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The behaviour of retail investors and price discovery in China, a realistic review

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Abstract

China has, in the last decades, seen tremendous economic growth. Retail investors characterize the equity market, and these retail investors, who have a substantial impact on the price discovery in the mainland stock markets of China, are not entirely rational in their financial behaviours. Dual-listed A+H share companies have been the object of study in quantitative research, using classic theories and theorem in the process of trying to explain the fundamental grounds of price discovery. Among these studies, scholars name behaviour as a void, thus this paper investigates the behavioural aspect and its effects on price discovery in mainland China. A realistic review with market-opening policies as interventions is conducted in order to find evidence regarding the problem at hand. The literature study is reinforced with own observations which lay the ground for a possible theory behind the price disparity of dual-listed A+H listed companies. Furthermore, an interview made by Huang, X. (2015) give a hands-on, personal, perspective of retail investor behaviour among the Chinese.

The study concludes that the price discovery of the A+H share is affected by the dynamics of the Chinese mainland market. The sheer size of the ever-growing group of retail investors, their increased amount of capital allocated to the stock market and the limited amount of available equity (Free-Float) make for skewness in the supply and demand of shares, also, the young market environment and Chinese culture seem to limit the new investor's rationality. Moreover, the observations in this study expose a cycle behind the price disparity, which has its roots in the theoretical framework of financial behaviour applicable to the Chinese retail investors.

TABLE OF CONTENTS

1. Background

1.1 Introduction

China has developed economically since Deng Xiaoping implemented market-opening reforms in 1978 (Albers, M. and Z. Z. Chen, 2017; Brown, K., 2009) with the famous quote: "It doesn't matter whether a cat is black or white, as long as it catches mice" (Speake, J., 2015). China has seen tremendous economic growth ever since and is today the second-largest economy in the world (Chen, M., C. L. Kwok, H. Shan and P. S. F. Yip, 2018; Tong, J. T. and J. McManus, 2017), with an ever-growing equity market and financial sector (Wang, J., Y. Zhang and D. Guthrie, 2018; Zhen, Y., 2013a; Zhang, Z., 2018). The equity markets of mainland China has a distinctive overrepresentation of individual (retail) investors (CSRC, 2018; Min, Z., C. Weidong, Z. Jingtong, G. Xinzhe and X. Qiyue, 2020; Zhen, Y., 2013b), whose behaviour is characterized by biases and irrationality (Barber, B. M. and T. Odean, 2013; Lindblom, T., T. Mavruk and S. Sjögren, 2017a).

A rational investor, i.e. "Economic Man", understands the presence of a ubiquitous link between the risk of an investment and its expected return (Akdeniz, L., 2000; Barber, B. M. and T. Odean, 2013; Hashimzade, N., G. Myles, and J. Black, 2017; Perold, A. F., 2004). The concept of a rational investor as an individual which choice of investments are always maximizing wealth and choosing the investments which entitle the investor to the highest expected result (Akdeniz, L., 2000; Barber, B. M. and T. Odean, 2013; T. Lindblom et al., 2017b). Behavioural economics strives to explain why the decisions of individual and institutional investors deviate from neoclassical economic theory, such as the concept of utility maximization. The constraint of time has created a debate regarding these concepts (Becker, G., 1992); also, the concepts have been opposed by well-known psychologists, creating theories embodying the limitation of human rationality (Kahneman, D. and A. Tversky, 1979; Simon, H., 1957; Thaler, R. H., 2018).

1.2 Problem discussion

Within the realm of market efficiency the law of one price, Capital Asset Pricing Model and such tools of conduct reign the contemporary economic science, implying price equilibrium between dual-listed company share prices (Mohib, R., X. Bing, X. Yuan and L. Wen-Tsung, 2019; Zheng, Y., E. Osmer, L. Zheng, 2018). Throughout history, scholars and researchers have been fascinated by seemingly trivial problems which have fuelled their eagerness to understand problems such the disparity in share prices of dual-listed companies (Froot, K. A. and E. M. Dabora, 1999). The phenomena of price disparity are seen in dual-listed A+H share companies

listed in mainland China and Hong Kong (Hui, E., C. M. K. Kwan and K. Chan, 2018; Mohib, R. et al., 2019; He, D., 2008). According to Liu, C. and M. Seasholes (2011), the average price premium of A-shares compared to the corresponding H-shares has been 1.8 times from 2006 to 2009, which is significant in contrast to the study on Royal Shell Group by Froot, K. A. and E. M. Dabora, (1999). Nonetheless, the price disparity of dual-listed A+H listed companies still exists today.

However, in order to set a price, there must be a buyer and a seller, and also, there has to be a concept behind the actual price called price discovery, which in other words is the process of moulding the shape of the price (Brogaard, J., T. Hendershott and R. Riordan, 2014; O'Hara, M., 2003). Additionally, the price disparity of the two markets is an apparent cause of differences in price discovery hence; presenting itself as an evident area of research.

Dual-listed A+H share companies have been the object of study in quantitative research, using classic theories and theorem in the process of trying to explain the fundamental grounds of price discovery in such companies (Cai, C. X., P. B. McGuinness and Q. Zhang, 2011; Chen, Z. and R. Ibragimov, 2019; Zhanghong, H. and W. Xiaokun., 2008; Fana, Q. and T. Wang., 2017; Chan, M. K. and S. S. Kwok, 2016; Yao, S., H. He, S. Chen and J. Ou, 2018). Behavioural patterns of price discovery responsible for the price disparity in A+H shares have been discussed by researchers, without objective cause for the phenomena (Hui, E. C. M. et al., 2018; Liu, M., 2017; Ma, X., 1996; Wang, W., 2020), thus implying the need for further research to understand the behavioural part of price discovery behind the A+H disparity.

Additionally, researchers imply that H-shares chase the momentum of the A-share in dual-listed A+H share companies (Chan, M. K. and S. S. Kwok, 2016; Wang, W., 2020) and the price discovery in dual-listed companies more frequently take place in the home market (Eun, C. S. and S. Sabherwal, 2003; Frijns, B., A. Gilbert and A. Tourani-Rad, 2010; Lieberman, O., U. Ben-Zion, and S. Hauser, 1999; Pascual, R., B. Pascual-Fuster, and F. Climent, 2006), indicating the importance of a focus on the price discovery of mainland China.

1.3 Aim

This study aims to shed light on the behavioural aspect of price discovery in the stock market with a focus on mainland China and also to understand the behavioural role of price discovery in dual-listed A+H listed companies, which in turn may explain the price disparity in such companies.

1.4 Delimitations

Institutional investors have a higher degree of financial knowledge and invest more skilfully (rational) (Li, S., P. Brockman, and R. Zurbruegg, 2015), therefore the focus will be directed to retail investors of mainland China. In order to do so, relevant parts of retail investor behaviour, which apply to the Chinese, will be explained and later put in context. The main periods of analysis will include relevant periods from before and after market-opening policies which seem fit according to previous studies (Chan, M. K. and S. S. Kwok, 2016; Beltratti, A., B. Bortolotti and M. Caccavaio, 2016; Hung, C-H. D. et al., 2015; Ren, G. and Y. Zhao, 2009; Chan, M. K. and S. S. Kwok, 2016; Liu, N., D. Bredin, L. Wang and Z. Yi, 2014). The policies include CSSS, QFII, RQFII and SHSC, which are explained in the literature review, *Chapter 3.4 Policies*.

Since A+H share companies constitute for a significant part of the whole mainland market, and also A+H share companies correlates to 82% when compared to the entire A-share index (Carpenter, J. N., R. F. Whitelaw, and D. Zou (2020), which means that behaviours of the mainland have a significant part in shaping the price discovery of the A+H companies, therefore A+H companies will serve as a proxy for the mainland market.

2. Realistic Review Methodology

2.1 Introduction

Traditional methods such as a systematic literature review have been under scrutiny due to inflexibility (Pawson, R., T. Greenhalgh, G. Harvey and K. Walshe, 2005; Pawson, R., T. Greenhalgh, G. Harvey and K. Walshe, 2004; McCormack B., J. Wright, B. Dewer, G. Harvey, K. Ballintine, 2007). The main problem of this study, price discovery, is intricate and complex phenomenom which no single theory can actualise the precise framework for (Brogaard, J., T. Hendershott and R. Riordan, 2014; O'Hara, M., 2003), thus creating a perfect opportunity for a realistic review methodology. Scientific realism is a scientific exposition emerging in the twentieth century, originating from earlier philosophical beliefs in the form of rationalism and metaphysical realism (Bitsakis, E. 1993). The phrase "best explanation" portrays the concept of scientific realism. An approximate explanation of scientific realism consists of exploring causal mechanisms or processes by which some phenomena emerge and evaluate the explanatory power of theories and assess the plausibility of such causality (Boyd, R. 1985; Lipton, P. 1993; Psillos, S. 1999; Putnam, H. 2015).

Petticrew, M. and H. Roberts (2008a) puts a realistic review (or realist synthesis) in words: *"Approach to reviewing studies which involves synthesizing individual studies with a view to producing generalizable theories (rather than synthesizing outcomes across studies (as systematic reviews do)".* A realistic review serves as an iterative methodology to analyse complex chains of results by processing relevant literature (Rycroft-Malone, J., B. McCormack, A. M. Hutchinson, K. DeCorby, T. K. Bucknall, B. Kent, A. Schultz, E. Snelgrove-Clarke, C. B. Stetler, M. Titler, L. Wallin and V. Wilson, 2012). Additionally, realistic reviews revolve around triangulation, the ability to use different methods and multiple types of evidence in order to explain the underlying mechanisms behind the problem (Rycroft-Malone J., B. McCormack., K. DeCorby and A. Hutchinson, 2010), providing validity and reliability (Becker, S., A. Bryman and H. Ferguson, 2012).

2.2 Literature Screening Process

The process of a realistic review takes a long time (Allen, I. and I. Olkin, 1999), demanding for a planned screening process in order to handpick relevant literature (Rycroft-Malone, J. et al., 2012). Screening literature with specific inclusion criteria is of utmost importance, and every step of the review requires yet another evaluation of the process. For starters, taking the date of publishing into account is of top priority (Cohen, L., L. Manion, and K. Morrison, 2011;

Merriam, S. B., 2009), and for this report, the preoccupation of such matter is directed towards data concerning concepts which moves with the dynamics of time. However, proven and generally accepted theories date back to emergence, thus citing their original sources. Furthermore, stringency throughout the process of data analysis is quintessential to the validity, screening for connections between the problem and the interventions. By double referencing, when necessary, statement of facts, conclusions and theories from peer-reviewed articles published on public databases and by policymakers, the screening process becomes more reliable. Henceforth, articles with similar quantitative tests reaching the same conclusion, but with a difference in samples, is seen throughout the report, proving reliability. Additionally, commencing own observations based on valid literature, using secondary data derived from sources of origin, give them both validity and reliability.

2.3 Research Process

The review process consists of stages, and each stage includes actions and activities (Petticrew, M. and H. Roberts, 2008a). The first stage of the process aims to define the scope of the study. The object of this stage is identifying the background to, and the actual problem, hence previous research suggests further studies in the area of choice. The suggestions of further behavioural research by Hui, E. C. M. et al., 2018; Liu, M., 2017; Ma, X., 1996; Wang, W., 2020 had to be specified and narrowed down; the behaviour of *whom*? Previously stated in *Chapter 1.2 Problem Discussion*, neoclassic theories imply equilibrium between dual-listed companies, and since there is an apparent price disparity between the A and H-shares of dual-listed companies (Hui, E., C. M. K. Kwan and K. Chan, 2018; Mohib, R. et al., 2019), the differences have to be created by irrationality among agents in the market. The mainland market (A-shares) is the driving force of price discovery among the two markets (Chan, M. K. and S. S. Kwok, 2016; Wang, W., 2020; Eun, C. S. and S. Sabherwal, 2003; Frijns, B., A. Gilbert and A. Tourani-Rad, 2010; Lieberman, O., U. Ben-Zion, and S. Hauser, 1999; Pascual, R., B. Pascual-Fuster, and F. Climent, 2006) therefore the composition of the markets' agents had to be explored in order to answer: the behaviour of *whom*?

An inductive approach seemed most fitting for answering, or rather finding a conclusion to, in methodological terms, the question above. The inductive approach involved qualitative observations, from secondary sources, to evaluate the composition of agents in the mainland market and their influence on the price discovery of A-shares in dual-listed companies (seen in *Chapter 3.4.1 Market Share)*. In conclusion, retail investors are the chief influencers of the

price discovery, with *Chapter 3.4.2 GDP, Disposable Income and Financial Savings* aiming to support the conclusion with detailed data of China's rapid growth in GDP, disposable income and financial savings.

The behaviour of retail investors is showing to be an intricate matter which requires a base of knowledge in order to be able to search for adequate information, constructing a groundwork of the preeminent behavioural traits among retail investors is therefore required. In an inductive nature, a collection of qualitative observations, derived from secondary sources, took place, forming a structure of behavioural biases seen among retail investors (seen in *Chapter 3.5 Retail Investor Behaviour)*.

The results from the inductive studies presented two theories, establishing a platform for deductive research. First, the theory of retail investors being the driving force behind the price discovery in the mainland A-share stock markets, and second, the theory of behavioural biases being applicable to the retail investors. The second theory need answering before a test of the first is possible. A deductive model craves a hypothesis in order to test the theories mentioned, implying the need for the following hypothesis: *The behavioural biases among retail investors can apply to the retail investors of the mainland A-share stock markets*. Conducting a qualitative hand search of secondary data sources, with the behavioural biases as the primary inclusion criteria, produced evidence favouring the hypothesis and thus supported the behavioural biases theory among retail investors.

During the research of the behavioural biases, retail investor's financial knowledge plays a significant part in their behaviour, thus researching China's retail investors became imminent. Therefore, conducting a qualitative inductive review, via secondary sources, the financial knowledge of Chinese retail investors seemed fit, which evidently produced the theory of subpar financial knowledge among Chinese retail investors increase irrationality and therefore amplify their influence on the price discovery (review of literature seen in *Chapter 3.4.4 Financial Knowledge among Chinese Retail Investors*). Also, using an interview of retail investors in China, conducted by Huang, X. (2015) seen in *Chapter 2.8 Interview with Chinese retail investors)* to even further triangulate the conclusions from studies regarding biases among Chinese retail investors, the findings are reinforced with even further documentation, to present evidence on a more personal level and create validity.

Henceforth, exposure of reliable connection between biases and market movements created the willingness to find ways to concretize these connections onto the mainland A-share markets of China. Hence, the focus switched to the Hang Seng AH Premium Index, since the index has been used by researchers to indicate the present price disparity between the A-shares and H-shares in dual-listed A+H companies (Hui, E. C. M. et al., 2018; Mohib, R. et al., 2019).

Findings of stringency between a sudden rise in premium and retail investor behaviour introduce a new area of research for the study, *market-opening policies*. Previous research state that the market-opening policies should lead to a more efficient market (Fan, J. P. H. and R. Morck, 2013), thus reducing the disparity seen in the AH premium (Chan, M. K. and S. S. Kwok, 2016; Mohib, R. et al., 2019). Looking at the index today, this has not been the case, and the demi-regular pattern seen at the implementation of each market-opening policy creates an opportunity for a closer look on the causal relationship between price disparity and market-opening policies. Defining market-opening policies as interventions, and treating them accordingly, makes them serve as an empirical link (Rycroft-Malone, J. et al., 2012) between the price disparity and price discovery. Market-opening policies are explained in *Chapter 3.6 Market-Opening Policies.*

Presenting the stringency between market-opening policies and behaviour requires mapping of causality. Hence, approaching the issue inductively, using quantitative, secondary sources for analysis seems fit. Creating historic volatility indexes and compiling turnover volume diagrams supports an adequate illustration of such causality. The timeframe of market-opening policies is explained in *Chapter 2.4 Periods of Interventions,* and the approach is explained in *Chapter 2.6 Historical Volatility* and *Chapter 2.7 Turnover: Volume*.

