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# POSSIBLE REASONS FOR PRICE DISCREPANCIES BETWEEN THE SHANGHAI AND THE HONG KONG STOCK EXCHANGE

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**TABLE OF CONTENT**

# INTRODUCTION

The Chinese market is increasingly being studied for its continuous evolution and its unique characteristics. Many scholars have focused on it to understand why there is information that foreign investors can access and others that remain within Chinese territory. Initially, when the Shanghai stock market was established in 1990, only Chinese investors could exchange one type of stock, called A-shares, listed in China in Chinese yuan (RMB), while foreign investors could only exchange the B-shares listed on the Chinese market in US dollars, or the H-shares listed on the Hong Kong stock market in Hong Kong dollars. The reason for this difference between local and non-local investors has been the subject of numerous studies, which have highlighted the existence of asymmetric information and a total control by the Chinese government in the stock market. Through the analysis of the Shanghai Stock Exchange and the Hong Kong Stock Exchange, both belonging to the Chinese territory but with different rules and economic systems, the aim of this work is to find out whether there are price differences for the same securities listed in both markets and to provide possible explanations in this regard.

Specifically, the first chapter will describe the major changes in the history of China and Hong Kong, which have led to important breakthroughs in their economy. The handover of Hong Kong from a British colony to a Special Administrative Region in 1997 will be retraced, the principle of "one country, two systems", fundamental to guarantee the recognition of its independence by the Chinese government, will be discussed, and the key role which for years has covered Hong Kong as a window to the world for the Mainland will be illustrated. Subsequently, the phases of economic development experienced by China since 1979, the year in which the opening reforms by Deng Xiaoping began with the consequent establishment of four Special Economic Zones (that allowed for the first time direct trade with Western countries), will be presented. Finally, the work will describe the hypothesis of market efficiency theorized in the 1970s by Eugene Fama, which is the basis of the economy and which should guide the functioning of all markets, according to which share prices fully reflect all the available information. Finally, the chapter will deal with the criticisms levelled at such hypothesis, and with the factors that actually influence the financial markets and the behaviour of the participants (such as asymmetric information or irrational behaviour).

The second chapter will present both the Shanghai Stock Exchange and the Hong Kong Stock Exchange, their history, the type of investors that comprise them, their main stock market indices and the main types of shares traded in them. As mentioned earlier, there are two main types of shares in the Shanghai market: A-shares, which are shares of Chinese companies listed in China that are held only by local citizens and traded in Chinese yuan (RMB), and B-shares, shares of Chinese companies listed in the Shanghai Stock Exchange which up to 2001 were held only by foreign investors and traded in US dollars. In the Hong Kong stock market, the main shares traded are the H-shares, securities of Chinese companies listed on the Hong Kong market and traded by international investors in Hong Kong dollars. With the aim of increasing trade with the rest of the world, the Shanghai-Hong Kong Stock Connect program was established on November 17, 2014: it allowed all foreign investors to trade A-shares, whereas previously only specific institutions (banks, insurance companies etc.) that obtained the status of Qualified Foreign Institutional Investors could do. Despite the launch of this program, in this chapter it will be emphasized that the Chinese market continues to be not so transparent and for this reason it is still being studied today. Some theories that have been developed in this regard are: the asymmetric information hypothesis, linked to language barriers and to the fact that there is a lack of reliable information about the Chinese economic system; the liquidity hypothesis, linked to the fact that B-shares have registered a reduction in liquidity over time and for this reason they have been replaced by Hong Kong H-shares; the differential demand hypothesis and the differential risk hypothesis. To support the hypothesis of asymmetric information in China, a financial documentary entitled "The China Hustle" was produced in 2017 by Magnolia Picture: it explains how Chinese fraudulent companies managed in order to be listed on the American stock market in the first decade of 2000s.

In the third chapter, the price fluctuation of eight stocks of Chinese companies quoted in both the Shanghai and the Hong Kong stock markets will be shown through the support of technical charts. It will be chosen precise days to find out if there are price differences between the two markets, and time frames to study the percentage variation in price after one year, eight months and nine months. Specifically, the following securities will be considered: Air China, China Eastern Airlines, PetroChina, China Petroleum & Chemical, China Shenhua Energy, Anhui Conch Cement, Tsingtao Brewery and Nanjing Panda Electronics. The dates and the time frames considered to analyse the securities' percentage change in price concern three events that have strongly shaken the markets: the global financial crisis, from 1/12/2007 to 1/12/2008; the Hong Kong protests, from 1/3/2019 to 1/7/2020; the Covid-19 pandemic,

from 31/12/2019 to 1/9/2020. In conclusion, the possible reasons for differences in price and percentage variation will be provided on the basis of what was previously learned.

# 前言

**中国市**场因其不断演变和独特的特点而日益受到研究。许多学者关注这一点，是为了理解为什么有外国投资者可以获得一些信息，而其他信息仍留在中国境内。最初，当 1990 **年上海**证券市场建立的时候，只有中国投资者可以兑换在中国上市的一种叫做 A 股的股票，而外国投资者只能兑换在中国市场上市的 B 股，或他们可以兑换在香港市场上市的 H 股。A 股的交换需要人民币，B 股的交换需要美元，而 H 股的交换需要港币。本地投资者与非本地投资者之间存在这种差异的原因一直是众多研究的主题，这些研究强调了信息不对称的存在以及中国政府对股票市场的完全控制。通过对上海证券交易所和香港证券交易所的分析，本文发现虽然它们两个市场属于中国的领土，但有着不同的规则和经济制度，这项工作的目的是找出在这两个市场上市的同意证券是否存在价格差异，并在这方面提供可能的解释。

具体来说，在第一章中我们将描述中国和香港历史上的重大变化，这些变化导致了经济的重大突破: 我们描述 1997 年香港从英国殖民地移交给一个特别行政区的事件; 我们讨论"一国两制"原则，就是保证中国政府承认其独立性的基础; 然后说明多年来一直香港作为世界之窗的关键角色。随后，我们将介绍中国自 1979 年以来所经历的经济发展阶段。在中国发展的最重要阶段之间有邓小平的开放改革。它们开始于随后建立的四个经济特区（首次允许与西方国家直接贸易）。最后，本文将描述尤金·法马（Eugene Fama）在 20 世纪 70 年代提出的市场效率假说。这一假说是经济的基础，应该指导所有市场的运作，根据这一假设，股票价格充分反映了所有可用的信息。最后，在本章中我们将讨论针对这种假设的批评，以及实际影响金融市场和参与者行为的因素（如信息不对称或非理性行为）。

在第二章中我们介绍了上海证券交易所和香港证券交易所的历史、投资者的类型、股票市场的主要指数和股票交易的主要类型。如上面所举，上海市场上有两种主要的股票类型：A 股，即在中国上市的中国公司的股票。它们只由当地公民持有，并以人民

币进行交易；B 股，即在上海证券交易所上市的中国公司的股票。它们 2001 年以前只由外国投资者持有以美元交易。在香港股票市场，交易的主要股票是 H 股。香港上市的中国公司证券，国际投资者以港币交易。为了增加与世界其他国家的贸易，沪港通股票交易于 2014 年 11 月 17 日成立：它允许所有的外国投资者交易 A 股，而以前只有特定的机构（如银行，保险公司等）可以交易 A 股，因为它们获得合格境外机构投资者资格的。尽管沪港通股票交易启动了，但在本章中我们将强调，中国市场仍然不够透明，因此，今天还有许多学者进行研究它。在这方面发展起来的一些理论是信息不对称假说，流动性假说，差分需求假说和差异风险假说。信息不对称假说与语言障碍和中国经济体系缺乏可靠信息有关。关于流动性假说，因为 B 股已经随着时间减少了流动性，所以香港 H 股代替了。为了支持中国信息不对称的假设，2017 年，Magnolia Picture 制作了一部名为《中国喧嚣》（the China Hustle）的金融纪录片：它解释了中国欺诈性公司如何在 21 世纪头 10 年在美国市场能够上市。

