Speculative Bubbles and Investor Emotions: The Chinese Experience

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ABSTRACT
Between June 2005 and October 2007, when it peaked, the Chinese stock market rose five-fold. It then went into free fall losing 70% of its value over the following year, more than China’s total GDP. A very similar trajectory was played out between July 2014 and January 2016. This paper explores the powerful emotions unleashed during market crises of this nature. It seeks to provide an original explanation of the Chinese bubble by considering the role investor emotions play in driving market behaviour. Specifically, based on a detailed analysis of the bubble itself, we develop a five-stage path-dependent model relevant to other bubbles and financial crises which we then test empirically on our data. Our evidence is consistent with investors experiencing a range of different highly-charged emotions in different phases of the bubble. Inevitably, bubbles have to burst leading to blame, denial, and interestingly, subsequently, amnesia, as well as heavy financial loss. We equally show how failing to learn from experience can have sowed the seeds for the repeat of the bubble of only a few years later.

Key words: Stock market, psychoanalysis, phantastic object, defence mechanisms, paranoid-schizoid state of mind, basic assumption groups, empirical analysis

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Introduction

In just over two years from July 2005 to its high in October 2007 the Shanghai Stock Exchange Composite Index (SSECI, aka the Shanghai Market Index) went up five times, with a rise of 60% alone in the last three months before it peaked. The market then collapsed, falling by 70% over the following year leading to a $3 trillion loss by investors. Its 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. At its peak, the nominal market capitalisation of the Chinese stock market placed it as the third largest in the world, even larger temporarily that than of Japan, and with the average Chinese stock price/earnings (P/E) ratio of 73, more than three and a half times that for the equivalent US firm (average P/E ratio of 20) (Yao and Luo, 2009). The Chinese market then significantly underperformed international capital markets over the next five years; perhaps reflecting the effects of the trauma they had experienced investors showed little interest in the stock market despite the very strong performance of the Chinese economy. It 2014 it suddenly took off again following the trajectory of the earlier bubble in a more compressed time frame with the Shanghai Market Index increasing by 150% in less than a year, then crashing a second time.

How can we make sense of repeated stock market bubbles of this magnitude occurring in one of the largest and most successful economies in the world, and taking place seemingly with little apparent learning from experience? Conventional economic theory has difficulty in explaining such speculative bubbles (for summaries of attempts see e.g., Brunnermeir and Oehnike, 2013; Scherbina, 2013). In addition the definition of what a bubble is cannot be agreed upon (e.g., O’Hara, 2008). Some economists even deny bubbles exist. Eugene Fama, the joint 2013 Nobel Laureate in Economics,¹ for example, used his Award address to explain away asset pricing bubbles, although in a less than convincing way (Fama, 2014). In traditional economic theory bubbles should not occur! In contrast, his co-Laureate Robert Shiller used his Award address to argue just the opposite (Shiller, 2014) again demonstrating just how contentious this issue is to economists.

The main thesis of this paper is that asset pricing bubbles are inherently emotional in nature and thus we need to explore the emotional dynamics of market participants in different stages in a bubble for a real understanding of the morphology of such extreme market events. Specifically, this paper makes an initial attempt to introduce the formal study of investor emotions as key drivers of asset pricing bubbles.

Extant economic models of speculative bubbles tend to revolve around three stylised ideas. These relate to herding (all investors move together), informational cascades (investors

¹ Strictly speaking, the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel.
copy other investors believing them to have better information than they do), and the ‘greater fool’ Ponzi-type scheme (I ‘know’ it’s a bubble but I’ll sell out to someone else before it bursts) (see e.g., Hirshleifer and Teoh, 2003). In addition such models typically concentrate on the expansion phase of the bubble alone.

In this paper we explicitly consider the full cycle of an asset pricing bubble including asking why it eventually bursts and then rapidly collapses. This the economic historian authors Robert Z Aliber and Charles P. Kindleberger in their seminal work Manias, Panics and Crashes: A History of Financial Crises (2015), now in its seventh edition, stress is just as much an integral part of a bubble as its initial inflation. Specifically, we explore the underlying psychological processes that might be at work both at individual investor and market levels. In particular, we follow

We suggest that if we are to understand what really drives speculative bubbles we need to consider the actual experiences of investors as the bubble unfolds. Bubbles are highly emotional processes engaging market participants very directly as the language used to describe them demonstrates. Phrases such as “insane…blind passion…financial orgies…frenzies…feverish speculation…epidemic desire to get rich quick…wishful thinking…intoxicated investors…turning a blind eye…investors living in a fool’s paradise…a raging appetite… etc.” (Aliber and Kindleberger, 2015, p. 55) are common. We believe that to develop a dynamic theory that can help explain such economic events it is necessary explicitly to acknowledge the key role investor emotions play in driving repeated asset-pricing bubbles.

In an attempt to understand the underlying nature and drivers of speculative bubbles more generally we focus in this paper on the Chinese stock market bubble of July 2005 to December 2008 as an illustrative case study. Specifically, we observe what actually happened, inter alia using contemporaneous media reports as our lens into the different stages of the bubble as it unfolded to provide a basis for developing an underlying theory which we then test empirically. Interestingly, the parallel Chinese stock market bubble between 2014 and the beginning of 2016 which represents a direct re-run of the earlier one a few years later suggests little learning by market participants. This we argue condemns them to have to repeat the trauma (Stein, 2016). In asset pricing bubbles investors appear to be to operating in a paranoid-schizoid state of mind (Klein, 1952); in suspending disbelief they split off and deny underlying reality.

Based on a detailed reading of the bubble as it unfolded our evidence suggests, that the belief in the existence of and search for the phantastic object (Taffler and Tuckett, 2008), the fantasy of being able to generate great wealth without effort, was a key driver of investor behaviour. Our evidence shows how initially satisfying group processes allowed investors to
collude in the excitement that the phantastic object was real until external reality could no longer be denied and the bubble burst leading to panic, loss, anger and blame.

We make a number of contributions to the extant literature. First, we find that investor fantasies and group processes play a key role in the understanding of speculative bubbles. Second, we develop an explanatory theory of bubble market dynamics which seeks to explain the different stages in the underlying path-dependent trajectory. This has potential broader application to other asset pricing bubbles outside the immediate Chinese environment which is the subject of our case study such as dot.com mania, the Global Financial Crisis and most recently bitcoin, and arguably more generally (Aliber and Kindleberger, 2015). Finally, we present empirical tests of this theory employing formal content analysis of contemporaneous Chinese language media reports as our epistemology. In particular, we develop rich Chinese language dictionaries allowing us to measure the salience of different investor emotions during different stages of the bubble. Our results are consistent with our underlying theoretical model, and suggest that acknowledging the role ‘irrational’ investor emotions play in such market episodes can shed additional light on the drivers of these extreme events.