While inductively exploring the causality between market-opening policies and the AH premium, a theory regarding bank deposit rates came to life. Subsequently, deductively reviewing the matter, in a qualitative way using secondary sources, made clear sense, thus in *Chapter 3.4.3 Deposit Rates and Financial Stability* the review of evidence is presented. Furthermore, during research of the causality mentioned, a connection between market-specific constraints and retail investor behaviour became eminent, thus making room for an deductive review of the connection was established, using secondary, qualitative sources. An explanation

to the constraints is seen in *Chapter 3.2 Market Specific Constraints* and the matter is review in *Chapter 3.5.8 Market Constraints Effect on Behaviour and Sentiment.*

The observations of data regarding the interventions provided discoveries requiring analysis, therefore discussing the findings is crucial. The analysis, taking the form of a critical discussion, aims to scrutinize the mechanisms behind the demi-regularities (interventions) and reach a theory of how the behavioural biases among retail investors in China affect the price discovery in dual-listed A+H share companies via the Chinese A-share markets.

2.4 Periods of Interventions

In order to give the reader a better understanding of why the market-opening policies mentioned are of significant value for this study, statements from previous studies which indicate the influence the policies have on the market will here fore be discussed.

To begin with the first policy chronologically, the CSSS. As *Chapter 3.6.1 indicates*, the implementation of the split-share structure reform took place April 2005 and was divided in two periods, the one year delay until being able to float the non-floating shares and thereafter sell up to 10% of stock in the next 24 month period, thus the shares are not being fully unloaded on the market until 36 months post-implementation. Therefore, the Historical Volatility (*Figure 3-5),* AH premium graph (*Figure 2*) and Turnover Volume *(Figure 6)* regarding CSSS will be showing results from 3rd of April 2006 (when the first shares started floating the market) until 1st of January 2009 (approximately one month post the 24-month 10% lock-up period). First of January is used because the process of conversion takes time, all companies did not convert their shares on the exact date of April 2005 (Beltratti, A. et al., 2016; Fang, L. et al., 2013).

Next policy, the QFII and RQFII will be discussed. According to C. X. Cai (2011), states that QFII is of importance to the cointegration of A and H-shares and has an impact on the price discovery process, also Yao, S. et al. (2018) states the positive effects QFII and RQFII has on market integration. *Chapter 3.6.2* show the date of implementation, 24th of August 2006 and thus this date will be used as starting point in High Volatility (*Figure 8-10*) and AH premium graph (*Figure 7*) with an ending point one day prior to the start of RQFII (31st of July 2011), the Turnover Volume diagram (*Figure 11*) on the other hand, will start 1st of August 2006 and end 1st of August 2011.

RQFII has a similar impact on the market. The start of RQFII in Historical Volatility (*Figure 13-15*) and AH premium graph (*Figure 12*) is 1st of August 2011 and ending one working day prior to the start of SHSC (14th of November 2014). The Shanghai and Shenzhen stock exchange Turnover Volume diagram (*Figure 16*), on the other hand, will start 1st of August 2011 and end 1st of November 2014.

SHSC is a major policy having a significant impact on the markets. According to Chan, M. K. and S. S. Kwok (2016) the SHSC integrated the markets and was supposedly a policy of which the disparity of A+H shares should narrow closer to an equilibrium. As mentioned above, SHSC starts 17th of November 2014 and is therefore the starting point in Historical Volatility (*Figure 18-20*) and AH premium graph (*Figure 17)* with an ending point April 30th 2020, the Turnover Volume diagram *(Figure 21),* on the other hand, will start 1st of November 2014 and end 1st of April 2020.

2.6 Historical Volatility

The historical volatility is a commonly used tool to estimate historical volatility by using the standard deviation of historical variations in the pricing of assets, hence the "Historic Volatility Indexes" (*Figure 3-5, 8-10, 13-15 and 18-20)* are created using the equation below.

$$HV_t = \sqrt{n^{-1} \sum_{i=t}^{t+n} (r_t - \bar{r})^2}$$

n is the size of the window

r is log-price first difference,

$\bar{r}$ is the average of historical volatility over the window.

The Historical Volatility is computed as the sample variance log returns in a window of days. This is used to see the volatility or risk of the share prices in the market which can be related to behaviour. The share prices are closing prices of Hang Seng Index (Hong Kong)*,* Shanghai Stock Exchange A-Share Index and Shenzhen Stock Exchange A-Share Index. The data is gathered from Capitaliq.com (2020) which in turn mediate information from Hang Seng Indexes*,* Shanghai Stock Exchange and Shenzhen Stock Exchange. The historical volatility is measured in standard deviation (σ).

2.7 Turnover: Volume

Figure 6, 11, 16 and *21* show the turnover volume (in million shares) of Shanghai Stock Exchange A-Share Index (Red Graph) and Shenzhen Stock Exchange A-Share Index (Blue Graph). The data is given on a monthly basis; therefore, the periods of interventions are adjusted to the first date of the month for each diagram. The data is derived from Ceicdata.com (2020) which in turn mediate information from Hang Seng Indexes and Shanghai stock exchange. The turnover volume is used as an indication of stock market trading activity which can be related to behaviour.

2.8 Market Capitalization SSE & SZSE

In order to illustrate the tremendous growth of the Chinese capital markets during the periods of interest, data regarding the market capitalization of the SSE and SZSE was gathered. The data was gathered from Ceicdata.com (2020), which in turn is derived from the official data from the Shanghai Stock Exchange and Shenzhen Stock Exchange, and of which shows the compound market capitalization of the two markets in RMB with a monthly frequency. The data is shown for total market capitalization from the period 2007-04-01 to 2020-04-01 (since no data prior was available) (*Figure 1)* which also includes the market capitalization growth rate.

2.9 Interview with Chinese Retail Investors

An interview with an "loose snowball approach" conducted by Huang, X. (2015) include 40 experienced retail investors, with over 10 years of investing in stocks, from two cities of mainland China, Shenzhen and Haikou. The interview was used to see if such behaviours were eminent among retail investors, and to validate the findings of financial behaviour in mainland China. The interview is conducted through a doctor's degree report and approved by the Arizona State University's dissertation committee. The committee consists of three candidates: Professor Marjorie S. Zatz, Professor Gray Cavender, and Dr. Ning Wang. Occupations as Vice Provost and Graduate Dean while being a Professor of Sociology at the University of California (Merced), and at the same time possess almost 3000 citations, Zatz is a seemingly reliable source of supervision. Also, receiving awards as "Top 35 Women in Higher Education 2019" and "2019 American Society of Criminology, Fellow" does not delimit her reliability. Furthermore, Cavender is a Professor in Emeritus at the School of Justice and Social Inquiry at Arizona State University, also, Wang occupy the role of an assistant professor at the College of Liberal Arts and Sciences at Arizona State University, being sources of high reliability.

Huang, X. (2015) state in the interview that it is not representative for the population of retail traders, it is more of a provider of reflections from actual investors and their views on the stock market, its regulation and investor protection. The interview is briefly referred to in the result section and is widely referred to (*in italics*) in the *Chapter 3.5 Retail Investor Behaviour* section to illustrate the behaviour among Chinese retail investors on a personal level.

3. Literature Review

Statements from interviewees of Huang, X. (2015) interview will be written in *italics* at the end of the chapters which process the specific behaviour of the interviewees.

3.1 China's Equity Markets

The equity markets of mainland China were established in the early 1990s and constitute of two exchanges, the Shanghai Stock Exchange (SSE), and the Shenzhen Stock Exchange (SZSE). The equities of dual-listed A+H companies are split into two different types of shares, A-shares and H-shares, and both types of shares entitle the holder the same dividend and voting rights. A-shares are denominated in Renminbi (RMB) and trade in the SSE or the SZSE, while H-shares are denominated in Hong Kong Dollar (HKD) and trade in the Hong Kong Stock Exchange (HKSE). (Gu, A. Y. and C. Yang, 2007; Yan, H., 2015; Zhen, Y., 2013a; Zheng, Y. et al., 2018).

According to World Bank (2020c), mainland markets tends to have a significantly higher level of turnover and low levels of free-float, and the H-share market has had a low amount of free-float and low turnover. Also, according to De Jonge, A. (2008), H-shares are in a more frequent manner held by institutional investors which trading tendencies are more tilted towards movements of the market, rather than company-specific, hence creating a stability in the prices of H-shares.

3.2 Market Specific Constraints

There are apparent differences in the system and industry maturity of the different exchanges, according to Gu, A. Y. and C. Yang (2007), CSRC implemented a short-selling ban on the SSE and SZSE at the end of 2006. However, in 2010, SSE and SZSE allowed short-selling of qualified stocks with a specified size, liquidity and volatility for qualified investors whose total account balance exceeds RMB 500 thousand (Deng, X. and L. Gao, 2018; Ni, X. and D. Yin, 2020). The cost of short-selling in the SSE and SZSE is high, and brokers charge amounts up to 9% of the shares worth in lending fees (Deng, X. and L. Gao, 2018). The HKSE, on the other hand, does allow investors to sell short on a limited list of qualified stocks (HKEx, 2020a; Gu, A. Y. and C. Yang, 2007).

Additionally, between the year 2013 to 2015, authorities implemented easing rules for retail investors, including higher-margin and allowing them to open multiple trading accounts, raising

the number of new open trading accounts per week from less than 200 thousand in January 2014 to over 3 million in April in 2015 (International Monetary Fund, 2015). Nonetheless, margin-traders are only eligible for such activities if they possess accounts with a value exceeding 500 thousand RMB (Deng, X. and L. Gao, 2018). Another applied market restriction is the T+1 trading rule which the Chinese government implemented to both SSE and SZSE when the stock exchanges opened, and this trading rule stops day trades, and buyers are not allowed to sell the shares bought on the same day (Qiao, K. and L. Dam, 2020).

3.3 Origin of the A+H Companies

The origin of dual-listed A+H companies dates back to 1992, at this time the authorities of mainland China granted permission for mainland companies to list H-shares in the Hong Kong stock exchange (HKSE) (He, D., 2008). The objective, in addition to capital raising, was to improve the SOE's corporate governance and management standards and to fulfil international practices through global exposure. Consequently, the new H-share regime, which supplemented mainland regulations with further requirements regarding the audit, accounting, and investor protection, was born (HKEx, 2013). In 2014, the SSE and HKSE had a total of 68 dual-listed A+H companies. At the time, the companies A-shares formed 50% of the SSE's total market capitalisation, and the H-shares represented 18% of the HKSE market capitalisation (Chan, M. K. and S. S. Kwok, 2016). Carpenter, J. N. et al., (2020) conclude a significant correlation between the dual-listed companies and their corresponding indices. During the period from the year 2002 to the year 2016, the correlation of A-shares amounts to 82% when compared to the whole A share index, and H shares show a 99.6% correlation to the whole H index.

3.4 The Agents of China's Stock Markets

3.4.1 Retail Investor Market Share

Retail investors dominate the Chinese A-share market, in 2012 approximately 86,5% of the total stock investors were retail investors with an invested sum of under 100,000 RMB (Zhen, Y., 2013b), and by the end of 2016, the same type of investor accounted for 72% (Min, Z. et al., 2020). The investor account growth constituted approximately 87% retail investors, according to China's Securities Regulatory Commission (CSRC) (2018). CSRC (2013) states that retail investors accounted for approximately 81% of the total trading volume.

3.4.2 Growth of GDP, Income and Savings

China has, in the last decades, seen considerable economic growth with an average growth rate of around 9% from 1992 to 2020, and in 2018, China became the world's second-largest economy behind the United States, with a gross domestic product (GDP) of 13,6 trillion USD in 2018 (World Bank, 2020a). The number of listed companies has grown from 14 in 1991 to 3825 as of mars 2020 (Ceicdata, 2020a). According to the World Bank (2020b) Hong Kong's average annual GDP growth rate was approximately 3,7% between the year 1992 and 2018. Disposable income per capita annually in China has increased from 8 533 Yuan in the year 2000 to almost 46 000 Yuan in 2016 (Statisa, 2020). In Hong Kong, disposable income per capita has increased annually from approximately 325 thousand HKD in the year 2000 to approximately 605 thousand HKD in 2016 (Ceicdata, 2020b).

China has one of the highest national savings rates in the world with a remarkable household savings rate. The household saving rate was on an upward trend until its peak in 2010 at 25 percentage points of the total 51,7% gross domestic savings of GDP, the global average, on the other hand, has been declining during recent years. The percentage of household saving, which in the year 2016 amounted to 23 percentage points of total GDP, was at that time 15 percentage points above the global average. (Zhang, L., R. Brooks, D. Ding, H. Ding, H. He, J. Lu and R. Mano, 2018).

3.4.3 Deposit Rates and Financial Stability

Due to historically low deposit rates more capital moves towards stocks, this macroeconomic imbalance has led mainland investors to seek returns in the stock market (He, D., 2008; Dam, K. W., 2007). The interview by Huang, X. (2015) discover the unwillingness of Chinese retail investors to deposit money in the banks, because of unstable conditions connected with their bank account savings. Hence, the willingness to invest their money instead, also stating that trading in the stock market is a convenient method for investment activities.

He said it is common for Chinese people to deposit money in banks, but the generation born in the 1980s or 1990s has less inclination to save, preferring to do more investments. He also thought they were not fully comfortable placing their money in banks since things changed too much in this era, e.g., currency devaluation, possible political instability, and unexpected factors.

3.4.4 Financial Knowledge

Simon, H. (1956 and 1982) states that agents are bounded rational due to incomplete information and lack of knowledge. Noctor, M., S. Stoney and R. Stradling (1992) define financial literacy as the ability to make informed evaluations and effective decisions when it comes to using and managing money. Barber, B. M. and T. Odean (2013) state that retail investor often has inadequate financial knowledge and are not able to evaluate financial information efficiently. Also, less financially knowledgeable investors tend to hold, on average, a less diversified portfolio (Kimball, M. and T. Shumway, 2010), and more frequently act in a more risk-filled and costly way (Asaad, C. T., 2015). Van Rooij, M., A. Lusardi and R. Alessie (2011) finds a correlation between a low level of financial literacy and tendency to participate in the stock market. Additionally, they find that people with less knowledge about bonds and stocks often participate less in the stock market. Furthermore, Lusardi, A and O.S. Mitchell (2011) map the financial illiteracy in the world and conclude it as a widespread phenomenon, particularly low is the knowledge about the stock market. On the other hand, according to Calvet, L. E., J. Y. Campbell and P. Sodini (2009), investors who are well educated and has a higher degree of financial knowledge are not as likely to be as biased or irrational in their investment behaviour as non-educated investors. Empirical evidence confirming the theory of a link between financial knowledge and responsible financial behaviour is proven by Chen, H and R.P. Volpe. 1998; Lusardi, A and O.S. Mitchell. 2007; Robb, C.A and A.S. Woodyard. 2011; Agarwal, S., G. Amromin, I. Ben-David, S. Chomsisengphet and D.D. Evanoff, 2015, among many.

According to Klapper, L., A. Lusardi and P. van Oudheusden (2015), 72% of retail investors in China have no financial knowledge. Hanab, X. and Y. Lic (2017) explains the Chinese stock market as a market crowded with young and inexperienced retail investors; above 40% of the accounts belong to individuals in the age of 40 and below, and fewer than 20% of total retail investors have a degree exceeding undergraduate. However, according to a survey by Lan, Q., Q. Xiong, L. He and C. Ma (2018), investors who are under the age of 25 constitute approximately 19,5%, and investors in the age between 25-40 constitute approximately 68%. Additionally, under 8% of the survey participants have over 15 years of schooling. Furthermore, approximately 71% has less than 5 years of investing experience and approximately 75% has an income of less than 8000 RMB, according to the survey. In a study by Feng, X., M. Zhou and K. C. Chan (2014), the authors claim the financial knowledge of retail investors in China to be limited. Wang, X. L., K. Shi and H. X. Fan (2006) also states that Chinese retail investors

have a limited understanding of risk. The interviewees of Huang, X's interview (2015) state that their knowledge of the stock market is limited and basic, moreover, only 10% of the respondents make own analyses before making a stock investment.

Among the interviewees, 90% said they have limited knowledge about the stock market.

3.5 Retail Investor Behaviour
3.5.1 Introduction
Asset-pricing models assume complete rationality, and in contrary to such models, behavioural economics claim irrationality among investors, especially retail investors. Additionally, stating random fluctuations, the efficient market hypothesis claim inability for arbitrage in the long-term (Fama, E., 1965), however, as a significant fluctuation in either direction is initiated by events, a sentiment is created. Furthermore, retail investors are prone to be affected by their surroundings and emotions, which, in turn, create biased behaviour. For example, retail investors commonly hold narrow portfolios, trade frequently and speculatively and are often less informed (Constantinides, G. M., M. Harris and R. M. Stulz, 2013).

