though less than one in five had lost money in 2007, with the Olympic Games no longer being viewed as holding up

⁴⁷ China’s bubble may burst but the impact will be limited, *Financial Times*, 17 October 2007.

⁴⁸ The bubble risks in China OFF THE CHARTS, *International Herald Tribune*, 20 October 2007.

⁴⁹ On Asia: how long can China remain in orbit?, *Financial Times*, 26 October 2007.

⁵⁰ Greenspan says China stock market bubble may burst, *Bloomberg*, 30 October 2007.

⁵¹ Asia half full, *Financial Times*, 4 December 2007.

⁵² East Asia likely to surge on amid US slowdown, *Financial Times*, 16 November 2007.

⁵³ The short view, *Financial Times*, 29 November 2007.

⁵⁴ China’s parallel universe fades, *Financial Times*, 23 January 2008.

market prices.⁵⁵ A range of other investors' surveys in Chinese investment magazines also demonstrated this reversal of beliefs, with a large proportion of investors planning to reduce their exposure to the stock market. By the first quarter of 2008 the SSECI was 40% off its peak. The world's best performing market had suddenly turned into one of the worst. Panic replaced euphoria among Chinese investors almost overnight. Reality was no longer as they wanted it to be. Institutions were racking up enormous losses with the dramatic market falls being made worse, it was argued, by panic among inexperienced portfolio managers who controlled around \$360bn of local mutual funds. About three quarters of Chinese fund managers had spent less than 3 years doing the job. "Most of them have only bull market experience and they haven't seen past bubbles bursting. They are seeing it for the first time and they are scared. They behave like super retail investors."⁵⁶

As the market continued to fall the inflation rate soared reaching 8.5% in April 2008, close to its highest level for 12 years. This pushed the People's Bank of China into a corner. However, instead of increasing interest rates the Central Bank only raised the reserve requirement ratio modestly. Nonetheless, between June 3 and June 17 (a mere 10 trading days) the SSECI plunged a further 24%. Investors could no longer deny reality and turned to anger and blame. An additional issue related to the inherent contradictions in the market. The Chinese government's previously "all good" market reforms allowing listed state-owned enterprises to convert their non-tradable shares into tradable ones were now held liable for the large number of IPOs flooding the market, leading to a glut in new shares with limited demand, and one more reason given to rationalize the share price fall.⁵⁷ Before the Olympic Games had opened many investors appeared to be holding on to their stocks expecting it would lift market sentiment, and lead to a significant rebound in share prices. However, when the Games began they started to unload Olympics-related stocks, again putting pressure on the market.⁵⁸ The US sub-prime mortgage crisis and global inflation also dented investor confidence.

Excitement turned to blame with Chinese investors being in no doubt who was responsible – Beijing – with the state owning 70% of the equity of listed shares.⁵⁹ In fact, a June 2008 poll conducted by Chinese television found more than 80% of those surveyed saying the

⁵⁵ The second individual investors in securities market survey and analysis report, *China Securities Journal*, 1 April 2008 (in Chinese).

⁵⁶ Chinese shares tumble on profit fears, *Financial Times*, 11 June 2008.

⁵⁷ Supply demand relationship crucial in China stock market fall, *Asia Pulse*, 18 August 2008.

⁵⁸ Stocks slide to lowest in 19 months, *China Daily*, 12 August 2008.

⁵⁹ Market slump deters investors in India and China, *Financial Times*, 11 April 2008.

government was at fault for their market losses.⁶⁰ In their turn, fund managers, who claimed not to have acted “inappropriately” or “irresponsibly” as some investors had charged, blamed retail investors who “turned a blind eye to the risks” and “pumped more and more money into equity funds even when the market was overheated”.⁶¹ However, there was no evidence in any of the large number of media comments on the causes of the bubble that investors themselves blamed their own judgment or of being caught up in an investment fantasy.

Trading activity collapsed as investors pulled out of the market which was now stigmatized. Trust had broken down; fantasy and wishful thinking were replaced by revulsion. Although the SSECI subsequently had recovered somewhat from its lowest level in November 2008 by the end of 2009, as at the end of June 2010 it was still only up 40% from its trough, not very different from the 35% increase in the S&P 500 from its lowest point on 21st November 2008.

3. Stock markets and the unconscious

The previous section demonstrates very clearly how investors were caught up *emotionally* in the market roller-coaster the Chinese stock market bubble of 2005-2008 represented. All caution was put to the wind in the excitement that the bubble first generated, replaced by panic and blame when it burst and reality ultimately intruded as it inevitably had to. The extant economics and finance literatures almost completely ignore how people’s emotions and unconscious fantasies are key drivers of their investment activities. In contrast to neoclassical economic theory, and related finance perspectives including cognitive behavioral finance, which both view economic actors as “rational” or potentially rational (Buturovic, Z. and S. Tasic. 2015. “Kahneman’s Failed Revolution against Economic Orthodoxy.” *Critical Review* 27(2): 127-145), this paper argues that really to understand such extreme market events we need to accord the unconscious a key role in determining the way individuals make investment decisions. To this end we adopt a formal psychoanalytic perspective as an appropriate lens through which to analyze the Chinese stock market bubble, both at the individual psyche and market levels. In the latter case, drawing on the understanding of group psychodynamics, *inter alia* of Bion (1952, 1970), we view markets as large virtual groups prone to be swayed by unconscious and often debilitating market-wide dynamic processes.

The starting point in seeking to understand investment behavior, we argue, is to recognize that, on one level, investment activity is only loosely about seeking to maximize financial returns, as conventionally conceived, and that it has a much deeper meaning in unconscious

⁶⁰ Shanghai losses test pensioners’ faith, *Financial Times*, 20 June 2008.

⁶¹ Equity funds hit by crash, *China Daily*, 30 August 2008.

psychic reality. Freud (1911) views feelings as essentially of two types, *pleasurable* (exciting) or *unpleasurable* (painful, anxiety-generating or loss-provoking). Life is viewed as a continuing unconscious struggle between the *pleasure principle*, and the ability to acknowledge reality as it really is, the *reality principle*, however painful this may be (Freud, 1908). We deal with this unconscious conflict via a range of defense mechanisms, by *splitting*, mentally separating the good and bad feelings, with the former attributes exaggerated (or *idealized*), and the latter, which we do not want to “know” or acknowledge, *projected* on to others, *repressed* and rendered unconscious (Auchinloss and Samberg, 2012, pp. 50-52). Psychoanalysis views what has been made unconscious as becoming more, not less, influential as a result. Such unrecognized emotions or *phantasies* are the principal components of unconscious mental life, and thus key drivers of human judgment. In fact, Klein (1935, p. 290) suggests that the whole of an individual’s psychic life is dominated by phantasies originating in the earliest stages of emotional development.

On this basis, investing in stocks takes on an emotional meaning. Investment is an activity that generates conflicting and highly-charged feelings, both conscious and unconscious. It is inherently exciting, and thus pleasurable, but also uncertain and potentially painful if losses arise. The investment process is likewise anxiety-generating because outcomes are largely outside the control of the investor, and thus unpredictable, however much this awareness is conventionally repressed.

Investor behavior and states of mind

We also believe that an understanding of the states of mind in which investment judgments are made can contribute significantly to an understanding of asset pricing bubbles, and investor behavior more generally. Klein (1935) describes two basic alternating mental states. Adapting these ideas for our purposes, we can distinguish between the *depressive* state of mind (D), and the *paranoid schizoid* (PS) state of mind. In the D state of mind people see the world essentially as it is, complex with good and bad characteristics. In the PS state of mind financial actors are operating in a black and white world where the psychic pain of dealing with undesirable reality is avoided by mentally separating good and bad feelings, with the latter now disowned.⁶² As will be recognized there is a constant tension between judgments grounded in reality, made in a D state of mind, and the more fantastical judgments made in a PS state of mind.

⁶² *Schizoid* refers to the splitting and projection process where the good or bad experiences are disowned and projected onto others who are either idealised or feared as a result. *Paranoid* refers to the outcome of the splitting when one feels unconsciously persecuted by the recipient of these bad feelings.