In the next section we develop our theory and introduce the concept of the phantastic object as a description of the unconscious meaning Chinese stocks seemed to have for investors until the bubble burst when they became stigmatised. Following this we describe what was happening in the Chinese financial markets between 2005 and 2008 and demonstrate the emotional nature of the bubble as it unfolded. Built on this the next section develops our path-dependent emotional trajectory of asset pricing bubbles and establishes our associated propositions which are tested formally in the following two sections. In the first of these we describe our content analysis method, and how we develop our emotion keyword dictionaries and construct our variables. Then we provide formal empirical tests of our propositions. Our final section summarises what we find, discusses our contribution, and concludes.

**Stock markets and investor emotions**

A cursory review of events as they unfold during the Chinese stock market bubble which is the focus of this paper demonstrates clearly how investors are caught up *emotionally*. Caution is put on one side and warnings ignored in the excitement as the market takes off and races to its peak, replaced by panic and, in due course, blame when the bubble bursts and reality intrudes as it eventually has to. In contrast to neoclassical economic theory which views economic actors as *homo economicus*, and thus ‘rational’, this paper argues that we need to recognise how people’s emotions are key drivers of their investment behaviour.
The starting point in seeking to understand investor behaviour, we believe, is to recognise that, on one level, such activity is only loosely about seeking to maximise financial returns, as conventionally conceived, and meets their emotional needs as well which we can think of in terms of emotional utility. Investment, particularly in stock market bubbles, is an activity that generates conflicting and highly-charged emotions, both conscious and unconscious. It is inherently exciting, and thus pleasurable, but likewise anxiety-generating because outcomes are largely outside the control of the investor, and thus unpredictable, however much such recognition is conventionally repressed.

**Investor behaviour**

The process of investing requires the investor to enter into necessarily ambivalent emotional relationships, whether conscious or not, with stocks or other assets that can easily let him or her down. In asset pricing bubbles, such as the one we explore in this paper, doubt is split off, and the market and individual stocks ‘idealised as prices shoot up. When the bubble bursts these investments now become all bad with others (the government, markets, advisors, the media etc.) blamed for the collapse of the original unrealistic wishful thinking, and financial losses resulting.

**The phantastic object**

We believe that any investment can be viewed as potentially exciting and transformational in unconscious terms and see this as fundamental to understanding asset valuations. The idea of the phantastic object is used to convey this argument more formally and connotes

“...a mental representation of something (or someone) which in an imagined scene fulfils the protagonist’s deepest desires to have exactly what she wants exactly when she wants it. ... [P]hantastic objects allow individuals to feel omnipotent like Aladdin (who owned a lamp which could call a genie); or like the fictional bond trader, Sherman McCoy (who felt himself a Master of the Universe [Wolfe, 1987]).” (Tuckett and Taffler, 2008, pp. 395-396.)

According to Tuckett and Taffler (2008) the term is derived from two ideas, 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. Phantastic objects are inherently alluring: “...(they) appear to break the usual rules of life and turn aspects of ‘normal’ reality on its head; creating the impression that what was previously thought impossible or permanently elusive
might happen after all.” (Tuckett and Taffler, p. 396.) Asset pricing bubbles reflect the metamorphosing of actual assets into exciting, emotionally highly fulfilling and magical ones in the minds of those investors caught up in them. The concept of the phantastic object reflects just this process.

In the next section, we describe the events of the 2005-2008 Chinese stock market bubble as it played out to help us understand what, how, and why it happened, and assist us in developing our underlying theory and explanatory model. This we lay out and test in subsequent sections.

The Chinese stock market bubble – an emotional journey

Background

The Shanghai Stock Exchange and Shenzhen Stock Exchange were both founded by the Chinese Government only at the end of 1990 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 Market Index had been hovering not much above the 1,000 mark for almost four years after collapsing from its previous high of over 2,200 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 rationalised the poor investment performance of Chinese equity markets as due largely 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 state-owned enterprises (SOEs) which were non-tradable (“Hangover cure? China’s stock markets”, The Economist, 13 August 2005). 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 and why 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 was that government policy towards the capital markets had clearly changed. There was now obvious commitment to market reforms. These included encouraging state-owned enterprises to make their non-tradeable shares tradeable, thereby allowing them to raise new capital on the Chinese exchanges, as well as opening up the local Chinese stock markets to international investors. In this way, a strong positive
message was sent about a revitalised investment environment and the associated likelihood of a sustained recovery in stock prices (e.g., “Market insights: growing optimism in the Chinese stock market”, *Financial Times*, 26 January 2006; “Stock market expected to see a bullish year”, *China Daily – Hong Kong edition*, 24 January 2006.)

Another signal of the new zeitgeist in China’s equity markets was the high profile flotation (initial public offering or IPO) of one of China’s large banks, China Construction Bank, 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’, with the potential to provide an appropriate environment in which the search for the phantastic object to which investors are readily prone might be realised. In fact, by the end of 2005 the market was up by 16%, and there was a renewed sense of optimism about its fate in the Chinese calendar year of the dog (2006), ‘man’s best friend’. By the beginning of April 2006 the Shanghai Market Index was up 30%, the ceiling most analysts had set for the year (“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).

This powerful rally offered hope to investors, and there was even a Feng Shui Index which predicted investors would enjoy a relatively sustained run-up in 2006 (“Advice for investors in China: consider an 11-month vacation”, *The Wall Street Journal*, 28 February 2006). 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 floated 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 on the local stock markets, with investor demand for the new shares greatly exceeding supply leading to very high first day returns and stoking the excitement.