在第三章中，我们通过技术图表的支持，显示了在上海和香港股票市场上市八个中国股票的价格波动。我们将选择精确的日期，是为了确定两个市场之间是否存在价格差异，并研究一年、八个月和九个月后价格的百分比变化。具体来说，我们将考虑以下这些证券：国航、东航、中石油、中国石油化工、中国神华能源、安徽海螺水泥、青岛啤酒和南京熊猫电子。分析证券价格变化的日期和时间框架考虑了三个强烈震动市场的事件：全球金融危机，从 1/12/2007 到 1/12/2008；香港的抗议活动，从 1/3/2019 到 1/7/2020；从 2019 年 12 月 31 日到 2020 年 9 月 1 日的 COVID-19 大流行。通过价格波动的具体分析我们将突出表明，中国 A 股的交易价格比香港 H 股的总是较贵，这意味着本文前一章和第二章的理论得到了证实。价格差异的一些可能原因是：A 股相对于 H 股的流动性导致定价过高，因为上海股票市场的特点是大量散户投资者，而香港股票市场的特点是机构投资者。因为中国散户投资者缺乏信息，所以他们抬高了 A 股的价格，从而出现了价格差异。另一个原因是，由于中国投资者的非理性和乐观行为，他们经常具有冒险的态度。同时，a 股表现出高度的波动性，这反映出它们比 H 股价格更高。这一原因证实了“差异风险假说”. 2014 年沪港通股票交易后，因为需要披露更多中国信息，以吸引更多外国投资者，所以 A 股和 H 股价格的差异缩小了。

# CHAPTER 1

# CHANGES IN CHINA AND HONG KONG ECONOMY

The following chapter describes how Chinese and Hong Kong economy changed over time and how they influenced each other. Towards the end, a brief explanation of some of the basic concepts of Finance such as the Efficient Markets Hypothesis, several criticisms of it and the recent Adaptive Markets Hypothesis will be provided, in order to prove that financial markets are not as efficient as people previously thought.

## 1.1 Hong Kong from the Treaty of Nanking to the ratification of the "Basic Law"

In 1842, when the Treaty of Nanking was signed, the Qing government agreed to cede Hong Kong to the United Kingdom as a crown colony. The treaty ended the First Opium War (1839-1842) and the island became a possession of Britain "*in perpetuity*" and was used as a strategic port. In 1860, when the Convention of Peking - that marked the end of the Second Opium War (1856-1860) - was signed, the land forming the peninsula across from Hong Kong, known as Kowloon, became a perpetual concession of Britain. In 1898, when the Second Convention of Peking was signed, the land known as New Territories was granted as a 99-year lease to Britain. Together these three areas, that Britain controlled from 1898, represented the political territory recognized as Hong Kong[1].

During the Chinese Revolution of 1949 Hong Kong faced a potential crisis, but when the new Chinese government strategically decided not to take back what was considered as rightfully part of China, the territory started a new growth. There was an inflow of wealthy Chinese refugees, especially from Shanghai, that provided the capital and expertise for new investment in manufacturing industry and that was an important development since it allowed the exploitation of the cheap Chinese labour thanks to the open-minded policies of the British administration, which maintained the tradition of Hong Kong and did not impose tariffs on the import or export of goods. Hong Kong also became the principal gateway to China for the

[1] Carroll, Feng, Kuilman, "The Handover in Hong Kong: Impact on Business Formation", *Sociological Science*, 2014, pp. 366-367.

outside world: with the liberalization of Chinese economy after 1978, Hong Kong, the free entry point for trade and finance, became more important by providing a source of investment capital, technology and marketing skills to help China's rapid economic development and increasing foreign trade. As a result, in the 1990s, Hong Kong became the major source of foreign direct investment in China[2].

During the late 1970s and the early 1980s, when the deadline of the 99-year lease almost came, China and Britain started discussing about the future of Hong Kong: the British government argued that it should maintain an administrative role in Hong Kong after 1997, while the Chinese government argued that the treaties were invalid and that sustaining the inhabitants without access to the natural resources in the New Territories was impossible. The uncertainty about the Hong Kong's future has shaken its economy, and the UK on 19 December 1984 signed the Sino-British Joint Declaration, an agreement whereby it renounced its sovereign rights over Hong Kong on June 30, 1997. The Joint Declaration assured that, even if final sovereign authority lied with the People's Republic of China, Hong Kong was allowed to hold its capitalistic economic system and own currency, legal system and to retain a high degree of independence for 50 years (these are the core of the "one country, two systems" principle)[3].

Following the Joint Declaration, UK and China worked together to find a way that should facilitate the handover. Finally, on 4 April 1990, the China's National People's Congress (NPC) decided to pass a document called the "Basic Law of the Hong Kong Special Administrative Region" (SAR) including the Chinese policies on Hong Kong that are compliant with the conditions of the Joint Declaration.

This document protects rights such as the freedom of assembly and the freedom of speech - neither of which exist in China - and describe the structure of governance for the territory: Hong Kong is governed by a Chief Executive, that is responsible for implementing the Basic Law, with support from the Executive Council, that is a formal body of advisors, and another important Hong Kong's semi-representative system of government includes the Legislative Council.

The Chief Executive is elected by an Election Committee of 1.200 people chosen by representatives of various sectors in Hong Kong but he must be formally named by the central

[2] Yahuda M., "Hong Kong: China's Challenge", *Psychology Press*, London, 1996, p.24.
[3]Carroll, Feng, Kuilman, *op. cit.*, pp. 368-369.

Chinese government. According to the Basic Law, the Chief Executive must be selected by "*universal suffrage upon nomination by a broadly representative nominating committee in accordance with democratic procedures*"[4].

The Legislative Council makes and revises the laws. It is composed of 70 elected members elected by universal suffrage from both geographical constituencies and functional constituencies[5]. It has limited powers: it can effectively veto legislation proposed by the Chief Executive, endorses or deprecates the annual budget and has control over the operations of the executive branch[6].

## 1.2 Towards the reunification: "One country, two systems" principle

"One country, two systems" (一国两制yi guo liang zhi) is a constitutional principle the Chinese government, headed by Deng Xiaoping in the early 1980s, adopted to realize a peaceful reunification of the country since Hong Kong became Special Administrative Region (SAR) of China in 1997. This revolutionary principle was a major issue of governance to the Chinese leadership and marked a major breakthrough for the history of Hong Kong and Hong Kong citizens, since under this proposal Beijing promised to respect the region's autonomy. Giving expression to the "one country, two systems" concept, it provided the constitutional basis for the establishment of special administrative regions in specific areas, such as Hong Kong, Macau and Taiwan, that adopted different social systems and different policies from those on the Mainland. On July 1, 1997, the Chinese government started to exercise its sovereignty over Hong Kong. At the same time, the Hong Kong Special Administrative Region (HKSAR) was established and the Basic Law came into effect. Hong Kong lived an era characterized by "one country, two systems" and "Hong Kong people governing Hong Kong" principles and enjoyed a high degree of autonomy. Some people in Hong Kong felt confused in understanding the "one country, two systems" concept and the Basic Law, since the meaning of "one country" is that, even if Hong Kong is recognized as independent, it is

[4] The complete text of the Basic Law is available at "The constitution of the People's Republic of China. The Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China", [http://www.info.gov.hk/basic_law/fulltext/index.htm].

[5] For more details visit "A Companion to the history, rules and practices of the Legislative Council of the Hong Kong Special Administrative Region - Part I: An introduction to the Legislative Council, its history, organisation and procedure - Chapter 3", available at [https://www.legco.gov.hk/general/english/procedur/companion/chapter_3/chapter_3.html].

[6] Martin F. Michael, "Hong Kong: Ten Years After the Handover", *CRS Report for Congress*, 2007, p.4.

directly under the jurisdiction of China's Central People's Government: it means that the HKSAR's high degree of autonomy is represented by the power to manage local affairs but is subject to the central leadership's authorization; meanwhile, the meaning of "two systems" is that the Mainland practices the Socialism and Hong Kong practices Capitalism and both the countries respect each other, since the China's Socialist system is the prerequisite and the guarantee for maintaining Hong Kong's Capitalism and prosperity: in order to retain its capitalist system and enjoy such a high degree of autonomy, Hong Kong must respect the Chinese socialist system in keeping with the "one country" concept; at the same time, China should respect the capitalist system of Hong Kong and learn from the successful economic development and social management of Hong Kong [7]. Therefore, the success of this principle and the success of Hong Kong's future needs three preconditions:

1. Each side must respect the other's political system;
2. China must support Hong Kong's capitalism;
3. Hong Kong must govern itself with economic efficiency.

If one of these prerequisites is not respected, the Hong Kong's survival is compromised, so the solution is that both sides try to coexist as long as possible while accepting each other's social and market practices[8].