The process of investing is both exciting and uncertain, and requires the investor to enter into a necessarily ambivalent emotional relationship, whether conscious or not, with a stock or other asset that can easily let him down. The investment decision can be made in a depressive state of mind, with an awareness of the reality of the inherent unpredictability, and potential for both upside and downside, or in a paranoid schizoid state of mind. In asset pricing bubbles, such as the Chinese stock market bubble, the *paranoid schizoid* state of mind we argue tends to dominate among investors with doubt being split off, and the assets unconsciously idealized as prices shoot up. When the bubble bursts these investments now become all *bad* and hated with others (the government, markets, advisors, the media etc.) blamed for the resulting pain of the collapse of the original unrealistic fantasies, and financial losses resulting.

The phantastic object

In some sense all investment activity includes the investor's unconscious belief that any investment can be represented both as exceptionally exciting and transformational in unconscious psychic reality.⁶³ The term *phantastic object* is used to convey this important idea connoting

“... an unconscious mental representation of something (or an idea) that fulfils the individual's earliest (and deepest) desires to have exactly what they want when they want it. Possession of such phantastic objects allows people unconsciously to feel omnipotent like Aladdin whose lamp could summon a genie...” (Taffler, 2017, p. 7).⁶⁴

As Tuckett and Taffler (2008, p. 396) point out, phantastic objects are both alluring and transformational: “...(they) appear to break the usual rules of life and turn aspects of ‘normal’ reality on its head.” As will be recognized, asset pricing bubbles reflect the metamorphosing of ‘real’ assets into exciting, highly fulfilling and magical fantasies in the minds of investors caught up in them. The concept of the phantastic object reflects just this process.

Financial markets and group psychodynamics

Another important potential contribution of psychoanalytic theory to the understanding of financial markets in general, and asset pricing bubbles in particular, relates to the relationship

⁶³ We view this concept as a fundamental contribution to the understanding of asset valuations in psychic terms.

⁶⁴ The term is derived from two ideas (Tuckett and Taffler, 2008), the Freudian concept of *object* denotes the mental representation of something but not the actual thing itself. *Phantasy* or *phantastic* is a technical psychoanalytic term used to describe an individual's unconscious beliefs and wishes, which it teaches are derived from the earliest stages of an infant's mental development as referred to above.

between the individual investor and the market, which represents one large (virtual) group with its own set of group dynamic behaviors. In the case of an asset pricing bubble anxiety is split off from the excitement, and underlying reality is denied, repressed and split off. In such settings, market participants are essentially behaving as a “basic assumption group” (Bion, 1952) showing the same strong belief in the phantastic object, and operating in a paranoid schizoid state of mind which blocks any attempt to think clearly or independently. The purpose of the group (or market) then becomes to provide comfort to the group members (investors) through the unconscious defenses the group as a whole adopts against anxiety, and what its members don’t want to know. In this way, continued wishful thinking and the good exciting (pleasurable) feelings can be promoted. This can easily lead to behavior among market participants all caught up in the same basic assumption group thinking leading to the appearance of unconscious wish-fulfilling fantasy initially being self-fulfilling.^{65,66}

In the next section we describe the emotional trajectory asset pricing bubbles seem to follow, and then test this model against what happened during the 2005-2008 Chinese stock market bubble in an attempt to understand how and why it happened.

4. The emotional trajectory of asset pricing bubbles

Five-stage path-dependent emotional asset pricing bubble trajectory

Kindleberger and Aliber (2005, p.25) define an asset pricing bubble as “an upward price movement over an extended period of 15-40 months that then implodes”. That such speculative bubbles or “manias” constitute an essentially emotional process is also highlighted by the language conventionally used to describe them (e.g., Taffler and Tuckett, 2008; Yao and Luo, 2009, Aliber and Kindleberger, 2015, p.55). Based on a general model of financial crises originating with Hyman Minsky, Aliberger and Kindleberger (2015, pp. 39-46) characterize a 3-stage descriptive model for asset pricing bubbles in terms of the path-dependent process of initial “displacement” or some exogenous shock, “euphoria”, and

⁶⁵ Bion (1952) contrasts basic assumption groups with *work groups* whose members cooperate in the performance of a task, and act in a rational and constructive manner. Markets operating appropriately in allocating resources efficiently can be viewed as having work group characteristics.

⁶⁶ Bion (1952; 1961) further discusses how basic assumption groups form to meet three different common purposes which oscillate: fight-flight, pairing off, and dependency. Interestingly, market behavior in asset pricing bubbles appears to portray all three basic assumption group characteristics at different stages in their trajectory.

“mania”, as prices boom, and then “revulsion” and “panic” as they collapse.⁶⁷ However, a detailed reading of such bubbles suggests an expanded 5-phase dynamic theoretical model can provide a more detailed description of such processes as they play out, which is what we work with in our analysis of the 2005-2008 Chinese bubble below. However, it should be noted that although we present these phases sequentially for exposition purposes, there is inevitably some overlap as the psychodrama of the bubble unfolds.

The underlying research question we address is whether the nature of this emotionally-driven path-dependent trajectory we hypothesize can help explain, in particular, the morphology of the Chinese stock market bubble, and its rapid inflation and subsequent implosion. Is this psychologically-informed model consistent with the emotional meaning Chinese stocks represented for investors during this period, and what were the consequences?

In our 5-stage model we term Aliberger and Kindleberger’s beginning phase of displacement or exogenous shock “emerging to view” when, in our case, Chinese stocks began to be perceived as transformational phantastic objects in the minds of investors, and prices began to move upwards., Examining the SSECI price graph we define this period as the 12 months from the beginning of July 2005 to the end of June 2006, as figure 1 illustrates. Next, once these unconscious mental images are established in this way, we predict a headlong and compulsive craze among investors to acquire more of such assets at almost any price helped by observing how other investors have profited so well from their speculative activity, *inter alia* assisted by the media. This we term the “rush to possess” phase, and define it as the 6 months from the beginning of July 2006 to the end of the year.⁶⁸

Following these two stages we predict a crucial third stage with asset prices, as in the Chinese case, continuing to boom, and departing even further from fundamental value, despite increasing evidence that such stock valuations are clearly unrealistic and unsustainable. Normal investment criteria are no longer salient when applied to phantastic objects. This is due to the specific ways investors unconsciously collude to maintain their exciting idealized wish-fulfilling fantasy against the external challenges of material reality. This is the phase of “psychic defense” and lasts from the beginning of 2007 to the end of September.

⁶⁷ Or *Torschlusspanik* (door-shut panic) (p. 46) in German as investors crowd to get out before the door slams shut.

⁶⁸ As Aliberger and Kindleberger (2015, p. 43) point out: “There is nothing as disturbing to one’s well-being and judgment as to see a friend get rich. Unless it is to see a non-friend get richer.”

Ultimately, however, such exciting fantasies are unsustainable, however pleasurable and emotionally satisfying; external reality cannot be held at bay forever. The emotional logic underpinning the extreme stock valuations is no longer maintainable, and the stock market bubble implodes. Conscious awareness of having been caught up in what has turned out to be only an investment fantasy which was not real is now paramount, together with the pain of loss. This is felt both in terms of the pain of having to give up what the phantastic object represented emotionally, as well as the resulting financial loss. Investors now seek to liquidate their investments as fast as possible. This is the “panic” phase. Although the SSECI peaked on October 16 2007, to simplify our empirical analysis we delineate this market state as the 9 months from the beginning of October 2007 till the end of June 2008.

Fifth and finally, after the dramatic collapse in stock market valuations, we predict feelings of embarrassment, shame, guilt and loss will continue to predominate in markets. Investors will be wary of further involvement in the market that has let them down so badly, leading to potentially adverse consequences for rational asset pricing over quite a significant period of time. Those caught up in the bubble will look for other parties to blame for being caught up in the wish-fulfilling fantasy and the inevitable unwanted and very painful consequences that result. This we term the “revulsion and blame” phase, and view it in figure 1 as the 6 month period from the beginning of July 2008 till the end of December 2008 when our analysis concludes.

Although clearly these five phases of a speculative bubble, emerging to view, rush to possess, psychic defense, panic and revulsion and blame will overlap to some degree, nonetheless our we break down our analysis into five sequential phases for illustrative purposes.