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 of “this time it’s different” (Aliber and Kindleberger, 2015, p. 41) was that the capital markets had completely changed. The highly charged excitement conveyed by the financial media and websites, which themselves reflected what readers wanted to hear, as well as how the journalists themselves were equally caught up, further 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. There was a pervasive sense that it was “time to get on the train before it leaves the station” (Aliber and Kindleberger, 2015, p.21).
The bull market

The run of high profile IPOs of large state-owned enterprises continued to gather pace increasing investor excitement levels with the Industrial and Commercial Bank of China (ICBC), the nation’s largest lender, raising $21bn in October 2006 making it the largest IPO ever in the history of the world’s capital markets. By the following month the Shanghai Market Index was up 75% since the beginning of the year, double its 8-year low in July the previous year. Investing seemed to be the brand new fashion, and the ‘only way’ to pass the 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.” (“Chinese united by a common goal: a hot stock tip”, New York Times, 30 January 2007.) In Shanghai one of the most popular local television programs was “Stock Market Today”. Everyone seemed to want a stock tip: “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.” (op. cit.) Direct parallels with the manic excitement experienced in a similar phase of the dot.com bubble will be noted (e.g., Cassidy, 2002).

There was enormous pressure to join in the carnival; it was very difficult to resist being caught up. Not investing would make one feel eccentric and be ostracised. 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. This is even if, on one level, it was possible to recognise this manic excitement for what it was, and ‘know’ the stock price increases could not continue forever.

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 a bubble and that investors should be concerned about the risk (“Warning of bubble in China’s stock market”, Financial Times, 30 January 2007). However, most people who bought stocks made (a lot of) money; why would such ‘magic’ not continue, and why should anyone want to spoil the party even if on one level they ‘knew’ it was too good to be true (“Chinese united by a common goal: a hot stock tip”, New York Times, 30 January 2007)? Needless to say, this increasing 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. In February 2007 the Vice-Chairman of the National People’s Congress, China’s highest legislative body, stated 70% of domestically-traded companies were worthless, and should be
We must force bad children out.” He also criticised investors swept up in the bull market: “Some people’s brains are obviously starting to get hot.” (“Hot and cold – China’s stock market, The Economist, 10 February 2007.) 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 (“Investors pay little heed to Greenspan”, Bloomberg, 25 May 2007). 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 idealised and magical world could continue on forever (“Bubble economics”, Wall Street Journal Asia, 14 February 2007).

Investors’ wishful thinking was confirmed time and time again. Overriding all warnings, Chinese investors were carried away using their savings accounts and taking out bank loans to speculate with some even selling their apartments and houses to bet on the stock market (“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; “Unworried investors buy again in Shanghai”, International Herald Tribune, 1 March 2007). 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 (“China’s other celebration: Stocks holiday respite could spark even more buying”, The Wall Street Journal, 16 February 2007).

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 (“Where corruption is a buy signal millions of Chinese seek stocks amid ‘blind optimism’”, International Herald Tribune, 17 February 2007). “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, experienced professional investors were caught up in the fantasy in the same way with very few analysts betting against the market (op. cit.).

Chinese investors were not the only optimists. Foreign investors were also seeking to buy into China’s stock market appearing to believe that the US and Chinese markets were not connected and that China could provide a safe haven for funds prone to the vagaries of the US stock market (“Time to stop worrying and start investing”, Financial Times, 6 March 2007; “Taking stock in China”, The Wall Street Journal, 6 March 2007). Consistent with this, Bae and Wang (2012) show how 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 annualised abnormal return of 123%. Clearly, US investors were caught up in a similar way to local ones in the bubble. Importantly, the continuing actions of the Chinese government were also reassuring to investors (“China shrugs off losses as market swings back”, New York Times, 1 March 2007).

Despite the stock market previously falling 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 government’s stock market reforms to continuing economic prosperity. The economy was growing at a rate of nearly 10% a year, 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” (“A rapid rebound: Chinese stocks set record”, The New York Times, 22 March 2007).

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 (“Chinese investors crunching numbers are glad to see 8s”, Wall Street Journal, 24 May 2007). In contrast, investors appeared to get nervous when they saw the number 4 since its pronunciation (si) can mean ‘death’. As additional proof of the destabilizing force of number 4, many pointed out that Chinese stocks began to “wobble” in early May, when the market index was trading around the 4000 level for the first time (op. cit.). In fact, IPO issue prices were six times more likely to end in an 8 (sounding like the word meaning to become prosperous or rich), than in a 4 (Na and Schneider, 2010).

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 (“China’s stock market”, Financial Times, 6 May 2007). Other commentators were also increasingly warning about the impending bursting of the bubble. However, nothing seemed to be able to stop its inexorable rise. In April, the World Bank raised its forecast for China’s economic growth for 2007, and emphasised that the nation’s economy did not appear to be overheating. By August 2007, the Chinese stock market was even larger than that of Japan. The listing of Shenhua Energy, China’s largest coal miner, on the Shanghai bourse at the beginning of October 2007 valuing it at $172bn made 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. Very soon after, China’s largest oil and gas producer, PetroChina, listed on the Shanghai Stock Exchange becoming the first company in the world to be valued at more than $1,000bn. Its shares, 50 times oversubscribed, were up 160% at the end of first day of trading with its market capitalisation more than double the value of the then second largest company in the world (ExxonMobil) (“PetroChina first to reach $1,000 cap.”, Financial Times, 5 November 2007).

As the market raced to its peak investors appeared to lose any vestige of residual risk aversion ignoring any of the increasing number of warning voices. Even financial commentators seemed to give up on pointing out the acute risk of the collapse in prices the Chinese stock market was facing despite the market rising by no less than 45%, or more than twice the rate of the previous quarter between July and September 2007. No one seemingly wanted to listen. Institutional investors were equally optimistic, attributing the performance of the stock market to the Chinese government’s effective stock market reforms (“Chinese investors’ stock market survey report”, Xinhua News, August 3 2007 [in Chinese]). Despite Alan Greenspan’s warning in February 2007 that the US economy might slip into recession by the end of the year, the beginnings of the sub-prime crisis, and the fall in the US market, the continuing rapid rise in the Shanghai Market Index supported the “closed and safe stock market” fantasy, and the idea of the oxymoron of a “rational bubble” (“Growing debt crisis slams Asian markets, blurs outlook… how China continues to defy share slump; ‘rational bubble’”, Wall Street Journal Asia, 20 August 2007). The stock market was viewed as the mirror of the economy, and vice versa. It had all the characteristics of a phantastic object; prices could never fall.

The Shanghai Stock Exchange Composite Index peaked on October 16, 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 rationalised away. Powerful cover stories were being used to deny reality. However, not surprisingly, reality could not be held at bay forever and the market went into freefall.

… and collapse

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. One important component of the pricking of the bubble was probably increasing concerns about the impact of the beginnings of the financial crisis 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
(“China’s market mood swing”, *Time*, 22 November 2007). 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 the Chinese government would not allow a stock market collapse at least until after the closing ceremony of the Beijing Olympics in August 2008 (“On Asia: how long can China remain in orbit?”, *Financial Times*, 26 October 2007).

