How Do We Know When Things are Too Good to be True?

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Introduction: Professor LIU Ta-Chung

- It is a great honor to be invited to deliver this lecture in memory of the late Professor LIU Ta-Chung. Professor LIU and his close colleague and friend at Cornell University, Professor TSIANG Sho-Chieh, were the intellectual driving force behind Taiwan's economic development in the 1950s and 1960s.
- Professor LIU was a distinguished econometrician. He was a strong advocate of the reduced form approach to econometric modelling, as he believed that under-identification of the structural model would be the rule rather than the exception in the real world. In that case, the reduced form contains all the information there is, and the unidentifiable structural model(s) have no use. This is also the reason why Prof. LIU also preferred the recursive model to the simultaneous-equations model. He was the first person to construct a monthly econometric model of the United States. It is true that the shorter the time period of observation, the more likely it is that things happen sequentially rather than simultaneously.
- Professor LIU, jointly with Dr. Kung-Chia Yeh, wrote the definitive study of the Chinese economy of the 1950s: The Economy of the Chinese Mainland: National Income and Economic Development, 1933-1959.
- He has trained many very successful students: For example, Prof. Robert F. Engle, the 2003 Nobel Laureate in Economic Sciences; and Dr. Hwa Erh-Cheng, a senior executive of the World Bank and a trusted adviser of the Mainland Chinese Government.

Introduction:
Professor LIU Ta-Chung

- Prof. LIU was elected an Academician of Academia Sinica in 1959.
- In the early 1950s, Prof. LIU worked at the International Monetary Fund. He and Prof. TSIANG were instrumental in recommending a positive real rate of interest policy to the Government in Taiwan, which successfully tamed the inflation.
- In 1954, he and Prof. TSIANG proposed the foreign exchange certificate (結匯証) system to the Nationalist Government in Taiwan, which eventually enabled the unification of the multiple exchange rates and a significant devaluation of the New Taiwan Dollar, making it possible to implement an export promotion strategy.
- In 1966, he organized the Conference on the Economic Development of Taiwan, and invited distinguished foreign economists such as Paul Samuelson to visit Taiwan. I was fortunate enough to be invited as an observer to the Conference. This was my first meeting with Prof. LIU.

Introduction:
Professor LIU Ta-Chung

- Prof. LIU was also responsible for the establishment of the first Economics Ph. D. Program in Taiwan.
- In 1968, Prof. LIU was appointed the Chairman of the Tax Reform Commission. He revised the income tax code and helped to implement the new tax system, establishing the foundations of sound fiscal finance for Taiwan.
- In 1974, Prof. Kia-Ngau Chang, a former Governor of the Central Bank of China, and I organized a birthday celebration for Prof. and Mrs. LIU in San Francisco.
- Very sadly, both Prof. and Mrs. LIU left us in 1975. He was only 60 then.
- Prof. LIU would have become the Head of New Asia College at the Chinese University of Hong Kong in 1976.
- Before he passed away, Prof. LIU called me to encourage me to help advise the economic officials in Taiwan.

Introduction

- What is too good to be true is too good to be true (forever)! However, although it will not last forever, it may last for a while.
- Pyramid schemes provide very large returns to the early enrollees, but they all collapse eventually because they run out of new enrollees. It is the new money, which is used to pay the old enrollees, that keeps a pyramid scheme going. Once there is no more new money coming in, the scheme will collapse.
- Economists believe in the "efficient markets hypothesis". The "efficient markets hypothesis" implies that every good, service, and real and financial asset is priced correctly at any given time. Price bubbles of goods, services, real property and financial securities are therefore anomalies. Nevertheless, over the millennium, bubbles do occur from time to time, which implies occasional serious mis-pricing by the markets.
- Economists who believe in the "efficient markets hypothesis" do not believe that one can find a genuine US$100 lying on the ground. They reason as follows: if it were really genuine it would have been picked up; there should not be any good bargains left around. However, it is also true that someone has to do the picking up.

Introduction

- Borrowers who are willing to pay abnormally high rates of interest generally do not plan to repay their loans, especially if things turn sour.
- Investors should beware of investments that claim to have exceptionally high rates of return relative to the return generally available in the market.
- Are there identifiable signs that things are too good to be true? Are there observable indicators that allow us to identify price bubbles before they burst?

Introduction

- One of the realities that we have to accept is that markets are not complete. The assumption of state-contingent commodities is an ingenious sleight of hand introduced by Prof. Kenneth Arrow. But it is not true in general. We cannot insure against everything, that is, we cannot insure against certain states of nature. For example, we cannot insure against a financial bubble. In the U.S., there is no private insurance against a nuclear plant disaster.
- Rinehart and Rogoff (2009) contains a history of the significant financial bubbles throughout the centuries. Every time, before the bubble burst, the investors would all say, "This Time Is Different!", but they all ended up the same way—a big bust.
- The coin (crypto-currency) offerings are similar. They have no intrinsic value and only serve to protect criminals and law-breakers.

What is Too Good to be True is Too Good to be True

- What are some examples of things too good to be true?
  - It is cheaper to borrow long-term than to borrow short-term. Normally borrowers have to pay more to borrow long-term—the longer the maturity, the higher the rate of interest. If the opposite holds, it implies an inverted yield curve. In the U.S., it is known to signal an impending economic recession.
  - Borrowers with bad credit can borrow at the same interest rate as borrowers with good credit. A very narrow spread between the yields on government bonds and junk bonds is a warning sign. Default risk is definitely underpriced.
  - A persistently negative real or even nominal rate of interest for the borrowers.
  - Both equity and fixed income investments achieved large and increasing returns at the same time.
  - There are simultaneously a high rate of economic growth, a low unemployment rate and a low rate of inflation in the economy.

Irrational Exuberance

- "Irrational exuberance" is a term coined by Dr. Alan Greenspan, former Chairman of the Federal Reserve Board, in the late 1990s. He foresaw the internet bubble in 2000, but he did not do anything about it.
- "Irrational exuberance" can last for a while. Things that are too good to be true can also last for a while, just not forever.
- Hope springs eternal. That is why bubbles occur all the time. Expectations, "fake news", and the "herd instinct" can all lead to price bubbles.
- Expectations are normally self-fulfilling. That is what drives the initial stages of a bubble, because everyone is bullish and buys, that in turn drives up the price.
- However, when all the expectations are in one direction, it can be self-non-fulfilling. Examples: A campus queen may be without a date on the night of the prom (a promenade dance for graduating students) because everyone else assumes that she is already taken; a popular movie plays to an half-empty theatre because potential attendees believe that no seats would be available.

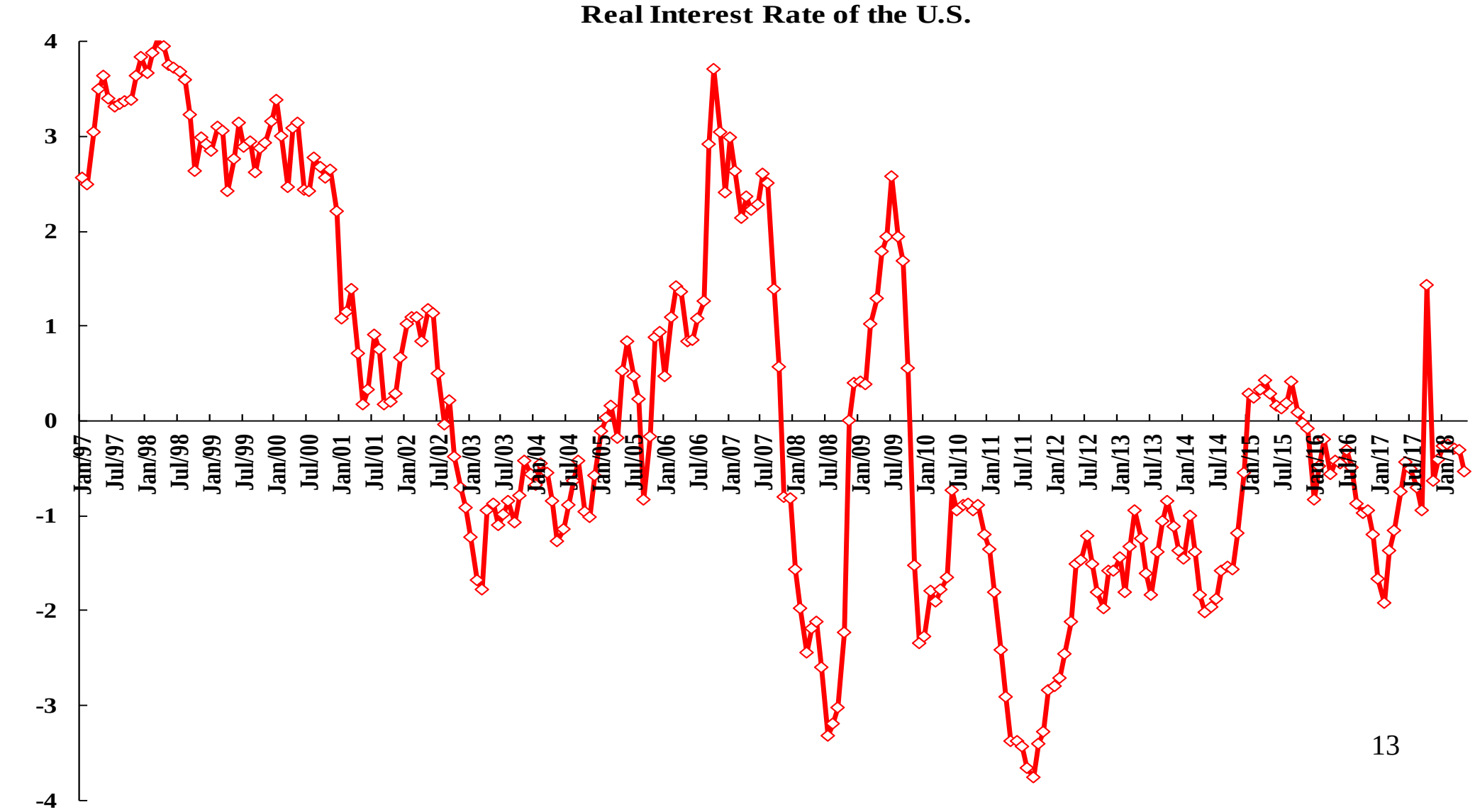
Irrational Exuberance

- “Fake news” can indeed move markets.
- For an asset manager, it is better to make the same mistakes that everyone else makes, which gives one a good excuse, rather than to be caught as the only one making the wrong call. There is safety in numbers, even when one is wrong.
- Big money is frequently made by people who are patient and have staying power, or who are contrarians, or both.
- Bernard Baruch, well-known successful U.S. investor, said that one of his secret of success was he always sold “too early”.

The Bond Market

- A negative real rate of interest is good for the price of all kinds of assets, real or financial, because it means that a borrower can make money in real terms by simply borrowing.
- One should look at the yield curve of government bonds, which presumably are risk-free assets, that is, compare the yields of short and long maturities. Normally the yield spread between long and short maturities should be positive. If the interest rate spreads are too narrow, or even negative, it suggests mis-pricing in the market and a major adjustment is likely to be imminent.
- One should look at the interest rate spread between bonds with different credit ratings but the same maturities. A compression of the spreads across credit ratings also suggests mis-pricing (due possibly to excess liquidity in the market).
- One should look at interest rate spreads between bonds with the same credit ratings and maturities but denominated in domestic currencies versus foreign (hard) currencies; for example, one can compare the yields of sovereign credit of the same maturity, across countries and regions, and with the risk-free safe-haven rate of interest.
- One can also look at deviations of the rate of interest from covered interest parity.
- The track record of the credit rating agencies in detecting problems ex ante is not good. The credit downgrades usually come too late to be helpful.