Hypotheses

Drawing on our five content analysis keyword dictionaries constructed to measure the following different investor emotions: excitement, anxiety, mania, panic, revulsion and blame as motivated and described in the next section, we set up the following hypotheses to test our 5-stage path-dependent bubble theory empirically on our Chinese stock market bubble data:

"Emerging to view" phase (July 2005 to June 2006)

H1: the standardized frequency of excitement emotion words in the Chinese media will increase in line with the market index.

"Rush to possess" phase (July 2006 to December 2006)

H2: the standardized frequency of excitement and mania-type emotion words will continue to move in line with the market index.

"Psychic defense" phase (January 2007 to September 2007)

H3: the standardized frequency of mania emotion words will continue to increase to its peak. Simultaneously, the standardized frequency of anxiety emotion words will start to rise while that of excitement will start to fall as the market moves towards its peak with the standardized frequency of panic emotion words increasing in parallel. We also predict the standardized frequency of bubble mention words will increase during this phase.

"Panic phase" (October 2007 to June 2008)

H4: the standardized frequency of bubble word mentions, and the negative emotion words anxiety and panic will all increase to a maximum.

"Revulsion and blame" phase (July 2008 to end 2008)

H5: the standardized frequency of revulsion type emotion words should increase to its peak.

5. Dictionary construction, data and research process

Selection of emotion word categories

Investment decisions create strong emotions of both excitement (associated with the pleasurable idea or fantasy of actual or imagined future gains) and anxiety (over the potential pain of actual or potential future loss). These emotions and their dynamic inter-relationship can be empirically measured using appropriate content analysis techniques (e.g., Tuckett, Smith and Nyman, 2014); Kuhnen and Knutson (2011) describe some of the underlying neuropsychology. As such, being able to measure the levels of Excitement and Anxiety manifest in different stages of the Chinese stock market bubble in testing the role of investor emotions as potential drivers, and exploring empirically the degree of fit of our 5-stage path-dependent model, is fundamental. Hence, we need to generate keyword dictionaries to measure the degrees of excitement and anxiety reflected in articles in the Chinese media

commenting on the Chinese stock market during our period of interest. Construction of Mania, Panic Revulsion and Blame keyword dictionaries are equally required.

Construction of keyword emotion dictionaries

Henry and Leone (2016) show that domain specific wordlists in content analysis perform better than general wordlists, and also equal weighting of words is just as successful as more complex weighting procedures. Since there are no existing emotion word dictionaries in Chinese to the knowledge of the authors, and certainly none directly appropriate for our purposes, we build domain-specific ones ourselves by hand-collecting relevant emotion words from the Chinese media.

To construct appropriate keyword dictionaries for our purposes we first divide the 4-year period from January 2005 (we use the first 6 months to represent a pre-bubble period for data standardization purposes) into 16 quarters, then for each quarter using Factiva, as described in the next sub-section, we rank publications by frequency of relevant news stories and articles identified. Two relatively long articles appropriately selected are then downloaded from each of the top five sources in each quarter, making 160 different ones in total, and physically inspected for content appropriate for our emotion word dictionary construction purposes. All words in these articles that have emotional connotations are first highlighted by two Chinese research assistants independently, and assigned by each into one of our five emotion categories (excitement, anxiety, mania, panic, and revulsion and blame), with classifications then compared. The small number of classification disagreements was resolved in discussion between the two coders, leading to final agreed emotion keyword dictionaries for empirical application.

However, the volume of words in a number of our emotion categories was too great for ready application in the main stage of our research which involved analysis of our full article corpus (see below) so words appearing with very low frequency in it were removed leaving 241 in total across our five keyword emotion categories. Appendix 1 provides our keyword dictionary by emotion word category in Chinese together with English translation. Subsequently, an additional word category “Bubble” was added to measure the level of awareness of the existence of the asset pricing bubble at its different stages in the media. Bubble classification keywords (8 in number) were taken from the “Panic” emotion word dictionary.

Research corpus

All the media reports we analyze are published in Chinese and as such are directly accessible to Chinese investors; and are all downloaded from the Factiva database. To arrive at the corpus of news stories and articles referring to the Chinese stock market we content analyze using our derived emotion keyword dictionaries we work on a month by month basis. We first search systematically in Factiva for relevant articles each month from January 2005 to December 2008 using the following search conditions:

Searching keywords: (all in Chinese) *Chinese stock/share market OR Chinese stock/share OR stock/share market OR stock/share*

Region: *China; Beijing; Shanghai; Shenzhen etc.*

Language: *Simplified Chinese*

Sort by: *Relevance*

Subject: *Equity markets*

However, the resulting high volume of articles identified in this search process (around 1000 to 2000 a month) included a large proportion which simply reported firm results, were public company notices, or mentioned the formation of new investment funds, and thus not relevant for our purposes. As such, all news reports downloaded in this initial screening process had to be checked for appropriateness by looking at their headlines, and if these were not clear enough, by inspection of the actual article content to guarantee their relevance. Our target was to work with two hundred news articles each month. If the total number of the relevant articles for a specific month was less than two hundred, all were chosen to work with; if the number of available articles exceeded this, two hundred were chosen spread equally by date across the whole month.

In total, we end up with a corpus of 9,195 news stories and articles suitable for analysis, an average of around 190 a month. The top five publications drawn on are the Chinese language versions of Reuters, The Wall Street Journal, AFX Asia, InfoTimes and Finet HK. Since all downloadable media news and articles published in China in Chinese are censored by the Chinese government, there is unlikely to be any particular bias in the way we construct our research database.

Data analysis and standardization

Wordscount,⁶⁹ a Chinese software package, is used to count the frequency of occurrence of words in each of our 5 emotion keyword dictionaries and bubble dictionary. As there are different volumes of articles in our research corpus each month, and these will be of different

⁶⁹ Available at <http://www.yuneach.com/soft/WordsCount.asp>.

length, the total frequency of emotion words in a particular category in a month cannot be compared with that for the same category in other months directly due to the differing total number of words. However, comparison can be realized through the following relationship:

$$\text{Keyword dictionary category monthly frequency standardization} = \frac{\text{total frequency of emotion words in the respective category in the month}}{\text{total amount of words in all the news and articles downloaded in that month}} \quad (1)$$

All frequencies used in this paper are standardized in this way.

SSECI index vs standardized emotion category word frequency

To test our five-step emotional trajectory asset pricing bubble theory we need to explore the relationship between the relative salience of our different investor emotions as reflected in media reports as the Chinese stock market bubble evolves, bursts and deflates as measured by movements in the Shanghai Stock Exchange Composite Index between 2005 and 2008. We do this by overlaying the monthly standardized frequency of words in the respective emotion category plotted in bar chart form on the daily value of SSECI index so the dynamic relationship between the market index and investor emotions can be tracked through each phase of the bubble. In particular, to aid interpretation, the value of the standardized frequency of the emotion words in each category for each month post-June 2005 as the bubble starts to take off is divided by its average value during the pre-bubble period from January 2005 to June 2005. Specifically, the actual standardized frequency of the emotion words of each category plotted in this paper is transformed into a ratio via the following equation:

$$\text{Actual standardized frequency of emotion words} = \frac{\text{standardized frequency of emotion words in the respective category in a month}}{\text{average standardized frequency of emotion words of that category in the period between January 2005 to June 2005}} \quad (2)$$

Since all standardized emotion word frequencies are transformed to a relative value via the above equation, in the rest of the paper for convenience of expression we just use the term “standardized frequency” rather than “actual standardized frequency” in reporting our results. Our line and bar charts are presented with the SSECI represented by primary axis (on the left side of the chart) and the respective emotion word standardized frequency as the secondary axis (on the right hand side).

6. Empirical results

In this paper we explore the extent to which investor emotions and fantasies are a prime driver of asset pricing bubbles. This section presents our empirical results. In the first subsection below we conduct an initial analysis to examine our underlying thesis before testing our formal hypotheses in subsequent sub-sections as the Chinese stock market bubble evolves.