Just one day after the Shanghai Market Index had peaked, the *Financial Times* published an article warning that the Chinese stock market bubble was about to burst (“China’s bubble may burst but the impact will be limited”, *Financial Times*, 17 October 2007). Three days later, the *International Herald Tribune* also pointed out the high risk of the bubble bursting (“The bubble risks in China OFF THE CHARTS”, *International Herald Tribune*, 20 October 2007). Likewise Warren Buffet, the world’s most celebrated investor, 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.” (“On Asia: how long can China remain in orbit?”, *Financial Times*, 26 October 2007). At the end of October 2007 Alan Greenspan again stated that China’s stock market was a speculative bubble that would burst (“Greenspan says China stock market bubble may burst”, *Bloomberg*, 30 October, 2007).

Nevertheless, at the beginning, investors remained determinedly optimistic. “It will all bounce back in the second quarter”, and “Asia is still booming” (“Asia half full”, *Financial Times*, 4 December 2007). Denials continued; investors did not want to know. The World Bank repeated its forecast of 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” for the wider economy as “likely to be fairly limited” (“East Asia likely to surge on amid US slowdown”, *Financial Times*, 16 November 2007).

However, the Shanghai Market Index had fallen over a fifth from its peak by the end of November 2007 and weekly stock trading volumes were down to only 20% of that earlier in the year (“The short view”, *Financial Times*, 29 November 2007). Chinese equities had attracted huge amounts of overseas interest 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 idealised belief ever was. Movements in Shanghai market prices were now highly correlated with those of other world markets as they all collapsed together (“China’s parallel universe fades”, *Financial Times*, 23 January 2008).

Panic replaced euphoria among Chinese investors almost overnight. Once they believed market prices were no longer supportable any news which reinforced these feelings would be amplified leading to a stampede to sell their stocks pushing prices down further. By
the first quarter of 2008 the Chinese market was 40% off its peak. The world’s best performing market had suddenly turned into one of the worst. Between June 3 and June 17 (a mere 10 trading days) the Shanghai Index plunged by a further quarter. Investors could no longer deny reality and manic excitement 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 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 rationalise the share price fall (“Supply demand relationship crucial in China stock market fall”, *Asia Pulse*, 18 August 2008). The US sub-prime mortgage crisis and global inflation also dented investor confidence.

Chinese investors were in no doubt who was responsible – Beijing – with the state owning 70% of the equity of listed company shares (“Market slump deters investors in India and China”, *Financial Times*, 11 April 2008). In fact, a June 2008 poll conducted by Chinese television found more than 80% of those surveyed saying the government was at fault for their market losses (“Shanghai losses test pensioners’ faith”, *Financial Times*, 20 June 2008). 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” (“Equity funds hit by crash”, *China Daily*, 30 August 2008). However, there was no evidence in any of the large number of media reports on the causes of the bubble that investors themselves blamed their own judgment or of being caught up in an investment fantasy. There was only anger that their dreams had been thwarted. Interestingly, this highly emotional trajectory differs little to that manifest in myriad other asset pricing bubbles starting with the Dutch Tulip Bubble of 1636 and the South Sea Bubble of 1720 through to the repeated stock market and real estate bubbles of recent decades as Aliber and Kindleberger (2015) eloquently demonstrate.

**Asset pricing bubbles: an emotional trajectory**

Investors can be viewed as entering into emotional relationships with their stocks or other assets which are inherently ambivalent and charged with anxiety. Stocks are at the same time both ‘exciting’ in terms of potential future returns and prone to the risk of loss leading to emotional conflict. As a result, what the investor does not want to know or acknowledge has to be unconsciously split off and repressed in what the psychoanalyst Melanie Klein (1952) describes as a paranoid-schizoid state of mind. As such, we would expect investors to experience highly charged and often contradictory emotions in different stages of a bubble.
Recognizing this helps inform the development of our underlying theory. Here we develop this and establish our propositions which we test empirically in subsequent sections.

**Five-stage path-dependent emotional asset pricing bubble trajectory**

Speculative bubbles or ‘manias’ constitute an essentially emotional process. Based on detailed analysis of financial crises throughout history Aliber and Kindleberger (2015, pp. 39-46) describe asset pricing bubbles in terms of a 3-stage process of initial “displacement” or some exogenous shock leading to “waves of optimism” (p. 57), “euphoria” with speculative excess leading to “mania”, as prices boom, and then “revulsion” generating “panic” as they collapse. However, Tuckett and Taffler (2008) suggest a more detailed 5-phase dynamic model with (p. 394): “… patchy excitement about an innovation leading to growing excitement, leading to manic or euphoric excitement, then turning to panic and finally resulting in blame … [and] invariably a wish to identify scapegoats … rather than guilt.” Following Tuckett and Taffler (2008) and based on the analysis in the previous section we establish a formal representation of the different stages of the Chinese bubble recognising of course inevitably some overlap as the ‘psychodrama’ unfolds.

The underlying research question we address is whether the nature of the emotionally-driven path-dependent trajectory we hypothesise describes the morphology of the Chinese stock market bubble we explore, its rapid inflation and subsequent implosion. Is our psychologically-informed model consistent with the emotional meaning Chinese stocks seemed to represent for investors during this period, and what were the consequences?

In the more detailed 5-stage model we establish we term Aliber 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 Shanghai Market Index graph of figure 1, the 12 months from the beginning of July 2005 to the end of June 2006 appears to reflect this period. 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 represent it in figure 1 as the 6 months from the beginning of July 2006 to the end of the year.

Following these two stages we predict a crucial third stage with asset prices 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 herd to maintain the exciting wish-fulfilling fantasy
against the external challenges of material reality. We label this phase one of “manic denial” which, in our case, seems to last from the beginning of 2007 to approximately the end of September when the bubble bursts. Following Stein (2011) the description manic denial is used as “The sense of omnipotence … is what first and foremost characterises mania, and, further… mania is based on the mechanism of denial.” (Klein, 1935, p. 161, emphasis in original.) Here, the process of denial involves the rejection of anything or anyone that might interfere with the enormously satisfying fantasy that the phantastic object is real and price rises can continue forever.