## 1.3 The role of Hong Kong in Chinese economic development

Historically, Hong Kong has always played a fundamental role in China's economic and financial reforms. Its links with the Mainland have strengthened since its handover in 1997, and Hong Kong not only has been the most important "entrepôt" for Chinese trade for years, but it is also the largest capital source of China's overseas direct investment, the hub of cross-border Renminbi (RMB) trade arrangement and offshore RMB business, and the major overseas capital market for Chinese enterprises that pursue Initial Public Offerings on the Hong Kong Stock Exchange (HKSE)[9]. The reasons that explain why HKSAR has been indispensable for China are the followings: before the Mainland began to open up from 1979, Hong Kong has been a window on the world for many Chinese state-owned trading companies which have used the island as a base for transferring goods from China; Hong Kong is the eighth largest trading centre and is considered a warehouse for commercial goods

[7] *Xinhua News Agency*, "The Practice of the "One Country, Two Systems" Policy in the Hong Kong Special Administrative Region", Beijing, 2014.
[8] Overholt H. William, "American Policies in East Asia", *The Academy of Political Science*, 1991, pp. 41-43.
[9] Chrisman J., Richardson D., Lee A., "Hong Kong's role in China's financial reform – the era of the "new normal"", *The banking journal*, 2015, p. 75.

traded between China and United States, Europe, Japan, Southeast Asia and Taiwan. The majority of these goods are transported by the sea and Hong Kong is one of the world's busiest shipping centres; Hong Kong was never subjected to technology export controls placed in China by Western countries and it has played an important role for the acquisition of advanced Western technologies for China; several Chinese companies, including military enterprises, have used Hong Kong to raise foreign capital in order to finance projects in China, so that at the end of 1995 the Special Administrative Region has become the largest source of foreign direct investment in China, totalling U.S.$76 billion; another key role played by Hong Kong is that it has facilitated the development of trade and tourism between China and Taiwan to the point that the Mainland would adopt the "one country, two systems" formula for its reunification with Taiwan; from 1980s, Hong Kong has made huge amounts of investment in Guangdong province that have led to an economic growth which transformed Guangdong into a prosperous province and contributed to the liberalization and internationalization of the PRC's economy[10].

Since Hong Kong is more than a supplier for China, it can survive and prosper even if China lives political and economic collapse. For example, the Tiananmen Square incident in 1976 showed that Hong Kong business in China was not at risk, but on the contrary no company of Hong Kong located in southern China suffered any production or trade loss. Moreover, most of these companies were processing centres for goods that satisfied Japanese, European or American demand, only few of them depended on Chinese demand. As an independent and prosperous region, Hong Kong has always been crucial for China. Its first role was as an airlock for the Mainland, an entry point for technology, capital, management skills and ideas. There were no countries that can compete in this respect, not even the Special Economic Zones that were dominated by Hong Kong's investment. Hong Kong's second major role was as an international financial centre and a funds managerial centre. This role was preserved thanks to its sound legal framework, and independent and efficient judiciary, thanks to its free flow of capital and information, and thanks to its mature financial market and sound banking system[11]. These factors made it difficult for competitors in the Mainland to rival Hong Kong's function as a major financial centre, on the contrary they benefited Hong Kong in different areas: in increasing placements by large Chinese State-owned enterprises and private firms in

[10] Pollack D. Jonathan, Yng H. Richard, "In China's shadow: regional perspectives on Chinese foreign policy and military development", *RAND Corporation*, 1998, pp.170-171.
[11] Overholt H. William, "Hong Kong and China after 1997:the real issues", *The Academy of Political Science*, 1991, pp. 36-40

the Hong Kong stock market; in growing corporate debt financing by Mainland companies; in increasing FDI to China with WTO related liberalization of service sectors and in eliminating textile export quotas; in encouraging Hong Kong's debt market through infrastructure projects in China. In order to ensure stability and development of Hong Kong's financial markets, market infrastructure and framework had to be continuously upgraded, and Hong Kong had to maintain a smooth flow of its economic activities with surroundings areas, especially the Mainland[12]. Hong Kong's third role was as a major manufacturer, more precisely, a manager of manufacturing in Southern China. Like New York, Hong Kong has changed from manufacturing to management, design, and finance. There were many competitors for this role, but Hong Kong's role as a manager and designer was increasingly a regional one, with factories in Thailand, Malaysia, and so on. Its fourth major role was as a regional headquarter since it was regarded as a superior environment for cultural and entertainment opportunities, thanks also to its position as Asia's press centre, with incomparable facilities and press freedom. These roles ensured the continuation of Hong Kong's positions as major tourism centre[13].

From the early 1980s, with the China's economic reform, Hong Kong entrepreneurs took advantage of the opportunities in the Pearl River Delta region. Production capabilities were expanded across the borders at low costs, the amount of Hong Kong's domestic export reduced and was replaced by re-exports from China produced by Hong Kong-invested companies. As a result, during the Chinese economic development period, Hong Kong's economic structure became service-dominated (Table 1): the share of secondary industry, around 32 percent in the early 1980s, fell to 14 percent in 2000. The tertiary or service industry's share reached 88.7 percent in 2000. Finance, shipping, tourism, and especially producer services represented the driving forces for Hong Kong's economic growth[14].

[12] Mok Yeuk-kwok, "A Study of the Future Role of Hong Kong as an International Port in China", *University of Hong Kong*, Hong Kong, 1999, pp. 11-13.
[13] Overholt H. William, *op.cit.*
[14] Zhu Wenhui, "Towards an integrated market: the future of Hong Kong's economy and its interaction with the Chinese Mainland", *Brooking Institution*, October 2005, pp. 5-6.

Table 1: Hong Kong's economic indicators 1980-2000

| Year | Population (million) | GDP (HK$ billion) | Primary industry (%) | Secondary industry (%) | Tertiary industry (%) | Per capita GDP (US$) | Exports (US$ billion) | Total trade (US$ billion) |
|---|---|---|---|---|---|---|---|---|
| **1980** | 5.04 | 135.04 | 1.0 | 31.7 | 67.3 | 5,268 | 19.10 | 40.80 |
| **1985** | 5.46 | 255.42 | 0.6 | 29.9 | 69.5 | 6,134 | 30.15 | 59.82 |
| **1990** | 5.71 | 563.52 | 0.3 | 25.3 | 74.4 | 13,092 | 82.04 | 172.32 |
| **1995** | 6.16 | 1.041.07 | 0.2 | 16.1 | 83.7 | 22,831 | 172.32 | 363.49 |
| **2000** | 6.67 | 1.228. | 0.1 | 14.2 | 85.7 | 24,782 | 201.63 | 414.19 |

*Source:* Census and Statistics Department, HKSAR

Another factor which strengthened the economic interaction between China and Hong Kong was the Closer Economic Partnership Arrangement (CEPA) signed on 29 June 2003, a free trade agreement through which Hong Kong's products, companies and residents enjoy a preferential access to the Chinese market. Under its terms, over 1,400 Hong Kong's goods can be imported into China tariff-free. In addition, CEPA allows Hong Kong companies to establish wholly-owned subsidiaries in the Chinese mainland that can compete in the Chinese markets. For many professional services (legal, accounting, etc.), Hong Kong practitioners provide limited services in the Chinese mainland that are prohibited to other practitioners. Finally, in the financial sector, Hong Kong banks can offer bank accounts, credit cards, and remittances denominated in RMB, while Hong Kong residents can convert their currency into RMB and they can open Renminbi checking accounts in banks in Guangdong Province[15].

## 1.4 China's Economic Development

China's economic transition between 1979 and 1998 has evolved in two stages, with the Decision of November 1993 marking a turning point, and it was a remarkable success. China from a centrally-planned economic system became a market economy. During this period, China's GDP grew at an average annual rate of about 9 per cent, or 7.5 per cent on a per capita

[15] Martin F. Michael, *op.cit.*, pp. 22-23.

basis. The living standard of Chinese people, including the living spaces in urban and rural areas, improved significantly. Between 1979 and 1993, the first stage of Chinese economic transition was characterized by the "*incremental reform*"[16], that involved: the rapid rise of the "*non-state sector*", that operated outside the scope of the central planning, faced more competition than State-Owned Enterprises and finally became the driving force of Chinese growth and industrialization; the price reform, which started through the "*dual-track*" mechanism under which non-state enterprises were allowed to sell their surplus output at market prices, while their planned quota production was sold at state-set prices; the fast expansion of foreign trade and attraction of foreign investment, thanks to Deng Xiaoping's establishment of four Special Economic Zones (SEZs) in the south, where foreign companies could invest freely and export their profits[17]. These SEZs were: Shenzhen, Zhuhai, Shantou (in Guangdong province) and Xiamen (in Fujian province). These areas enjoyed lower tax rates and a special institutional environment and gained more authority over their economic development. While the Mainland was dominated by public ownership, SEZs became market economies dominated by private ownership. The objectives set out for the SEZs were to develop a market-oriented and outward-looking economic system, and to serve as a window for the Chinese economy, so that the domestic economy could be linked to the outside world without leaving its door wide open. The operations of SEZs brought benefits that have been extended to the rest of the country, such as: employment and resource utilization, capital formation and technology transfer, trade expansion, economic reforms (that led to the opening of the Chinese economy)[18].