Overview

As outlined above our psychological bubble model is built around the idea of how the continuing search by investors for transformational phantastic objects can help explain the morphology of asset pricing bubbles as they unfold. Investors become increasingly aroused and stimulated as the bubble inflates, and the phantastic object appears to be “real”, and this is then followed by their anger and despair when the bubble bursts and the phantastic object turns out to be worthless. To explore our general proposition that investors’ emotional states both serve to drive and reflect the different stages of an asset pricing bubble, and the way in which they experience associated market movements, figures 4 and 5 plot our monthly excitement and anxiety variables against the SSECI between January 2005 and December 2008.. As can be seen levels of excitement and anxiety are highly volatile and negatively correlated. On this basis, the stock market would appear to provide a very emotional environment for investors to operate in. This picture is confirmed in figures 6 to 8 which plot mania, panic, and revulsion and blame emotion keyword frequencies against the SSECI.

Based on this initial analysis, we find evidence supportive of our main proposition that there is a clear relationship between investors’ different emotional states, and what they experience during an asset pricing bubble. Our results are arguably also consistent with the underlying idea that in such speculative bubbles investors appear to believe they have been given license to search for and find the phantastic object. On this basis we suggest that the associated visceral investor passions and antipathies unleashed in this process can be a key driver of asset pricing in bubble markets. Our specific hypotheses are tested using our data in the following sub-sections.

"Emerging to view" phase (July 2005 to June 2006)

H1: the standardized frequency of excitement emotion words will increase in line with the market index.

During this initial phase of the Chinese stock market bubble we predict that Chinese stocks will begin to be viewed by investors as phantastic objects and hypothesize an increase in the associated sense of enthusiasm in the market. Figure 4 shows how in line with an increase in the SSECI of over 50% in this period the average standardized frequency of excitement

emotion words in the media is almost double (up 89%) its average pre-bubble level highlighting the strong positive tone of the Chinese media. Figure 6 also shows in parallel how the average standardized frequency of mania type emotion words is significantly increased (up 40%) compared with its average level in the pre-bubble period. Clearly the heating up of the Chinese market and levels of investor excitement are closely associated. Our empirical evidence is consistent with our first hypothesis.

"Rush to possess" phase (July 2006 to December 2006)

H2: the standardized frequency of excitement and mania-type emotion words will continue to move in line with the market index.

In the rush to possess phase of the bubble we predict an increasing headlong and compulsive desire among investors to speculate, and not be left out, with media content reflecting this need directly. During this 6-month period the SSECI shot up by 60% in value and, as figure 4 shows, the level of investor excitement even increases further compared with the emerging to view stage, now standing on average at 2.5 times the average for the pre-bubble period. In comparison, our average investor mania measure during this period is only a little higher. Our empirical thus evidence appears somewhat supportive of our hypothesis 2.

"Psychic defense" phase (January 2007 to September 2007)

H3: the standardized frequency of mania emotion words will continue to increase to its peak. Simultaneously, the standardized frequency of anxiety emotion words will start to rise while that of excitement will start to fall as the market moves towards its peak with the standardized frequency of panic emotion words increasing in parallel. We also predict the standardized frequency of bubble mention words will increase during this phase.

In the third stage of an asset pricing bubble our model predicts that prices will continue to boom with stock valuations increasingly at variance with reality, and ultimately unsustainable. Pursuit of the phantastic object dominates investor thinking with any questioning voices dismissed and ignored as prices race to their peak and the bubble bursts. Crucially, any challenges to the enormously rewarding wish-fulfilling fantasy that prices will continue to go up in effect for ever are denied in the forlorn hope the party will never end even though the bubble has inevitably to implode.

In its state of manic denial the Chinese stock market, as represented by the SSECI, more than doubles (up 108%) in this 9-month period (and in fact by the time it peaks on October 16 it is up no less than 128% on its value at the start of the year). Figure 6 shows how our mania measure is, on average, almost 2½ times its value in the pre-bubble period (up 138%) and almost 2/3 higher (up 63%) compared with the rush to possess phase. However, in contrast to our expectations, figure 4 shows the average level of market excitement to be effectively unchanged compared with that in the rush to possess phase. Importantly for our main thesis, as predicted, market-wide levels of anxiety as reflected in the Chinese media dramatically increase as figure 5 shows, despite the state of market euphoria, with our average anxiety emotion variable standing at 125% of that of the pre-bubble period and up almost 4/5 (78%) compared with its average during the rush to possess phase when emotions of excitement dominated. Our average panic measure also increases significantly with figure 7 showing it to have a value of over 2½ (2.7x) that in the rush to possess phase. Equally importantly for our bubble theory, figure 3 shows how our proxy measure for denial (media bubble mentions) which was, not surprisingly, at a low level in both the pre-bubble period and previous two market phases, now dramatically shoots up with an average level over 9 times (9.21x) that in the emerging to view and rush to possess phases. As manifest by the more than doubling of the SSECI in the first 9 months of 2007, Chinese investors appear to be turning a blind eye to what they don't want to know (Steiner, 1985) even though our anxiety and bubble measures show there is increasing awareness of the fragile bubble state of the market. Our empirical evidence is clearly consistent with hypothesis 3; in such manic states of the market, investor ability to deny underlying reality is paramount in maintaining the enormously satisfying fantasy that the market can only continue to go up for ever.

"Panic phase" (October 2007 to June 2008)

H4: the standardized frequency of bubble word mentions, and the negative emotion words anxiety and panic will all increase to a maximum.

Ultimately, our model predicts, the bubble has to burst. External reality cannot continue to be avoided forever and the story that “this time it is different” is no longer credible with the extreme stock valuations now seen as grounded only in fantasy. During this panic phase of the Chinese bubble with the SSECI more than halving (down 56%) from its peak on October 16 to the end of June 2008 the phantastic object is now recognized as only a chimera with investors now seeking to exit the market in a state of panic. There is not only the pain of financial loss but also that of having to give up such an enormously satisfying wish-fulfilling fantasy, and belief in manic wealth creation. In line with our hypothesis 4, once it has burst,

with the bubble now recognized for what it is, there are continuing high levels of bubble emotion words in the media, although interestingly the average is down by a third compared with the stage of psychic defense which we speculate reflects the fact that this is now obvious and old news. Not surprisingly, the level of investor mania now collapses (figure 6), and similarly the level of excitement, with an average level of not much more than half (52%) the average of the rush to possess and psychic defense phases (see figure 4). Levels of anxiety are effectively unchanged compared with the stage of psychic defense (figure 5), even though the bubble has now burst, again perhaps serving to emphasize that investors unconsciously “knew” the bubble would eventually collapse even as their actual investment behavior belied this. Our average panic emotion measure, although a little higher (10%) than in the immediately preceding psychic denial phase (figure 7) provides a similar picture. On this basis the evidence we report is broadly consistent with hypothesis 4.

"Revulsion and blame" phase (July 2008 to end 2008)

H5: the standardized frequency of revulsion type emotion words should increase to its peak.

We further predict that after the precipitated fall in stock valuations investors will experience feelings of shame and guilt as well as embarrassment for becoming involved in what ultimately turns out to be nothing more than a very painful wish-fulfilling fantasy quite apart from the financial loss incurred, particularly by those who entered the market after it had already taken off. Feelings of revulsion and blame will now predominate with investors looking for scapegoats to avoid having to acknowledge their actions in being caught up in the bubble. Figure 8 shows how mentions of revulsion and blame peak in the last 6 months of 2008 as the SSECI collapses by a further third (34%). As such our evidence is reasonably supportive of hypothesis 5.

7. Summary and conclusions

This paper sets out to explain the repeated Chinese stock market bubbles of 2005-2008 and 2014-2015 in terms of their emotional drivers. Traditional explanations of financial bubbles tend to focus on theoretical and analytical models that may or may not actually fit the real world experience of investors in real world markets (e.g., Hirshliefer and Teoh, 2003). However, by considering the role unconscious mental processes play in investor behavior we are able formally to recognize the powerful phantasies and emotions unleashed in speculative bubbles and, as a result, increase our understanding of such major destructive economic

events. Specifically in our paper we demonstrate how Chinese market participants' unconscious fantasies, anxieties and drives, and their emotions *inter alia* fanned by the actions of the Chinese government and media cheer leading, lead asset prices dramatically to depart from fundamental value. We develop a novel 5-stage emotion-driven path-dependent trajectory model of such asset-pricing bubbles and test the degree of fit empirically with what was going on in the Chinese stock market between 2005 and 2008 when the market went up by no less than 500% in not much more than two years with stock prices representing a P/E ratio of no less than 73x at its peak, and then rapidly imploded. We also show that the unconscious search for what we describe as the phantastic object, which is continually present in all financial markets, can help explain the two Chinese stock market bubbles, and their different phases.