Ultimately, however, such exciting fantasies are unsustainable; external reality cannot be held at bay forever, the dam ultimately has to burst. The emotional logic underpinning the extreme stock valuations is no longer maintainable, and the stock market implodes. Conscious awareness of having been caught up in what has turned out to be only fantasy is now paramount, together with the pain of loss. This is felt both emotionally in terms of having to give up what the phantastic object represents 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 Shanghai Market Index 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 and loss, but not guilt, will continue to predominate. Investors will be wary of further involvement in the market that has let them down so badly, with adverse consequences for quite a significant period of time. Those caught up in the bubble will look for other parties to blame and scapegoat rather than themselves. 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, manic denial, panic and revulsion and blame will run into each other to some extent nonetheless we break down our analysis into five sequential phases for illustrative purposes.

**Propositions**

We establish the following propositions to help us explore our 5-stage path-dependent bubble theory empirically in terms of the expected salience of different investor emotions at different stages of the 2005-2008 stock market bubble using Chinese media reports as a proxy:

“Main thesis”
Different investor emotional states are key to the understanding of an asset-pricing bubble.

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

P1: investor excitement will increase in line with the market index.

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

P2: levels of excitement will continue to rise in line with the market index.

"Manic denial" phase (January 2007 to September 2007)

In this stage of the bubble we expect investors will be pulled simultaneously in different directions. Levels of manic excitement (mania) will ramp up to their highest levels as the market index races to its peak. However, our theory suggests that coupled with this anxiety will be magnified with investors aware on one level things are ‘too good to be true’ and in a sense they are on ‘borrowed time’. Directly associated with this high levels of denial or ‘investors “turning a blind eye”’ (Steiner, 1985) will be manifest which, in our case, can be measured by the volume of warnings about the unsupportable nature of market prices with no apparent impact on the stock market index. Our associated proposition follows:

P3: mania will rise to a peak in parallel with increasing levels of anxiety and denial.

"Panic phase" (October 2007 to June 2008)

P4: levels of mania and excitement will collapse and panic and anxiety rise to a high.

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

P5: revulsion and blame will be at their highest level.

5. Research method

To explore the degree of fit of our emotionally-driven theory of asset-pricing bubbles in the Chinese environment empirically we need to measure salient investor emotions at different stages as the bubble plays out. To do this we employ contemporaneous news reports, articles and opinions published in the Chinese media to reflect directly or indirectly what investors might be experiencing and feeling as stock prices shoot up, and then plummet. Sociologists describe how the media has a reflexive and performative relationship with its audience (Kury, 2014) helping to make sense of and “organise the world” (Gamson, 1992, p. 384). Journalists both report on what is happening, and provide plausible explanations (or rationalisations) for events as they unfold. In this way they generate meaning for their readers triggering an
emotional response, and associated reaction i reflected in stock price movements. Similarly, financial journalists are likely themselves to be active investors and prone to being swayed by the same powerful emotions as their readers which will inevitably affect the way they report on an asset-pricing bubble as it unfolds. Equally, they will want to write about, and be encouraged by their editors to write about, what their audience wants to hear with such positive ‘feedback’ reinforcing existing investor emotional states.

For all these reasons, we employ Chinese language media reports as a window on the Chinese investor ‘psyche’ between 2005 and 2008. These we analyse using content analysis methods to measure the relative salience of different investor emotional states in different phases of the bubble using six keyword dictionaries: excitement, anxiety, mania, denial, panic and revulsion and blame. In the next sub-section we explain why these particular emotions are important and then describe how we construct our keyword dictionaries. Following this we describe our main research corpus and in the final sub-section the construction of the variables we work with in our empirical analysis.

Selection of emotion word categories

Investment decisions create strong emotions inter alia 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). Tuckett, Smith and Nyman (2014) show how these emotions and their dynamic inter-relationship can be empirically measured using appropriate content analysis techniques. Thus, we need keyword dictionaries to allow us to measure the levels of excitement and anxiety reflected in articles in the Chinese media commenting on the Chinese stock market during our period of interest. In parallel, to explore different investor emotional states as the bubble unfolds, and test our propositions directly, we equally want to ‘quantify’ levels of investor mania, denial, panic and revulsion and blame over time, and need to develop the necessary keyword dictionaries to allow us to do this.

Research corpus

All the media reports we analyse are published in Chinese and as such are directly accessible to Chinese investors. These we download from the Factiva database. To arrive at a complete corpus of news stories and articles referring to the Chinese stock market suitable for our purposes 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
However, the resulting high volume of articles identified in this search process (around 1,000 to 2,000 a month) includes a large proportion which simply report firm results, are public company notices, or mention the formation of new investment funds, and thus are not relevant for our purposes. As such, all news reports downloaded in this initial screening process are checked for appropriateness by looking at their headlines, and if these are not clear enough, then by inspection of the actual article content to guarantee their relevance. Our target in our main analysis is to work with approximately the same number of articles each month in each quarter. If the total number of the relevant articles for a specific month is less than two hundred, all are chosen to work with; if the number of available articles exceeds this, two hundred are 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 (or just under 600 a quarter as our empirical analysis is conducted on a quarterly basis). 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. Nonetheless, there is still a potential issue in that such ‘stage-managed’ news could obfuscate the underlying investor emotions we are seeking to measure at different phases of the bubble. Although we do not explore such issues directly here, in unreported parallel analysis using non-censored English-language Western media sources we find broadly similar results suggesting such concerns may not be too serious.

**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 to the knowledge of the authors there are no existing emotion word dictionaries in Chinese, and certainly none directly relevant for our purposes, we build domain-specific dictionaries ourselves by hand-collecting relevant emotion words from the Chinese media.

First we divide the 4-year period from January 2005 into 16 quarters using the first 6 months to represent a pre-bubble period for data standardisation purposes. Then, for each quarter using our corpus of media reports, we rank publications by frequency of relevant news stories and articles identified. Two relatively long articles appropriately selected are next downloaded from each of the top five sources in each quarter, making 160 different ones in total, and physically inspected for content appropriate for 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 into our six emotion categories (excitement, anxiety, mania, denial, panic, and revulsion and blame), with classifications then compared. The small number of disagreements resulting are resolved in discussion between the two coders leading to final agreed emotion keyword dictionaries for empirical application. As denial is a more repressed emotion, and thus more difficult to measure directly, we proxy it by mentions of bubble ‘warnings’.

However, the volume of words in a number of our emotion categories are too great for ready application in the main stage of our research which involves analysis of our full article corpus (see below) so words appearing with very low frequency are removed leaving 241 different words in total across our 6 emotion categories. Appendix 1 provides our keyword dictionaries by emotion word category in Chinese, together with English translation.