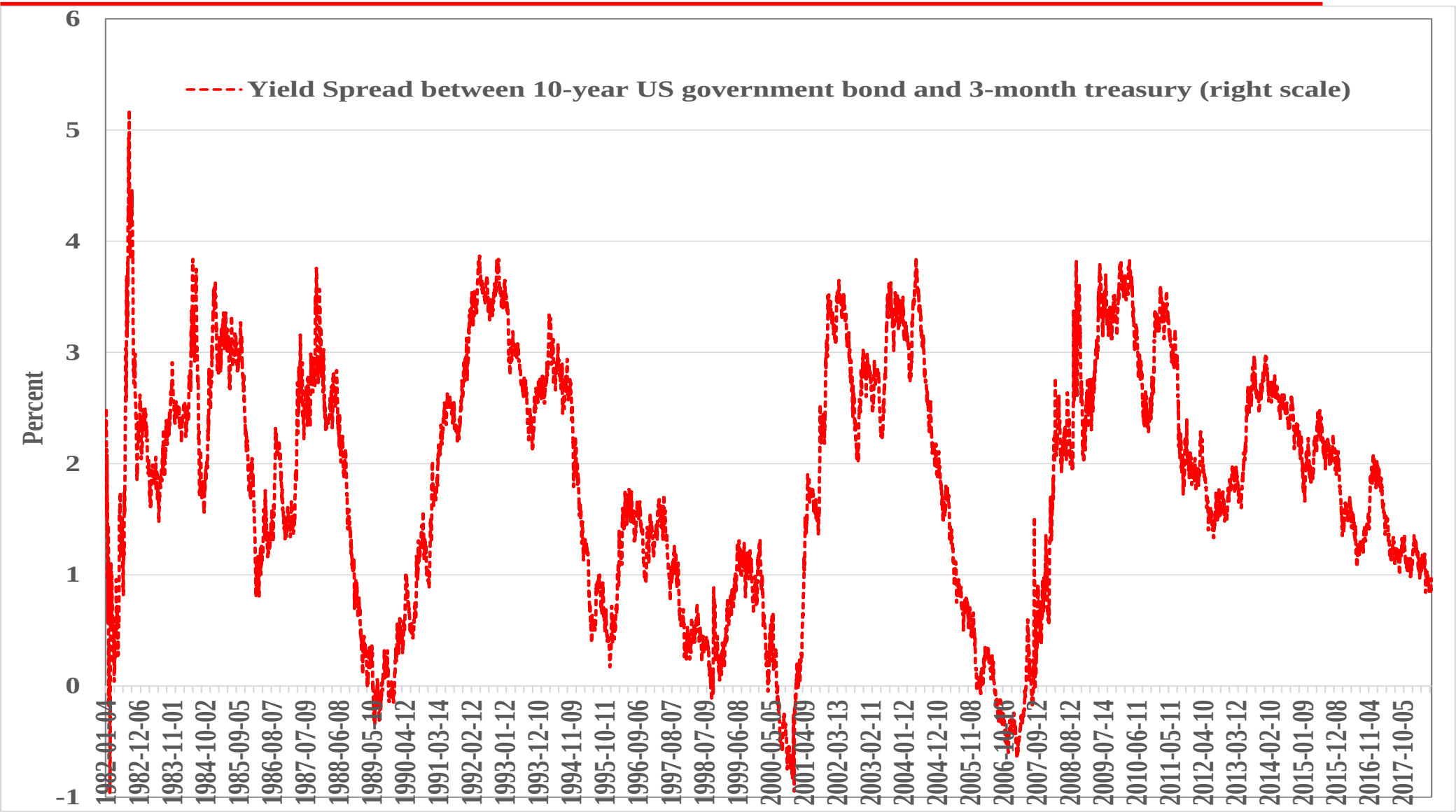
The Real Interest Rate in the U.S.



The Yield Spread between Long-Term and Short-Term U.S. Government Bonds

- There are instances of an inverted yield curve in the U.S., that is, with the short-term rate of interest higher than the long-term rate of interest for U.S. Government bonds (or bonds of the same credit quality).
- The yield spread of U.S. Government bonds turned negative at the following dates: February 1982, May-August, 1989, October-December 1989, September-October 1998, April 2000, July 2000-January 2001, July 2006-May 2007, July-August 2007.
- Except for the period 16 August-28 September 1982, the yield spread between 10-year and 3-month U.S. Treasury securities was never higher than 4%.
- An inverted yield curve for U.S. Government bonds is usually identified as a signal of an economic recession to come in the U.S.

The Yield Spread between 10-Year and 3-Month U.S. Government Bonds since 1982



The Yield Spread between Long-Term and Short-Term Chinese Government Bonds

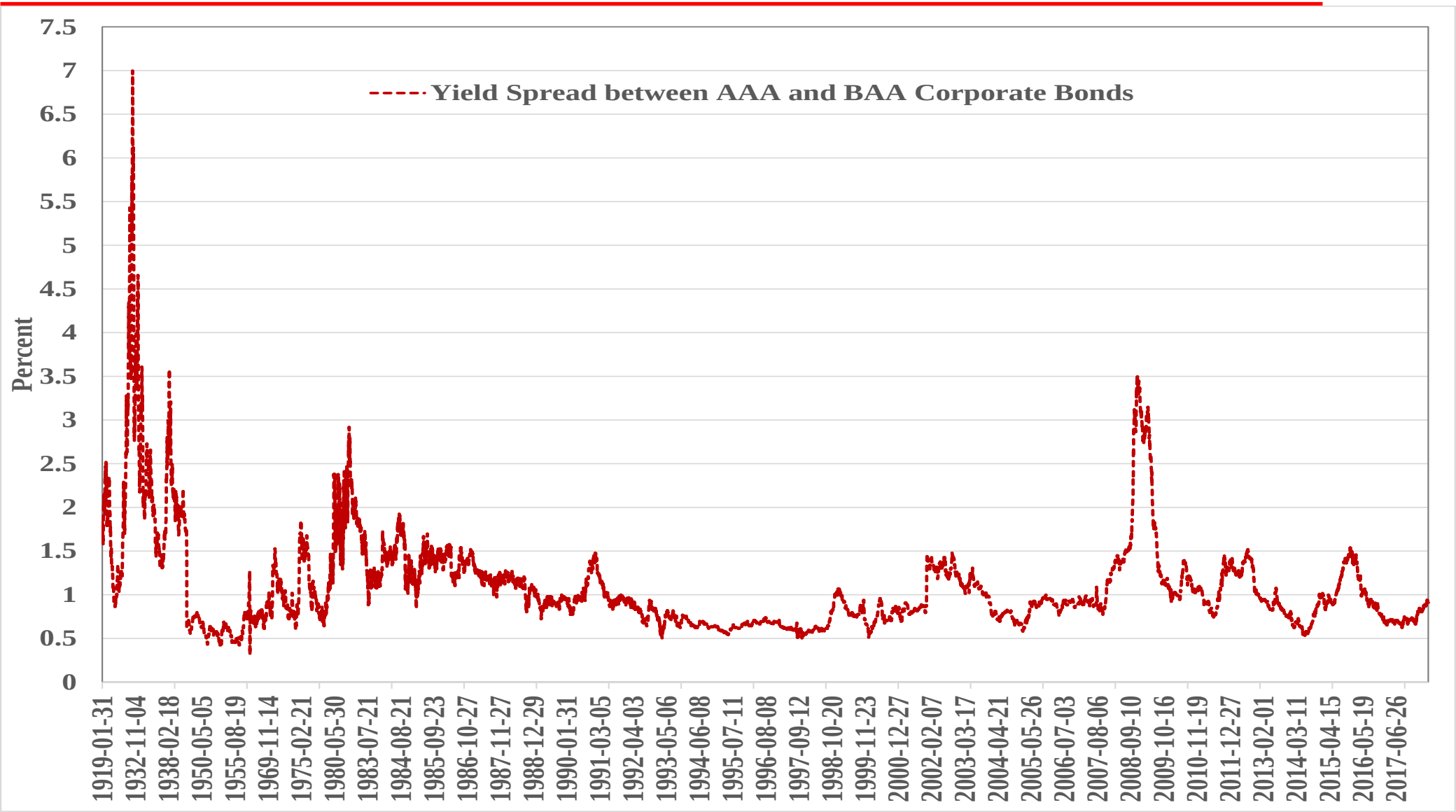
- There has not been any indication of an inverted yield curve in China. There were very few instances of an inverted yield curve in China. In fact, the interest spread turned negative only on a few isolated occasions and did not last at all. 26 April 2002, 10 June 2003, 17 August 2004, 20 June-11 July 2013, 4 December 2013-2 January 2014, 14-20 June, 2017, 30 November 2017-30 December 2017.
- It is also highly unusual that the yield spread between long-term and short-term Chinese Government bonds has been persistently so narrow—less than 1 percentage point since 2016. In other words there is no additional reward for a long-term commitment to fixed income. It is a real mystery why there has been long-term (say 30-year) fixed-rate mortgages.

The Yield Spread between 10-Year and 3-Month Chinese Government Bonds since 2002

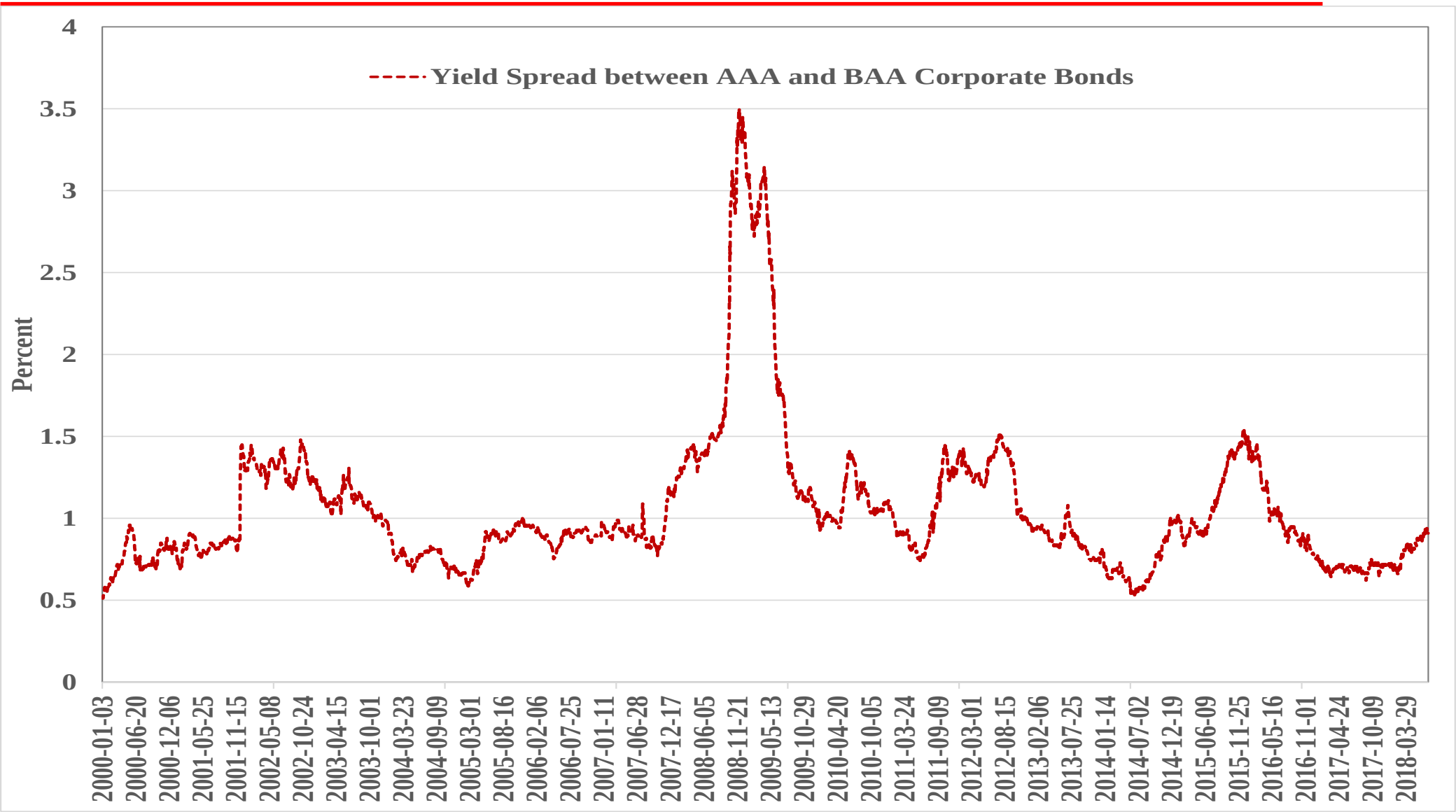
The Yield Spread between U.S. Corporate Bonds of Different Credit Ratings

- The yield spreads have been very low since the beginning of "Quantitative Easing". This is again a reflection of the abundant liquidity provided by the Federal Reserve Board.
- There are signs that the yield spread will begin to rise as the Federal Reserve Board raises the rate of interest.