In direct parallel with the 2005-2008 bubble we explore in detail in this paper, not much more than five years later in less than a year between June 30 2014 and when it peaked on June 12 2015, the Shanghai Stock Exchange Index again shot up by over 150%. It then imploded, collapsing by 43% over the next two and half months and by almost 50% by its trough at the end of January 2016. Importantly, the emotional trajectory of this Chinese stock market bubble 2.0 has an identical pattern to that of figure 1 for the earlier bubble with the acting out of similar investor unconscious fantasies and basic assumption group market psychodynamics. We are forced to ask once again why Chinese investors appear to have the repeated need to act out enormously destructive phantasies with no apparent learning.

Driven by the quest for excitement described by Freud in terms of the pleasure principle, which is innate in all human beings, we demonstrate how initially a new idea actively promoted in the media that this time it's different can trigger a move into states of euphoria and boom with investors denying reality as stock prices rocket. Market participants collectively unconsciously deny and repress reality to keep the party going. Warning voices are ignored in the acting out of the enormously exciting, and initially psychically rewarding, self-fulfilling unconscious infantile fantasy that you can have what you want when you want it. What is known as mania or psychic denial reigns. Eventually we show how it was no longer possible to deny the siren voices, and reality had to intrude. The magic was shown to be only sleight of hand. Prices collapsed, panic followed as investors realized they had been in a dream, and then blamed the government and the authorities. Certainly nothing to do with the investors themselves! In the 2014-2015 bubble, in a slightly different take on this, the Chinese government's ultimately fruitless attempt to keep the bubble inflated was replaced with a parallel search for those "responsible" to blame. Certainly the bubble was nothing to do with its stimulus and encouragement of investors to act out their unconscious fantasies in such a destructive and damaging way. Not surprisingly, Chinese investors subsequently avoided the market for several years after 2008, and again after the most recent bubble, appearing to have found another phantastic object in its place, in this case real estate.

In contrast to many economists who view bubbles as an underlying fact of life which cannot be explained, we argue that, in fact, asset pricing bubbles are perfectly explicable. This follows if, instead of looking for patterns of rational economic activity, we recognize that most financial decisions, as with most other decisions we make, are predominantly emotional in nature. Unconscious fantasies and drives very much determine our actual behavior. An important contribution of our paper, we argue, is also to provide empirical evidence demonstrating the potential value of the formal analysis of investor emotions in helping to explain such extreme market events.

We argue that only if we start to recognize the unconscious emotional drivers of investment activity, and the unconscious fantasies that markets can release, are economists and policymakers going to be able to understand the nature and morphology of financial bubbles in the future and take appropriate action. In fact, we can speculate on the potential broader application of such perspectives in other areas of finance and economics.

References

Auchincloss, E L, and E Samberg (2012), *Psychoanalytic Terms and Concepts*, 3rd ed. New Haven, CT: Yale University Press.

Bae, K-H and W Wang (2009), *What's in a "China" name? A test of the investor sentiment hypothesis*, working paper

Bion, W R (1952), "Group dynamics: A re-review", *The International Journal of Psychoanalysis*, 33, 235-247.

Bion, W R (1961), *Experiences in groups*, London, Tavistock.

Bion, W R (1970), *Attention and interpretation: A scientific approach to insight in psychoanalysis in groups*, London Tavistock.

Brunnermeier, M K and M Oehmke (2013), "Bubbles, financial crises, and systematic risk" in *Handbook of the Economics of Finance*, edited by G M Constantinides, M Harris and R M Stulz, ch. 18, 1221-1228, Amsterdam: North-Holland.

Cassidy, J (2002), *Dot.con: the greatest story ever told*, London: Alan Lane/Penguin.

Fama, E (2014), "Two pillars of asset pricing", *American Economic Review*, 104, 6, 1467-1485.

Freud, S (1908), *Creative writers and daydreaming*, Standard Edition 9, 141-153, London: Hogarth Press.

Freud, S (1911), *Formulations regarding the principals of mental functioning*, Standard Edition, 12, 213-226, London: Hogarth Press.

Kindleberger, CP and RZ Aliber (2005), *Manias, panics and crashes*, Basingstoke Hampshire: Palgrave Macmillan (5th ed).

Kindleberger, CP and RZ Aliber (2015), *Manias, panics and crashes*, Basingstoke Hampshire: Palgrave Macmillan (7th ed).

Klein, M (1998), "Weaning" originally published in: John Rickman (Ed) *On the bringing up of children*, London: Kegan-Paul, reprinted in Melanie Klein, 1998, *Love, guilt and reparation and other works*, 290-305, London: Vintage.

Klein, M (1935), "A contribution to the psychogenesis of manic depressive states", *International Journal of Psychoanalysis*, 16, 145-174.

Moore, BE and BD Fine (1990), *Psychoanalytic terms and concepts*, New Haven, Conn: Yale University Press.

Na, S and T Schneider (2010), *The use of 'lucky numbers' in the pricing of Chinese A-share initial public offerings*, working paper

O'Hara, M (2008), "Bubbles: some perspectives (and loose talk) from history", *Review of Financial Studies*, 24, 1, 11-17.

Scherbina, A (2013), *Asset pricing bubbles: a selective survey*, IMF Working paper 13/145.

Shiller, R J (2003), "From efficient markets to behavioral finance", *Journal of Economic Perspectives*, 17, 1, 83-104.

Shiller, R J (2014), "Speculative asset prices", *American Economic Review*, 104, 6, 1486-1517.

Shiller, R J (2015), *Irrational Exuberance*, 3rd ed., New Jersey: Princeton University Press.

Steiner, J (1985), "Turning a blind eye. The cover up for Oedipus", *International Review of Psychoanalysis* 12.1, 161-172.

Taffler, R. J. (2017) "Emotional finance: investment and the unconscious", *European Journal of Finance* forthcoming.

Tuckett, D A and R J Taffler (2008), "Phantastic objects and the financial market's sense of reality, a psychoanalytic contribution to the understanding of stock market instability", *International Journal of Psychoanalysis*, 89, 2, 389-412.

Yao, S and D Luo, (2009) "The economic psychology of stock market bubbles in China", *The World Economy*, Vol. 32, 5, 667-691.