**Data analysis and variable standardization**

*Wordscount*, a Chinese software package, is used to count the frequency of occurrence of words in each of our six emotion keyword dictionaries in our news reports. As there are different volumes of articles in our research corpus each quarter, and these will be of different length, the number of emotion words in a particular category in a quarter cannot be compared with that for the same category in other quarters directly. As such we standardise all emotion word frequencies by total word count across all articles in that quarter, i.e., keyword dictionary category standardised word frequency =

\[
\frac{\text{total frequency of emotion words in the respective category in the quarter}}{\text{total number of words in all the news articles downloaded in that quarter}}.
\] (1)

To test our five-stage 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 2005 – 2008 Chinese stock market bubble evolves, bursts and deflates. We do this by overlaying the quarterly frequency of words in the respective emotion category plotted in bar chart form on the daily value of the Shanghai Stock Market Index. This allows the tracking of the dynamic relationship between the market index and investor emotions through each phase of the bubble. In particular, to aid interpretation, the value of the standardised frequency of the emotion words in each category for each quarter post-June 2005 when 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 normalised frequency of the emotion words of each category plotted is transformed into a ratio i.e.: normalised frequency of emotion words =

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2 Available at http://www.yuneach.com/soft/WordsCount.asp.
standardised frequency of emotion words in the respective category in a quarter between January 2005 to June 2005

Since all standardised emotion word frequencies are transformed to a relative value via the above equation, in the rest of the paper we just report normalised frequencies when describing our results. Our line and bar charts in figures 2 to 7 are presented with the Shanghai Stock Market Composite Index represented by the primary axis (on the left side of the chart) and the respective normalised emotion frequency variable as the secondary axis (on the right hand side) expressed as a percentage. In addition, because of the inevitable noise in this process between quarters we average quarterly normalised emotion word frequencies for each phase of the bubble, and plot these as stepped horizontal lines on the charts. We focus on these latter in our empirical analysis.

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 we conduct an initial analysis to examine our underlying thesis before testing our more detailed propositions relating to different stages of the Chinese stock market bubble trajectory in subsequent sub-sections.

Overview

P0: different investor emotional states are key to the understanding of an asset-pricing bubble.

As outlined above our psychological model of asset-pricing bubbles is built around the idea of how the continuing search by investors for transformational phantastic objects can help explain their morphology 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, despair and blame when the bubble bursts and the phantastic object turns out to be worthless. To test the main idea of this paper that investors’ emotional states are reflexive with the different stages of an asset pricing bubble, and the way in which they experience associated market movements, figures 2 and 3 plot our quarterly excitement and anxiety variables against the Shanghai Market Index between June 2005 and December 2008.

As can be seen levels of excitement and anxiety are broadly path-dependent and move in line with the market index in a way consistent with our expectations. At least during the market bubble the Chinese stock market appears to constitute a very emotional environment for investors which is confirmed in figures 4 to 7 which plot levels of mania, denial, panic, and revulsion and blame against the market index. Corroborating this finding correlations
between quarterly market return and the average levels of our market emotion variables are all significant with the exception of mania, in most cases at better than the 1% level, and all with the predicted sign.

Based on this initial analysis, we find evidence supportive of our main thesis as expressed in our proposition $P_0$ that there is a clear relationship between the different emotions investors manifest at different stages of the Chinese stock market bubble, and the market index. Our results are also consistent with the underlying idea that in such speculative bubbles investors appear to believe that the phantastic object they have been given licence to search for and ‘find’ is real. 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 more generally. Our more-detailed propositions 1 – 5 are tested using our data in the following sub-sections.

"Emerging to view" phase (July 2005 to June 2006)
$P_1$: investor excitement 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 hypothesise an increase in the associated sense of enthusiasm about the stock market. Figure 2 shows how in line with an increase in the Shanghai Market Index of over 50% in this period the average normalised frequency of excitement emotion words in the media (the dashed line) is almost double (up 89%) its average pre-bubble level. Clearly the heating up of the Chinese market and levels of investor excitement are closely associated. Our empirical evidence is thus consistent with our proposition $P_1$.

"Rush to possess" phase (July 2006 to December 2006)
$P_2$: levels of excitement will continue to rise 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 Shanghai Market Index rises by 60% and, as figure 2 shows, the average level of investor excitement (the dashed line) even increases further compared with the emerging to view stage, now standing at 2.5 times the average for the pre-bubble period. Our empirical evidence is thus supportive of proposition $P_2$.

"Manic denial" phase (January 2007 to September 2007)
$P_3$: mania will rise to a peak in parallel with increasing levels of anxiety and denial.
In the third stage of the asset pricing bubble our model predicts that prices will continue to boom with stock valuations increasingly at variance with underlying reality and ultimately unmaintainable. Pursuit of the phantastick object appears to be dominating investor thinking with any questioning voices dismissed as prices race to their peak. Crucially, any challenges to the wish-fulfilling fantasy that prices will continue to go up in effect for ever are denied even though on one level investors ‘know’ the bubble has inevitably to implode.

In its state of manic denial the Chinese stock market 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 4 shows how the normalised frequency of mania words 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. Importantly for our main thesis, as predicted, figure 3 shows how market-wide levels of investor anxiety, as measured by the normalised frequency of anxiety words used in Chinese media stock market reports, dramatically increase, despite, or more likely because of, the state of market euphoria. In fact, the dashed line shows how our average anxiety emotion variable is 125% that of the pre-bubble period, and up almost 4/5 (78%) compared with its average during the earlier rush to possess phase when emotions of excitement dominate. In line with this our average panic measure also increases significantly with figure 6 showing a level 70% higher than in the rush to possess phase. Equally important for our bubble theory, figure 5 shows how our proxy measure for denial (media ‘bubble’ mentions) which is, not surprisingly, at a low level in both the pre-bubble period and the emerging to view and rush to possess phases now dramatically increases. In this phase of the bubble, the dashed line highlights how the normalised frequency of bubble words is over 9 times (9.14x) the average of the previous two market phases. As manifest by the contemporaneous more than doubling of the market index to its peak, Chinese investors appear to be turning a blind eye to what they don’t want to know (Steiner, 1985) consistent with operating in a paranoid-schizoid state of mind.

Figure 5 also shows how the normalised frequency of media mentions of ‘bubble’ in Factiva between July and September 2007, immediately before the bubble bursts, actually falls to only 40% of that in the previous three months. This is despite the market index increasing in the quarter by almost a half (up 45%), or more than twice the rate of the previous quarter. This is consistent with journalists giving up trying to tell their audience what it clearly does not want to hear or even they themselves being caught in the same process of denial?