3.5.2 Sensation seeking, gambling and speculation
Evidence suggests a link between gambling and sensation-seeking behaviour among investors (Gupta, R., J. L. Derevensky and S. Ellenbogen, 2006; Barrault, S. and I. Varescon., 2013; McDaniel, S. and M. Zuckerman, 2003; Powell, J., K. Hardoon, J. L. Derevensky and R. Gupta, 1999). Sensation seeking behaviour is an attribute defined by Zuckerman, M. (1979) as "A trait defined by the seeking of varied, novel, complex, and intensive sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience". Dorn, D. and P. Sengmueller (2009); Sulphey, M. M. (2014) claims that trading in stocks can appeal to individual investors as entertainment, and investors who are categorised as sensation seekers are more likely to endeavour in such activities. Sulphey, M. M. (2014) continues explaining the source of stimulation for the sensation-seeking investor; risk. Studying investor behaviour, Dorn, D. and P. Sengmueller (2009) identify four groups of investors; people who enjoy (1) investing, (2) gambling, (3) risk propositions, and has (4) a stronger attraction to betting activity when the stakes increase, the authors conclude a higher likelihood of trading activity among such investors. Grinblatt, M., and M. Keloharju (2009) states that trading behaviour is related to both overconfident individuals and individuals seeking sensation, Abreu, M. and V. Mendes (2012) also confirms higher trading frequency among overconfident investors. According to Kumar, A (2009) individual (retail) investors prefer lottery-like stocks

which have a history of idiosyncratic skewness and volatility since it gives investors the belief of having a chance of hitting the jackpot, i.e. get a positively skewed return.

To understand the fundamental structure of human behaviour, one must incorporate culture. Culture is a structure of behaviours transmitted to the individual by the behaviour of others, thus adapting to the anthropological structures of the community (Glenn, S. S., 2004; Smith, E. A., 2017). Social gambling has throughout history been a cultural phenomenon within Chinese communities and is seen as a form of entertainment (Looa, J. M. Y., N. Rayluab, T. Po and S. Oeia, 2008; Guo, S. and M. Xiao, 1995). Casino and gambling activities are, according to Huang, X's (2015) interviewees, idolised in China's contemporary popular culture, although gambling in China is illegal (Tijie, C., 2010). Problem gambling has been documented as a common occurrence in Chinese communities, and the problem seems to be increasing (Looa, J. M. Y. et al., 2008). The stock market is frequently referred to as a casino (Huang, X., 2015; Wu, J. 2004).

The Chinese are reliant on luck in their gambling (Huang, X., 2015), and according to Law, P. (2010), Chinese individuals believe luck increase their chance of success in business, hence when luck is on their side, Chinese individuals are more motivated to gamble, and, according to Chandra, A. and R. Kumar, (2012); Kumar, A. (2009), the retail investors who are prone to gambling frequently rely on luck when trading stocks. This behaviour is also seen in Huang, X's interview (2015), where Chinese retail investors see luck as a way of winning big in the stock market. When researching the Chinese stock market for irrational pricing, Yao, S., C. Wang, X. Cui and Z. Fang (2019) find idiosyncratic skewness in relation to returns and suggesting a correlation between retail investors attention and gambling in the stock market. Nartea, G. V., D. Kong and J. Wu (2017) claims that Chinese investors tend to be seeking risk in their stock investments, this behaviour is driven by their preference, which is buying stocks with lottery-like characteristics. Ma, X. (1996); Wang, X. L. et al. (2006) states that Chinese investors are speculative, which is confirmed by Chinese retail investor interviewees (Huang, X., 2015). Ma, X. (1996) continues to argue that such investors accept a higher level of risk.

All the interviewees admitted that when they began frying stocks, they felt it exciting as an enrichment of life.

3.5.3 Attention grabbing

Working on behaviour related to the mediation of information, Krauss, A. and H. R. Stoll (1972) created two hypotheses regarding the phenomenon. In short, creating a hypothesis which suggests price adjustment concerning the publication of recommendations among analysts and their clients with financial knowledge is not sufficient to set a price accordingly, and a hypothesis which involves price adjustment created by investors with limited financial knowledge and experience who are not able to act rationally on new information. However, creating a third hypothesis called Attention-Grabbing Hypothesis, Barber, B. M. and T. Odean (2008) research attention among retail investors with limited financial knowledge and experience. However, by classing stocks with abnormal trading volume, return and news events as attention-grabbing, the authors claim such investors are net buyers of attention-grabbing stocks. According to Easley, D., N. M. Kiefer, M. O'Hara and J. B. Paperman (1996), informed trading, i.e. the buying and selling of stocks by investors who are well informed and financially educated, has a lower probability of occurring in high volume stocks since investors with limited financial knowledge are more likely to rush to these type of stocks.

Investing as a result of the behavioural bias created by stocks categorised as attention-grabbing is shown among Chinese retail investors (Kishan, K. and E. Alfan, 2018; Ying, Q., D. Kong and D. Luo, 2015), and according to Li, Z., Y. Shi, W. Chen and M. Kargbo (2014), less knowledgeable and less wealthy retail investors more often invest in attention-grabbing stocks. Using Weibo Index as the proxy for investor attention, Minghua, D., X. Xiong, X. Li, and D. Shen. (2018) utilise the return, trading volume, and intraday volatility to investigate the relation between the stock market and investor attention, concluding the existence of a correlation between investor attention and stock market performance. Ying, Q. et al. (2015) use Baidu.com (Chinas largest search engine) search frequency to measure investor attention, finding evidence stating significant positive correlation between investor attention and stock returns, within one week from the attention in China's stock markets. Additionally, their study found higher institutional ownership weaken the effects investor attention have on the stocks return.

Oversubscriptions of IPOs has been an indicator of the initial rise of the stock price post-IPO which has also been reflected in the Chinese A-market (Derrien, F., 2005), where the initial return is, on average, above 100 % (Chan, K., J. Wang and K. J. Wei, 2004; Ting, Y., Y. K. Tse, 2006). According to Aggarwal, R. (2003), developed markets have around 60% to 90 % of IPO shares distributed to institutional investors. Furthermore, institutional investors only

obtain approximately 15% of the share count from IPOs because of high barriers, the rest is distributed to retail investors via a raffle-like system (Geertsema, P., H. Lu., 2018).

Reviewing accounts records from the Shanghai Stock Exchange, Seasholes, M. S. and G. Wu (2007) discovered buy-sell imbalances for individual investors when stocks hit the limit up function. Moreover, when reaching the limit up function, the attention of investors is drawn to such event, and investors who have not previously owned stocks have a higher likelihood of investing during these events.

3.5.4 Disposition effect

Another fundamental trait in retail investor irrationality is their habit of selling stocks showing returns and holding the stocks which are decreasing in value, in other words, selling the winners and holding on to the losers, this is known as the disposition effect (Shefrin, H. and M. Statman, 1985). Barber, B. M. and T. Odean (2011); Frydman, C., C. Camerer, N. Barberis, P. Bossaerts and A. Rangel (2014) have researched this phenomenon more recently, concluding the disposition effect still widely present among retail investors. Afi, H. (2017) find a significant negative correlation between the disposition effect and returns, trading volume, turnover and volatility when researching NYSE and NASDAQ between 2006 and 2015, indicating the effect of the disposition bias among investors led to reduced liquidity in stocks. Furthermore, studying developed and emerging markets, Wen, F., Z. He, Z. Dai and X. Gong (2012) also find a negative correlation between return and price volatility. On the other hand, when investors suffer a loss, the authors discover an increase in trading activity which has a positive effect on volatility, questioning the previous study by Afi, H. (2017). According to Dhar, R. and N. Zhu (2006), the group of retail investors who show the most significant traits of the disposition effect has low income and nonprofessional occupations. Later research by Jonsson, S., I.L. Soderberg and M. Wilhelmsson (2017) also conclude that financial literacy generally affects disposition bias.

A government employee discloses, staying in the stock market when losing money, hoping to win it back, another employee defines Chines stockholders as being in the market just for short-term speculation.

3.5.5 Home Bias

Retail investors tend to focus their investment portfolios to an area close to home, not reaching satisfactory diversification, the phenomenon is called "Home bias" (Kenneth R. F., M.P. James, 1991, Lindblom, T. et al., 2017c). Lindblom, T. et al. (2017c); Seasholes, M. S. and N. Zhu (2010) state that investors apt to overinvest in stocks of companies located in close proximity. According to Cooper, I., and E. Kaplanis, 1994; Ivkovic, Z., and S. Weisbenner, 2005; Massa, M., and A. Simonov, 2006, investors prefer local and well-known stocks. Furthermore, Lindblom, T., T. Mavruk and S. Sjögren (2018) suggests that retail investors living in urban areas are prone to be home biased. Goetzmann, W., and A. Kumar (2008); Anderson, A (2008) discovers a lower level of diversification among younger investors with low-income and a lower level of education. Also, these investors, on average, systematically hold portfolios of stocks that have the same characteristics and are highly volatile. Campbell, J.Y. (2006) states that less educated and less wealthy households tend to hold under-diversified portfolios. Chniguir, M., M-K. Kefi and J-E. Henchiri. (2017) find that home bias exists on a sample of 20 countries. Their result indicates that developed markets offer better opportunities for investors to diversify their portfolios towards other countries. Also, the amount of foreign companies listed on the domestic market seems to increase the investors level of international diversification.

Bai, Y., W. M. Tang and K. F. C. Yiu (2019) confirms the existence of home bias in mainland China, stating that A-shares are the preferred investment among domestic investors due to A-shares characteristics. Feng, L. and M. S. Seasholes (2004) break down groups of investors geographically and discover that Chinese investors tend to invest in stocks closer to their household. Yuqin, H., Q. Huiyan and W. Zhiguo. (2016) study local bias and attention by examining posts by investors on Chinese internet stock message boards and find evidence that local bias in attention exists. The authors find this bias more prevalent in underdeveloped regions.

The law of one price assumes "all information is available at the same time to all investors", however, asset pricing, in reality, suffers from asymmetric information to some degree (Falahati, K., 2019) Lindblom, T. et al. (2017a) states that investing in close proximity can be rational due to the information asymmetry created by separation. Chakravarty, S., A. Sarkar and L. Wu (1998) claims the occurrence of information asymmetry for foreign investors in China are due to differences in accounting law, language barriers and shortage of adequate

information regarding the local economy. According to Chan, K., A.J. Menkveld and Z. Yang. (2008); Chakravarty, S., A. Sarkar and L. Wu (1998), mainland investors are on the advantaged side of information asymmetry because they are better informed, having the linguistic, cultural and regulatory resources. Chui, A.C.W. and CCY. Kwok. (1998); Grinblatt, M and M. Keloharju. (2000), on the other hand, contradicts the advantages of domestic investors claiming foreign investors have an informational advantage because they are more experienced and subject to less information censorship.

3.5.6 Herding Behaviour

Keynes, J. M. (1930, 1936 and 1937) describe social forces affecting behaviour. For example, ambiguity can encourage investors to believe what others believe and to do what others do, also known as "Herding". Herding behaviour is shown to be commonly occurring among retail investors in the stock market (Lindblom, T., T. Mavruk., and S. Sjögren. 2016; Kumar, A. and C. M. C. Lee, 2006), and the behaviour is evident in times of uncertainty (Bikhchandani, S., D. Hirshleifer and I. Welch, 1998). According to Kumar, A. and C. M. C. Lee (2006), variations in stock prices caused by retail investor sentiment increase the likelihood of investment by such investors. Bekiros, S., J. Mouna, L. Brian, N. Kamel and S. U. Gazi (2017) find a positive and significant correlation between herding and market volatility and presents results indicating that irrational agents herd towards market consensus in an asymmetrical manner during times of stress in the market, also, Huang, T-C., B-H. Lin and T-H. Yang. (2015) implies a correlation between herding behaviour and different levels of idiosyncratic volatility. Furthermore, Demarzo, P. M., R. Kaniel, and I. Kremer (2004) claim that herding behaviour leads to portfolios not reaching satisfactory diversification and is also more common in urban areas.

An interviewee office worker portrays, discussing what stocks to buy and sell at the workplace, just like talking about fashions, also getting information from WeChat24 (social media) for information about stocks.

3.5.7 Habituation

Habituation, the simplest form of learning, is non-associative learning in which a natural response to a stimulus decrease as a result of recurring presentations of that stimulus (Bouton, M. E., 2007). Studies imply traits of such behaviour among individual investors. Barber, B. M., T. Odean and M. Strahilevitz (2011) suggest that investors are prone to avert from negative emotions, i.e. stocks sold for a loss, and therefore, due to reinforcement learning, i.e.

habituation, tend to purchase stocks associated with positive emotions, i.e. stocks sold for profit. Individual investors are strongly affected by the outcomes of recent stock trades, according to De, S., N. R. Gondhi, and B. Pochiraju (2010) individual investors trade more when their recent trades are successful. However, the decrease in trading due to recent losses are not as significant. Investors who experience subpar returns during their lifetime affect their eagerness to invest in risky investments and are also more pessimistic regarding stock returns, according to evidence presented by Malmendier, U. and S. Nagel (2011), using data from 1960 to 2007. In conjunction with the previous statement, investor-generations encountering high returns are more likely to invest in risky assets such as stocks. Furthermore, Kaustia, M., and S. Knupfer (2008) discover a robust positive correlation between past IPO returns and future subscriptions among investors.

A state-owned enterprise employee from the interview describes the time of 2006 and 2008, as making money on almost every trade, and continuing trading indicating traits of habituation. This risky market is perfect for sensation-seeking retail investors prone to risky investments.

3.5.8 Market Constraints Effect on Behaviour and Sentiment

Gu, M., W. Kang and B. Xu (2018) argue for the harm the short-selling rule cause the Chinese stock markets regarding efficiency and liquidity. According to Mei, J., J. A. Scheinkman and W. Xiong (2009), when stocks trade in a market where short selling is limited, the marginal investor has an optimistic view on the stock, which gives birth to speculation; the idea of being able to sell the shares at a higher price to an even more optimistic investor shortly. Therefore, heterogeneity in investor beliefs regarding the price of the stock generates more frequent trading, and the consequence is an increase in value due to the marginal optimism; hence resulting in higher prices for stocks with high trading volume. Zhang, L., Y. Li, Z. Huang and X. Chen (2018) has researched the Chinese stock market and confirms Mei et al. hypothesis, showing that an increase in liquidity has a positive correlation with firm value, hence higher liquidity increase the stock price. Moreover, Xiong, W. (2013) also states that trading restrictions are empowering speculation instead of reducing it due to heterogeneity in investor beliefs. On the other hand, if the Chinese stock market's regulatory agencies change the T+1 rule to the T+0 rule (gives the investor rights to buy and sell shares the same day), excessive speculation in the Chinese stock market is a potential risk, according to the regulator's opinion (People's Bank of China, 2014). A study by Chen, X., Y. Liu and T. Zeng (2017) confirms

earlier statements and concludes that the T+1 rule trigger speculation and decrease market efficiency in a liquid market.

According to Shuye, S. and W. L. Jiang (2004), A-share returns are connected to the specific risk and the sentiment of the Shanghai and Shenzhen markets. H-share returns, on the other hand, are connected to the specific risk and sentiment of Hong Kong and act in correlation with the Hong Kong stock market rather than the mainland markets. Bai, Y. et al. (2019) explain that during times of high volatility in the markets, the A-shares are even more volatile than their corresponding H-shares, seemingly because the A-share investors buy and hold their stock for a shorter time, increasing the price of the share in the short term, and therefore the premium increase at periods of high volatility. Chung, T-K. et al. (2013), on the other hand, explains that volatility, or risk, has a negative relation to price disparity. Furthermore, the authors claim the trading volume of A-shares being, on average, considerably lower than the trading volume of the corresponding H-share.

Using open data from Chinese stock trading accounts, Xindan, L and B. Zhang Bing (2008) test the relationships between returns, volatilities and retail investor sentiments. The authors find a positive relationship between sentiment changes and returns, and a negative correlation is found between shifts in sentiment and volatility (increased volatility when investors are bearish and vice-versa). Xu, N. and X. Tang (2018) test the effects societal risk perception have on market volatility from 2012 to 2017, using Baidu index and hot news search as the function to map societal risk perception, they demonstrate causal connections between Baidu trends and societal risk levels. Additionally, a correlation between societal risk and stock market volatility exists, concluding a collective perception of both SSE and SZSE.