The Yield Spread between AAA and BAA U.S. Corporate Bonds since 1919



The Yield Spread between AAA and BAA U.S. Corporate Bonds since 2000



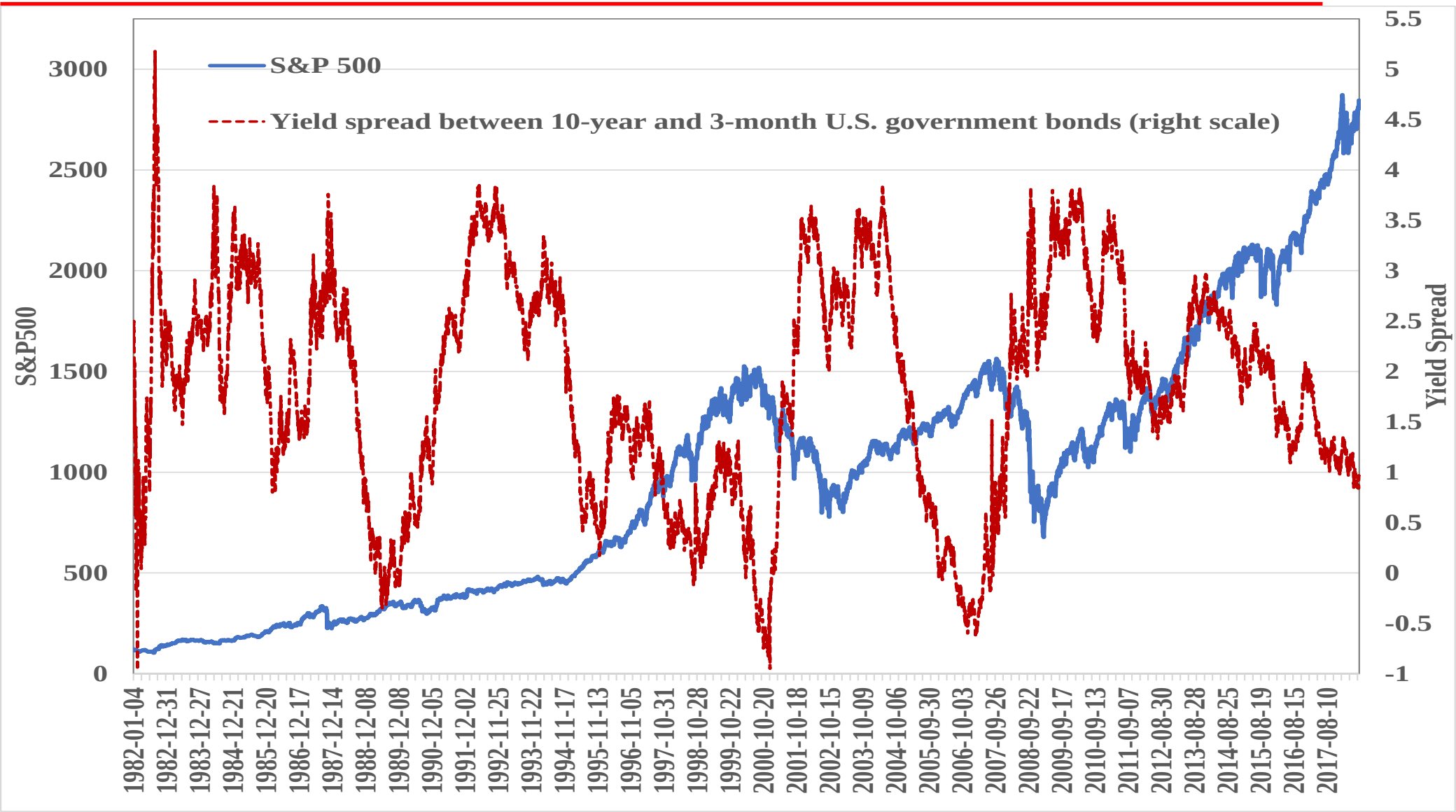
The Stock Market

- The average price to earnings ratio (P/E ratio) is an indicator of how expensive the shares in a stock market on average is relative to other stock markets. The higher the P/E ratio, the more expensive are the shares. It is however possible for a P/E ratio in a closed market, such as China's, where capital control still exists, to differ significantly from that in an open market in which investors from the entire world can both buy and sell.
- The average price to book value ratio (P/B ratio) is another indicator of the relative expensiveness of shares on average in one market when compared to another. A "fair" P/B ratio is approximately one (assuming "mark to market" rules).

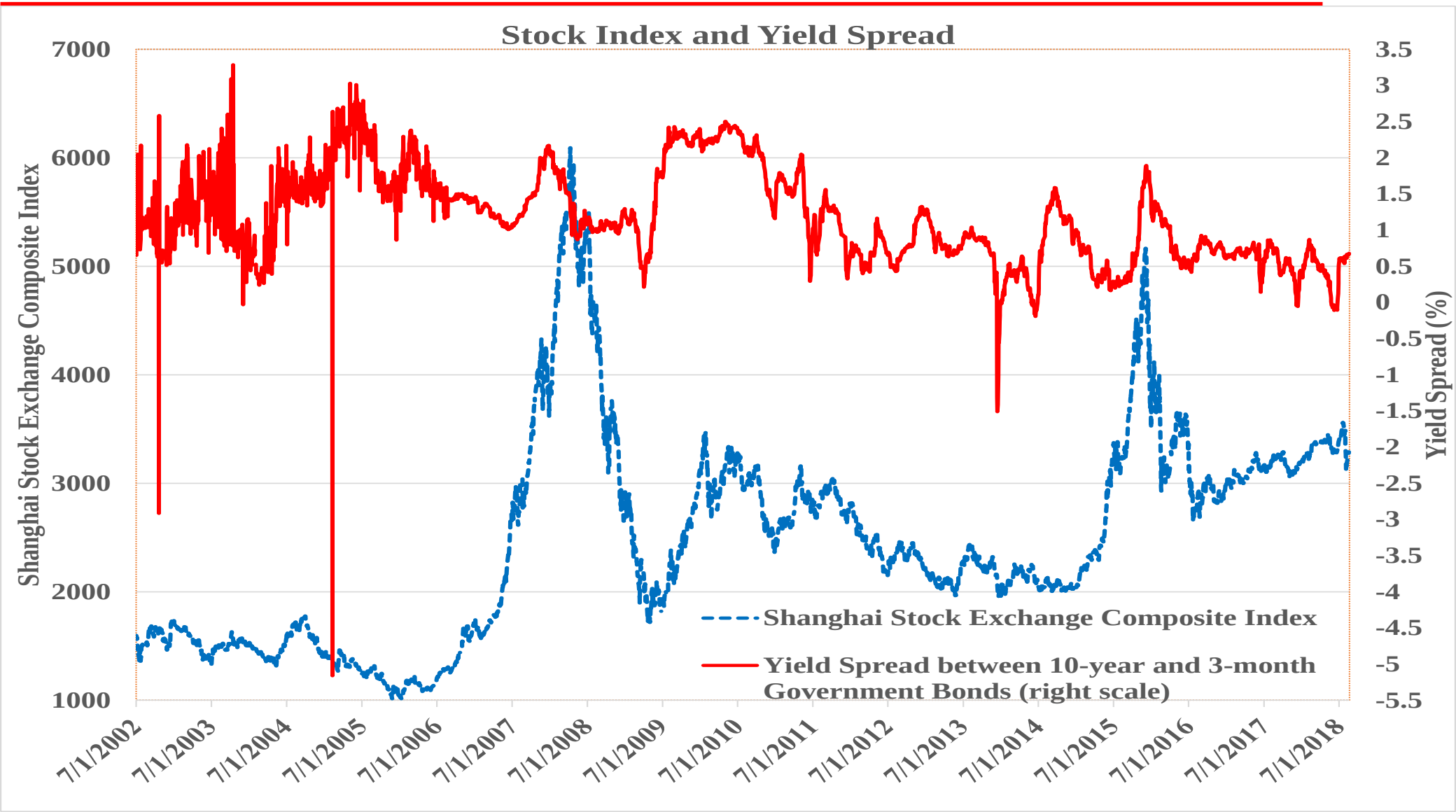
Negative Yield Spreads between Long-Term and Short-Term Bonds and the Stock Market

- The following chart shows that for the U.S., a negative maturity yield spread is a leading indicator of a significant decline in the stock market index as represented by the S&P 500.
- However, no similar effect can be found in the Chinese stock market. In any case, the incidence of a negative maturity yield spread is very rare in China.

When Long-Term Interest Rates are Lower Than Short-Term Rates (Inversion): the U.S.



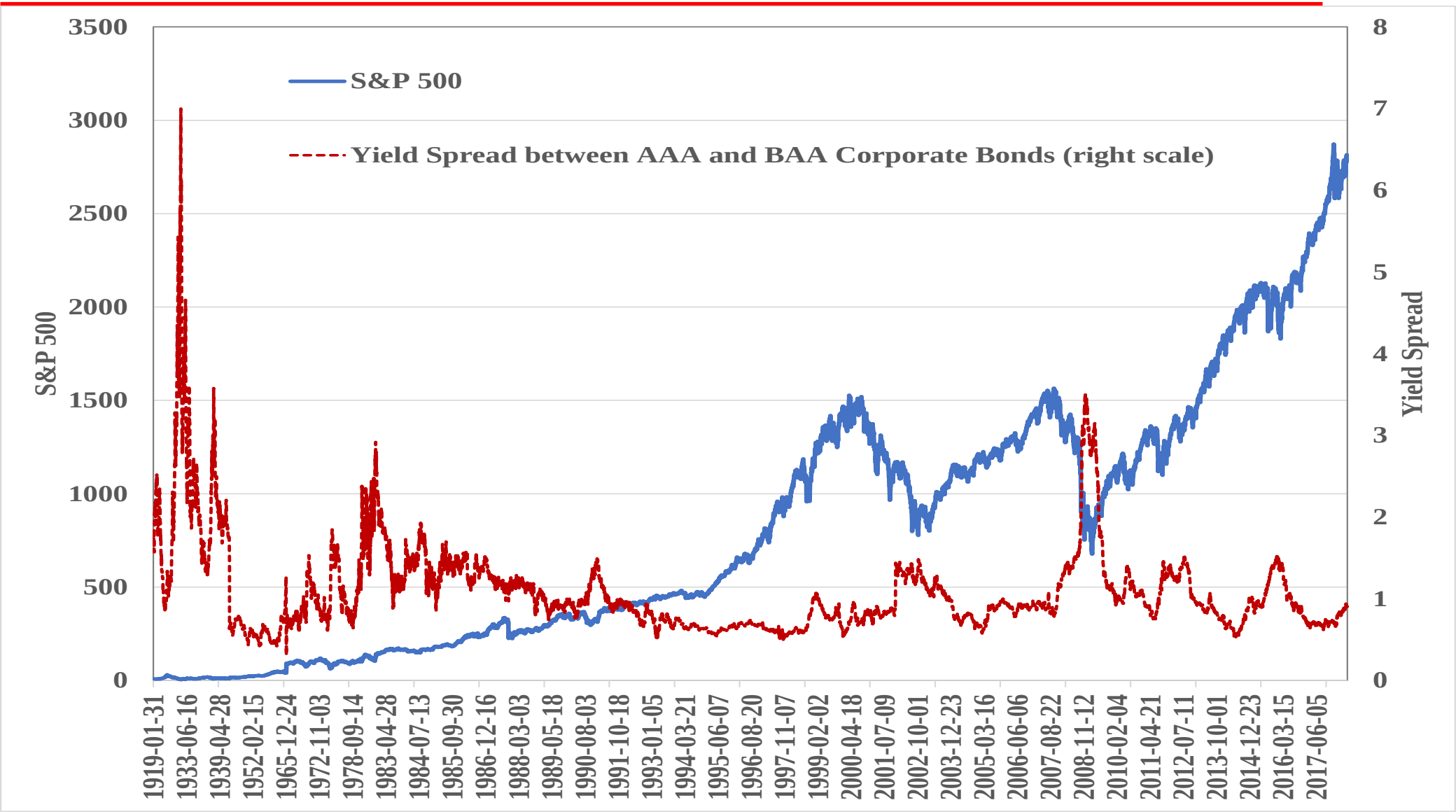
The Stock Market Index & the Yield Spread between Short- & Long-Term G-Bonds, China



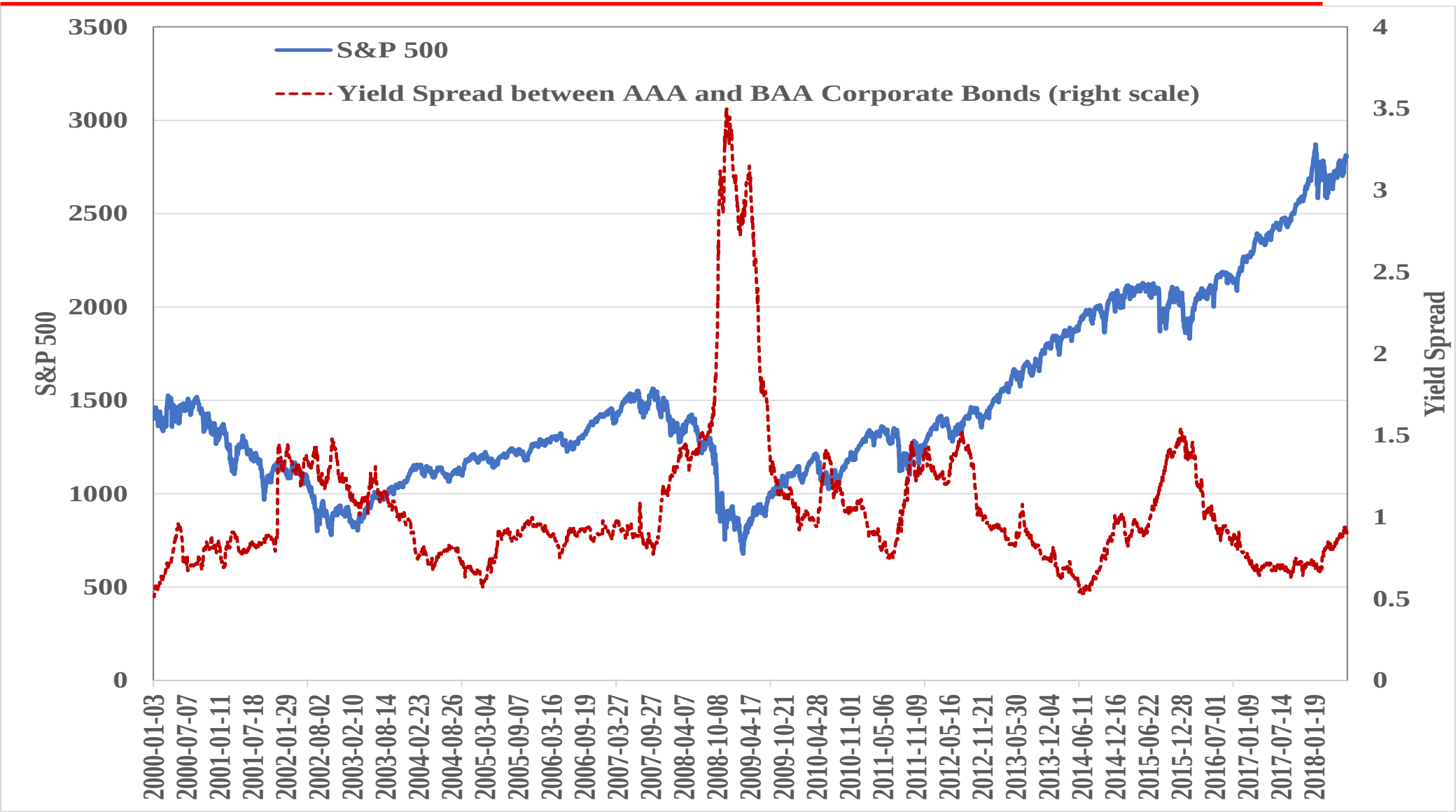
Yield Spreads between AAA and BAA Corporate Bonds and the Stock Market

- The following chart shows that for the U.S., a narrow spread between corporate bonds with different credit ratings is bullish. It also shows that a large and rising spread is a bearish sign and an indicator of a significant decline in the stock market index as represented by the S&P 500.