In 1993, the Communist Party's Economics and Finance Leading Group, headed by Jiang Zemin, worked together with economists to organize a strategy of transition to a market system. In November of the same year, the "Decision on Issues Concerning the Establishment of a Socialist Market Economic Structure" was adopted by the Third Plenum of the Fourteenth Party Congress in November 1993. The core of this document was to replace

[16] Ichimura S., Sato T., James W., "Transition from Socialist to Market Economies: Comparison of European and Asian Experiences", *Palgrave Mcmillan*, 2009, pp. 37-66.
[17] China.org.cn September 16, 2009, "1981: Dual-track Price System", [http://www.china.org.cn/features/60years/2009-09/16/content_18534471.htm].
[18] Ge Wei, "Special Economic Zones and the Opening of the Chinese Economy: Some Lessons for Economic Liberalization.", *World Development Vol. 27*, 1999, pp. 1267–1285.

China's centrally planned system with a market system. According to the November 1993 decision, from 1994 to 1998 several reforms were promulgated in five main areas[19]:

- Foreign exchange and external sector reform, that abolished the plan allocation of foreign exchange and under which the dual-track mechanism became a single market track;
- Tax and fiscal reform, that made a distinction between national and local taxes and built a national tax bureau and local tax bureaux responsible for their own tax collection; in addition, in 1995, the "Budget Law", which forbidden the central government from borrowing from the central bank, took effect;
- Financial reform, which gave the central bank the right to determine monetary policy, by reducing the local government's influence on financial decisions;
- SOEs reform, based on the privatization of small-sized SOEs that started in 1992 on an experimental basis by local governments in few provinces, and then was endorsed by the central government in 1995;
- Establishment of a social safety net, essential for both SOEs and private enterprises.

Another crucial event that marked Chinese economic transition was the China's accession to the World Trade Organization (WTO) in 2001. This event not only established China's rightful accession to the international trading system, but it also constituted an external constraint that drove the regime to carry out reforms in order to complete the country's modernization. The "Protocol on the accession of the People Republic of China", drafted in November 2001, laid down the criteria of transparency, free market and non-discrimination between domestic and foreign products to which China had to adapt in order to abandon its status of "non-market economy"[20]. Even if China has experienced a significant economic transition, it is not possible to affirm that it has an efficient market. The next chapters will deeply analyse the Shanghai stock market together with the Hong Kong one, and it will be explained why there are substantial price discrepancies between same stocks listed in both markets. Before starting this comparison, the basic notions about what is the efficiency of markets, what did scholars state about during the second half of the 20$^{th}$ century and how the efficiency concept has changed over time due to the different behaviour of investors are provided below.

[19] Ichimura S., Sato T., James W., *op. cit.*.
[20] Russo F., "La Cina e l'economia di mercato: una questione ancora aperta", [https://ilcaffegeopolitico.net/60107/la-cina-nel-wto-una-questione-ancora-aperta].

## 1.5 Market Efficiency: General concepts

### *1.5.1 Efficient Market Hypothesis (EMH)*

The most important evaluation of market efficiency is based on the "*theorems of welfare economics*"[21], developed by several researchers such as Arrow, Sen A. and so on. These theorems deal with competitive markets and they analyse what happens when markets are in equilibrium. The first theorem establishes that, under specified conditions, every competitive market equilibrium is weakly Pareto efficient, that means that no other feasible allocation can improve someone's conditions without decreasing someone else's conditions. This theorem is mathematically true but it shows some objections: it ignores the fact that the real economy is never in equilibrium, it is characterized by excess supply or demand; the theorem refers to a competitive market behaviour, whereas the real economy is full of monopoly; another objection is that the theorem assumes that there are not externalities in real economy; finally, it ignores distribution, and it is the most important objection.

In this regard, the second theorem claims that in specific conditions, there are equilibrium prices at which the Pareto efficient allocation becomes a complete competitive market equilibrium, with respect to a suitable distribution of the given resources[22]. According to these theorems, it is possible to identify an ideal or efficient market under specific conditions:

- Sellers and buyers are all price-takers and not price-setters;
- Products are homogeneous so that buyers are unable to distinguish between goods sold by different sellers;
- Firms can freely enter and exit the market, therefore new suppliers can enter the market to increase competition or leave the market if they are inefficient;
- Perfect information about prices and technology at zero cost;
- No externalities in production and consumption.

If these conditions are not met, the market does not attain efficiency. For example, if there are barriers to entry or exit, new suppliers cannot enter the market to increase competition, at the same time inefficient producers stay into the market without facing new competitors, and

[21] Hindriks J., Myles D., "Intermediate public economics", *MIT press*, 2013, pp.33-38.
[22] Sen A., "Markets and freedom: achievements and limitations of the market mechanism in promoting individual freedom", *Oxford economic paper*, 1993, pp. 520-521.

consumers do not get the best value for their money. Only the perfect competition situation, where producers compete to increase production that lowers prices, attains efficiency and improves consumer welfare and purchasing power through lower prices[23]. In most cases, these requirements are not respected in real life and this leads to market failures.

There are different types of market efficiency[24]:

- Allocative efficiency, with which the capital markets allocate limited amounts of capital funds to the most productive uses;
- Operational efficiency, means that the cost efficiency of capital markets and financial institutions are defined in terms of charges of investors;
- Informational efficiency, that focuses on the extent to which securities prices reflect all available information and react to changes in information.

In 1965, Paul Samuelson was the first who developed the notion of market efficiency in his article "Proof that properly anticipated prices fluctuate randomly", stating that in an efficient market full of available information, price changes must be unforeseeable if they are anticipated, that means, if they fully incorporate the information and expectations of all market investors[25]. Another important study on the concept of market efficiency was conducted by Eugene Fama in 1970, who theorized the Efficient Market Hypothesis:

> "*the ideal is a market in which prices provide accurate signals for resource allocation: that is, a market in which firms can make production-investment decisions, and investors can choose among the securities that represent ownership of firms' activities under the assumption that security prices at any time "fully reflect" all available information. A market in which prices always "fully reflect" available information is called efficient*."[26]

According to this assumption, Fama has identified three types of informational efficiency[27]:

[23] Frank R., "Microeconomics and Behavior". *McGraw-Hill*, New York, 2014, pp. 29-31.
[24] Pilbeam, Keith, "Finance & Financial Markets", *Palgrave Macmillan*, 2010, pp. 247-248.
[25] Samuelson P., "Proof that properly anticipated prices fluctuate randomly", *Industrial Management Review 6*, 1965, pp. 41–49.
[26] Fama Eugene, "Efficient capital markets: a review of theory and empirical work", *The Journal of finance*, 1970, p. 383.
[27] Fama E., *op. cit.*, p. 383.

- *Weak form* efficiency, in which current prices of securities just reflect the information contained in their historical prices; it is not possible to make consistent returns by looking at the history of securities price movements and using this for future trading;
- *Semi-strong form* efficiency, in which current prices of securities reflect not only the information contained in their historical price movements, but also any publicly available information, such as earnings, company reports' details, information about the state of the economy and so on. It is not possible to make consistent returns by using these information for future trading;
- *Strong form* efficiency, in which current prices of securities reflect any private and public information gathered by given investors. It is not possible to make consistent returns by using private information for future trading.

The EMH defines three sufficient conditions under which a market is efficient:

- There are no costs of transactions in trading securities;
- All market participants have access to all available information without costs;
- All participants share the same opinion on how current information reflect on the current price and distributions of future prices of each security.