3.6 Market-Opening Policies
3.6.1 Chinese Split Share Structure
In the late 1980s, when China became more of a mixed economy rather than a planned economy, a large portion of the SOE's followed the western way of owner's structure through stock holding. At the start, the government controlled the entirety of company stocks and raised capital through issuing stock to "legal persons". Both the shares held by the government and legal persons were non-floating shares, which could not be traded or sold to the public. When the SSE and SZSE opened for the public, other kinds of investors were able to trade floating shares via company IPOs or through issues of rights. The structure of floating and non-floating

shares is referred to as China's Split-Share structure. (Hung, C-H. D., Q. Chen and V. Fang, 2015; Fang, L., J. Wang, and H. Yuan, 2013). Reforming the split-share structure in late April 2005, China implemented the Chinese split share structure (CSSS) (Beltratti, A. et al., 2016; Hung, C-H. D. et al., 2015; Ren, G. and Y. Zhao, 2009). The reform made it possible to convert non-floating shares to floating shares, and vice versa, for compensation, if the company approve the conversion. Furthermore, the transformation from non-floating shares to floating shares is lengthy and involves many steps and governance. Additionally, the process starts with an initial twelve-month period in order to convert the shares, (hence the shares from the split-share structure reform starts floating the market one year post the reform), and after the twelve months, the new shareholder of floating stock will not be able to sell more than 10% of the stock in the next twenty-four-month period (Beltratti, A. et al., 2016; Fang, L. et al., 2013). At the end of 2006, there were only 40 companies left that had not started the conversion process from non-floating to floating shares (Beltratti, A. et al., 2016; Fang, L. et al., 2013). The reform has decreased the amount of non-floating stock from 65% in 1999 to approximately 30% in 2010 (Chia, J. et al., 2014). As of 2008, the amount of stock held by the government of Chinese of publicly traded companies was, on average, 22% while in 1998 the government-owned 41% of the stock and the average amount of non-floating stock in publicly traded Chinese companies amounted more than 50% of the total stock, making the floating shares little less than 50% (Fang, L. et al., 2013).

3.6.2 QFII & RQFII

The Chinese stock market has undergone major market-opening policies in the last decades, two of them focusing on raising foreign capital. Primarily, intending to give larger foreign institutions access to China's debt and equities market, applications to the Qualified Foreign Institutional Investor (QFII) started in 2003 (HKEx, 2020b; Chan, M. K. and S. S. Kwok, 2016). The China Securities Regulatory Commission (CSRC), People's Bank of China (PBC) and State Administration of Foreign Exchange (SAFE) jointly issued new regulations 24th August 2006. The new regulations meant new requirements for applicants wishing to receive their quota, requiring at least 5 billion US dollars in assets under management and been in business for a minimum of five years. The requirements for receiving a QFII-quota were later lowered to 1 billion US dollars as of 29th September 2009 (Liu, N. et al., 2014; Bredin, D. and N. Liu, 2011). Second, Renminbi Qualified Foreign Institutional Investors (RQFII) launched in August 2011, allowing foreign institutional investors to invest in the domestic securities market with

an RMB quota of 20 billion ($3.2 billion) in January 2012, increasing the quota throughout the year, ending at billion 270 RMB ($43.2 billion) (Zhen, Y., 2013c; Bredin, D. and N. Liu, 2011).

### 3.6.3 Shanghai-Hong Kong Stock Connect (SHSC)

The Shanghai-Hong Kong Stock Connect (SHSC) launched on 17th November 2014, a policy to connect SSE with HKSE. SHSC gives all Hong Kong and overseas investors the possibility to trade designated equity securities listed in the SSE. Since the official launch on 17th November 2014, the two markets have been more integrated, and the trading quota has gradually increased (Liu, N. et al., 2014). Furthermore, in contrast to Hong Kong and overseas investors, mainland institutional investors and individual (retail) investors with an aggregate balance of at least 500,000 RMB in their securities and cash accounts can trade Securities through SHSC (HKEx, 2016).

3.7 Why Hang Seng AH Premium Index

According to researchers, a way of interpreting the disparity of dual-listed A+H share companies, the Hang Seng AH Premium Index can be used as illustration. The graph has been used by researchers to indicate the present price disparity between the A-shares and H-shares (Hui, E. C. M. et al., 2018; Mohib, R. et al., 2019). The policies make the market more open and should contribute to market efficiency (Fan, J. P. H. and R. Morck, 2013), stated in the chapter, henceforth, the premium should, theoretically, diminish, or at least decrease, by the implementation or activation of stated market-opening policies (Chan, M. K. and S. S. Kwok, 2016; Mohib, R. et al., 2019). Furthermore, it is important to understand that the market-opening policies do not instantaneously make the market more efficient, it can lead to short-term overvaluation (Wang, X., S. Zhou and W. Fang, 2014), but should in time lead to an equilibrium in the pricing on A+H shares (Chan, M. K. and S. S. Kwok, 2016; Mohib, R. et al., 2019).

3.8 A+H Premium Graph

The black graph in the diagram below (Graph 1) shows the Hang Seng China AH Index: Premium index. The index constituents are based on liquidity, the most liquid dual-listed A+H companies (Hang Seng Indexes, 2017). 100,00 indicate 100%, which in turn means total equilibrium in the pricing. The data behind the graph is obtained from Ceicdata.com, with the original data from Hang Seng Indexes. Furthermore, the markings (squares) are used to indicate relevant market-opening policies that change the dynamics of the market, and they are marked with their acronyms next to the amount of premium on the exact date.

Hang Seng AH premium index
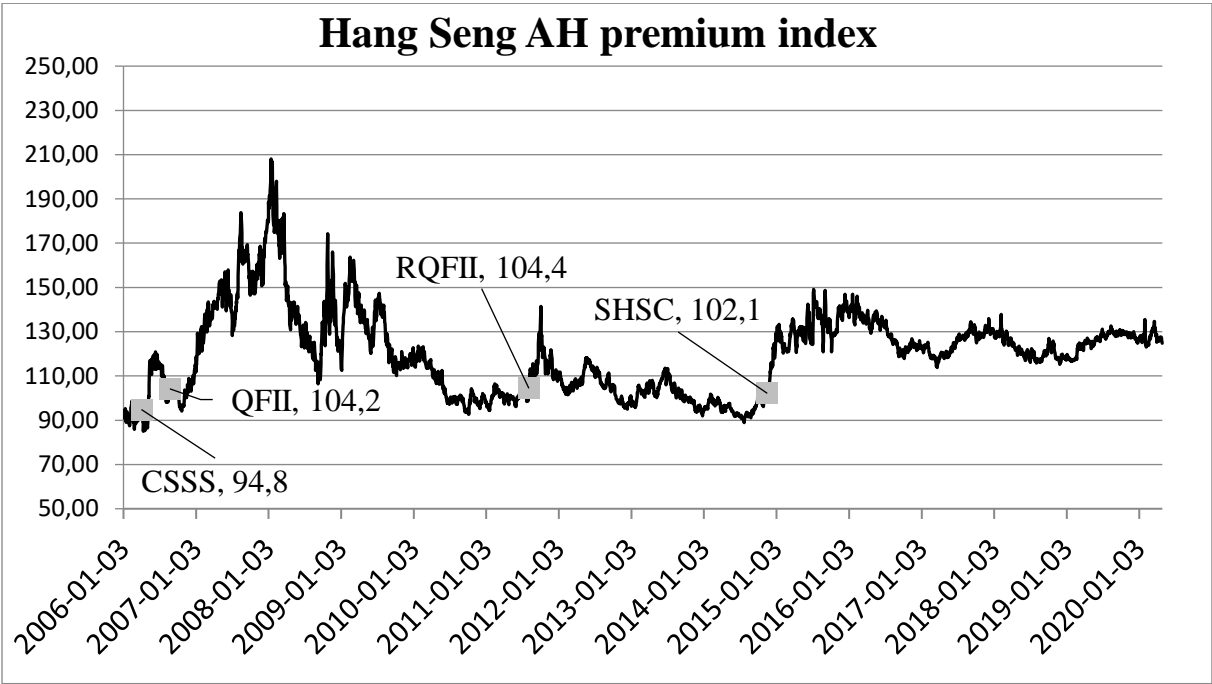
Graph 1. Hang Seng China AH Index: Premium index. (Ceicdata, 2020).

4. Result/Discussion

4.1 Reflections on Behavioural Dynamics of Price Discovery

Emerging-market China has adopted several changing policies which opens the stock markets and making them more in line with liberal, developed markets, although, some constraints are still active. China is the most populous country in the world with the highest gross domestic savings and household savings rate, where the stock markets largest agent is retail investors when compared both globally and with Hong Kong. Since retail investors dominate the Chinese market, their behaviour should play a vital role in the dynamics of the market, and therefore, the price discovery.

Individual investors have a hard time finding stocks to pick, instead of being systematic and rational in their stock picking, they rather choose stocks that catch their attention, this may be due to abnormal movements of the stock price or stocks being presented on the news. Evidence from retail investors in china match studies regarding irrational economic behaviour and are, in some cases, intensified by the market dynamics and the transmission of behaviour rooted in Chinese culture via habituation. The population of retail investors constitutes, to a great extent, of rather low-income, not as highly educated individuals with limited financial knowledge born in the era of high economic growth; these prerequisites indicate certain traits which are reflected in their economic behaviour. Additionally, studies indicate that higher institutional ownership is going to weaken the effects of investor attention, making for a possible future with less biased price discovery in mainland China.

The culture of gambling is a consistent finding throughout the research. It seems like the Chinese population have a higher tendency to gamble and find the stock market as a perfect place to do so. Gambling is in China illegal but investing in stocks is not. Chinese retail investors seem to be gambling when they are feeling lucky, hence investing in the stock market. They also see gambling as entertainment, and the stock market can be their platform of entertainment. Studies also say that Chinese retail investors are speculative and are more frequently subject to higher risk or even seeking risk.

Take the IPOs, for example. The number of shares issued is not enough to fill the demand, which in other words mean the IPOs are subject of oversubscription. The high demand leads to a rise in the price initially which leads to the stock price hitting the limit up function, thus drawing attention. The almost constant and fast return of investment both draws attention but

also make them accustom to the generally high initial IPO return, and investors become habituated to such lottery-like (gambling) events. This kind of "easy money" might also be drawing people into the stock market. In China, the IPOs seemingly reaches the retail investors rather than the institutional, thus fuelling the sensation seeking, speculative retail investors. Furthermore, the high barriers for institutional investors to obtain shares from IPOs is further skewing the composition of agents in the market.

The presence of home bias among retail investors is evident, and the case of in China is no exception. A-shares seems to be the preferred investment among domestic investors due to the characteristics, minimal barriers to invest, and the biases seemingly create relative high volatility and these characteristics among the retail investors of China. The high barriers for the retail investors to invest in other markets such as the HKSE makes the evidence of home bias seem logical. For example, the high barriers of the SHSC count out most of the retail investors of China, hence blocking them from investing in H-shares. Furthermore, urbanisation amplifies the home bias, and China has been an object of a substantial rise in urbanisation through the years of economic growth. The retail investors also hold narrow portfolios, which implies trading activities in shares of a few domestic companies. Furthermore, developed markets, such as HKSE, offer better ways of diversification internationally, indicating a lower degree of home bias in Hong Kong and the trading of H-shares. The theory of information separation seems logical since domestic investors inevitably have an advantage due to information proximity. However, due to censorship, Chinese retail investors are presumably in a disadvantaged position during international macroeconomic events, since observations in the Chinese markets shows a delayed reaction to major macroeconomic events.

Market-specific constraints and rules also play a significant role in the process of price discovery. First, the T+1 rule creates a marginal optimistic view on stock prices. Since retail investors are speculative and prone to disposition-effect behaviour, they sell the shares when they reach satisfactory return to another optimistic speculative investor, thus pushing up the price of the stock. The attention-seeking investor will notice the rise, allocating liquidity to the stock. Because of the restraint of low free-float investors fight over fewer shares, resulting in a further rise in prices when the liquidity increases. The short-selling constraint makes it hard for retail investors to sell short, further contributing to positive sentiment. Herding behaviour in such climate appears to be inevitable. Furthermore, when the investor's liquidity is getting tied up, the stock starts to decline, and due to the disposition effect and enhanced with the short-

selling constraint, the retail investors hold on to the declining stock and the price plunges without the bearing capacity. The habit of acting in a higher degree on positive emotion and averting from negative emotions, together with the disposition effect, can presumably further confirm the biases of investors. However, there seems to be hard to measure the disposition effect in Chinas stock indexes during extended periods. The traits of disposition effect among populations observed internationally suggest such effects is likely to exist in China and can during periods contribute a marginal optimistic sentiment.

The evidence clearly shows that market opening policies are not solely able to integrate the markets efficiently, and thus the prices of A-shares and H-shares are not equilibrium as of yet. High price-fluctuations in a low volume market indicate the retail investor's capability of laying the ground for sentiment, thus significant movements in the market are shaped by the biases of human behaviour and traits of culture, further reinforced with market-specific constraints.

4.2 Behavioural Dynamics of Price Discovery During Own Observations

Furthermore, the periods will be discussed below, with a viewpoint from the conducted observations.

It is important to understand the interconnection between the behavioural biases mentioned in the literature review. One behavioural trait or bias must not lead to another even if this is often the case. Retail investors are affected by their own biases to a certain extent, some being more influenced than others. However, adequate research makes room for a possible way to interpret a causal link between the price disparity created by irrational behaviour among retail investors in the period of the market-opening policies. This is done by trying to sequence the behavioural patterns of retail investors in order to clarify the process of price discovery and the causality for the current price disparity.

The CSSS seems to create a catalyst for stock market attraction among retail investors in mainland China. The attention drawn to the stock market starts a herd of sensation-seeking investors who are prone to invest in volatile stocks created by the sentiment of CSSS. The sentiment itself is created by the idea of more shares floating the market, since if you as a retail investor know money can be made, you will trust your lucky feeling and invest in the stock market. During the period of early June to mid-August, some spikes are seen in the volatility of SSE and SZSE (Figure 3, 4) which is the start of the release of CSSS stocks. During the same

period, the volatility of HKSE (*Figure 5*) is seemingly low; thus, the H-shares illustrate characteristics different from those created by behavioural biases among retail investors, indicating a more rational view on the market-opening policy. On the A-markets the spikes are presumably due to shares switching hands at a higher frequency, and the T+1 rule increases the value of the stocks asymmetrically due to heterogeneity in beliefs. Also, the high liquidity increases the value of firms due to behavioural biases among the Chinese retail investors, and this leads to a spike in the AH premium in the period of early June to early August (*Figure 2*). Looking at the AH premium index and the volatility and turnover volume of SSE and SZSE in late August (*Figure 2-4, 6*), the herd of investors seem to lose interest for the market and are affected by the disposition effect, reflected in low volatility and low turnover.

Furthermore, turnover volume in mainland China saw a rise during the later period of 2006 and through the first half of 2007 (*Figure 6*), and in late 2007 the turnover volume declined to a plateau, reaching a higher state of average turnover volume after the CSSS shares reached the market, although this is likely to have a positive connection to both the CSSS and the QFII scheme.

On 24th August 2006 5 billion, the investment requirement of a single QFII was lowered to 1 billion U.S. dollars as of 29th September 2009, thus, in time, flooding the A-markets with liquidity, increasing the turnover volume (*Figure 11*). Furthermore, in early 2007, retail investors of China seem to catch the attention of the sentiment created by the initial rise in stock prices created by the liquidity of institutional investors using their QFII-quota. Ambiguous beliefs and irrational behaviour is a probable cause to the volatility increase seen in the SSE and the SZSE (*Figure 8, 9*), during the same time the volatility in HKSE is not as apparent (*Figure 10*), suggesting a more rational H-share market. Frequent spikes in volatility are seen throughout the year of 2007 in SSE and SZSE (*Figure 8, 9*), exhibiting market conditions related to irrational, sensation-seeking retail investors. However, the turnover volume decreases after a top in mid-2007 (*Figure 11*), at this time the AH premium still advances from approximately 140% in mid-2007 to more than 200% in early 2008 (*Figure 7*). A probable cause seems to be the institutional investors buying a large number of shares and holding on to the shares while retail investors affected by the disposition effect, fight over a small amount of free-floated shares pushing the price up further with their marginal optimistic sentiment due to their traits of behavioural biases and market constraints.