The S&P 500 Index and the Yield Spread between AAA and BAA Corporate Bonds



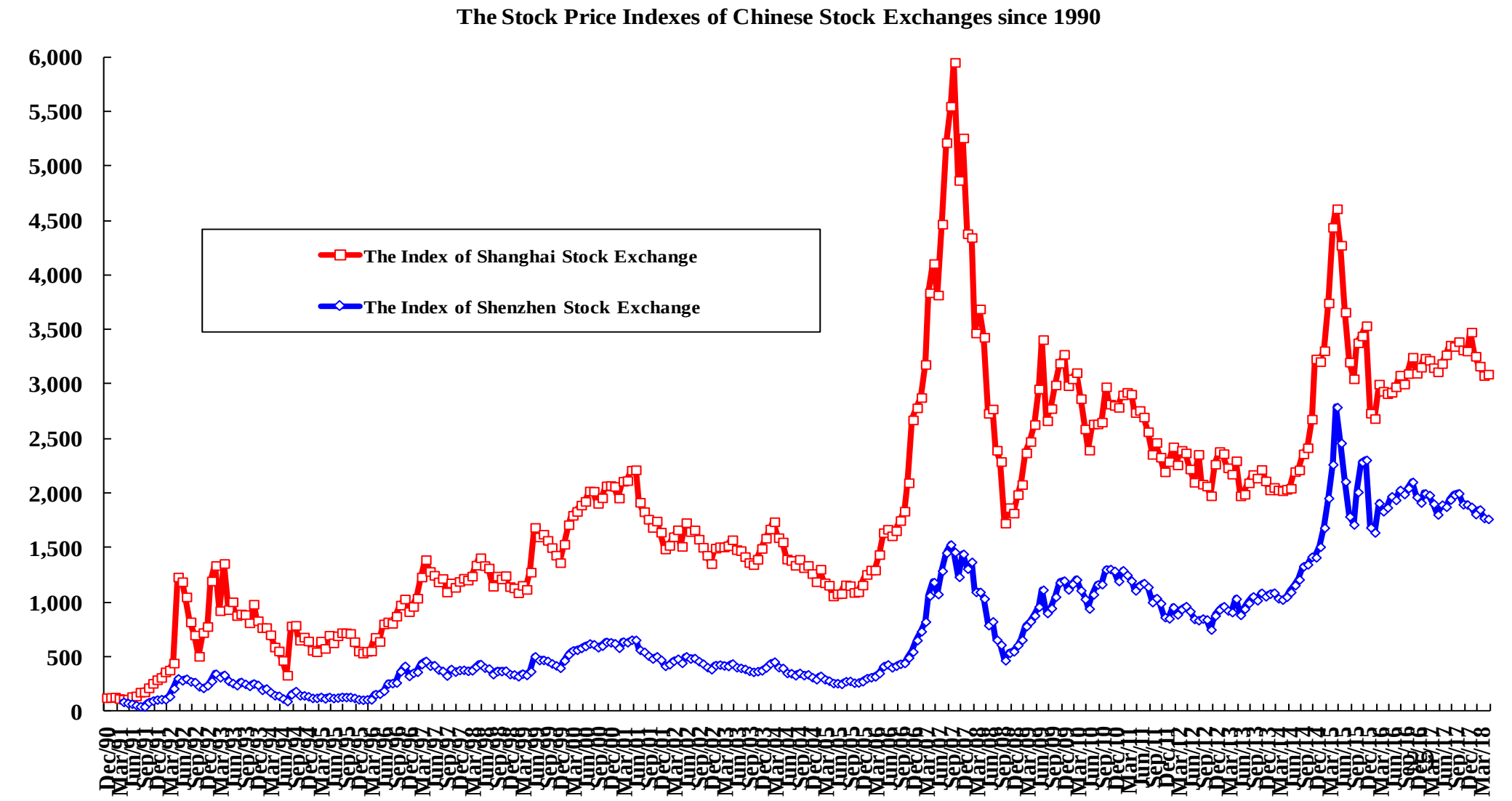
The S&P 500 Index and the Yield Spread between AAA and BAA Corporate Bonds



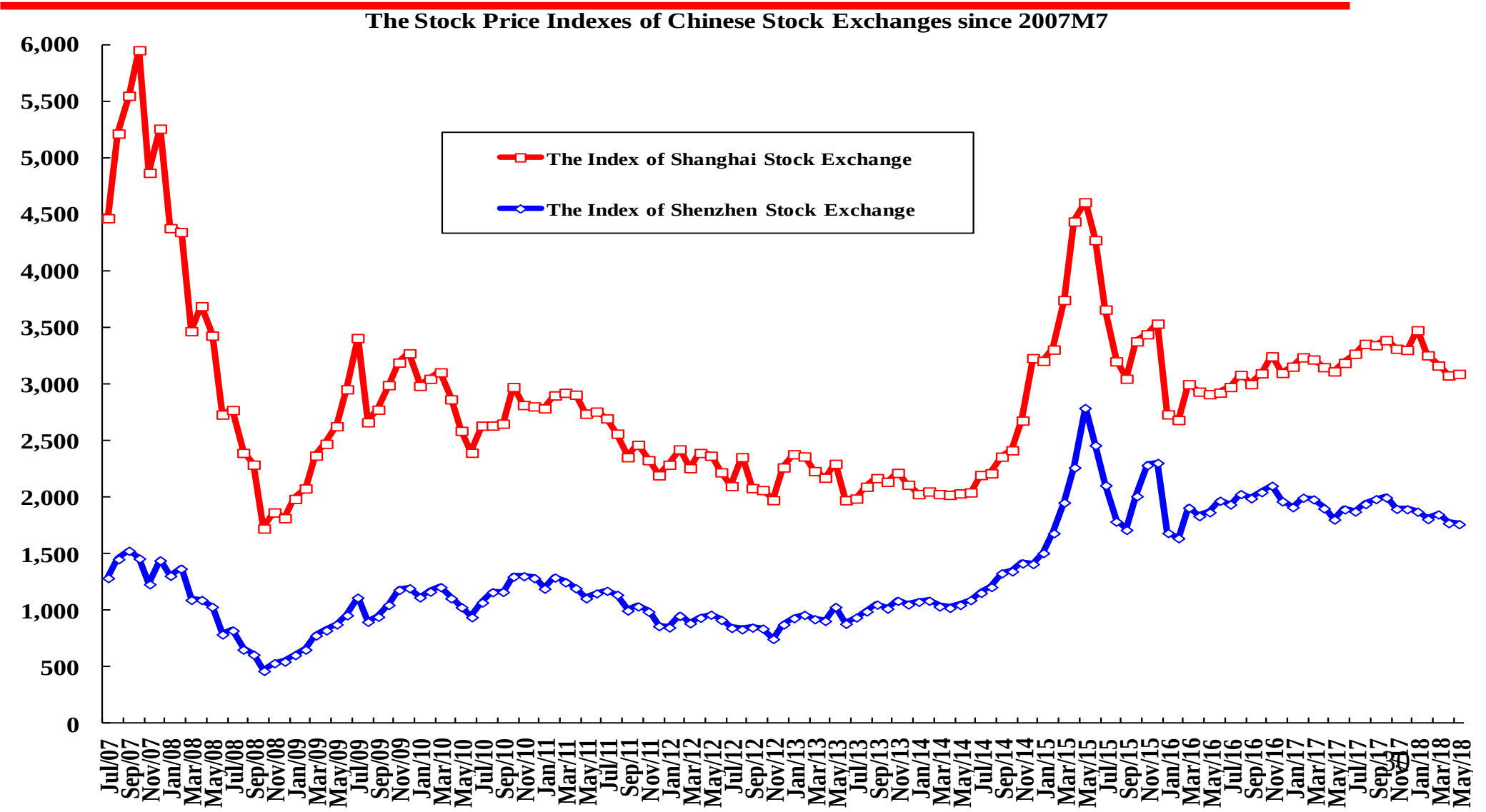
The P/E Ratios of Chinese Stock Exchanges

- The P/E ratios of the Shanghai and Shenzhen exchanges are consistently higher than that of the Hong Kong Stock Exchange.
- Since 2008, the P/E ratios of the Shenzhen Stock Exchange has been significantly higher than the P/E ratios of the Shanghai Stock Exchange.
- Moreover, even for the same underlying securities, the P/E ratios of the A shares, which are traded in Shanghai, are higher than those of the H shares, which are traded in Hong Kong.

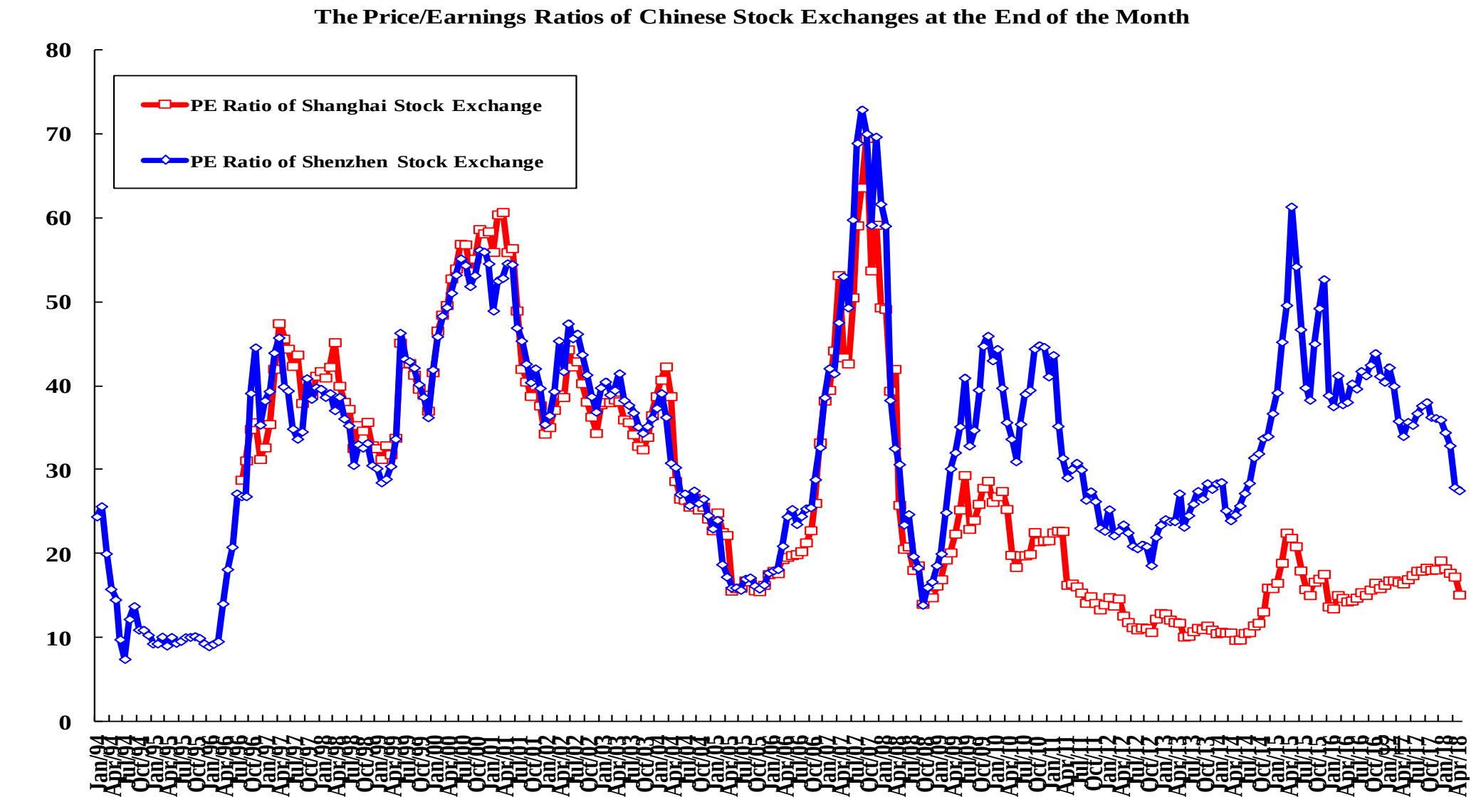
The Stock Price Indexes of Chinese Stock Exchanges since 1990