In such conditions, the security's current price fully reflects all the available information, but the problem is that these circumstances are impracticable because of different reasons: prices reflect available information even if there are transactions costs, since they just modify resource allocation; it is impossible that all participants gather all available information, but it is sufficient that the majority of them gather information; market participants can disagree on the implications of current information. For these reasons, these conditions are sufficient, but not necessary, for market efficiency[28].

If the EMH is hold, it is impossible for an investor to expect to make consistent returns *ex ante*. This concept is similar to that of a "fair game", where there is not differences between the actual and the expected returns on a game. In the EMH the "fair game" model states that there should not be differences between the actual and the expected returns on a security given its risk profile. According to this statement, the "random-walk" concept is formalized: the actual return on a security corresponds to the expected return plus a random error that can be positive or negative. It means that if a security price follows a random walk, at the start of

[28] Fama E., *op. cit.*, pp. 387-388.

each period there is a 50% chance that such price will rise by a given amount, and a 50% chance that it will fall by a given amount. Given this assumption, the best forecast of the future price is the current price[29].

Fama's hypothesis on market efficiency is enhanced in reference to the categories of investors: financial markets, characterized by rational investors, always reach the equilibrium because these economic participants exploit the opportunities for arbitrage (that is the purchase or sale of a specific security and the simultaneous opposite operation in a different market) in order to cancel any price fluctuations caused by the investment strategies of any irrational investors, so the behaviour of investors do not influence market efficiency[30].

### *1.5.2 Criticisms to the EMH*

Despite many scholars supported Fama and his thought, EMH has been discussed by many others. Criticisms focused on three main issues:

- Magnitude issue: if financial market is like a fair model, only investors with a high portfolio value can earn huge profits by exploiting financial mispricing, that is the deviation from the current value of the market price.
- Selection bias issue: an investor that discovers a way to earn profits can decide to gather or to publicly share it.
- Lucky event issue: if the market is a fair game, financial investment can be compared to the coin toss, so that gains or losses rely on chance.

In 1980, Grossman and Stiglitz also criticized the hypothesis on market efficiency[31], stating that a situation in which efficient markets have all information is impossible to reach: if markets are perfectly efficient, there is no profit to gathering information, since there are no reasons to trade and markets could collapse. Alternatively, the degree of market inefficiency defines the effort investors are willing to make to gather and trade on information: when investors find out sufficient profit opportunities that compensate them for the costs of trading and information gathering, a market equilibrium arises. The profit earned by these investors is

[29]Pilbeam K., "Finance and financial markets", *Macmillan International Higher Education,* 2005, pp. 250-251.
[30] Pilbeam K., *op. cit.*, p. 252.
[31] Grossman S., Stiglitz J., "On the impossibility of informationally efficient markets", *American Economic Review 70,* 1980, pp. 393–408.

known as “economic rent” and is provided by the so-called “noise traders”, market participants who, by using noises, hinder the investors’ possibility to obtain information from prices. Moreover, Grossman and Stiglitz criticized Fama’s assumption that prices fully reflect all available information by claiming that, in reality, prices fully reflect all *publicly* available information, since the disclosure of private information produces incentives. The researchers theorized models that state that trading between informed investors has effects on prices and discloses information to the market, but these models did not consider other institutional aspects related to the public information dissemination: the experts did not pay attention to the role of institutions, on the contrary they hypothesized that investors independently gather and distribute information. For this reason their theory seemed to be incomplete. A further criticism comes from the Schredelseker model[32]. It starts from the assumption that it is impossible to have a homogeneous distribution of information among investors. There are always more and less informed participants. The publication of information, previously not accessible to all, leads to providing less informed investors with a greater level of information. Despite this, they can alternatively ignore this information or make use of it.

In the first case, the market situation does not change and the information made public has no value as much for the more informed investors as for the less informed ones, since the former already have such information. If less informed investors decide to use the information, the more informed ones would try to anticipate the decisions of others to their advantage. There would therefore be a change in the market equilibrium situation which is not necessarily advantageous for less informed investors.

Meanwhile, many authors have conducted empirical studies to verify the hypothesis of market efficiency. One of these analyses is the “event study”, carried out in 1969 by Fama *et al.*, that looks at the effects that the dissemination of “good or bad news” in financial market have on security prices[33]; the structure of the event study is the following: a sample of analysis is determined by choosing a number of companies that have made a "surprise" communication to the market (the “event”); "day zero" is defined as the day when the news appears; the event window, that is the analysis period before and after the communication, is determined; for each company of the sample, the return of each day of the period is calculated and the excess

[32] Schredelseker K., “Anlagestrategie und Informationsnutzen am Aktienmarkt”, zfbf - *Schmalenbachs Zeitschrift für Betriebswirtschaftliche Forschung 36*, 1984, pp. 44-59.
[33] Fama E., Lawrence F., Jensen M. and Roll R., “The Adjustment of Stock Prices to New Information”, *International Economic Review* Vol. 10, 1969, pp. 1-21.

return is estimated; finally, the average excess return of each day of the period is calculated, in order to analyse the general effect of the advertisement in the market. The study shows that the price of the securities, which changes on day zero, does not increase further following the company's communication, on the contrary it remains stable. This is consistent with the semi-strong form of markets efficiency, because prices quickly embed the news and affect returns. In addition to Fama *et al*., in 1981 Banz also conducted studies in order to verify the truthfulness of the EMH by developing his "small-size effect"[34]: he analysed the relationship between the expected return and the total market value of firms' shares, then the results showed that, between 1936 and 1975, the shares of small companies had higher returns than the shares of large companies. Following the study of Banz, it has been shown that smaller firms' stocks had generated higher returns the first month of the year for several years, and this led to the "January effect", a seasonal anomaly against the hypothesis of market efficiency since it is a predictable event that breaks the random walk idea. These anomalies arise because they refer to the behaviour and rationality of investors. The empirical studies show that the processes that characterize the financial market do not fully satisfy the conditions and assumptions of the ideal market. Thus, sometimes it presents inefficiencies deriving from: transaction and information costs, externalities, asymmetric information, and irrational behaviour of investors. After a brief explanation of the first two factors, we will focus on the last two.

- **Costs of transactions and information**

In financial markets, transaction and information retrieval costs are never zero for both sellers and buyers. Even the information, which should be publicly available, is not for some investors. For this reason, prices do not fully incorporate such information and, consequently, the markets are not as efficient as elaborated and supported by Fama.

- **Externalities**

They refer to costs or benefits of an economic activity experienced by an unrelated third party. They are not reflected in the final cost or benefit of goods or services, but they lead to the market failure. Externalities can be positive or negative:

[34] Banz W., "The relationship between return and market value of common stocks", *Journal of financial economics*, 1981, pp. 1-18.

- Positive externalities are positive consequences of economic activities experienced by a third party. An example is individual education, that provides benefits to the students, but the benefits for this public good spills over to the whole society.
- Negative externalities are negative consequences of economic activities experienced by a third party. An example is cigarette smoking, that is primarily harmful to a smoker, but it also has a negative health impact on people around him.

- **Asymmetric information**

A set of information that is not really shared among the individuals who are part of the economic process, therefore a part of them has more information than the other party, thus deriving various advantages. Asymmetric information involve two different phenomena:

- Adverse selection
- Moral hazard

The first case (studied by Stiglitz and Weiss) implies that lenders and borrowers are not equally informed since the latter ones have more information regarding the probability of success of the project to be financed; the second case implies that the lenders consider all borrowers identical, moreover both parties have the same information on the probability of success of the projects undertaken. Market failure arises because the lenders offer credit only to some borrowers knowing that there are riskier investments than others.