After lowering the QFII-requirements, the smaller barriers for institutions seems to have less of an effect on the market compared to when the first QFII-quota was established. A possible explanation is the habituation process among retail investors, and since the QFII policy already left its sentiment markings, the investors have become habituated to the current state of the market. Also, there was probably not impactful enough to spark a sentiment since the lowering of barriers were not as ground-breaking as the launch of the initial scheme, in turn not creating enough enthusiasm for the sensation-seeking retail investor army to speculate in the A-share markets. The discouragement among retail investors is seen in the AH premium almost achieving equilibrium at the end of 2008 (*Figure 7*), possibly because the retail investors of the mainland started selling off the "overvalued" A-shares when the financial crisis make the markets budge, thus being a victim of their behavioural biases. Another explanation is simply the disposition effect; retail investors hold on to their overvalued stocks while the institutional investors of Hong Kong, with their higher degree of rationality, sell their stocks in a slower pace, mitigating market decline and thus the H-shares has a higher bearing power, which in turn makes the AH premium come closer to equilibrium. However, in October 2008 the volatility in HKSE spikes (*Figure 10*), this is quite a significant anomaly and is probably due to the Lehman crash and the financial crisis, and because of the sheer size of H-shares being dumped by institutions, the AH premium sees a rise during this period (*Figure 7*). The market reaction from the retail investors is delayed due to information asymmetry and home bias, and therefore the turnover volume (*Figure 11*) starts increasing at the end of 2008/start of 2009, the AH premium once again decrease (*Figure 7*) since the A-share prices trade more towards the lower prices set by the institutions.

Henceforth, after the Lehman crash 2008 (Piontek, T. and A. Metrick, 2014), the world sees a market recovery which grabs the attention of the biased mainland retail investors; thus, the increased demand for A-shares push the AH premium up again, above 160% (*Figure 7*). The period of 2009 is characterised by large movements in the AH premium, further proving evidence of segmentation between the A-market and H-market during times of stress. Mainland shows more volatility than HKSE in 2009 (*Figure 8-10*), which gives fuel to the biases of retail investors behaviour. Later, between 2010 and mid-2011, the volatility in mainland China decreases (*Figure 8, 9*), and retail investors seem to lose interest, the AH premium goes back to equilibrium (*Figure 7*). Additionally, seen in the turnover volume from mid-2009 until August 2011 (*Figure 11*), the market-events, which has increased the attraction to the stock

market among retail investors, seem to have created a new plateau of turnover, indicating habituation among retail investors.

RQFII launched in August 2011 and seemed to have, once again, sparked the interest of foreign institutional investors, starting an upward trend in the market, witnessed in the volatility spikes of HKSE late 2011 (*Figure 15*). The initial volatility, leading to an upward trend, brings attention to the market and starts a positive sentiment which the mainland retail investors catches onto, seen in the AH premium in September 2011 (*Figure 15*). However, the herd of retail investors overreact to the initial rise, thus being victims of their irrational behaviour, the stocks quickly settle after the clear spike in AH premium in October 2011 (*Figure 12*). The sentiment changes in late October and the herd of retail investors start selling, which enables the spike to decline so quickly since the selling of shares would have mitigated the decline by the rise in liquidity, thus the AH premium decrease from 140% to approximately 110% in mid-November (*Figure 12*). Despite evidence showing how an increase in liquidity results increased firm value due to behavioural biases and market constraints, the turnover volume shows a high rise in February 2012 (*Figure 16*), and at this time the AH premium is decreasing (*Figure 12*).

Another explanation to the sudden rise of AH premium in late September is the so-called Black Monday, which took place in August 2011 (Dunnam, Z., 2013). The event caused the investors of Hong Kong to sell their positions in the market; thus the value of H-share plunged, which in turn brought the AH premium quickly up to 140% (*Figure 12*). Hang Seng has a clearer spike in volatility around black Monday (*Figure 15*) compared to the mainland, which shows more noise during most parts of the period (*Figure 13, 14*). The reactions of the retail investors of mainland China are delayed due to the disposition effect and asymmetric information.

The market-opening policy SHSC allows the general investors in Hong Kong to enter the A-market and hence similar effects are seen again. Volatility in the A-market rises (Figure 18, 19), and so does the volume (*Figure 21*) implying that new agents from Hong Kong once again tilt the mainland market sentiment. The mainland Chinese investors have barriers of aggregate balance of at least 500,000 RMB in their securities and cash accounts, unattainable for most retail investors preventing them from taking part. The large movements and the nature of retail investors cause the AH premium to rise above 120 (*Figure 17*). Still, the increasing amount of retail investors are hard to accommodate when liberal functions as allowing more accounts and margin enter the market A-markets soar (*Figure 17*) Market Crash In the mainland June 2015

(Zeng, F., W. Huang and J. Hueng., 2016) sees high volatility (*Figure 18, 19*) and volumes (*Figure 21*). The AH premium sees large movements between 120% and 150% (*Figure 17*); during this period, the Hong Kong investors follow the mainland markets but under a less volatile condition (*Figure 20*). The volatility and volumes in the mainland go down in mid-2016 until 2018 (*Figure 18-19, 21*). The AH premium seems to go back to equilibrium. However, social unrest (Umbrella Revolution) in Hong Kong has since 2014 flourished in different periods until now (Lee, F. L. F and J. M. Chan., 2018), this seems to have suppressed the Hang Shang from equalising the AH premium.

5.1 Conclusion

As evidence show, limited financial knowledge among retail investors is widespread. China's capital market is crowded with young and inexperienced retail investors who seemingly are more prone to irrational investment decisions due to behavioural biases and has a limited understanding of risk. Retail investors with low income and nonprofessional occupations, "less financial knowledgeable" generally are the most affected by the disposition effect. Sensation seeking behaviour is seemingly a common trait among retail investors, also, evidence suggest a link between gambling and sensation seeking behaviour. Gambling, a form of entertainment for the Chinese people, is rooted in their culture and is of common occurrence. The behavioural bias of investing in attention-grabbing stocks is seemingly widespread among Chinese retail investors, commonly occurring among inexperienced, less knowledgeable investors. Retail investors have a tendency of focusing their investment to an area close to home and is prevalent among younger investors with low income and low level of education. However, investing in close proximity can be rational because of the information asymmetry created by separation. The behavioural biases among retail investors creates ambiguity in their decision-making, creating an environment easily influenced by sentiment changes caused by market-opening policy's and major events, and herding behaviour is eminent with these prerequisites. The retail investors become habituated to their environment and will time again act in a idiosyncratic manner which fits with their behavioural biases, reflected in the observations of market-opening policies.

The price discovery of the A+H share is seemingly significantly affected by the dynamics of the Chinese mainland market. The sheer size of this ever-growing group of investors, the increase of urbanisation, increase of capital flowing into the stock market and the limited amount of available equity (Free-Float) make for skewness in the supply and demand. The climate of such a young market and Chinese culture seem to limit new investors rationality. The rise in market capitalization of the SSE and SZSE has increased with a growth rate much higher than the GDP (*Figure 1)* and national savings rate implying an increased stock market awareness among the Chinese population. Retail investors are the largest operators in the market and carry typical behaviour-economic flaws. Additionally, there are market constraints further increasing the effect of these behaviours.

The findings of this report uncover the seemingly clear evidence of the strong influence Chinese retail investors have on the price discovery of dual-listed A+H companies. The analysis of

observations exposes a cycle behind the price disparity which has its roots in the theoretical framework of financial behaviour applicable to the Chinese retail investors. Market-opening policies makes way for the institutional investors of which starts a sentiment in the market, the sentiment created starts a chain reaction among retail investors because of their behavioural biases, creating high volatility in the price disparity of dual-listed A+H companies. The cycle ends with less activity settling and, in the market, often closer to equilibrium, indicating neutrality in the sentiment. Retail investors in which their biases are not as applicable to the same degree due to market inactivity, but as the next market opening policy or major event kicks in gears, a positive sentiment is created making way for the Chinese retail investors idiosyncratic behaviour in the stock market. Additionally, change in global market conditions is not to be disregarded, since they can spark a sentiment, in either direction, thus being a set up for the cycle. These behaviours and constraints seem to make it possible for more prominent agents to affect the price discovery by drawing attention in the sentiment sensitive market of mainland China.

Since Deng Xiaoping in 1978 started opening the Chinese economy, the country has come a long way. Although far from completely integrated with the rest of the world, China has gone from being more politically focused, to find itself in a juxtaposition, approaching Adam Smith's liberal view on capitalistic markets.

"*The craze of stock investors at the beginning of the stock market; ordinary people became individuals with a passion for acquiring wealth*" (Huang, X., 2015).

If China continues its path, the future of price discovery will evolve as Chinas market composition and policies change; biases of retail investors will not influence the price discovery the way it has.

5.2 Further Research

Further research in the behaviour of institutional behaviour in China might complement these findings and can serve as a perfect object of study since their market share is seemingly growing. Also, finding applicable methods to measure actual biases among the population and their direct impact on the market in a quantitative fashion to complement and confirm this literature study.

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Shanghai Stock Exchange. (2020). Turnover: Volume Shanghai Stock Exchange A-share. 01/01/2006 to 01/04/2020 [statistics]. Available from CEIC Data database.

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7. Appendix

7.1 Market Capitalization SSE (Red) & SZSE (Blue) and growth rate (green)

Figure 1. Shanghai Stock Exchange. (2020). Market Capitalisation. 2007-04-01 to 2020-04-01. Shenzhen Stock Exchange. (2020). Market Capitalisation 2007-04-01 to 2020-04-01. (Ceicdata.com, 2020)

7.2 CSSS

7.2.2 Hang Seng AH Premium Index

Figure 2. Hang Seng AH Premium Index, 2006-04-03 to 2008-12-31. (Ceicdata.com, 2020)

7.2.3 Shanghai Stock Exchange A-Share Historical Volatility Index
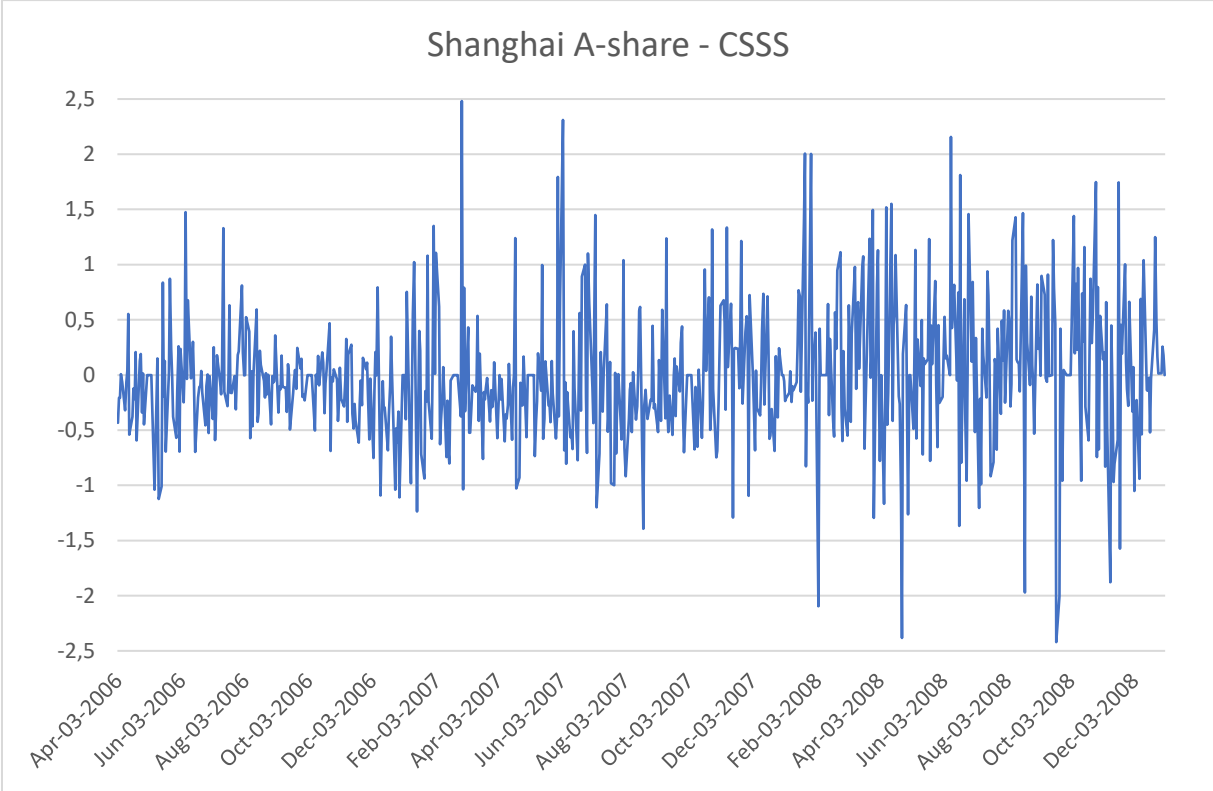
Figure 3. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2006-04-03 to 2008-12-31 (Capitaliq.com)

7.2.4 Shenzhen Stock Exchange A-Share Historical Volatility Index
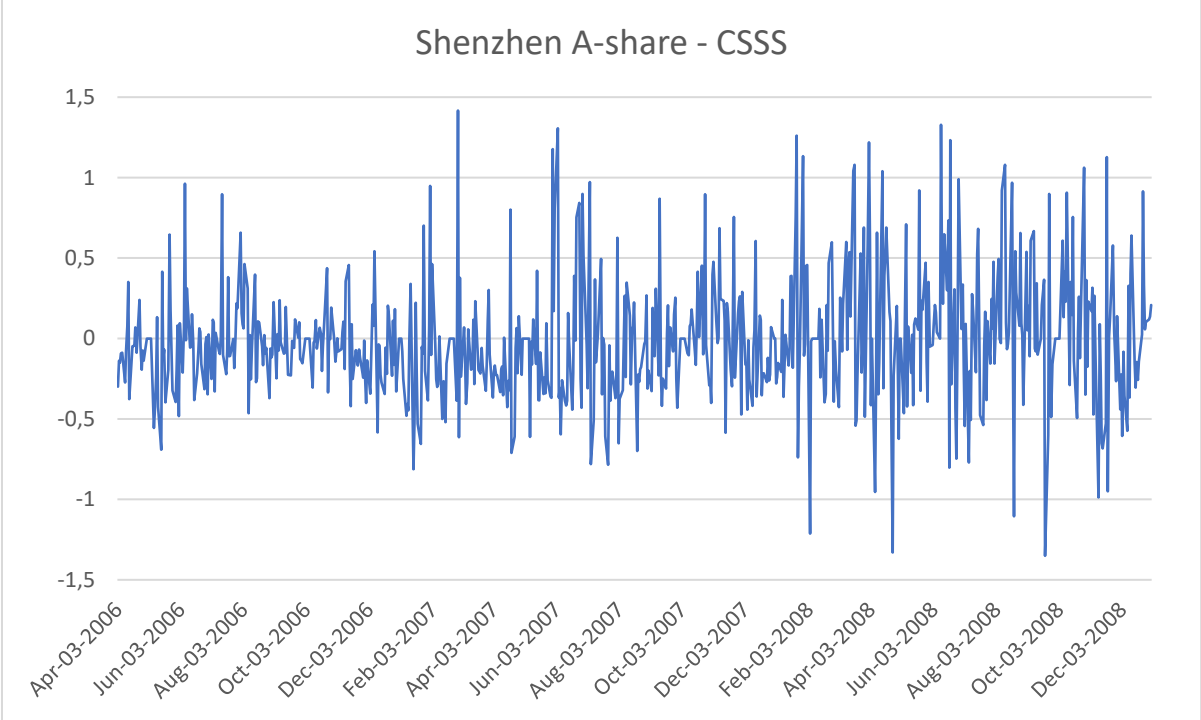
Figure 4. Shenzhen Stock Exchange. (2020). Shenzhen Stock Exchange A Share Index (^SZSE-A). 2006-04-03 to 2008-12-31 (Capitaliq.com)