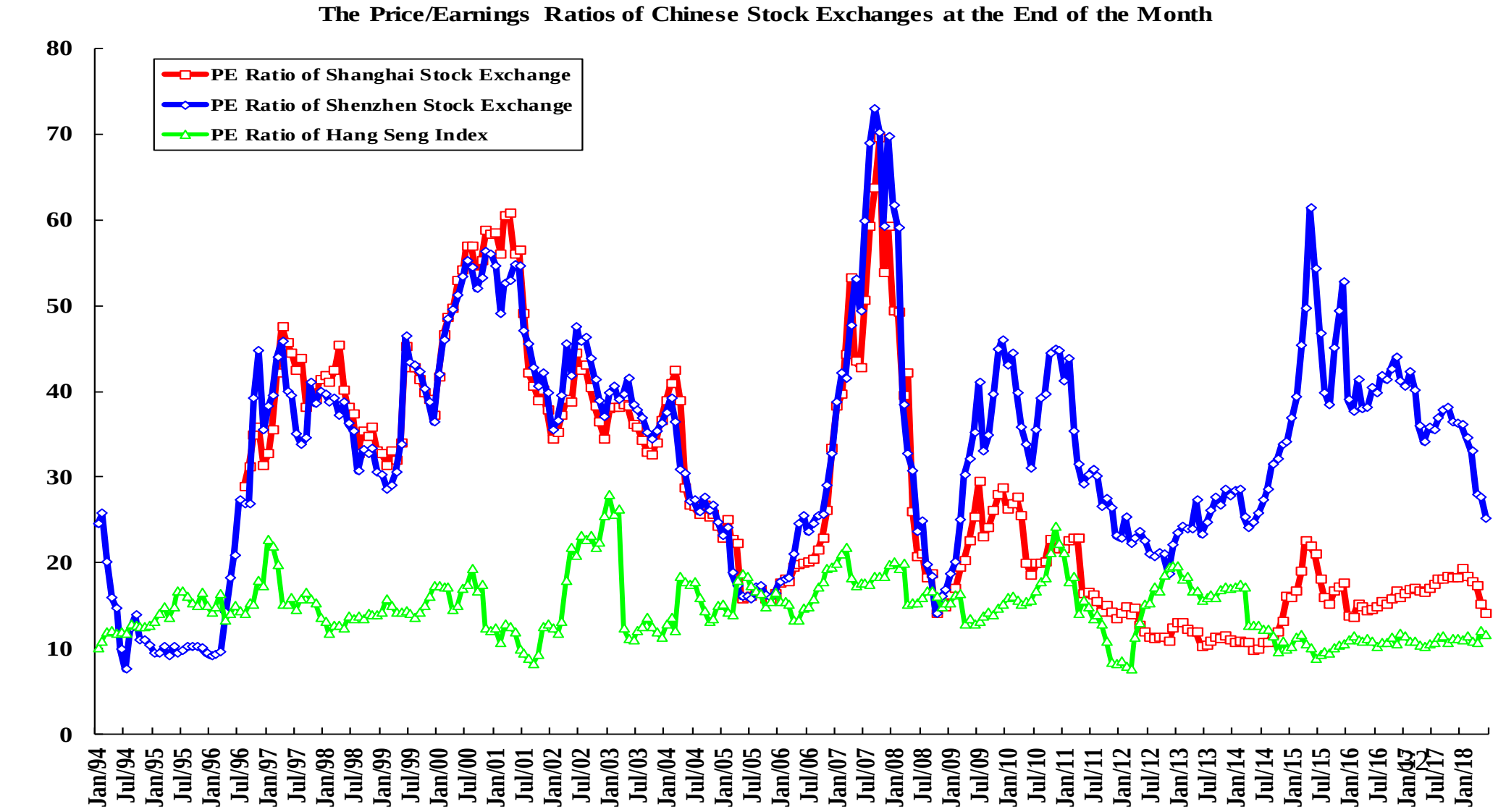
The Stock Price Indexes of Chinese Stock Exchanges since 2007M7



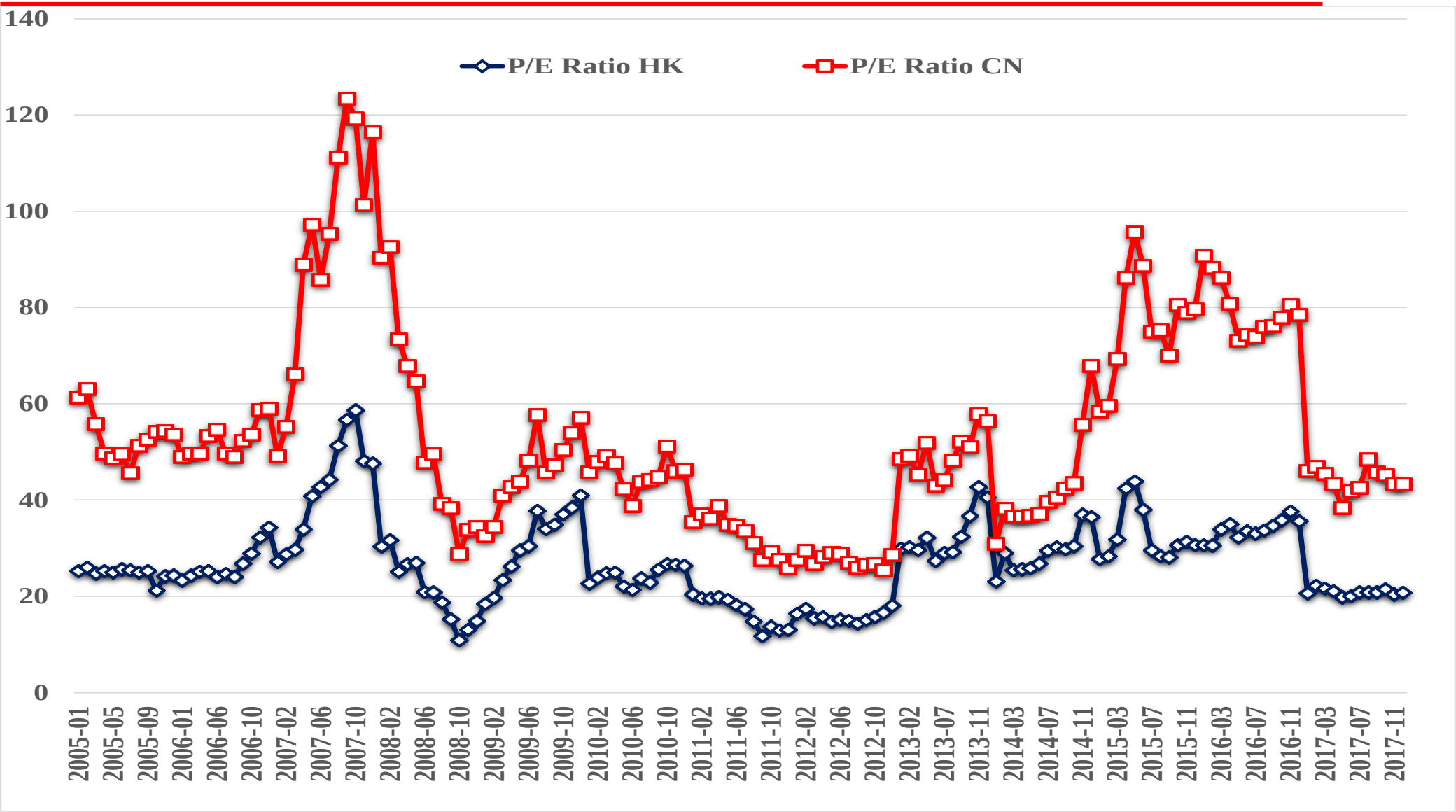
The Month-End Price/Earning Ratios of Chinese Stock Exchanges from 1994M1



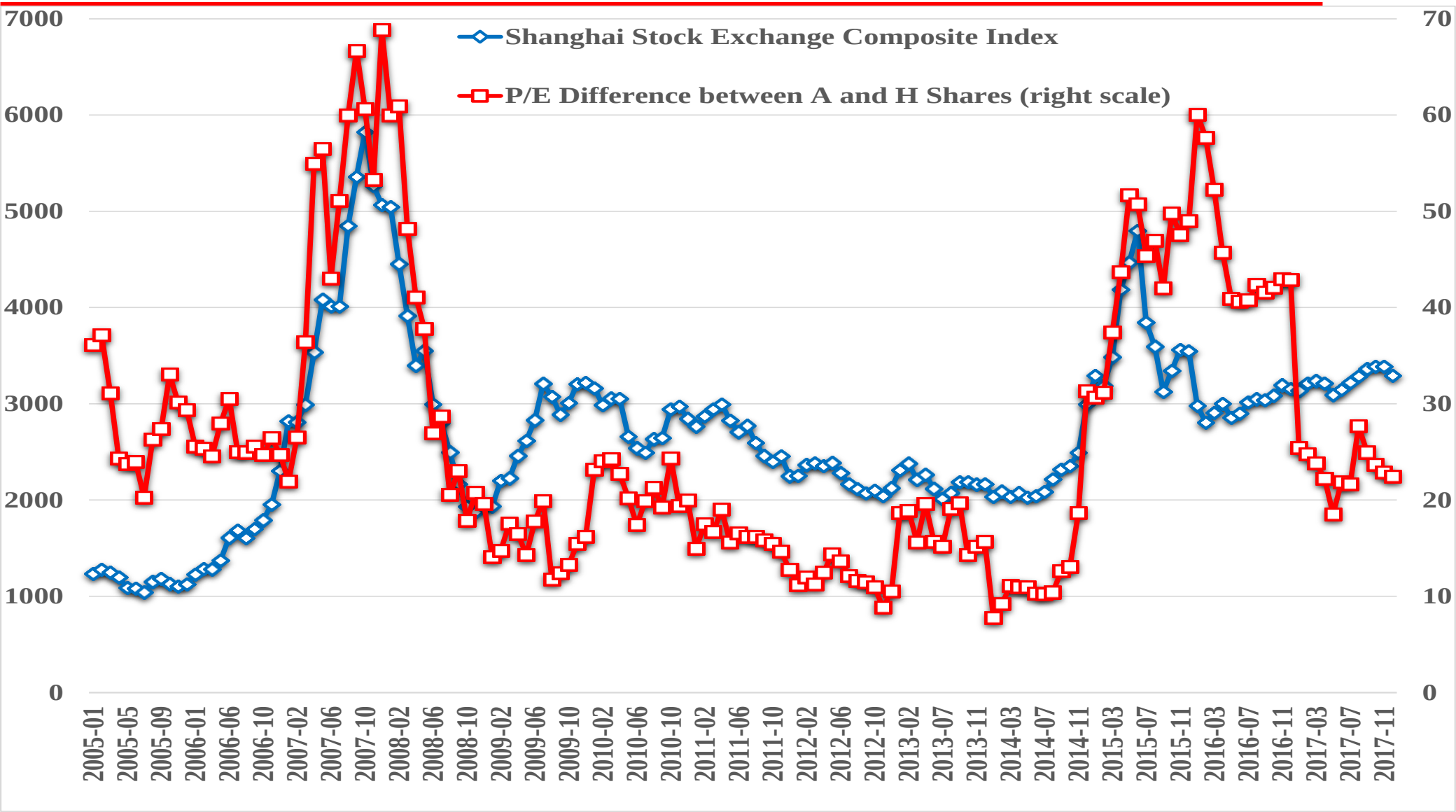
The Month-End Price/Earning Ratios of Chinese Stock Exchanges from 1994M1



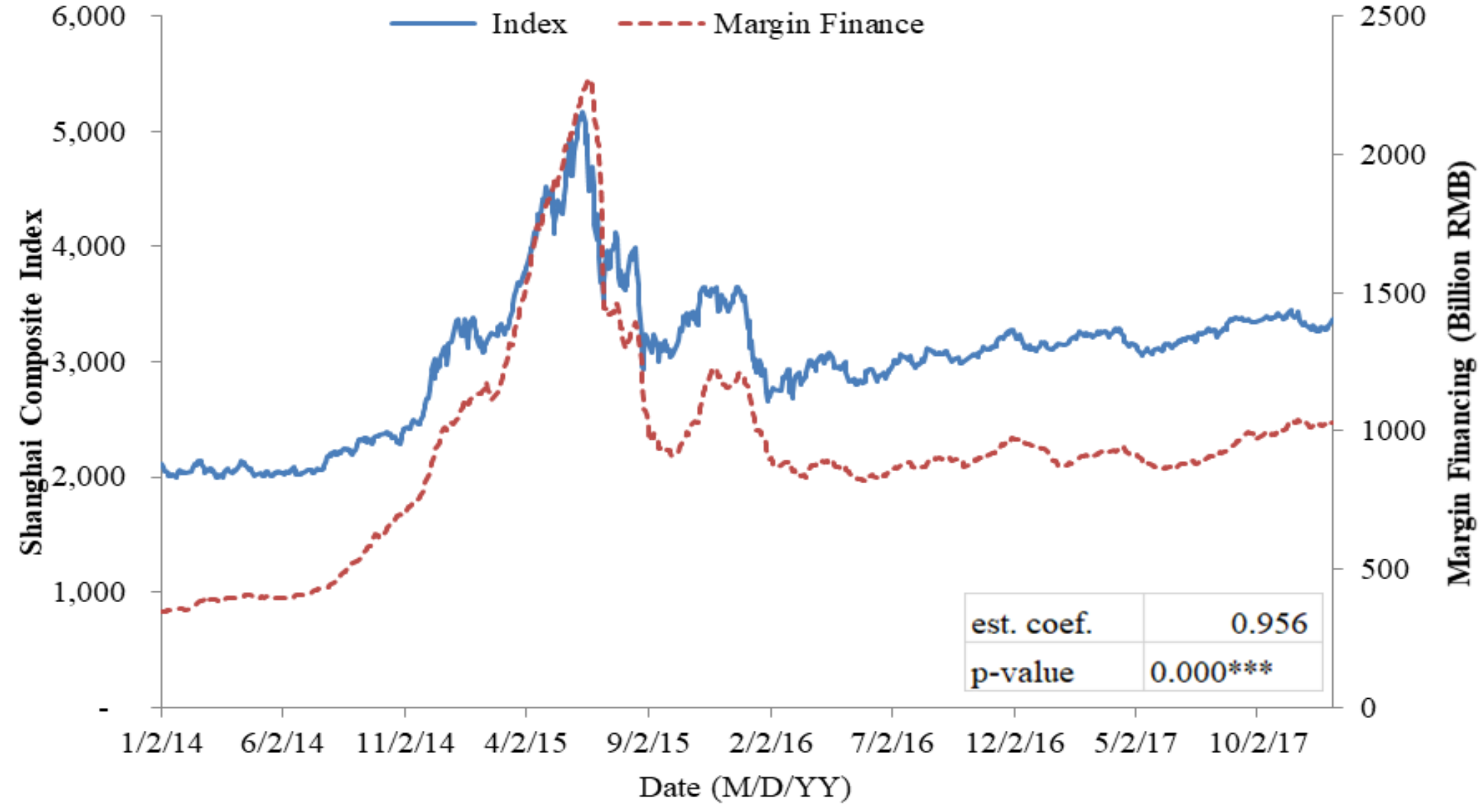
The Difference between the Price-Earnings Ratios of A and H Shares from 2005M1