Now the case of adverse selection is analysed. In the 70s George Akerlof develops the theory of the market for lemons[35], and takes the used car market as an example: it includes sellers and buyers with asymmetrical information on the quality of the used cars for sale. While the latter ones know the average quality of the goods that would be sold at a given price, the former ones know exactly the quality of the goods. This implies that, while the buyer is willing to spend a certain amount of money according to the car's average valuation, the seller will be willing to accept the offer only if it exceeds the valuation of his car. If the quality of the seller's good is consistently above the average, this can lead to those sellers out of the market. In 1981 Stiglitz and Weiss explain the phenomenon of credit rationing[36], a situation in which economic participants are unable to obtain the amount of bank loan they want. This

[35] Akerlof G., The Market for "Lemons": Quality Uncertainty and the Market Mechanism, *The Quarterly Journal of Economics*, Vol. 84, 1970, pp. 488-500.
[36] Stiglitz J. And Weiss A., Credit Rationing in Markets with Imperfect Information, The American Economic Review, Vol. 71, 1981, pp. 393-410.

is because lenders (that are generally banks) focus on their expected return, which depends on the interest rate on the loans granted. The interest rate may also affect the degree of risk of the individuals requesting the loan. The information asymmetry (adverse selection) concerns the different probabilities borrowers have to repay their loans, since the expected return to the bank depends on borrowers' probability on repayment. The bank therefore would like to be able to recognize individuals who will repay. In order to discern the different types of borrowers, lenders use some *screening devices*, one of them is the interest rate itself, since the riskiest individuals will be willing to pay a higher interest rate than safe individuals (because in case of failure, the former ones would not repay the debt). If the interest rate increases, the probability that the bank will not be repaid the debt increases too, so in such situation individuals and enterprises will be tempted to borrow riskier loans. These information asymmetries are also known as *ex-ante* asymmetries.

Now the case of moral hazard, or *ex-post* asymmetries, is analysed. In *ex-post* asymmetries, disinformation occurs after the bank makes the loan. Individuals and banks have the same information about projects before financing; subsequently, individuals will be able to choose between different projects with different profitability and therefore different degree of risk. Therefore, it is important for the bank to monitor the individuals to whom the loan is granted. However, this monitoring is not without cost, the bank must bear a burden to observe what the borrowers will do after the loan is granted. Because of this, various models have shown that in the presence of *ex-post* asymmetries not all individuals or enterprises are able to be financed and therefore there is the phenomenon of credit rationing. For example, Diamond[37] in 1991 investigates how the company's reputation affects the ability to borrow directly from the credit market. New borrowers or those applying for a loan for the first time use the intermediary of the bank which applies higher interest rates due to the monitoring that it must perform to verify the probability that the borrower has chosen a good investment so that he is able to repay the debt contracted to the intermediary. Diamond demonstrates that given two moments in time, when the borrower is able to repay the debt to the intermediary the first time, later he can obtain the credit directly. The bank can decide not to grant the credit when the probability of success is below a certain threshold. When present real interest rates are high or present economy-wide profitability is low, a higher credit rating is required to have a

[37] Diamond D., Monitoring and reputation: the choice between bank loans and directly placed debt, *Journal of Political Economy*, Vol. 99, 1991, pp. 689-721.

loan without monitoring. This implies that the demand for bank loan monitoring is high and that the average new bank loan goes to a safer and higher-rated customer.

The asymmetry consists in the fact that the borrowers, once a project has been undertaken and once its profitability has been verified, sometimes declare to the bank a return that is lower than the one actually achieved, in order to profit from the difference between the two values.

- **Irrational behaviour of investors**

The results emerging from the empirical studies are more or less discordant with the EMH. For example, the *event study* supports such hypothesis, while the researches that reveal the presence of anomalies in the returns of securities are incompatible with it. In the 80s a new approach, aimed at responding to the differences between the theory of market efficiency and the actual price trend by focusing on investor behaviour, has been developed. It is known as Behavioural Finance[38] and it consists in linking economic and financial factors with studies on psychology and sociology. By recognizing that investors are human beings and that instinct is often one of the most important drivers of the financial market, any action undertaken by an economic participant implies an irrational decision-making process (due to some *behavioural biases* that arise in uncertain situations) which leads to inefficiencies or pricing errors in the financial markets. Therefore, the "behaviourists" Kahneman and Tversky argue that the choices of individuals are guided by their preferences in order to obtain the best for themselves, and finally highlight how individuals follow *heuristic* principles and generate *bias* in the formulation of judgment[39].

To explain how investors try to obtain the best results for themselves, the psychologists Kahneman and Tversky[40] developed the Prospect Theory under which in risky situations, the behaviour of individuals differs according to whether the stakes are gains or losses. It means that, if an investor has the possibility to choose between two alternative options with equal expected returns, one with certainty of gain, the other with the possibility of greater gain, he will probably choose the first option and will therefore show a risk aversion behaviour. On the contrary, if an individual faces the same choice between two alternative options with equal expected returns, but one with certainty of loss, and the other with the risk of greater loss, he

[38] Shleifer A, "Inefficient Markets: an introduction to behavioural finance", *Oxford University Press*, 2000, pp. 59-65.
[39] Kahneman D., Tversky A., "Prospect theory: an analysis of decision under risk", *Econometrica*, 1979, pp. 263-292.
[40] Kahneman D., Tversky A., *op. cit.*

will probably choose the second option and will therefore show risk seeking behaviour. This happens because the pain of losing a certain amount of money is greater than the pleasure of earning the same amount of money. This different attitudes towards gains or losses is graphically represented through the so-called "value function" (Figure 1.).

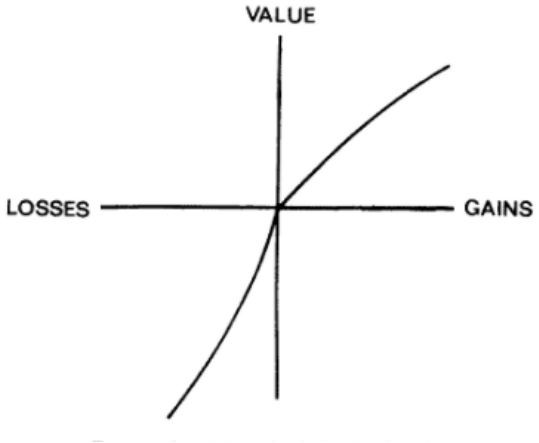


**Figure 1: Value Function**

It is defined on deviations from the reference point (the point where the axis of value and the axis of gains or losses coincide), generally concave for gains and convex for losses, steeper for losses than for gains, since the losses weigh more than the gains (i.e. if the amount of the win is doubly greater than the amount of the loss, the individuals agree to participate in a bet with 0.5 probability of winning and 0.5 probability of losing). Another relevant fact is that the S-shaped value function shows a less steep slope when moving away from the referent point, since the marginal value of both gains and losses decreases as their value increases (i.e. a variation from €100 to €150 is more relevant than €10.000 to €10.500) [41].

Kahneman and Tversky, in another paper[42], state that people facing uncertain situations tend to resort to the *heuristics* and to make incorrect judgments due to distortions that arise during the acquisition of information (since sometimes its reliability is overestimated), the information processing (since people tend to overestimate their capability in processing it) or the issuance of judgment. These heuristics are: Availability, Representativeness and Anchoring and Adjustment.

[41] Kahneman D., Tversky A, *op.cit.*
[42] Tversky A., Kahneman D., "Judgement under uncertainty: Heuristic and biases", *Science*, 1974, pp. 1124-1131.

- Availability: it consists of the degree of ease with which an individual is able to recall a fact that has already happened or is already known, so as to be able to exploit this information which is not available to everyone, overestimating its quality. Daniel, Hirshleifer and Subrahmanyam[43] apply this behaviour to finance and they define an *overconfident investor* as an investor who overestimates the accuracy of private information and ignores public information. The result is that in the short term there is an excessive price reaction, while in the long term, with the arrival of public information, there can be a trend reversal and so prices will tend to adjust.
- Representativeness: It is the principle used by individuals to assess the probability that an event will occur. In order to know if an object A belongs to a class B, or if an event A originates from a process B, people typically rely on representativeness heuristic, that means the degree to which A resembles B. This approach to the judgement of probability leads to serious mistakes, because there are factors that do not influence representativeness but should have effect on probability, such as the *prior probability* (or base-rate frequency) *of the outcomes*: individuals tend to consider the probability of the occurrence of an event on the basis of the events that occurred previously, when instead the two events considered are totally independent. Another mistake that explains this attitude is the so-called *gambler's fallacy* in a Russian roulette: after a series of red, most people erroneously believe that the roulette wheel will come up black, presumably because the occurrence of black will be more representative than the occurrence of an additional red.
- Anchoring and adjustment: It is used to estimate a number: people start from a given initial number (different from the initial value) that is adjusted to provide the final answer. Frequently, adjustments are not sufficient, since different starting points provide different estimates. This phenomenon is called *anchoring*. In finance, anchoring bias can cause an investor to make incorrect decisions based on irrelevant data. For example, market participants tend to invest on shares of companies whose value has declined in a very short period of time as they remain anchored to the original prices of such shares, since they hope the shares will return to their purchasing power[44].