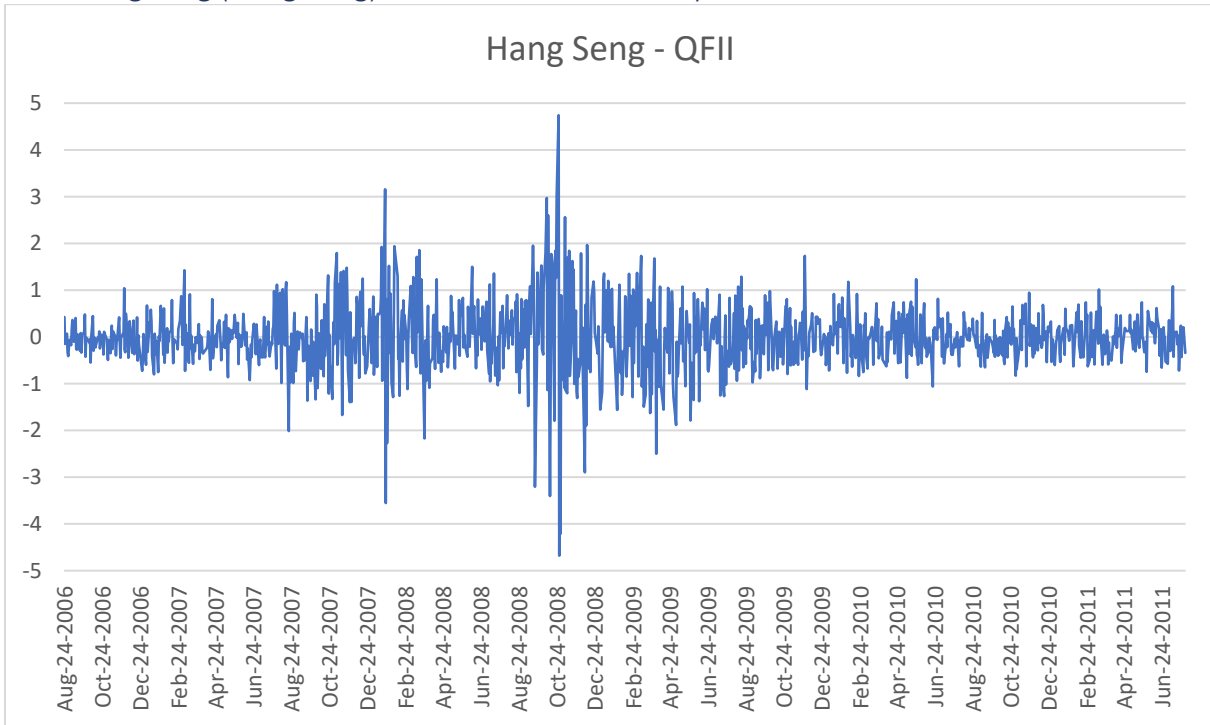7.2.5 Hang Seng (Hong Kong) Share Historical Volatility Index
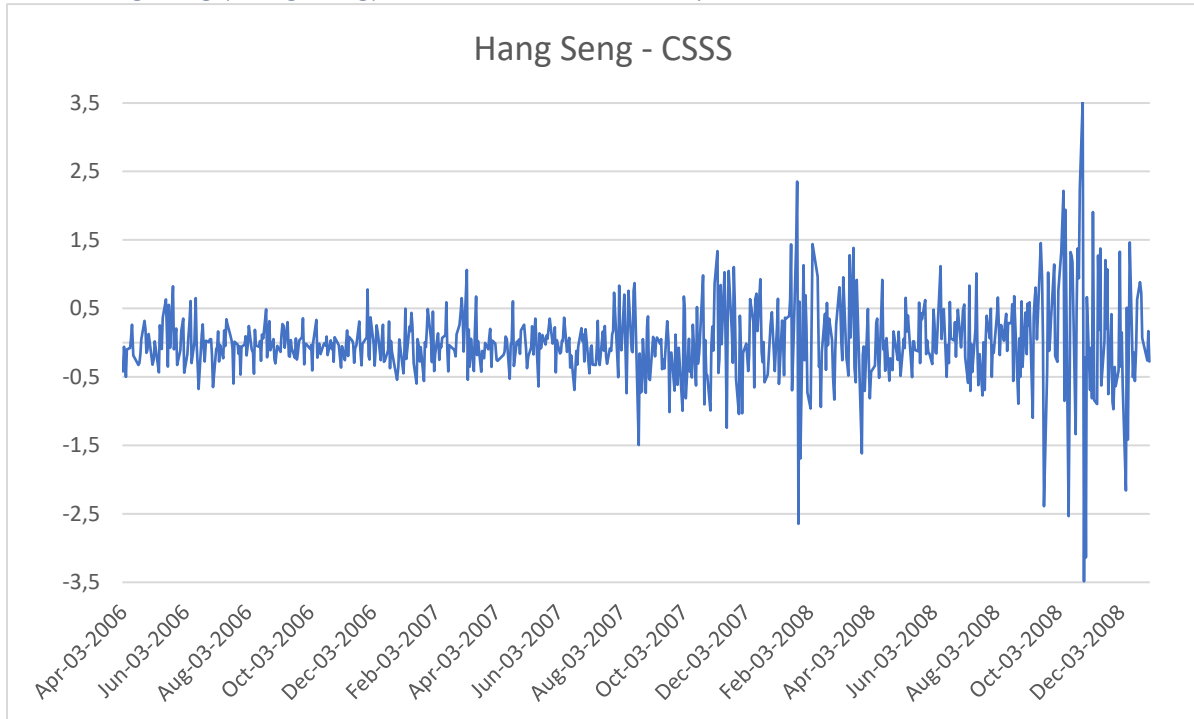
Figure 5. Hang Seng Indexes. (2020). Hang Seng Index (^HSI). 2006-04-03 to 2008-12-31 (Capitaliq.com)

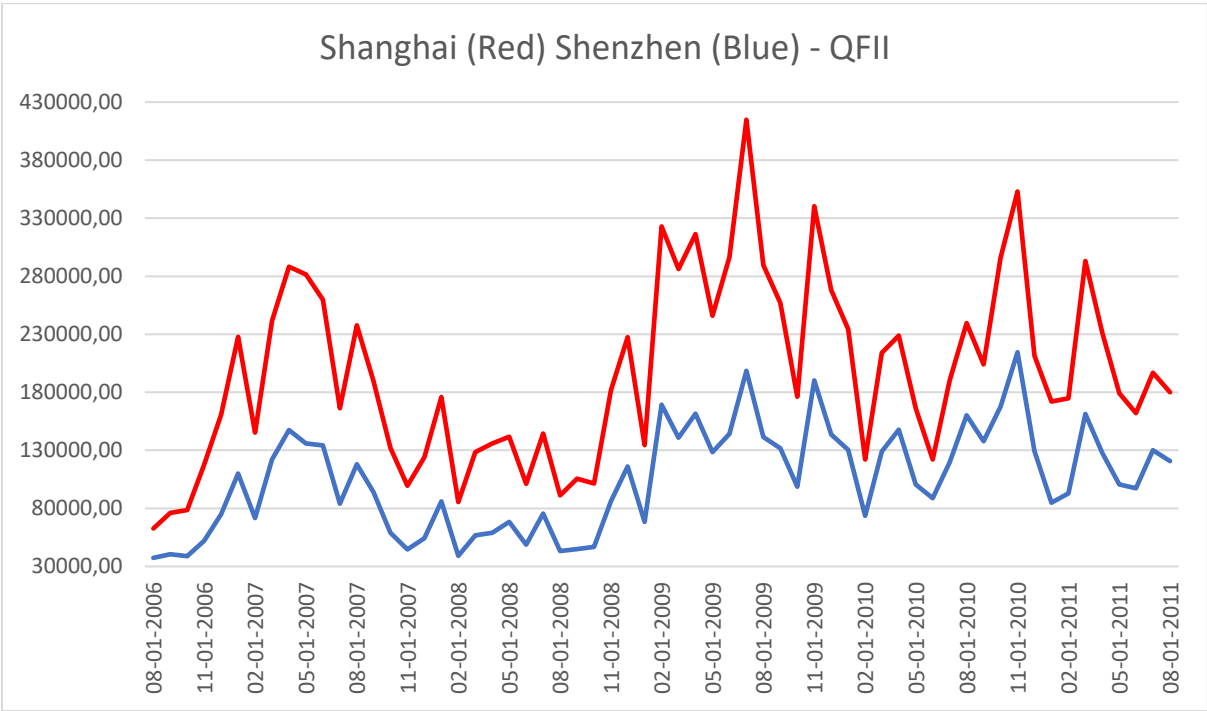7.2.6 Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue)
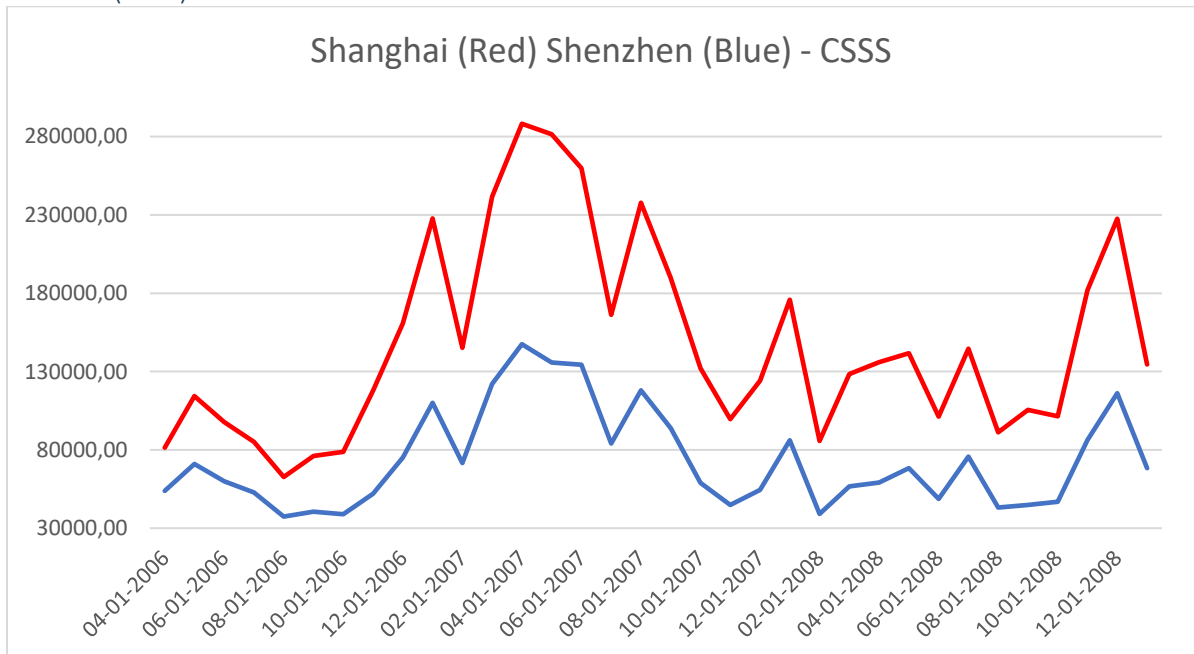
Figure 6. Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue) 2006-04-01 to 2009-01-01. (Ceicdata.com, 2020)

7.3 QFII
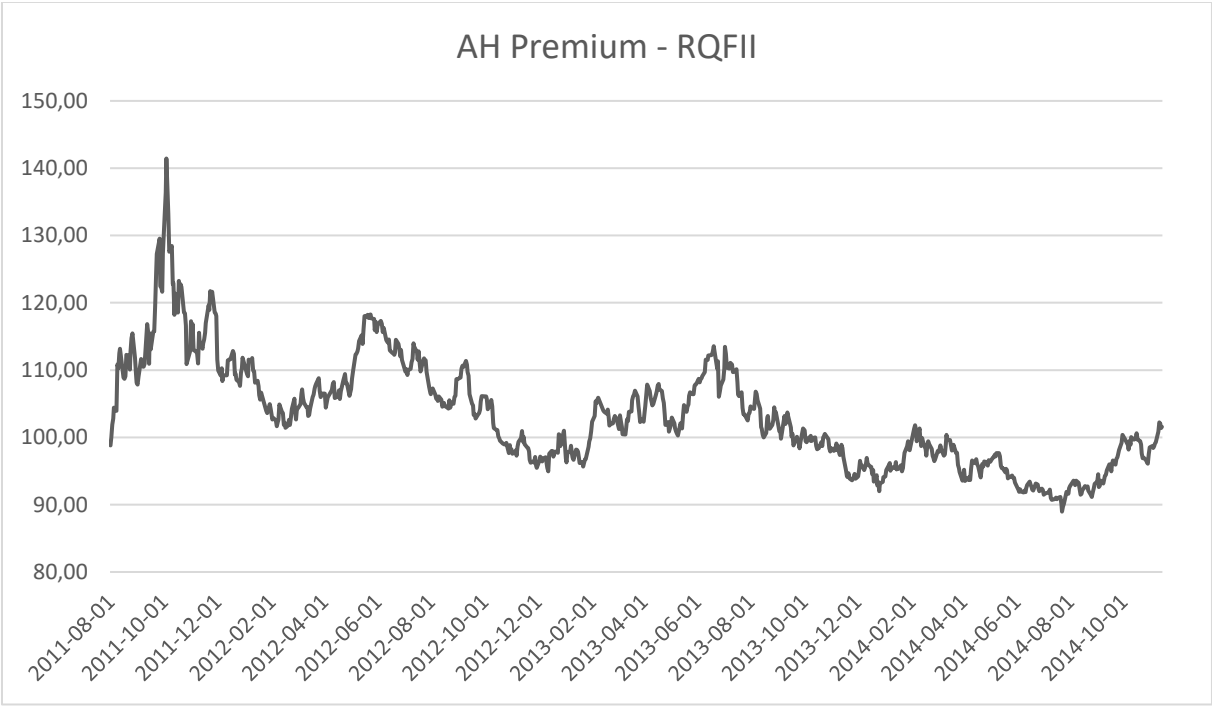
7.3.2 Hang Seng AH Premium Index
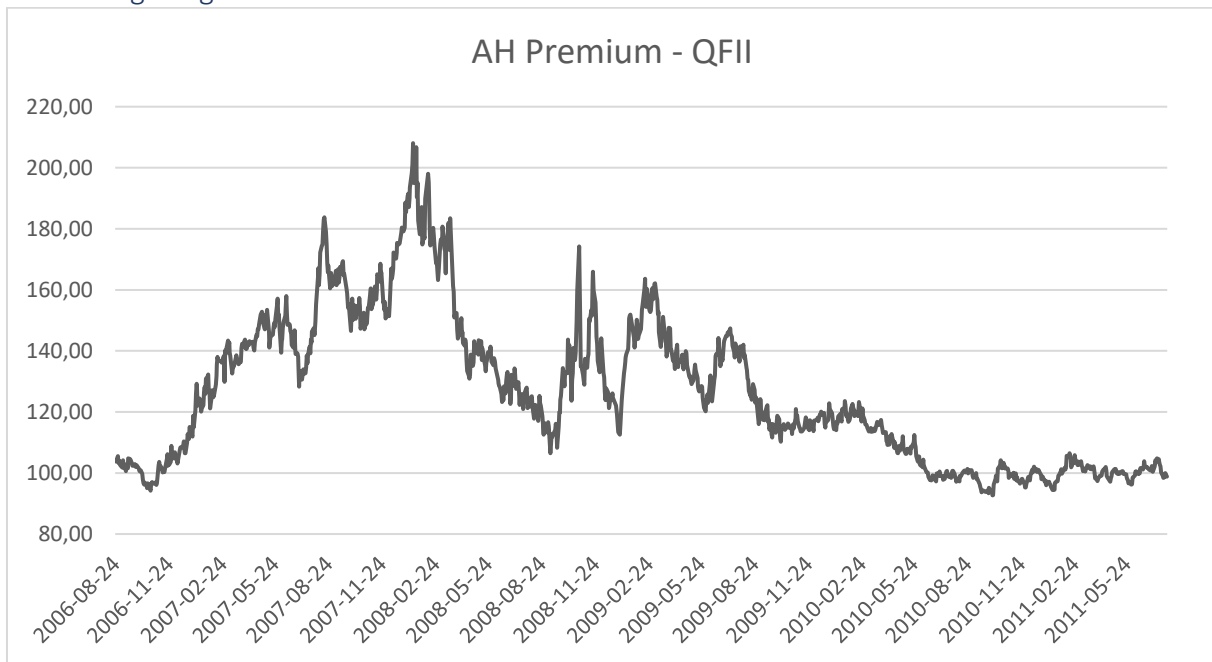
Figure 7. Hang Seng AH Premium Index, 2006-08-24 to 2011-07-31. (Ceicdata.com, 2020)