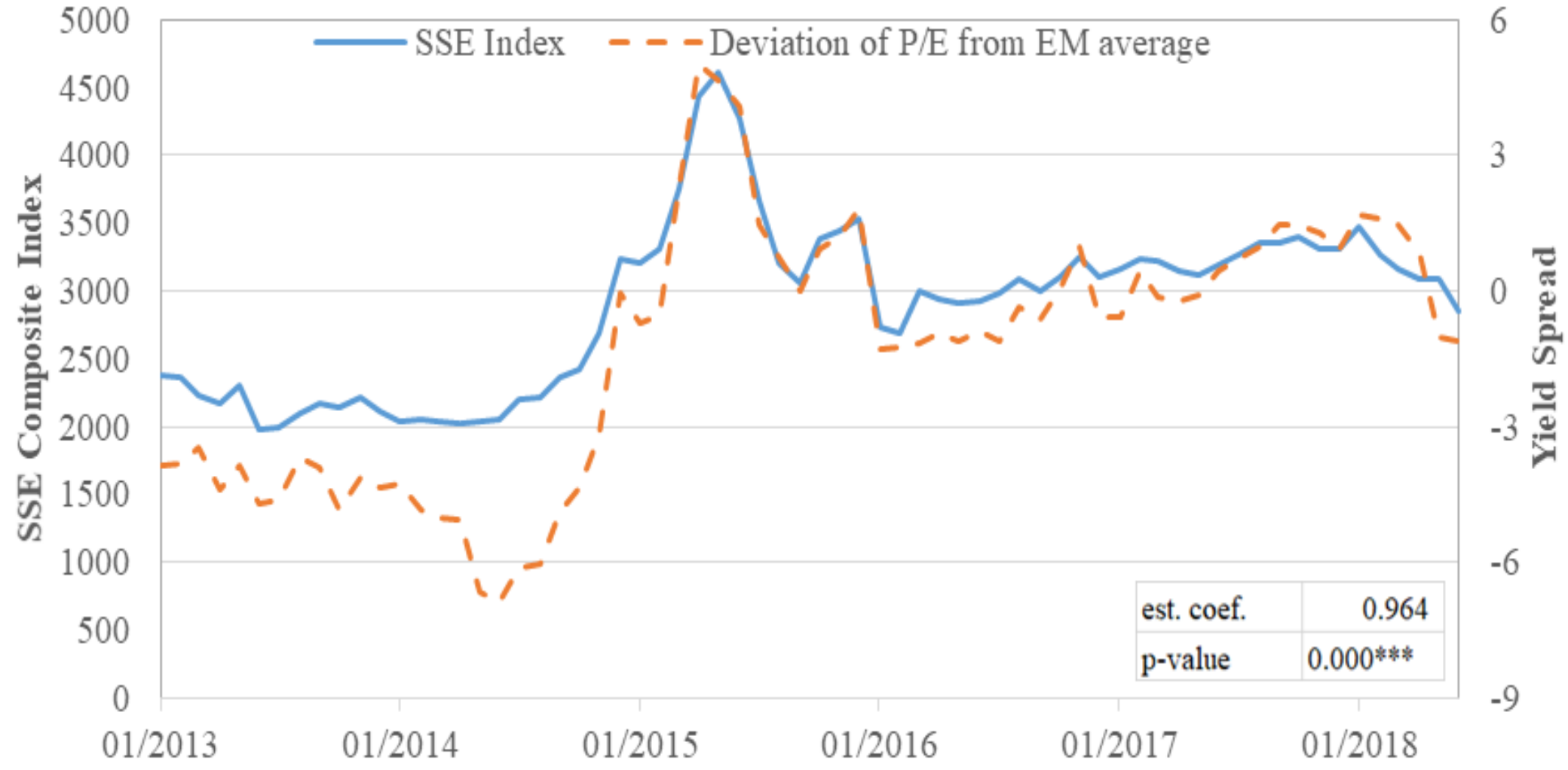
The Shanghai Composite Index and the Difference in P/E Ratios of A & H Shares



The Shanghai Composite Price Index and Margin Financing



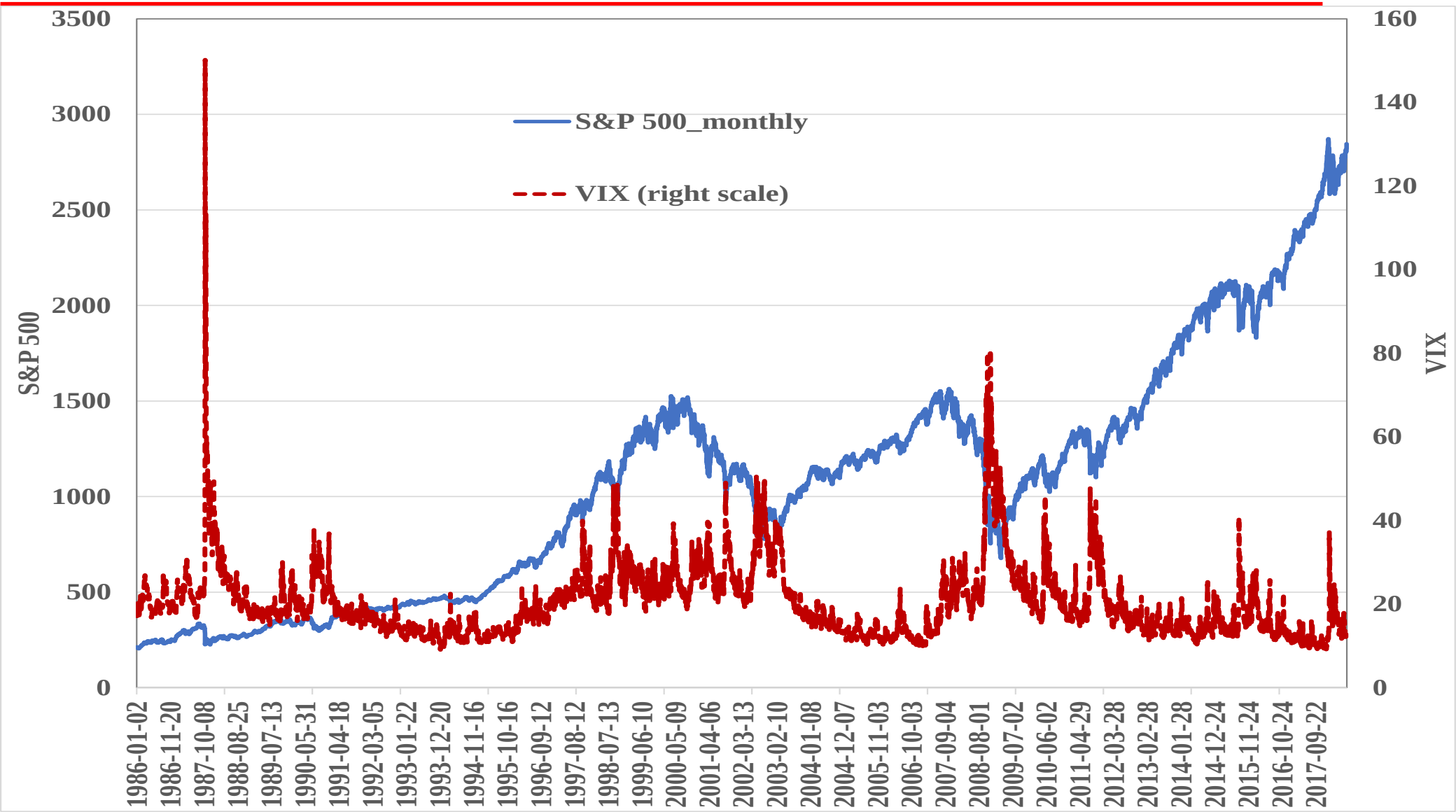
The Shanghai Composite Index and Deviation from the Average P/E of Emerging Markets



The Stock Market: The Expected Volatility

- VIX, the Chicago Board of Options Exchange (CBOE) Volatility Index, is a measure of the stock market's expectation of volatility implied by S&P 500 index options, calculated and published by the Chicago Board of Options Exchange. It is colloquially referred to as the fear index or the fear gauge. (Wikipedia)
- There was a Black Monday on October 19, 1987, when stock markets around the world crashed. Stock markets fell in Hong Kong (45.5%), Australia (41.8%), Spain (31%), the United Kingdom (26.45%), the United States (22.68%) and Canada (22.5%). The crisis during this period was characterized by sharp decline with a short period of time and quick recovery.

The Expected Volatility (The VIX) and the S&P 500



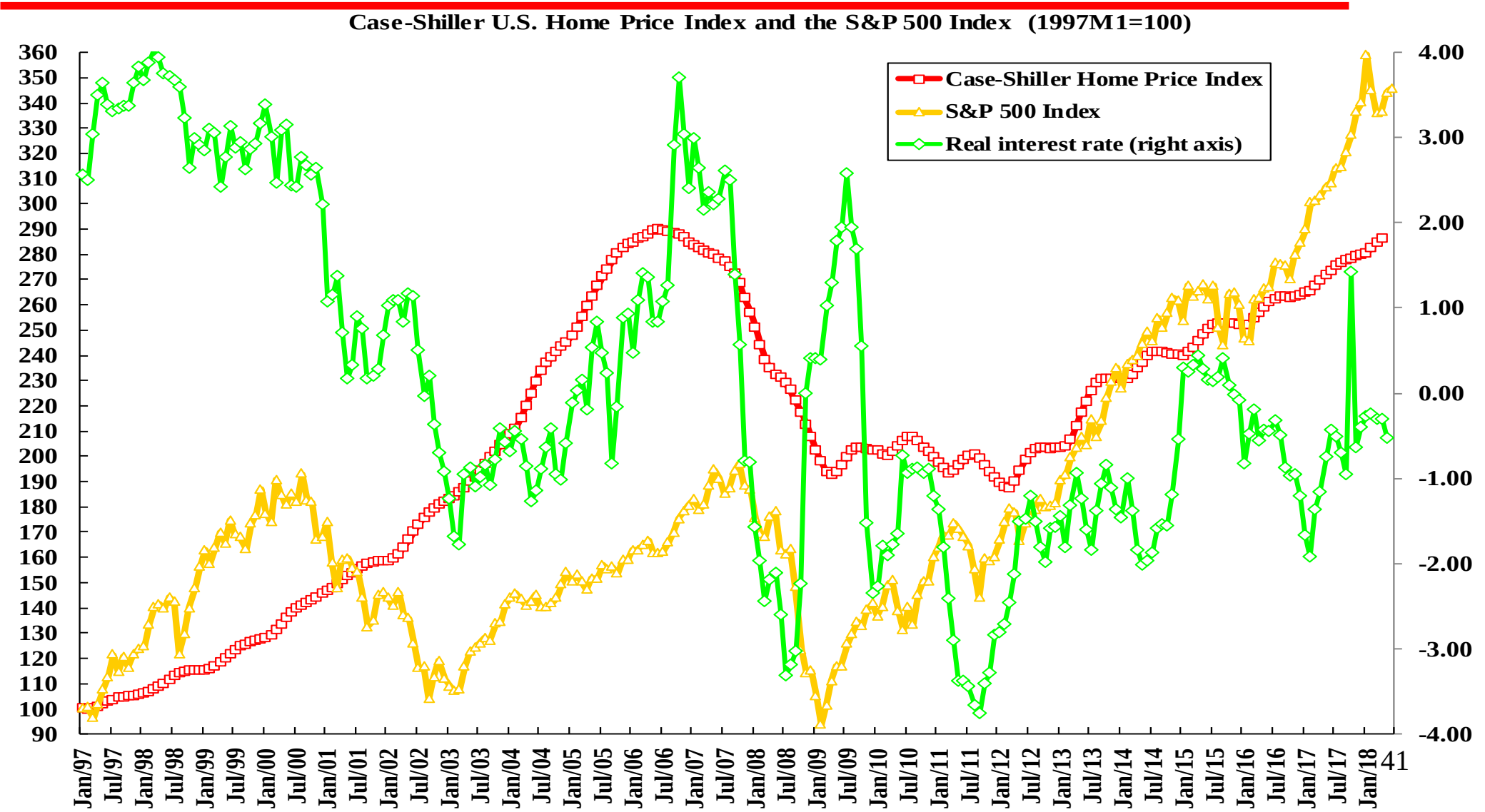
The Stock Market:
How to Contain a Stock Price Bubble?