Figure 1: Shanghai Stock Exchange Composite Index: An Emotional Trajectory

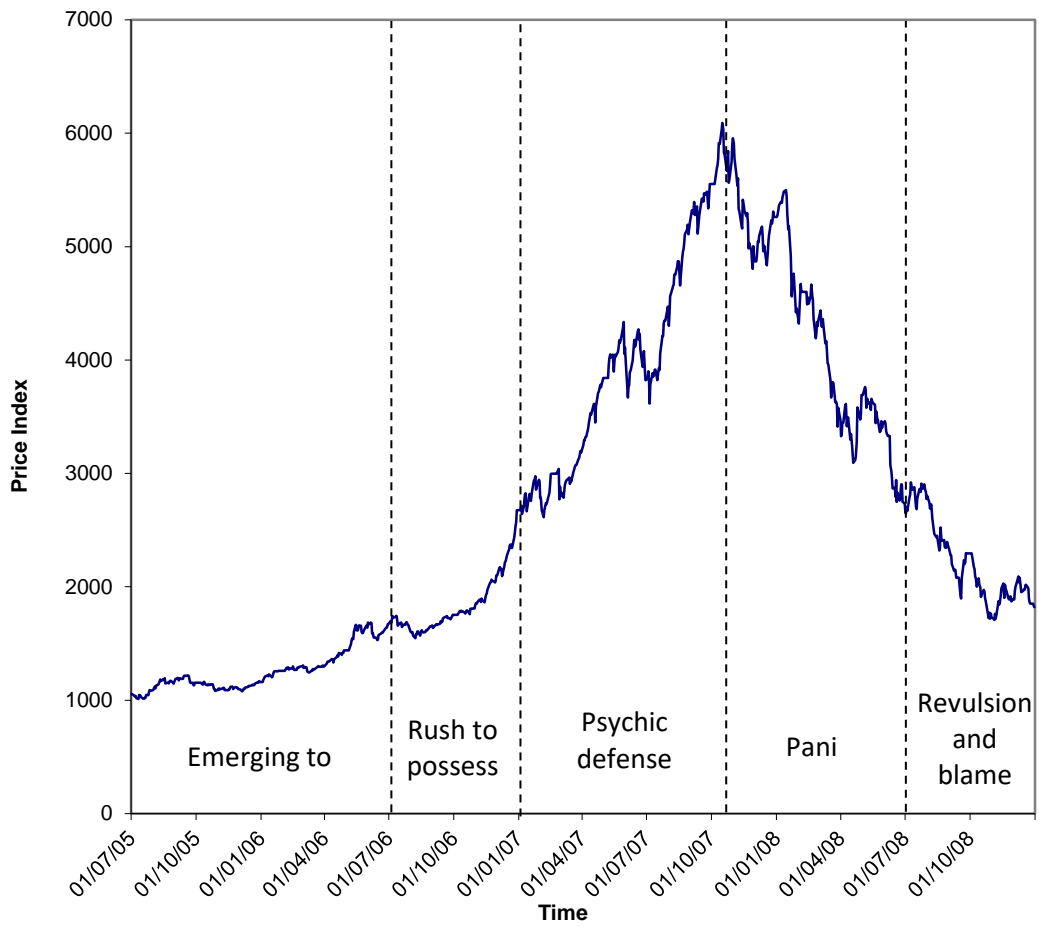
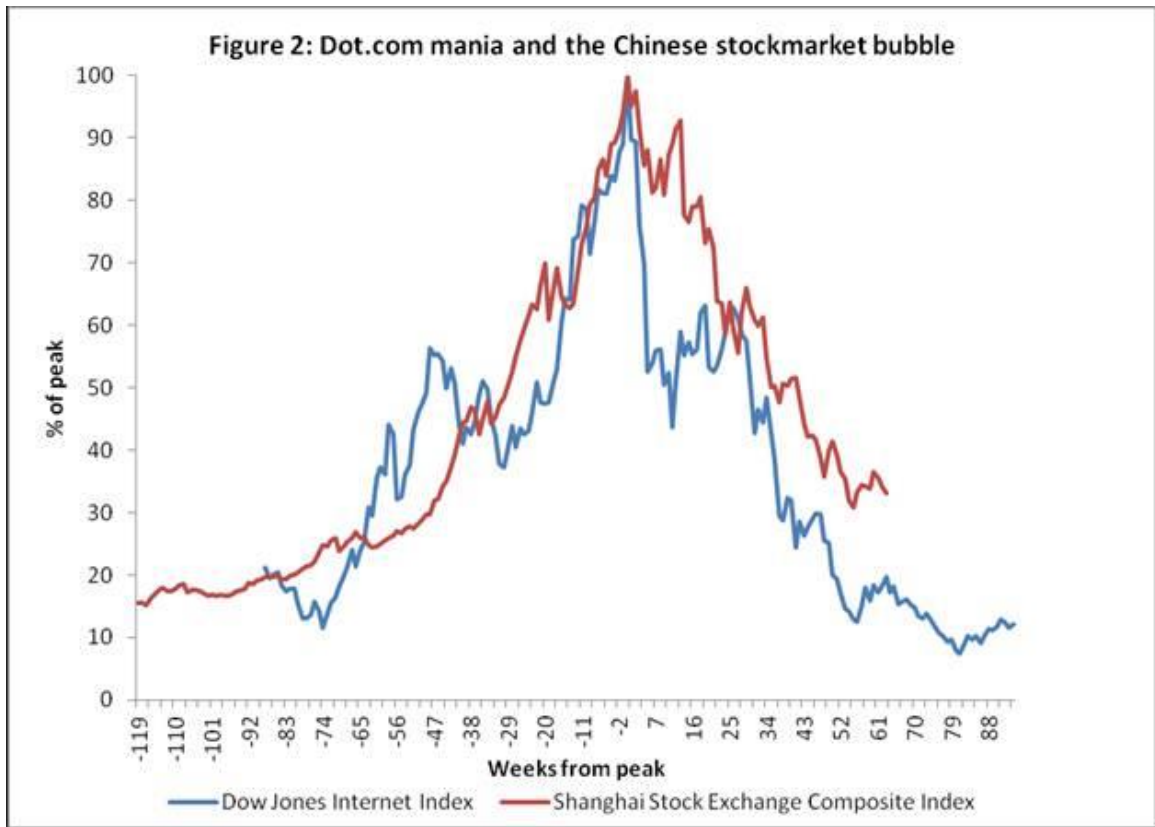
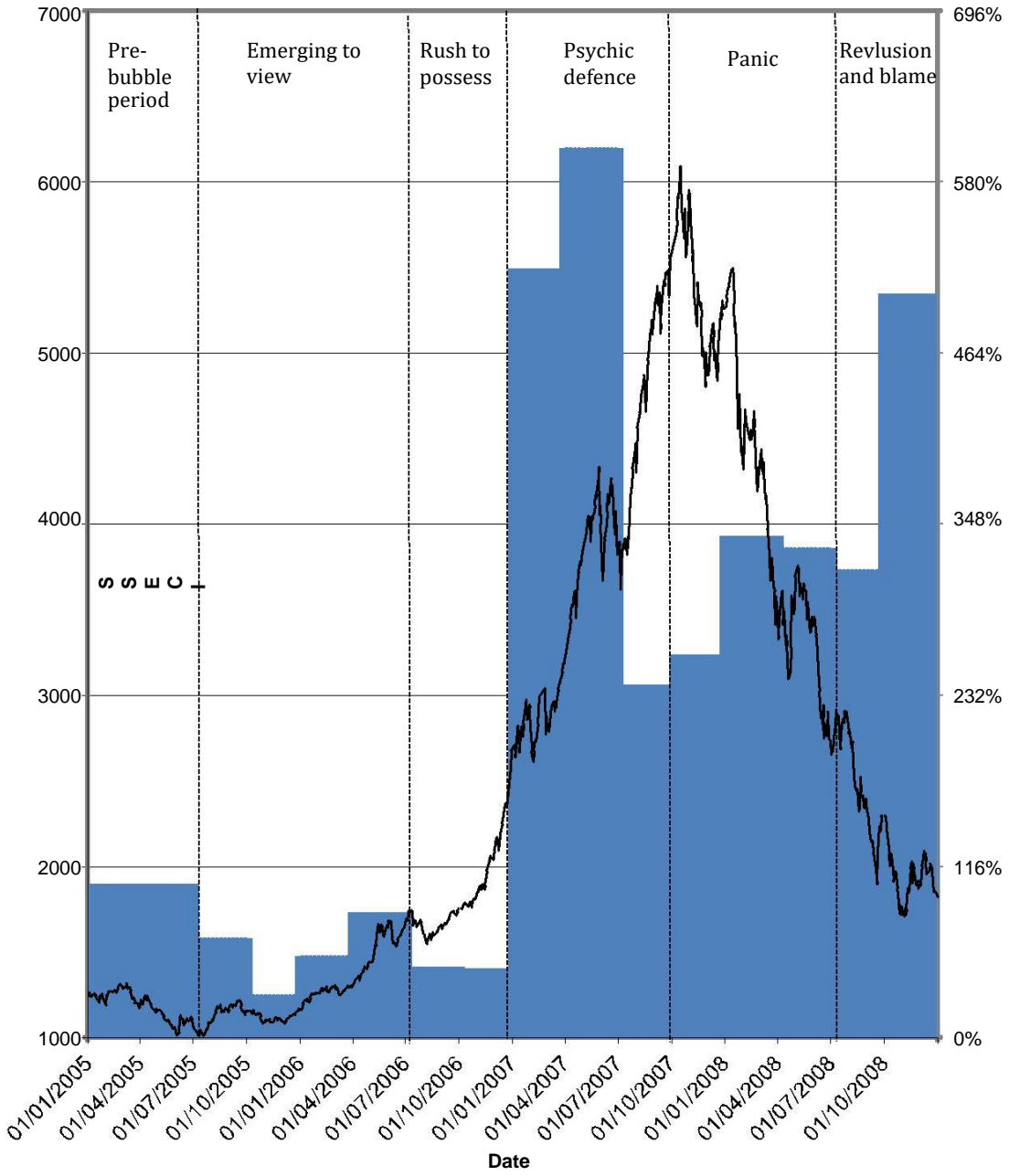