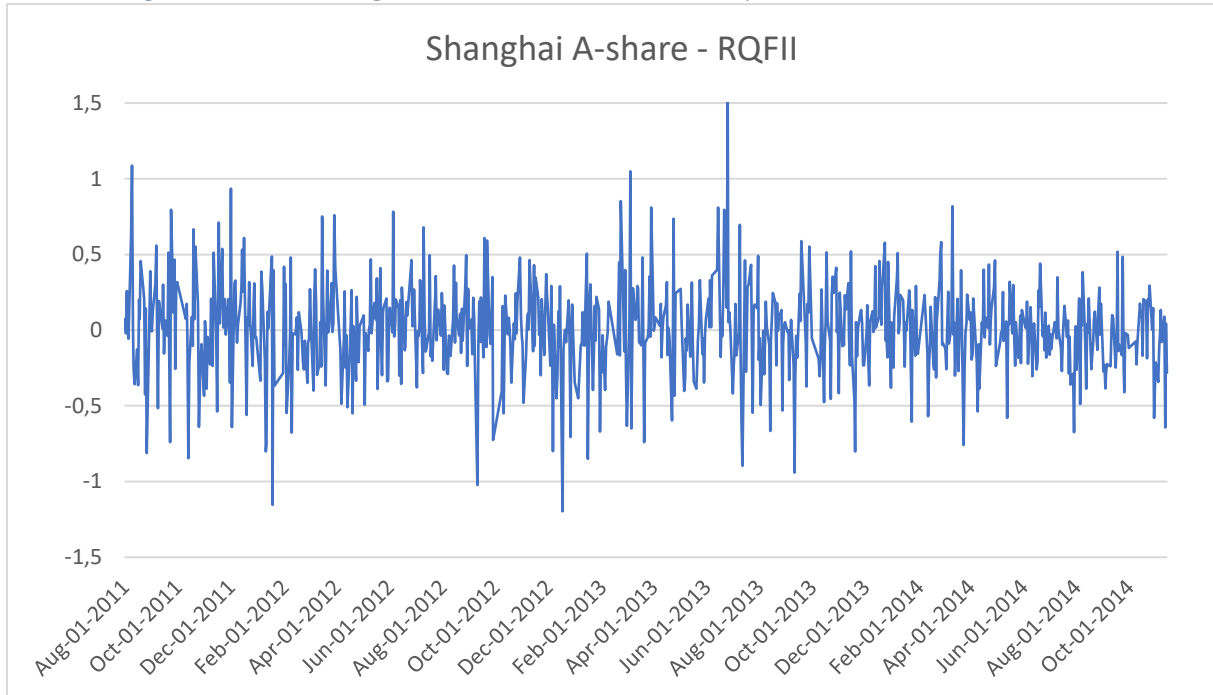### 8.3.3 Shanghai Stock Exchange A-Share Historical Volatility Index
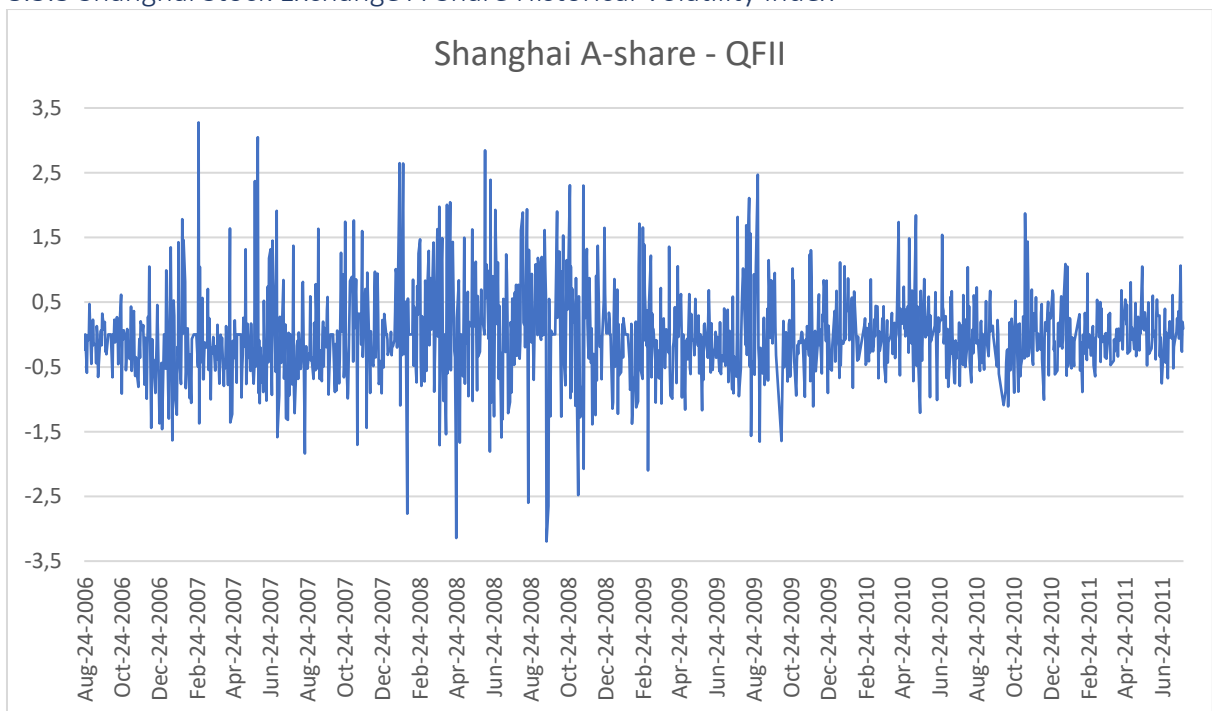
Figure 8. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2006-08-24 to 2011-07-31 (Capitaliq.com)

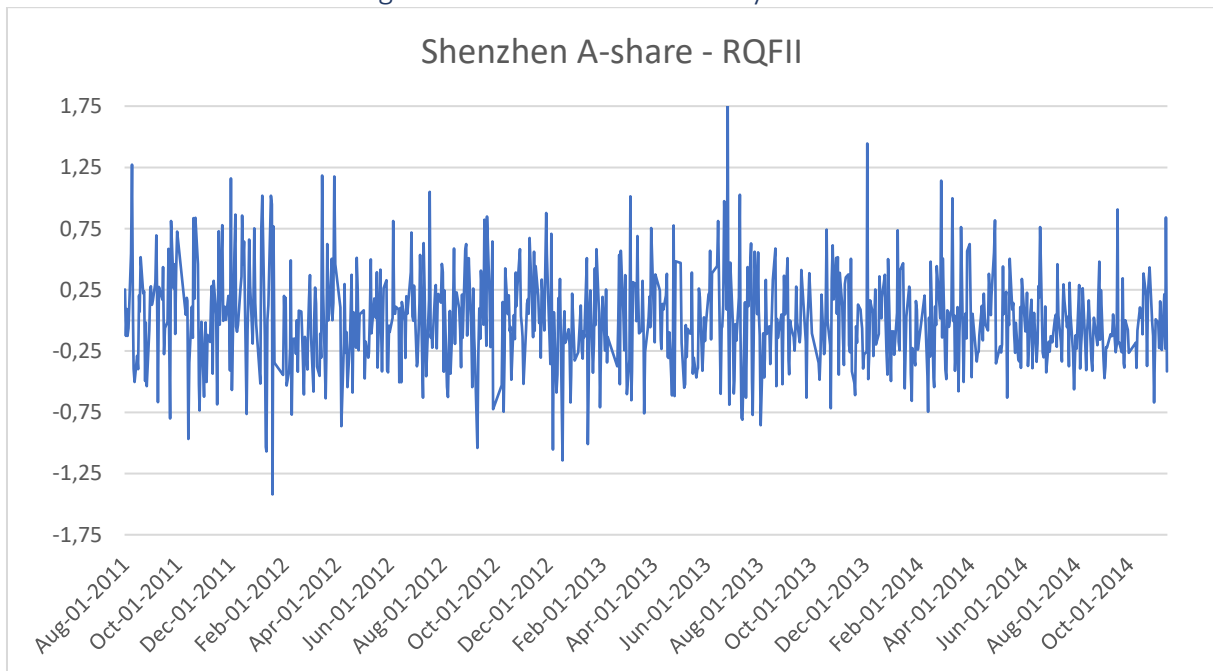### 7.3.4 Shenzhen Stock Exchange A-Share Historical Volatility Index
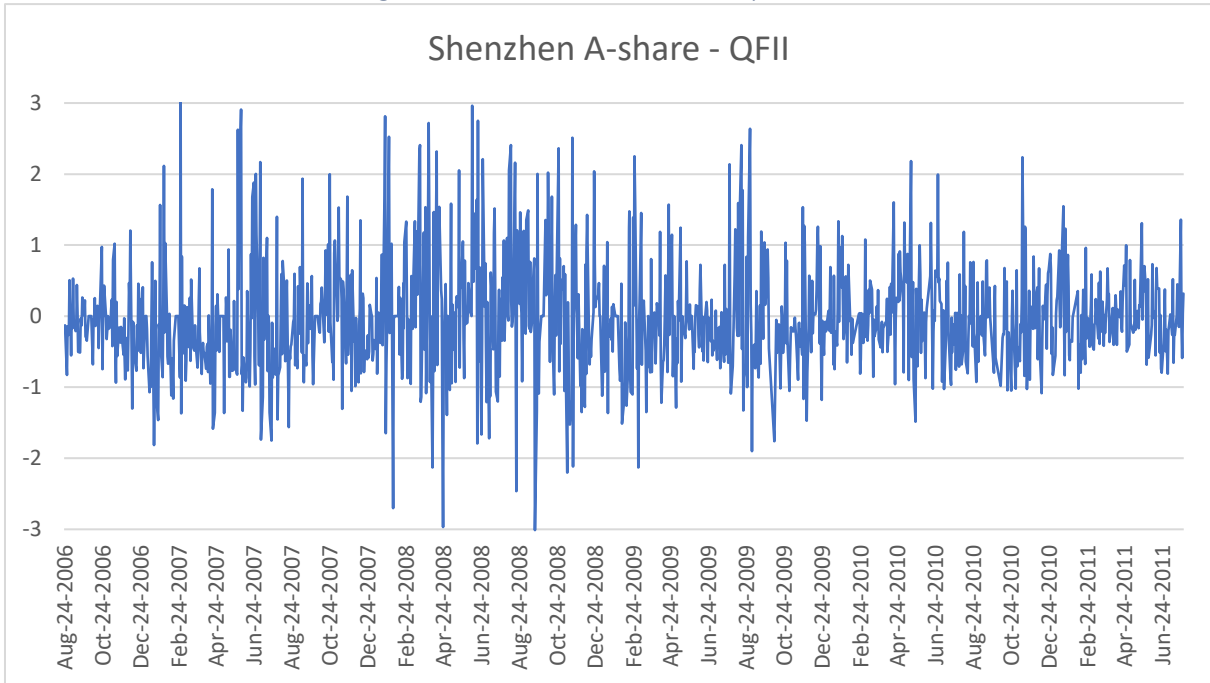
Figure 9. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2006-08-24 to 2011-07-31 (Capitaliq.com)

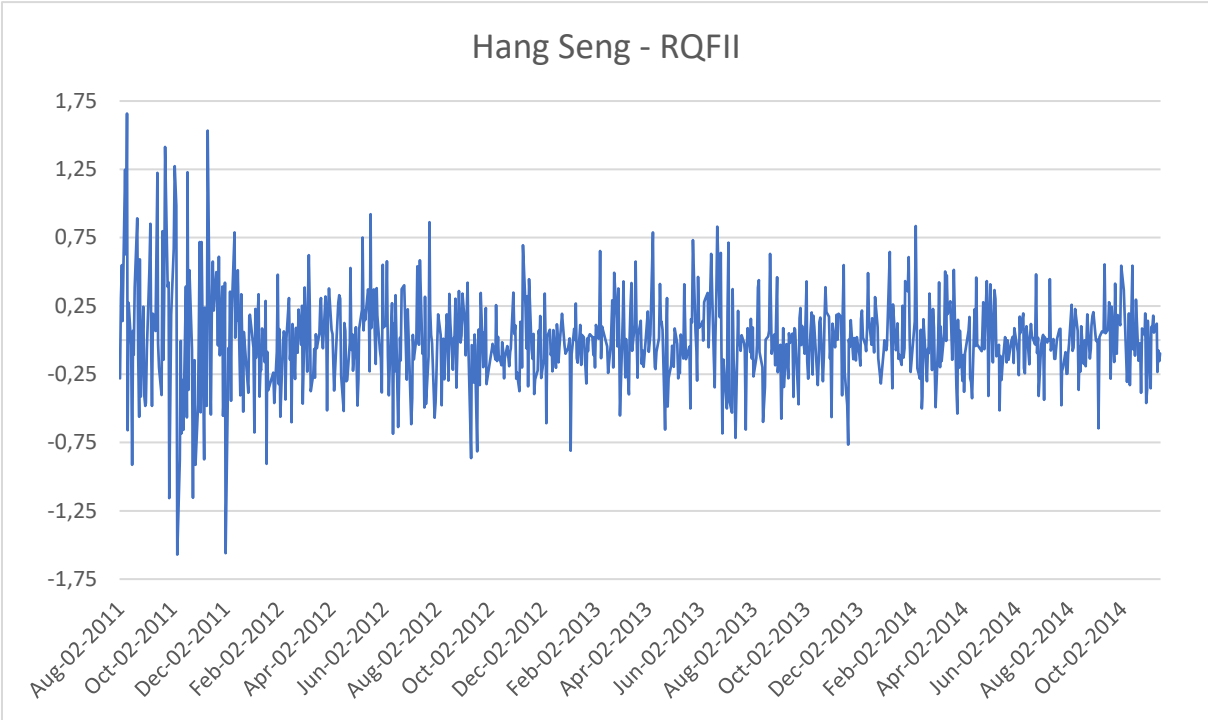### 7.3.5 Hang Seng (Hong Kong) Share Historical Volatility Index

Figure 10. Hang Seng Indexes. (2020). Hang Seng Index (^HSI). 2006-08-24 to 2011-07-31 (Capitaliq.com)

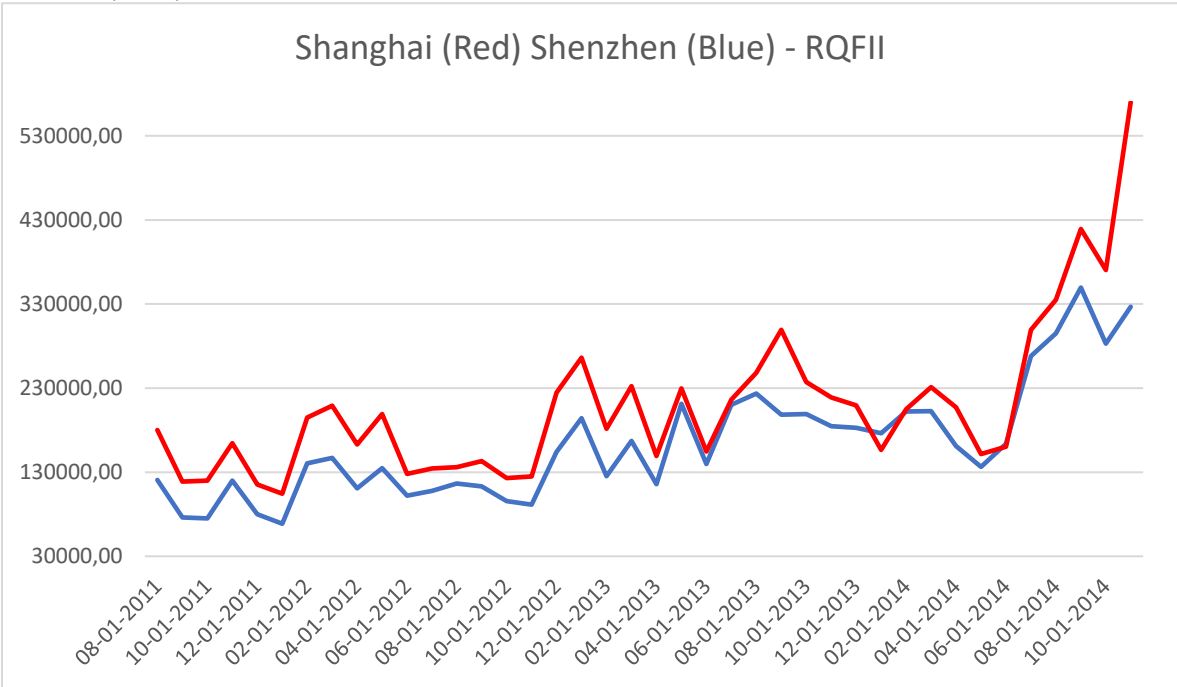## 7.3.6 Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue)