Our empirical evidence is thus clearly in line with proposition $P3$; in the manic denial phase of the bubble investor ability to deny underlying reality seems to be paramount in maintaining the emotionally-satisfying fantasy that the market can only continue to move in one direction and that is up.
"Panic" phase (October 2007 to June 2008)

P4: levels of mania and excitement collapse and panic and anxiety 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 Shanghai Market Index more than halving (down 56%) from its peak on October 16 to the end of June 2008, the phantastic object is now recognised as only a chimera. Investors seek to exit the market as quickly as possible in a state of panic. There is not only the pain of financial loss, but also that of having to give up such an exciting wish-fulfilling fantasy and associated belief that rapid accumulation of wealth with no actual effort is magically possible.

Not surprisingly, the level of investor mania collapses (figure 4), and similarly the level of excitement, with an average level only half (52%) the average of the rush to possess and manic denial phases (figure 2). Levels of anxiety are effectively unchanged compared with the stage of manic denial (figure 3) even though the bubble has now burst. This again perhaps serves to emphasise how investors unconsciously ‘knew’ the bubble must collapse eventually even if their actual investment behaviour belies this. The normalised frequency of panic emotion words is now over 2/5 greater (43%) than in the immediately preceding manic denial phase (as indicated by the dashed line in figure 6). In parallel now the bubble has burst and presumably is recognised for what it is the normalised frequency of bubble word mentions is down by a third (32%) compared with that of the previous phase (figure 5). This may also reflect how as the existence of the bubble can no longer be denied, ‘warnings’ are redundant and ‘old news’. On this basis, the evidence presented in figures 2 – 7 is generally supportive of the tenor of proposition P4.

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

P5: revulsion and blame will be at its highest level.

We further predict that after the precipitous fall in stock valuations investors will experience feelings of shame and embarrassment for becoming involved in what ultimately turns out to be nothing more than a very painful fantasy. This is quite apart from the financial loss incurred particularly by those who enter the market after it has already taken off. Feelings of revulsion and blame will now predominate with investors looking for scapegoats to avoid having to acknowledge their feelings of guilt and responsibility for being caught up themselves in the bubble. Figure 7 shows how the average normalised frequency of revulsion and blame words in the media rises to a peak in the last 6 months of 2008 as the Shanghai
Market Index collapses by a further third (34%). As such our empirical evidence is in line with our final proposition.

7. **Summary and conclusions**

This paper sets out to explain the Chinese stock market bubble of 2005-2008 when the market goes up by no less than 500% in not much more than two years and then implodes in terms of its emotional drivers. Traditional explanations of financial bubbles tend to focus on theoretical and analytical models that do not address the real world experience of investors in real world markets (e.g., Hirshliefer and Teoh, 2003). However, by formally acknowledging the role investor emotions play in all investment activity we can recognise the powerful fantasies and emotions speculative bubbles unleash, and, as a result, increase our understanding of these highly destructive economic events. Specifically, in our case study, we demonstrate how Chinese market participants’ need for excitement in their search for the phantastic object, *inter alia* fanned by the actions of the Chinese government and media cheerleading, lead asset prices dramatically to depart from fundamental value. In particular, we develop a novel 5-stage emotion-driven path-dependent model of such asset-pricing bubbles and test its degree of fit empirically with what happened in the Chinese stock market between 2005 and 2008.

Interestingly, in direct parallel with the 2005-2008 bubble we explore in detail in this paper, not much more than five years later the Shanghai Stock Market Composite Index again shot up by over 150% in less than a year between July 2014 to when it peaked in June 2015. The bubble then burst collapsing by over 40% in the next two and half months and almost halving by its trough at the end of January 2016. Importantly, the emotional trajectory of this Chinese stock market bubble ‘2.0’ closely resembles that of figure 1 for the earlier bubble, with its aetiology showing investors being driven in a similar way. The interesting question we are forced to ask is why Chinese investors appear to be exhibiting the “compulsion to repeat” the earlier traumatic events (Freud, 1920, p. 32) with no apparent learning from experience despite the pain they earlier experienced.

We demonstrate how initially the idea that this time it’s different can trigger a move into states of euphoria and boom as stock prices rocket. Reality is collectively denied and warning voices ignored in the apparent belief that the phantastic object is ‘real’. What we term manic denial, colloquially called mania, reigns. Inevitably, reality has to intrude.. Prices collapse and panic follows with investors blaming the government and the authorities for their losses to avoid any feelings of personal responsibility and guilt. Not surprisingly,
Chinese investors subsequently avoided the market for several years after 2008, and again after the most recent bubble.

Many economists deny asset pricing bubbles exist, being “highly improbable because ‘all the information is in the price’” (Aliber and Kindleberger, 2015, p. 47), or alternatively consider them simply a fact of life like earthquakes which cannot be predicted and thus not worthy of study (Shulman, 2016). However, in contrast, we argue such bubbles are perfectly explicable. This follows if instead of looking for patterns of rational economic activity we recognise that most financial decisions, as with most other decisions we make, are predominantly emotional in nature. Thus an important contribution of our paper, we also believe, is to provide empirical evidence demonstrating the potential value of the formal analysis of investor emotions in helping to explain such extreme economic events.

Investors, it seems, may often be searching for phantastic objects. 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 here, need to be formally recognised by policy makers and market regulators. Based on our analysis we suggest that asset pricing bubbles are not at all inevitable when the key role unconscious fantasy plays in driving them is properly recognised!