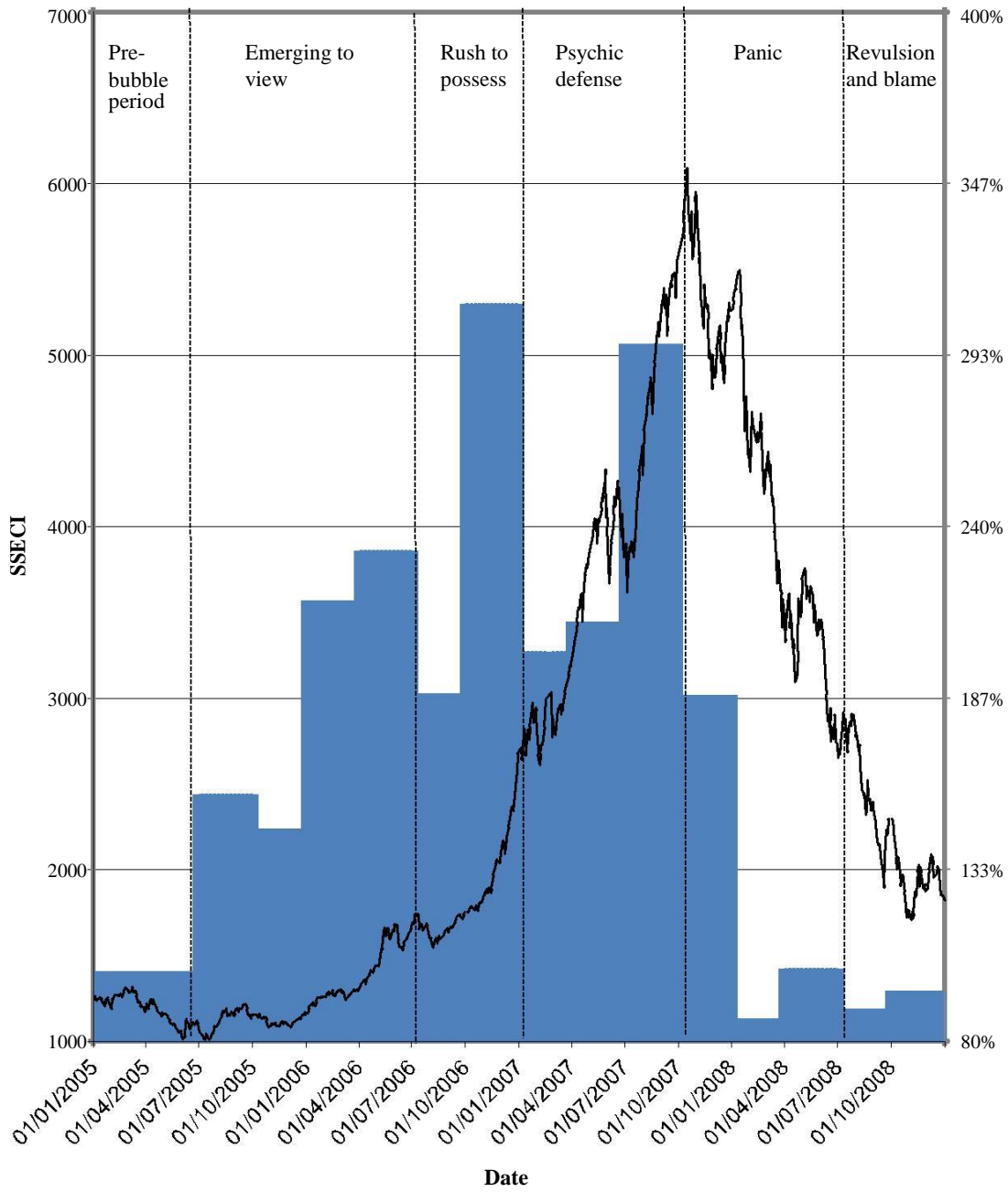
Figure 2: Dot.com mania and the Chinese stockmarket bubble