- Creation of new supplies—listed companies should be encouraged to issue new shares to meet the rising demands. This augments the capital base of the company, benefits all existing shareholders, and also effectively lowers the acquisition cost for the new investors.
- The margin requirement can be raised on new purchases. This makes the new investment less leveraged and hence on the margin more expensive. However, it does not put pressure on existing investors who have purchased with margin financing to sell.
- Encouragement of investors to hold long-term through significant cash dividends relative to the rate of interest of bank deposits. Significant cash dividends also provide automatic market support—when the cash dividend yield exceeds the bank deposit rate of interest, investors will be happy to buy or continue to hold.
- Circuit breakers works on the New York Stock Exchange and elsewhere but do not work well where most of the investors are short-term oriented.

The Real Estate Market

- In the Hong Kong real estate market in October 1997, people queuing up overnight to buy a flat the next day could sell their positions in the queue for HK$200,000.
- In the internet bubble period around 2000, landlords were known to accept options and warrants of start-ups as rent; and accountants and lawyers were known to accept options and warrants in lieu of fees.
- If the only possible return from a piece of real estate is from further appreciation, the property market is probably already bubbly. For example, if the rental yield is way below the bank rate of interest on deposits or loans.
- A negative real rate of interest is good for the real estate market. In the U.S., the real rate of interest has been mostly negative since mid-2009. The result is that the price of real estate is now almost at the same level as its previous peak in 2006, which was arguably a bubble then.

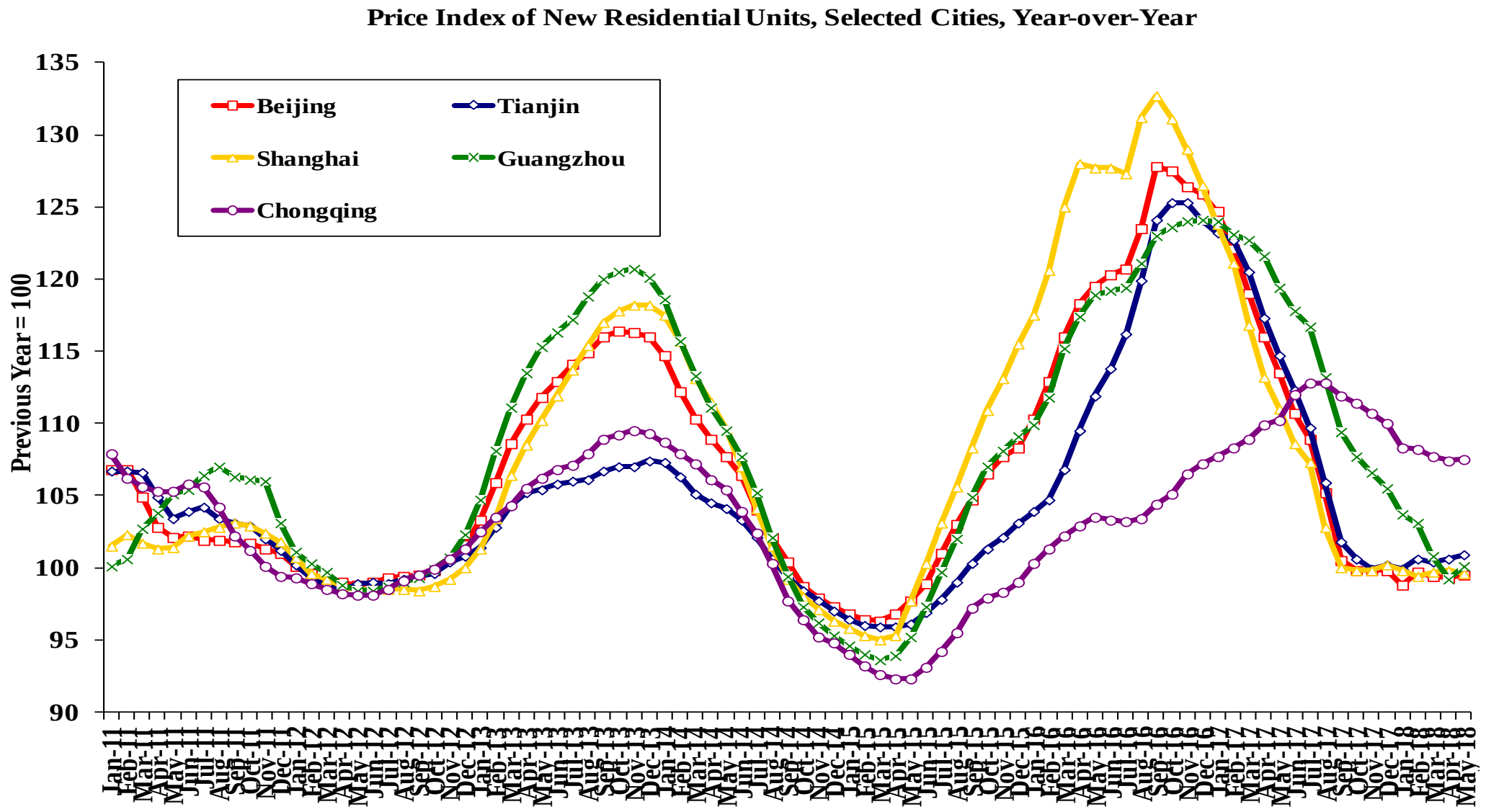
Case-Shiller U.S. Home Price Index, the S&P 500 Index and the Real U.S. Rate of Interest



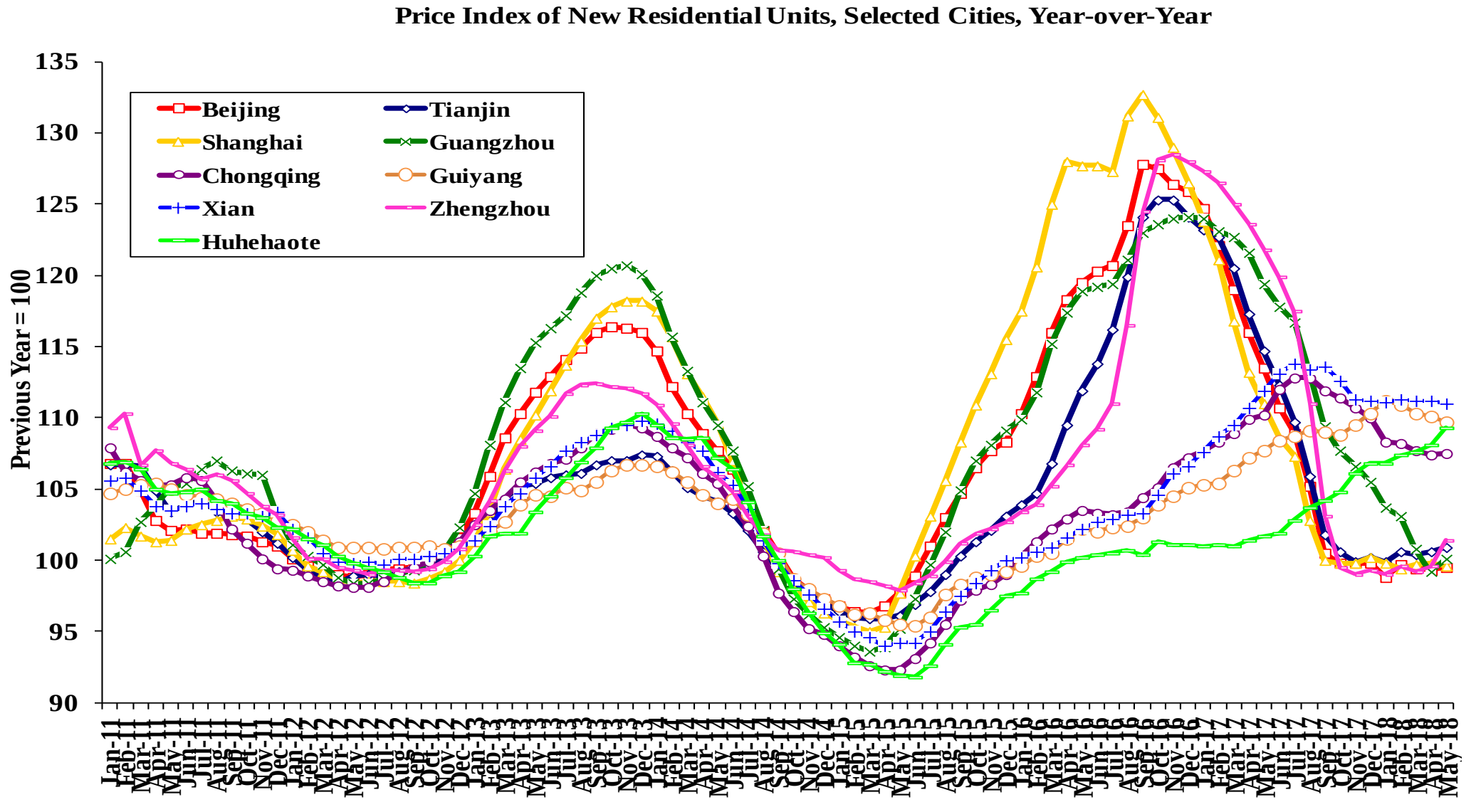
The Real Estate Market

- Chinese real estate prices have been very volatile, but with pronounced differences across different municipalities and provinces.
- In terms of price-rental ratios, the real estate in Hong Kong looks very over-priced.

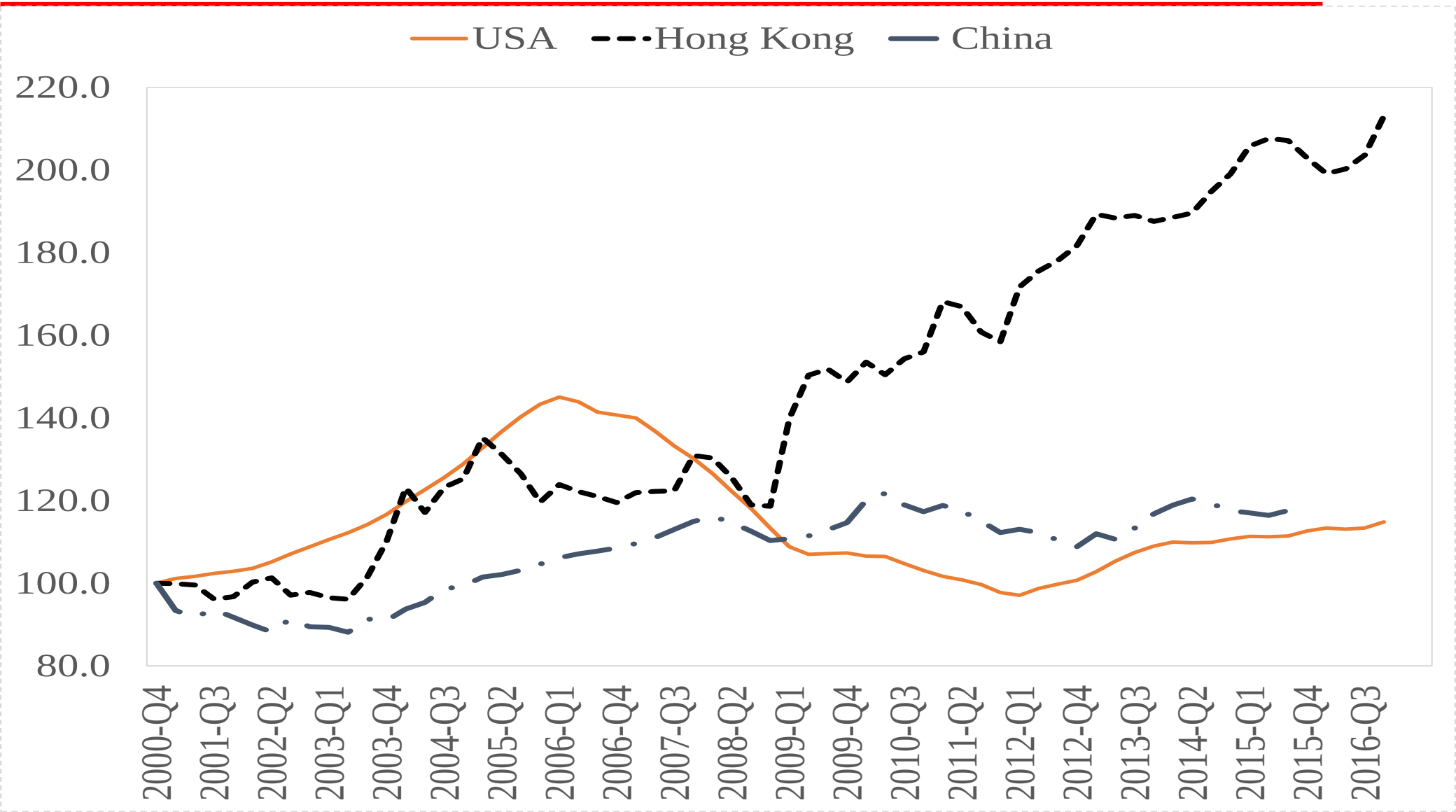
Price Index of New Residential Units, Selected Chinese Cities, Year-over-Year