Figure 11. Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue) 2006-08-01 to 2011-08-01. (Ceicdata.com, 2020)

7.4 RQFII

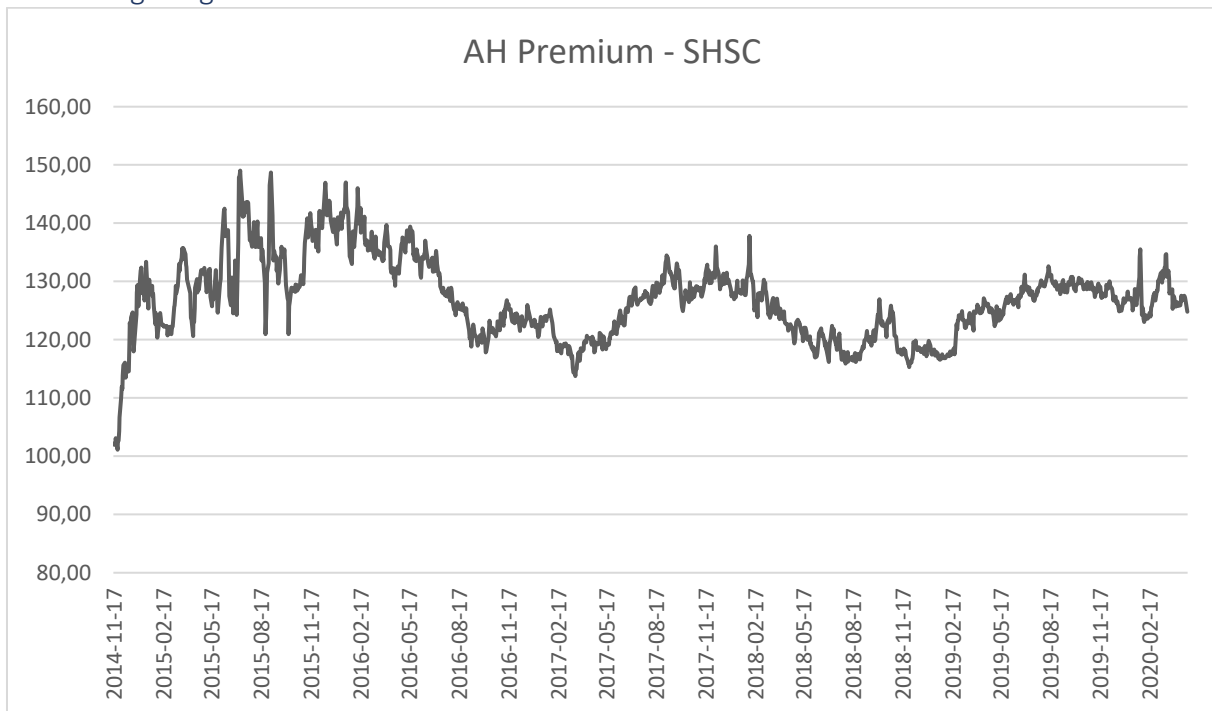### 7.4.2 Hang Seng AH Premium Index

Figure 12. Hang Seng AH Premium Index, 2011-08-01 to 2014-11-14. (Ceicdata.com, 2020)

7.4.3 Shanghai Stock Exchange A-Share Historical Volatility Index

Figure 13. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2011-08-01 to 2014-11-14 (Capitaliq.com)

7.4.4 Shenzhen Stock Exchange A-Share Historical Volatility Index

Figure 14. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2011-08-01 to 2014-11-14 (Capitaliq.com)

7.4.5 Hang Seng (Hong Kong) Share Historical Volatility Index

Hang Seng - RQFII

Figure 15 Hang Seng Indexes. (2020). Hang Seng Index (^HSI). 2011-08-01 to 2014-11-14 (Capitaliq.com)

7.4.6 Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue)

Shanghai (Red) Shenzhen (Blue) - RQFII

Figure 16. Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue) 2011-08-01 to 2014-11-01. (Ceicdata.com, 2020)

7.5 SHSC
8.5.2 Hang Seng AH Premium Index

Figure 17. Hang Seng AH Premium Index, 2014-11-17 to 2020-04-30. (Ceicdata.com, 2020)

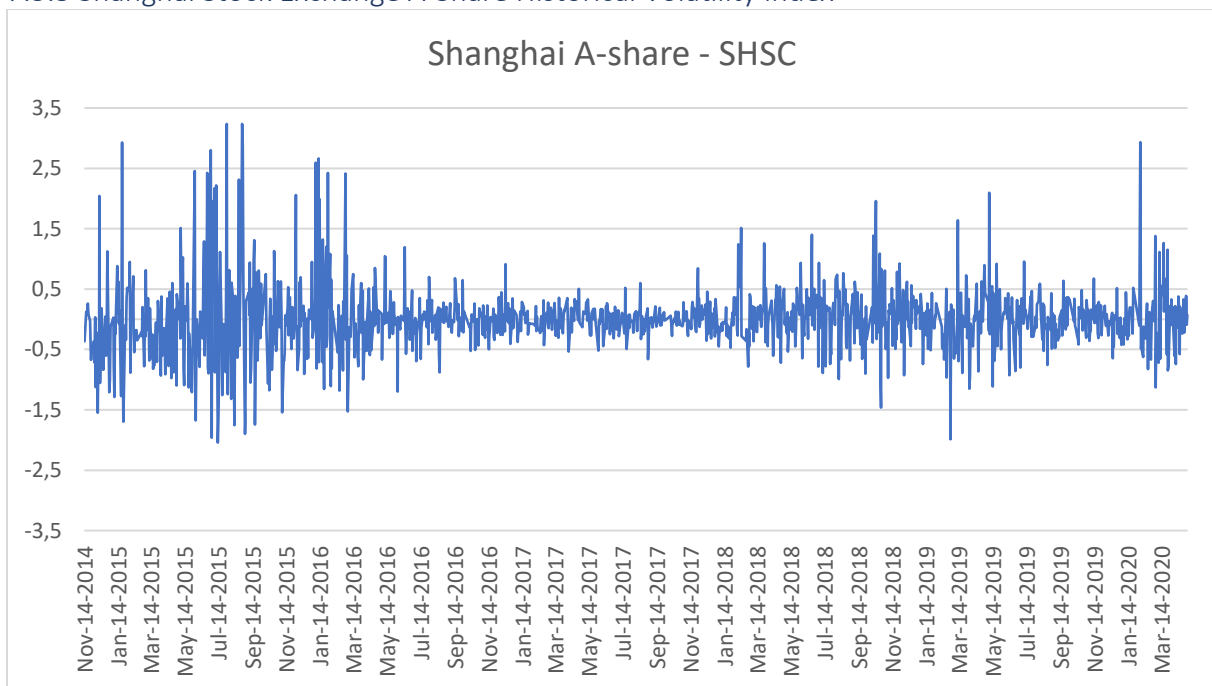### 7.5.3 Shanghai Stock Exchange A-Share Historical Volatility Index

Figure 18. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2014-11-17 to 2020-04-30 (Capitaliq.com)

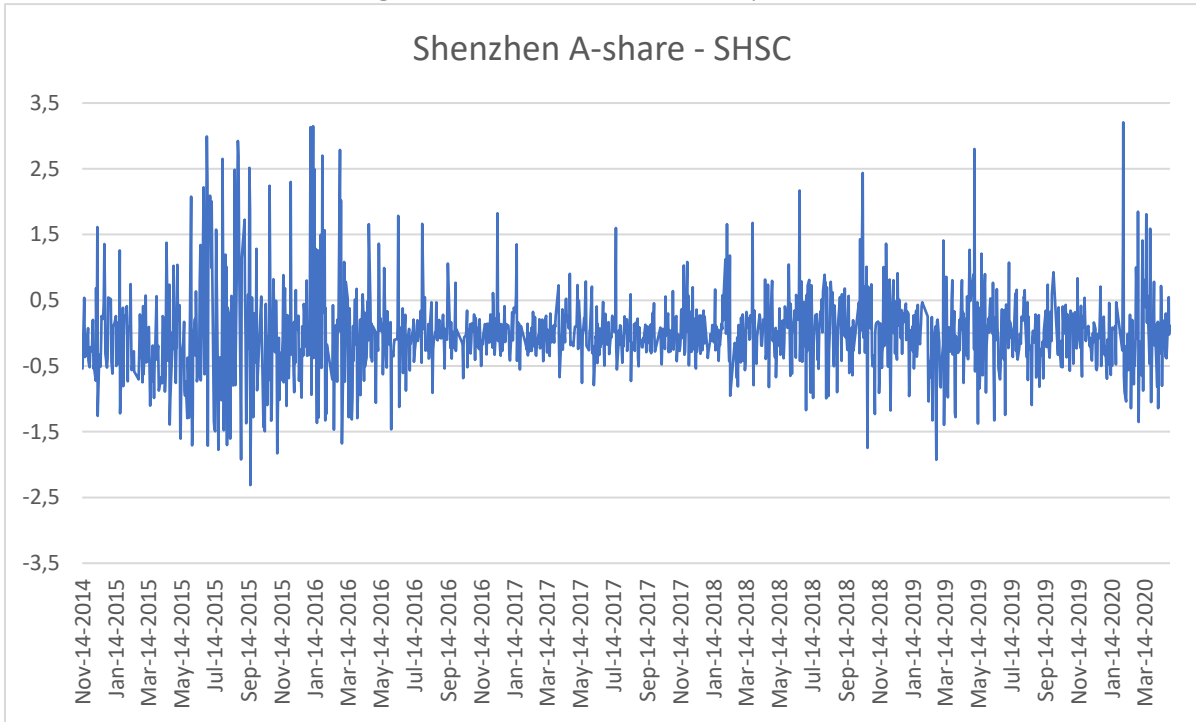## 7.5.4 Shenzhen Stock Exchange A-Share Historical Volatility Index

Figure 19. Shanghai Stock Exchange. (2020). Shanghai Stock Exchange A Share Index (^SHSE-A). 2014-11-17 to 2020-04-30 (Capitaliq.com)

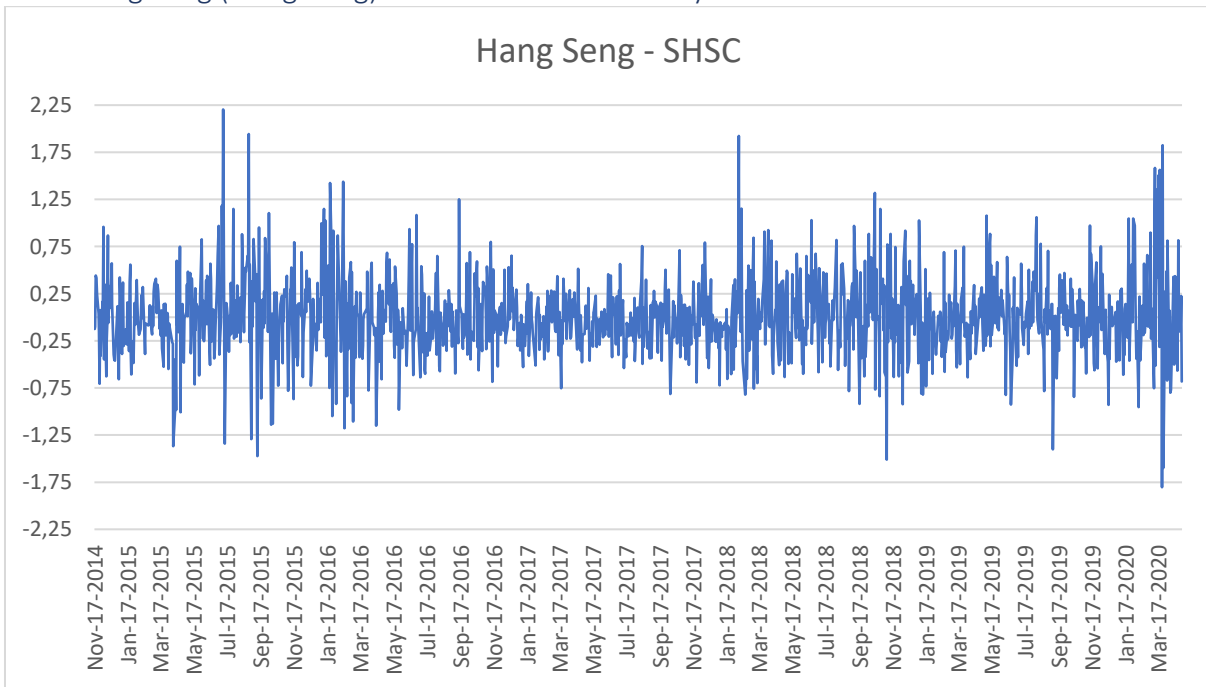## 7.5.5 Hang Seng (Hong Kong) Share Historical Volatility Index

Figure 20. Hang Seng Indexes. (2020). Hang Seng Index (^HSI). 2014-11-17 to 2020-04-30 (Capitaliq.com)

7.5.6 Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue)

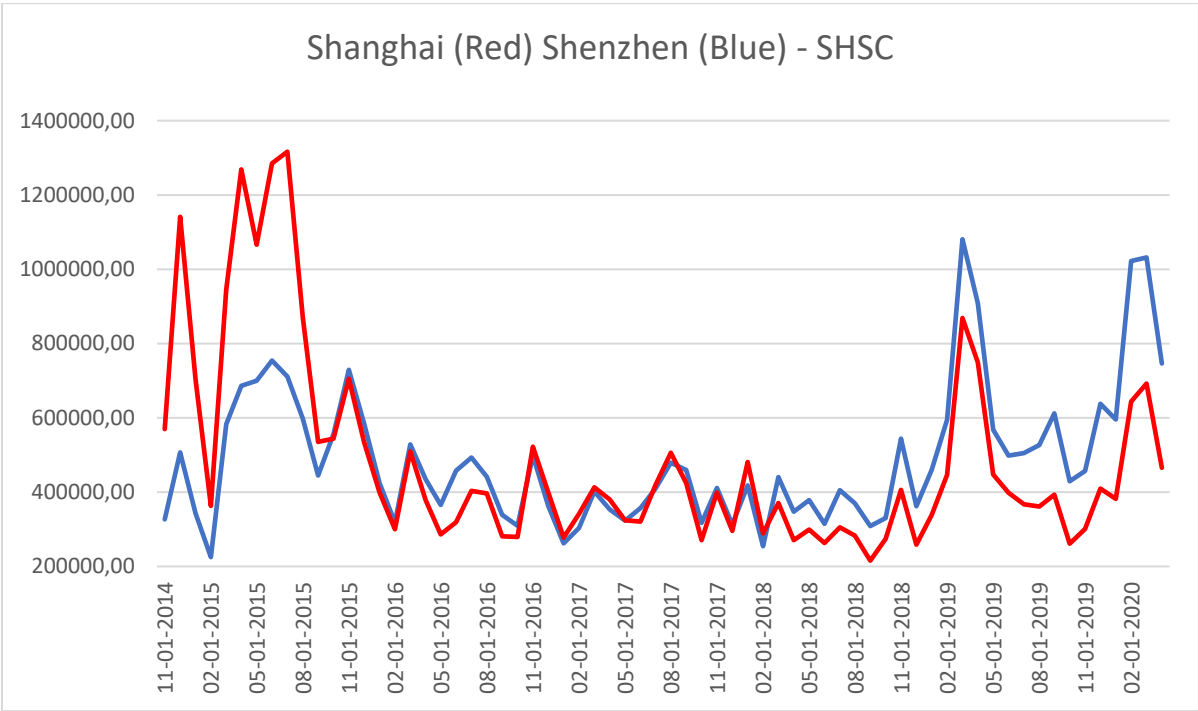**Shanghai (Red) Shenzhen (Blue) - SHSC**

Figure 21. Turnover: Volume Shanghai Stock Exchange A-share (Red) & Shenzhen Stock Exchange A-share (Blue) 2014-11-01 to 2020-04-01. (Ceicdata.com, 2020)