**Figure 3:
SSECI vs. Bubble**



**Figure 4:
SSECI vs. Excitement**



**Figure 5:
SSECI vs. Anxiety**

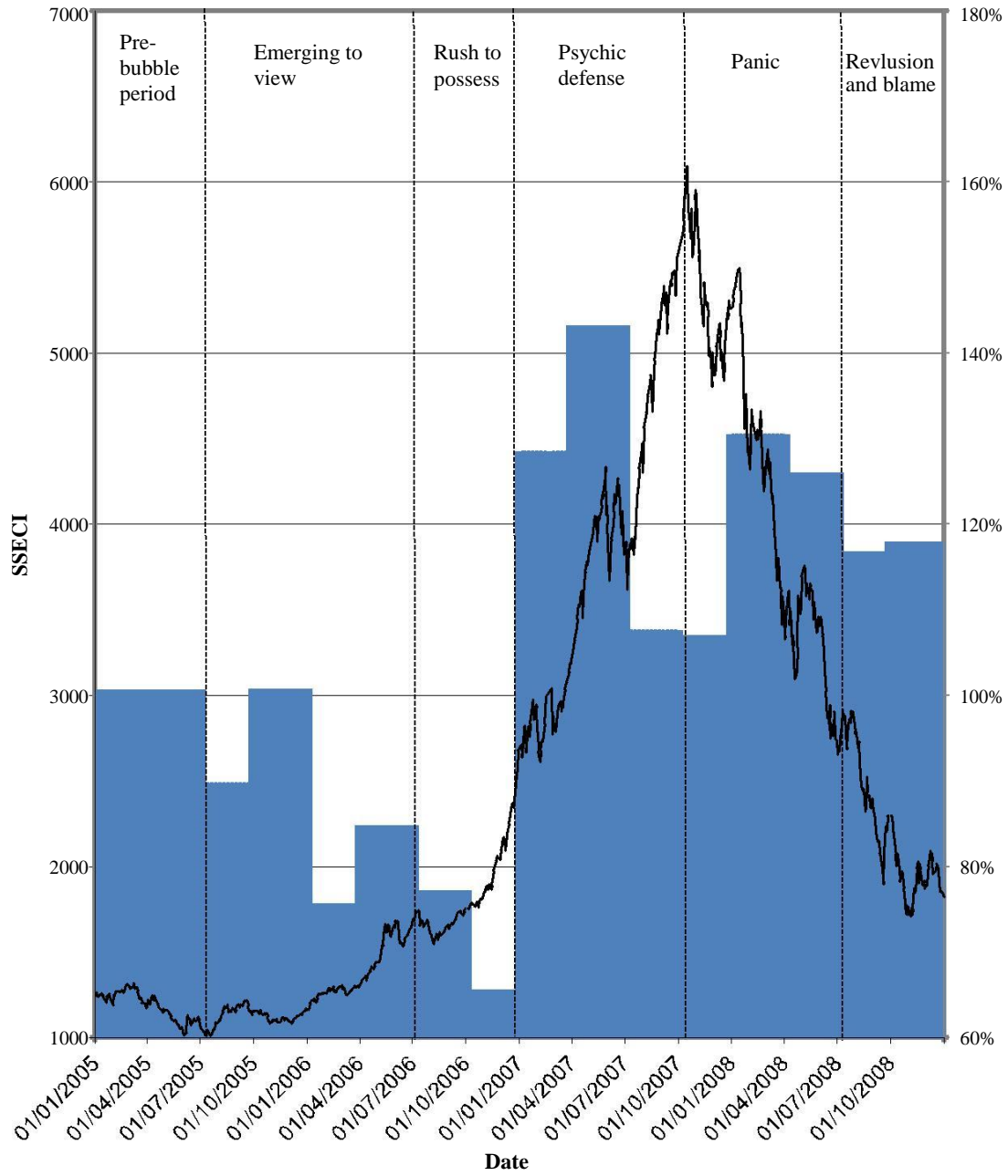


Figure 6
SSECI vs. Mania

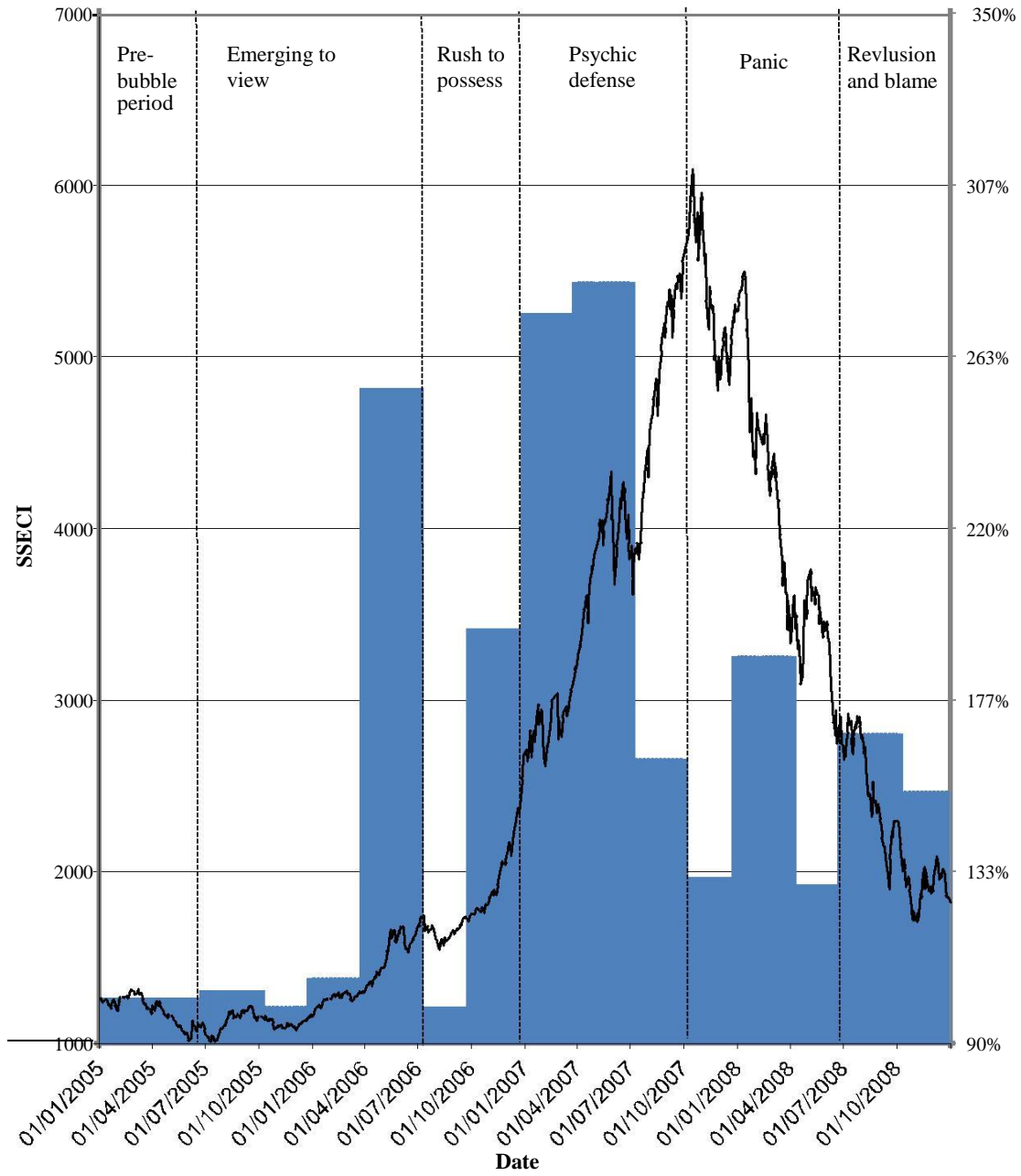
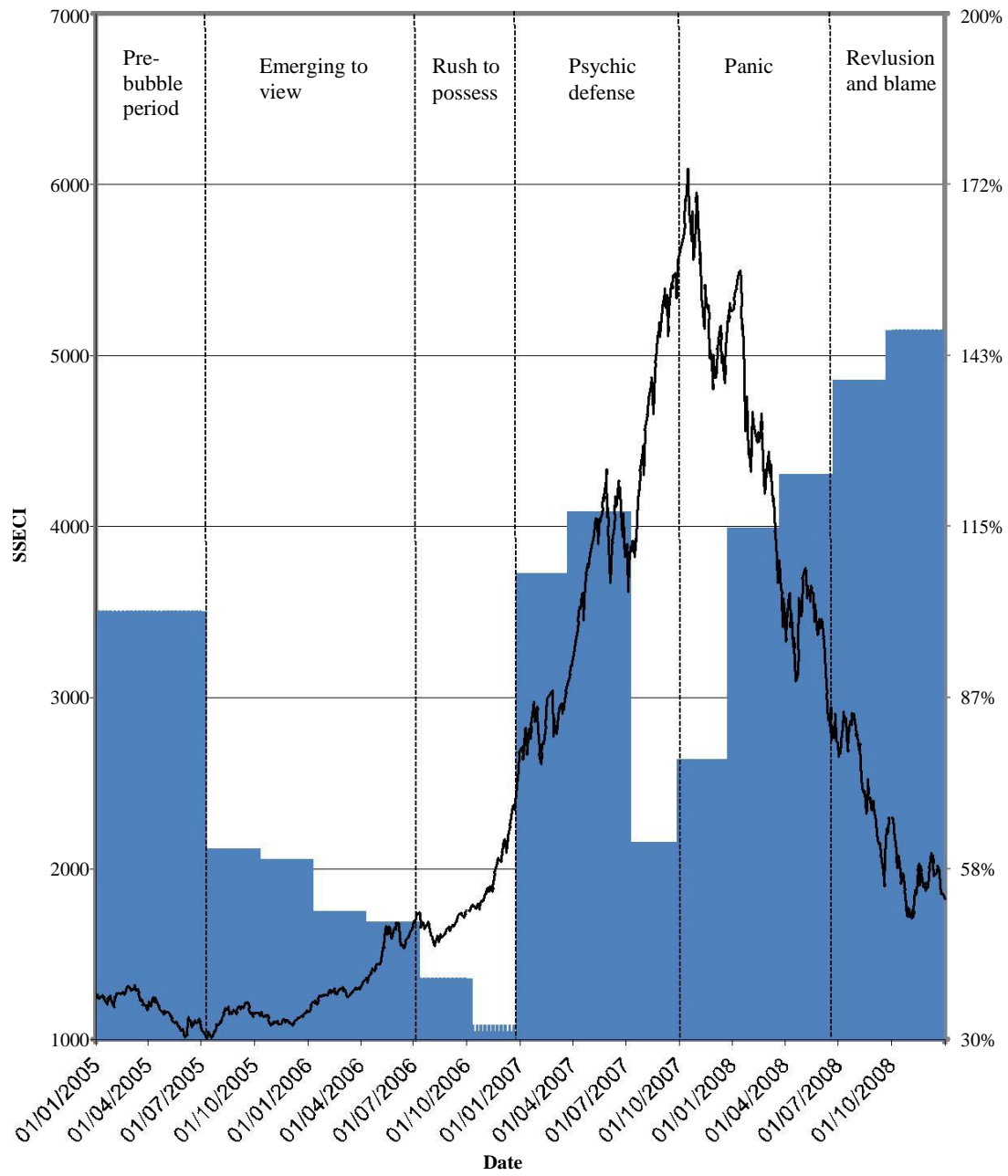


Figure 7: SSECI vs. Panic



**Figure 8:
SSECI vs. Revulsion and Blame**