[43] Daniel K., Hirshleifer D. and Subrahmanyam A., "Investor psychology and security market Under and Overreactions" *The Journal of Finance*, 1998.
[44] For more details visit: "What is Anchoring?" [https://www.investopedia.com/terms/a/anchoring.asp].

In order to question the truthfulness of the efficient markets hypothesis, other behaviourists have paid particular attention to the assertion that in a market composed of only rational investors, any price fluctuations caused by noise traders are eliminated by using arbitrage opportunities, so as to obtain positive profits without risk or capital. Actually, Shleifer and Vishny[45] argue that arbitrage usually requires capital, and is typically risky. Moreover, when arbitrage is conducted by a small number of specialized arbitrageurs that manage other people's capital, and these people do not understand their operations, if the arbitrage leads to a loss, they may infer that the arbitrageurs are not competent, refuse to provide them with more capital, and even withdraw part of the capital. Since arbitrage requires capital, arbitrageurs are most constrained when there is the probability that the mispricing they have bet against gets worse. The fear that this situation will arise makes them more cautious in putting on their initial trades, and less effective in fulfilling market efficiency.

Together with the psychologists, Andrew Lo through his work[46] provides an interpretation and explanation regarding the discrepancy between the EMH and the empirical results highlighted by proponents of behavioural finance. He argues that the *Adaptive Markets Hypothesis* (AMH) is an alternative version of the efficient markets hypothesis. The basic notion of what the AMH is about is:

- Individuals act in their own self-interest.
- At the same time, individuals make mistakes.
- Individuals learn and adapt (heuristic principles), and the way that they learn and adapt, the way they interact each other determines market dynamics.
- Competition, that comes out because investors do not want to be excluded from the market, drives adaptation and innovation.
- Evolution (the way individuals interact each other) determines market dynamics.

As Lo states, "*nothing makes sense in financial markets except in the light of the Adaptive Markets Hypothesis*"[47]. In this perspective, the degree of efficiency of a financial market is measured on the basis of the number of financial resources available and the number of participants who aspire to these resources. If there are several operators interested in a

[45] Shleifer A., Vishny R., "The limits if arbitrage", *Journal of Finance*, 1997, pp. 35-55.
[46] Lo Andrew W., The Adaptive Market Hypothesis – market efficiency from an evolutionary perspective, *The Journal of Portfolio Management*, 30th anniversary issue, 2004, pp. 15-29.
[47] Lo Andrew W., Adaptive Markets: Financial Evolution and the Speed of Thought, *Princeston University Press*, 2017, pp. 1-489.

financial resource scarcely present in the market, it will be characterized by a high level of efficiency, as prices fully reflect the new information. On the contrary, if there is a small number of operators interested in a resource abundantly present in the market, they operate in an inefficient context due to insufficient information. As resources diminish or the number of investors increases, competition between individuals strengthens, causing some of them to disappear. The factor that determines the cyclical continuity of this process or its convergence towards a state of equilibrium is the combination of resources and market operators that remain in (or are excluded from) the market and it depends on their ability to adapt and innovate. According to the AMH, a convergence of the market towards a point of equilibrium or stability is almost never reached. The degree of efficiency of a financial market, however, depends on every single situation (for example on financial trading days) and also on the dynamics that develop around the behavioural interactions between the investors[48].

[48] Lo Andrew W., 2004, *op. cit.*

# CHAPTER 2

# TWO MARKETS TWO PRICES: HYPOTHESES IN COMPARISON

The following chapter, after a description of the Shanghai and Hong Kong stock markets, focuses on the connection program launched in November 2014 with the aim of increasing the mutual market access among different investors. In China, an emerging country until a few years ago, there are price differences between securities listed on foreign markets such as Hong Kong and identical securities listed on the local market. Unlike other emerging markets, where foreign shares are traded at a premium over domestic ones, in the Mainland the opposite situation arises; various academics have studied such phenomenon and have developed different theories to explain price differences. In support of them, a 2017 financial documentary explaining how emerging China managed to list its fraudulent companies in US markets is introduced.

## 2.1 The Shanghai Stock Exchange

After the end of the Cultural Revolution (1976) and when Deng Xiaoping rose to power, from 1978 China started to open to the outside world. Its two securities markets, the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE), were established in November 1990 and July 1991, respectively. The Shanghai Stock Exchange was previously founded in 1891 and then closed in 1949 after the establishment of the People Republic of China. Today it is the world's second largest equity market after the United States. The shares initially traded in these two markets, that represent the majority of Chinese stocks, are known as A-shares. They constitute China's domestic market since originally they could be purchased only by Chinese citizens in local currency Chinese Yuan (Renminbi/RMB). In 1992 another type of shares, known as B-shares, was introduced into the two stock markets only for foreign investors. B-shares can be traded in U.S. dollars in the SSE and in Hong Kong dollars in the SZSE. Since 1993, a growing number of H-shares (shares of Chinese companies listed in the Hong Kong Stock Exchange) was introduced in Hong Kong and other Chinese shares started to appear in different markets such as New York (N-shares), London

(L-shares) or Singapore (S-shares). Most of A-shares are issued by state-owned enterprises and are divided in:

(i) State shares, held by the government through a specific government agency;

(ii) Legal shares, held by a "legal person" that can be an enterprise or an economic entity;

(iii) Public shares, held by ordinary Chinese citizens.

B-shares are legally identical to A-shares and enjoy the same voting rights and dividends[49]. In the past, the Chinese stock market was segmented, with domestic citizens allowed to trade A-shares and foreigners allowed to trade B-shares. Starting from February 2001, Chinese investors have been permitted to trade B-shares with legal foreign currency accounts[50]. In 2002, the China Securities Regulatory Commission[51] (CSRC) announced the Qualified Foreign Institutional Investors (QFIIs) program, which allowed a limited number of foreign institutional investors to buy and sell Chinese A-shares. However, since applicants were required to meet certain standards for financial stability concerns, so that getting QFII licences was extremely difficult. In 2003, only 12 foreign banks obtained the license but their approval ceased during 2006/2007[52]. However, today the A-share market is still dominated by Chinese investors. In 2006, five types of domestic institutional entities (insurance companies, banks, trust companies, funds, and securities firms[53]) have been allowed to access to foreign currency (that are under the exchange control in China) and to buy and sell foreign stocks abroad thanks to the Qualified Domestic Institutional Investor (QDII) program. In the same year, the Shanghai Stock Exchange guaranteed the listing of the shares of 842 Chinese

[49] Chan Kalok, Menkveld J. Albert and Yang Zhishu, "Information Asymmetry and Asset Prices: Evidence from the China Foreign Share Discount", *The Journal of Finance* Vol. 63, 2008, pp. 159-196

[50] Chen Jianxun, Shi Huici, "The Evolution of the Stock Market in China's Transitional Economy", *Edward Elgar Pub*, 2002, pp. 1-208.

[51] The CSRC is a ministerial-level public institution directly under the State Council. Its main regulatory reference is from the China's Securities Act that took effect in 1999 and direct the behaviours of people in the stock market. China's Securities Act is the first economic governance law established after the Asian financial crisis in 1998, which reminded China the importance of regulations that could help prevent or mitigate financial risks. The China Securities Regulatory Commission performs a regulatory function according to the laws and regulations, and with the authority by the State Council maintains an orderly securities and futures market order, and ensure a legal operation of the capital market.

[52] Ma C. & Rogers J. H. & Zhou S., "The Effect of the China Connect," *Finance and Economics Discussion Series* 2019-087, 2019, Board of Governors of the Federal Reserve System (U.S.).

[53] KPMG, "China's Capital Markets – The changing landscape", 2011, [https://assets.kpmg/content/dam/kpmg/pdf/2011/08/China-Capital-Markets-FTSE-201106.pdf].

companies with a market capitalization[54] of $915 billion. It is important to highlight that most of the SSE market capitalization is made up of companies that were once under the state control such as the largest commercial banks or large insurance companies. Since then, it has grown by 130% and then 97% in 2007 thanks to the strong dynamism of the country's economy, which attracted numerous investors from around the world. In 2007, the SSE Composite Index reached a price of 6,124 points[55], and the number of listed firms in the Shanghai Stock Exchange grew over time reaching more than 3,500 firms listed and traded at the end of 2018[56]. The SSE Composite Index is the most important index privileged by Chinese investors, even if there are other indices that include Chinese companies listed on both SSE and SZSE such as the CSI 300 Index (that consists of the top 300 A-shares listed on SSE and SZSE), Shenzhen Composite Index etc. Together with these, there are also other indices that are important for foreign investors who want to track Chinese companies listed in different stock markets, such as the Hong Kong China Enterprises Index (that tracks H-shares) and the MSCI China Index (that includes most of Chinese companies listed in Shanghai, Shenzhen, Hong Kong as well as Singapore and New York stock markets). Another major index is the FTSE China A50 Index, also known as Xinhua China A50, that is a stock market index belonging to the FTSE Group[57] which shows Chinese economic activity by grouping 50 companies with the highest stock market capitalization. Table 1 displays these top 50 companies in September 2018.