Price Index of New Residential Units, Selected Chinese Cities, Year-over-Year



Comparison of Price-Rental Ratios



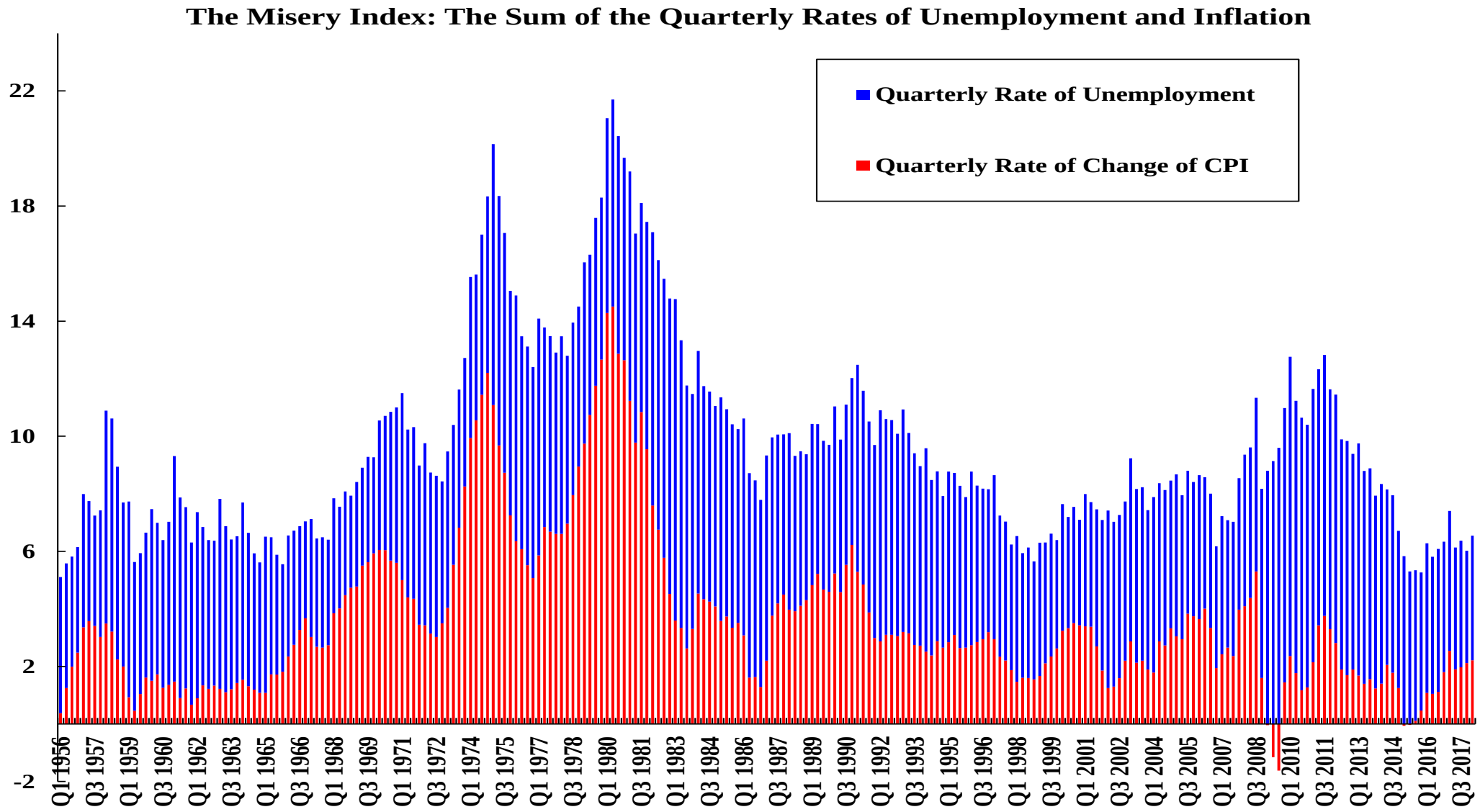
The Real Estate Market: How to Contain A Real Estate Price Bubble?

- Creation of new supplies both in the current period and in future periods so as to change the trajectory of price expectations. The Government can change land use and use building permit approvals to regulate both short-term and long-term supply.
- The banking regulatory agencies can change the equity to loan ratio on new purchases and impose new ceilings on financing.
- Reduction of the available leverage for speculators.
- Provision of long-term fixed-rate mortgage loans for qualified owner-occupied residential units for refinancing so as to reduce the debt-service costs.
- Publication of data on vacancies of residential units—a precise count can be obtained of sold and owned but unoccupied residential units from electricity and other utilities usage data.

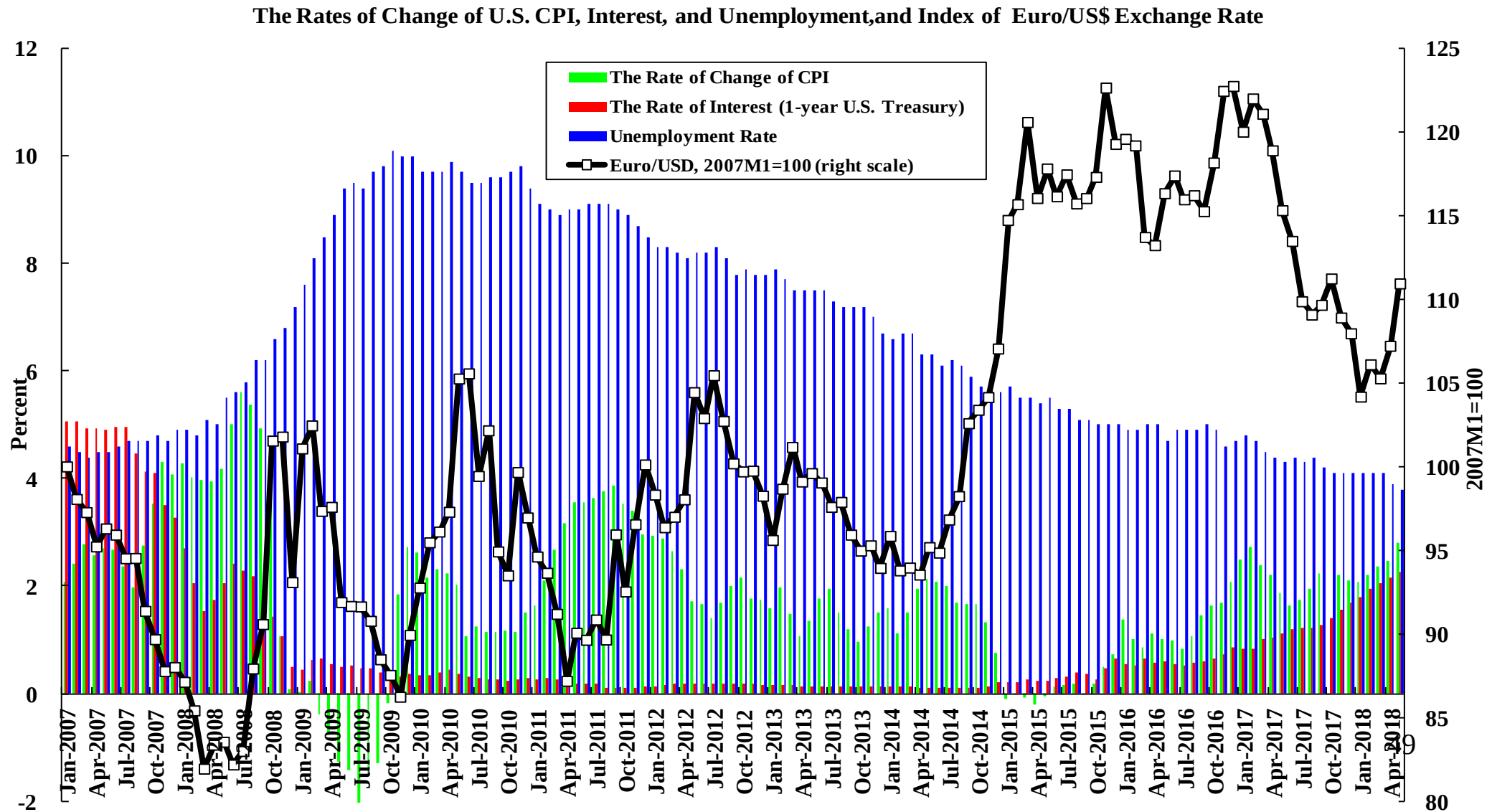
The Macroeconomy: The "Misery Index" in the U.S.

- The "Misery Index" , defined as the sum of the rate of unemployment and the rate of inflation as measured by the Consumer Price Index (CPI), was introduced by Prof. Arthur Okun of the United States in the early 1960s. It is presented in the following chart.
- The "Misery Index" reached a low of 5.26 in 2015Q2. The only other time that it was as low or lower was in 1956Q1 at 5.10. It cannot become much lower. It is possibly at its best possible period now--a Goldilocks time. Things will begin to get worse—the rate of inflation will rise and the rate of unemployment will gradually begin to edge back up.

The Misery Index = The Rate of Inflation + The Rate of Unemployment



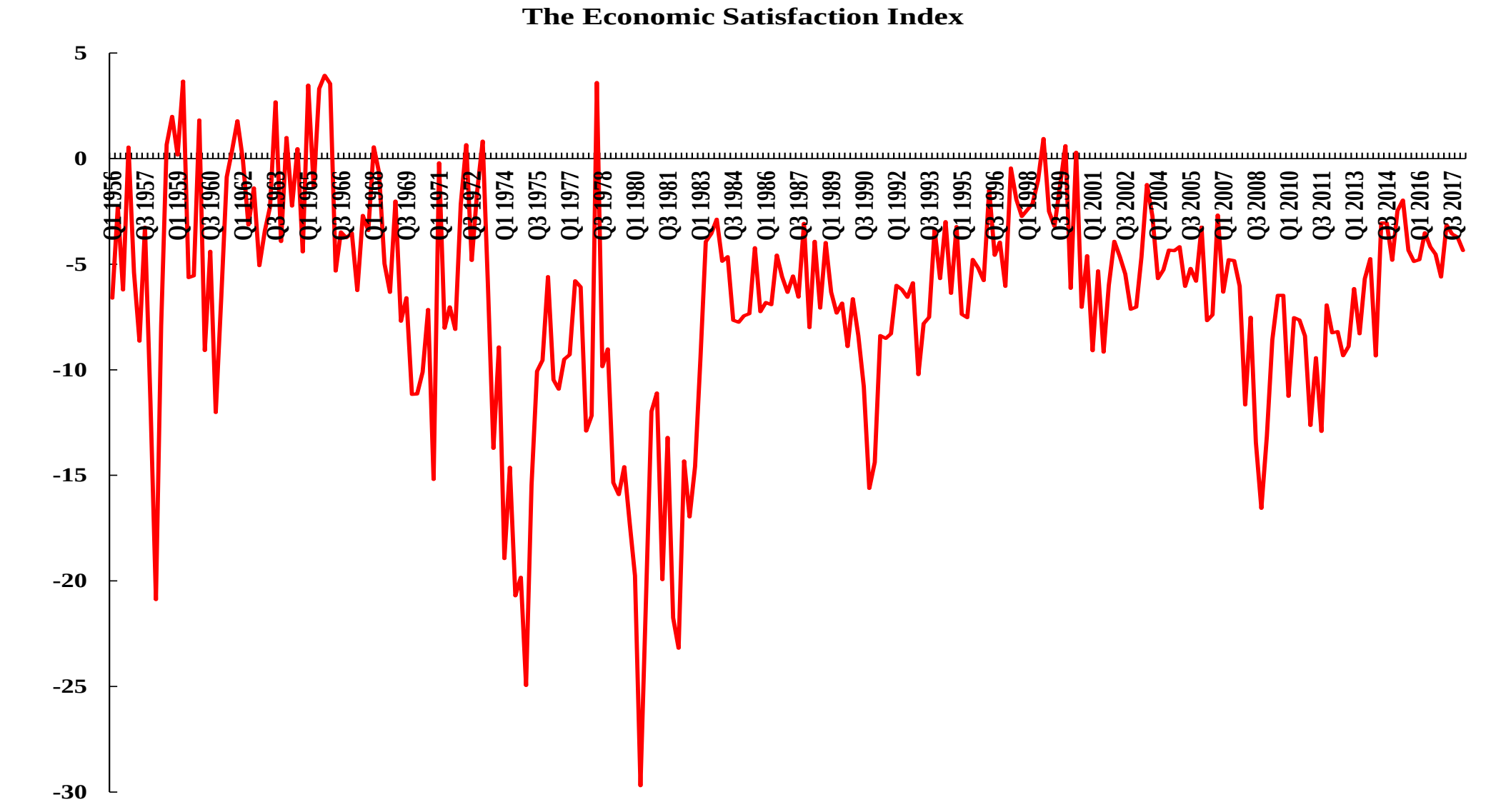
The Rates of Change of U.S. CPI, Interest, and Unemployment, and an Index of Euro/US$ Exchange Rate



The Macroeconomy: The Economic Satisfaction Index

- In the following chart, a primitive "economic satisfaction index" is also presented. It consists of the real rate of economic growth, minus the "Misery Index". The "Economic Satisfaction Index" was positive for only four quarters since 1978: 1978Q2, 1998Q4, 1999Q4, and 2000Q2. It is recently at its best since 2004.

The Economic Satisfaction Index = The Real Rate of Growth of GDP - The Misery Index



Concluding Remarks

- Low (real) rates of interest can encourage borrowing. However, loans can be used for two alternative purposes: making new real investments, that is, in structures and equipment, or purchasing existing assets, real or financial. The former creates GDP and employment. The latter does not.
- However, as long as the rate of interest remains low, and liquidity is ample, a purchaser of an asset will aim to profit by selling the asset to another purchaser at a future date, regardless of the yield of the asset itself. This will come to a stop when the rate of interest rises and liquidity is shrunk.
- What is too good to be true will not last forever!

References

- Carmen M. Reinhart and Kenneth S. Rogoff and (2009). This Time is Different: Eight Centuries of Financial Folly, Princeton: Princeton University Press.