Appendix 1 - Chinese emotion dictionary dictionaries (with English translation)

激动 (Excitement)
大涨 (surge) 热潮 (upsurge) 翻番 (Doubling) 连阳 (continues Yang) 强烈 (strong) 领涨 (leading up) 涨停 (limit-up) 热烈 (fervency) 强势 (mighty) 新高 (new high) 走牛 (bullish) 重大利好 (major benefits) 兴奋 (exciting) 领军 (leader) 获利丰厚 (largely profitable) 红 (red) 壮大 (expand) 振奋 (cheer up) 飞涨 (sharp increase) 全线上涨 (entirely increased) 蜂拥 (Swarm) 高歌猛进 (rapid development) 高涨 (upsurge) 盛行 (prevail) 翻倍 (doubling) 繁荣 (prosperity) 劲扬 (powerful increase) 踊跃 (energetic) 非常好 (super) 崛起 (rising) 强劲增长 (strong growth) 强势反弹 (strong rebound) 异军突起 (sudden rise) 冲高 (sharp increase) 激发 (motivate) 红盘 (red plate) 最佳 (optimal) 高点 (high point) 高档 (top grade) 热炒 (popular speculation) 收红 (closed in red) 高速增长 (rapid growth) 跃升 (jumped) 续升 (continues increase) 前所未有 (unprecedented) 迅猛 (rapid) 猛增 (surge) 激情 (passion) 火 (fire) 庞大 (tremendous) 蓬勃发展 (flourish) 热捧 (hot hands) 领头羊 (bellwether) 借机发挥 (opportunity to play) 屡创新高 (record highs) 潜力无穷 (great potential) 水涨船高 (When the river rises, the boat floats high) 赚钱效应 (money effect) (57)

焦虑 (Anxiety)
大跌 (a large drop) 差 (bad) 跌停 (limit down) 低迷 (downturn) 加剧 (aggravate) 重挫 (losing ground) 剧烈 (drastic) 打击 (strike) 遭遇 (suffer) 避险 (hedge) 忧虑
疯狂 (Mania)

烧(burn) 牛市 (bull market) 火爆 (hot) 狂热 (fever) 升停板 (up limit) 疯狂 (crazy) 强悍涨停 (strongly surged limit) 全面飘红 (all in the red) 重仓 (heavy holdings) 翻天覆地 (earth-shaking) 急速扩大 (rapid enhancement) 饱和 (soared) 爆增 (explode) 天量 (eye-popping) 爆发 (outburst) 火热 (hit) 人满为患 (packed) 奇迹 (miracle) 沸腾 (ebullition) 贷款 (loan) 抵押 (guaranty) 暴涨 (boom) 急升 (steep rise) 牛气冲天 (full of bull) 沸点 (boiling point) 狂飙 (madly increase) 暴红 (sharp red) 暴利 (excessive profit) 无可限量 (limitless) 气势如虹 (unstoppable) 满盘红 (plateful red) 全线暴涨 (soared across the board) 涨停板 (daily limit board) 神话 (myth) 巨大 (enormous) 嫉妒 (envy) 如火如荼 (in full swing) 急速上升 (rise extreme rapidly) 扶摇直上 (skyrocket) 狂欢 (carnival) 政策牛 (policy bull) 傲视全球 (the envy of the world) 冠全球 (global crown) 狂牛 (mad cow) 疯炒 (crazy speculation) 超级牛 (super bull) 巨量 (jillion) 火箭 (rocket) (48)

恐慌 (Panic)

严重 (terrible) 冲击 (shock) 亏损 (loss) 熊市 (bear market) 跌破 (drop below) 新低 (new low) 抛售 (dump) 损失 (damage) 坏 (bad) 恐慌 (panic) 股灾 (market disaster) 陷入 (sink into) 熊 (bear) 亏 (loss) 损 (harm) 失守 (fall) 惨 (miserable) 跌穿 (drop below) 崩盘 (market collapse) 蒸发 (evaporate) 代价 (at the cost of) 恐惧 (fear) 损害 (damage) 撤离 (evacuate) 受损 (be/ been damaged) 丧失 (lose) 急挫 (slump quickly) 冲破 (break through) 击穿 (breakdown) 伤害 (hurt) 损失惨重 (suffer great losses) 混乱 (chaos) 糟糕 (terrible) 狂泻 (slump drastically) 强制平仓 (mandatory unwind) 灾难 (disaster) (36)

厌恶与责怪 (Revulsion and Blame)

冷 (cold) 悲观 (pessimistic) 离场 (leave the market) 退出 (exist) 沉重 (a heavy heart) 冰 (ice) 冷却 (cooling down) 阴影 (shadow) 离开 (leave) 清淡 (insipid) 无奈 (can do nothing to help) 阴霾 (haze) 痛苦 (pain) 沉寂 (quiet) 黯淡 (gloom) 冷淡 (coldness) 冬天 (winter) 惨淡 (dismal) 冷落 (deserted) 一蹶不振 (unable to get up after a fall) 惨痛 (painful) 奢望 (extravagant hopes) 沮丧 (dispirited) 望而却步 (shrink back at the sight of something dangerous or difficult) 疼 (pain) 冷遇 (a cold reception) 厄运 (misfortune) 恶果 (bad result) 失落 (listless) 走人 (walk away) 噩梦 (nightmare) 失宠 (be out of favour) 淡漠 (indifferent) 回撤 (retracement) (34)

泡沫 (Bubble)
泡沫 (bubble) 危机 (crisis) 金融危机 (financial crisis) 风暴 (storm) 破灭 (disillusion) 破裂 (rupture) 终结 (end) 泡沫破裂 (the rupture of the bubble)
References


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

- Emerging to view
- Rush to possess
- Manic denial
- Panic
- Revulsion and blame

Price Index

Time
This figure plots the quarterly normalised frequency of excitement words in the Chinese media in percentage terms in columns relative to the pre-bubble period (1.1.2005 – 30.6.2015) against the Shanghai Stock Exchange Composite Index (SSECI) between 1.7.2005 – 31.12.2008. The horizontal stepped line provides the average of the quarterly normalised frequencies for each of the five stages of the bubble. Correlation between quarterly increase/fall in the SSECI and normalised emotion word frequency = 0.96 (t=12.6) significant at the 0.01% level.
Figure 3: Shanghai Market Index vs Anxiety

See figure 2 for key. Correlation between quarterly increase/fall in the SSECI and normalised anxiety word frequency = -0.48 (t=1.87) significant at the 10% level.
See figure 2 for key. Correlation between quarterly increase/fall in the SSECI and normalised mania word frequency = 0.33 (t=1.23) not significant at conventional levels.
Figure 5: Shanghai Market Index vs Denial

See figure 2 for key. Correlation between quarterly increase/fall in the SSECI and normalised denial word frequency = -0.80 (t=4.60) significant at the 1% level.
Figure 6: Shanghai Market Index vs Panic

See figure 2 for key. Correlation between quarterly increase/fall in the SSECI and normalised panic word frequency = -0.66 (t=3.02) significant at the 1% level.
Figure 7: Shanghai Market Index vs Revulsion and blame

See figure 2 for key. Correlation between quarterly increase/fall in the SSECI and normalised revulsion and blame word frequency = -0.76 (t=4.09) significant at the 1% level.