Table 1: FTSE China A50 Index Overview

| N. | Name | Sector | Weight |
|---|---|---|---|
| 1 | Ping An Insurance | Life Insurance | 12.53% |
| 2 | China Merchants Bank | Banks | 7.05% |
| 3 | Kweichow Moutai | Distillers & Vintners | 6.11% |
| 4 | Industrial Bank | Banks | 4.43% |
| 5 | China Minsheng Banking | Banks | 3.56% |

[54] Market capitalization refers to a company's market valuation and it is based on the number of shares it has issued and their current price. It is calculated by multiplying the number of shares outstanding by the current share price. The higher the market capitalization, the bigger the company.
[55] "La borsa cinese e la sua storia", [https://www.strategia-borsa.it/quotazione-borsa-cinese.html], *Strategia-borsa*.
[56] Ma, Chang, John Rogers, and Sili Zhou, *op. cit.*
[57] The Financial Times Stock Exchange Group (FTSE) is an independent organization owned by the London Stock Exchange Group. It has been created in 2002 and it specializes in developing index offerings for the global stock markets.

| | | | |
|---|---|---|---|
| 6 | Midea Group | Durable Household Products | 3.40% |
| 7 | Gree Electric Appliances Inc of Zhuhai | Durable Household Products | 3.39% |
| 8 | China Vanke | Real Estate Holding & Development | 3.24% |
| 9 | Shanghai Pudong Development Bank | Banks | 3.17% |
| 10 | Agricultural Bank of China | Banks | 2.99% |
| 11 | Ciric Securities | Investment Services | 2.62% |
| 12 | Industrial & Commercial Bank of China | Banks | 2.49% |
| 13 | Inner Mongolia Yili Industrial | Food Products | 2.49% |
| 14 | Bank of Communications | Banks | 2.41% |
| 15 | Wuliangye Yibin | Distillers & Vintners | 2.33% |
| 16 | Jiangsu Hengrui Medicine | Pharmaceuticals | 2.12% |
| 17 | China Construction Engineering | Heavy Construction | 1.87% |
| 18 | Poly Real Estate Group | Real Estate Holding & Development | 1.77% |
| 19 | China Pacific Insurance Group | Life Insurance | 1.74% |
| 20 | SAIC Motor | Automobiles | 1.71% |
| 21 | Hangzhou Hikvision Digital Technology | Electrical Components & Equipment | 1.67% |
| 22 | Bank of China | Banks | 1.60% |
| 23 | Bank of Beijing | Banks | 1.57% |
| 24 | Ping An Bank | Banks | 1.53% |
| 25 | BOE Technology Group | Electrical Components & Equipment | 1.43% |
| 26 | China Petroleum & Chemical | Integrated Oil & Gas | 1.39% |
| 27 | China Yangtze Power | Alternative Electricity | 1.34% |
| 28 | CRRC | Commercial Vehicles & Trucks | 1.31% |
| 29 | China Construction Bank | Banks | 1.29% |
| 30 | Anhui Conch Cement | Building Materials & Fixtures | 1.22% |
| 31 | Bank of Shanghai | Banks | 1.15% |
| 32 | China Everbright Bank | Banks | 1.13% |
| 33 | Focus Media Information Technology | Computer Hardware | 1.11% |

| | | | |
|---|---|---|---|
| 34 | Guotai Junan Securities | Investment Services | 1.04% |
| 35 | Jiangsu Yanghe Brewery Joint-Stock | Distillers & Vintners | 1.02% |
| 36 | China United Network Communications | Mobile Telecommunications | 0.90% |
| 37 | Baoshan Iron & Steel | Iron & Steel | 0.83% |
| 38 | China Railway Group | Heavy Construction | 0.80% |
| 39 | China Shenhua Energy | Coal | 0.79% |
| 40 | China Merchants Shekou Industrial Zone | Real Estate Holding & Development | 0.78% |
| 41 | PetroChina | Integrated Oil & Gas | 0.75% |
| 42 | China Life Insurance | Life Insurance | 0.66% |
| 43 | New China Life Insurance | Life Insurance | 0.65% |
| 44 | S.F. Holdings | Electrical Components & Equipment | 0.61% |
| 45 | Foshan Haitian Flavouring and Food | Food Products | 0.40% |
| 46 | Foxconn Industrial Internet | Telecommunication Equipment | 0.35% |
| 47 | China Communications Construction | Heavy Construction | 0.35% |
| 48 | China Citic Banck | Banks | 0.33% |
| 49 | Shanghai International Port | Transportation Services | 0.33% |
| 50 | 360 Security | Industrial Machinery | 0.23% |

*Source:* FTSE China A50 Index Constituent Weightings – September 2018

During the first fifteen years of the stock market's operation, A-shares were divided into tradable and non-tradable shares. The latter included non-tradable state shares - owned by the central or local governments through their business agencies or state owned enterprises (SOEs) - that averaged almost half of total A-shares, and non-tradable legal person shares - typically owned by institutions or business entities with local government backing - that constituted another 20% of total A-shares. Since the main aims of establishing the Chinese stock market were to allow SOEs to raise capital and assure the government to maintain the control over these enterprises, the existence of non-tradable shares represented a major obstacle to the development of China's equity market[58]. In this respect, the Split-Share

[58] Lee Suet Lin Joyce, "From Non-Tradable to Tradable Shares: Split Share Structure Reform of China's Listed Companies", *Journal of Corporate Law Studies*, 2008, pp.57-78.

Structure Reform of 2005 unlocked a significant number of non-tradable shares even if almost 25% of total A-shares remain non-tradable today[59]. After a previous unsuccessful attempt in 2001 to release non-tradable shares into the stock market, The CSRC announced in 2005 the gradual abolition of the trading constraints on non-tradable shares, so that to avoid another sharp price drop in the market[60] and compensate tradable shareholders for a possible adverse price impact. Under the reform, non-tradable shareholders negotiated a compensation deal with tradable ones in order to make their shares tradable. In order to strengthen the investors' confidence, the protection of the interests of tradable shareholders was an essential element. A study conducted by Firth *et al.* in 2010 demonstrated that state-controlled listed firms offered a higher compensation to the tradable shareholders than other firms, probably because of government pressure in ensuring the success of the reform. Once the compensation deal is negotiated, after 36 months all non-tradable shares become fully tradable in the stock market [61]. Most firms completed the process by 2007. Despite important progress in privatization, state ownership and the differentiation between state and private firms remain crucial characteristics of China's corporate sector[62].

## 2.2 The Hong Kong Stock Exchange

In 1891 the first formal stock market, known as the Stockbrokers' Association of Hong Kong, was established and then denominated Hong Kong Stock Exchange in 1914. It included a non-Chinese membership. A second stock exchange, the Hong Kong Stockbrokers' Association, was integrated only in 1921, and then after the Second World War in 1947 both the exchanges merged to build the Hong Kong Stock Exchange[63]. On 24 November 1969, the Hang Seng Index was made public, and currently it is owned by the Hang Seng Indexes Company Limited, a wholly-owned subsidiary of one of the biggest banks in Hong Kong, the Hang Seng Bank. Between 1969 and 1972, other stock exchanges were established, such as the Far East Exchange, the Kam Ngan Stock Exchange and the Kowloon Stock Exchange. In

[59] Jennifer N., Carpenter and Robert F. Whitelaw, "The Development of China's Stock Market and Stakes for the Global Economy", *Annual Review of Financial Economics* Vol. 9, 2017, pp 233-257.
[60] Hou Wenxuan, Lee Edward, "Split Share Structure Reform, corporate governance, and the foreign share discount puzzle in China", *European Journal of Finance*, 2011.
[61] Firth M., C. Lin and H. Zhou, "Friend or foe? The role of state and mutual fund ownership in the Split Share Structure Reform in China", *Journal of Financial and Quantitative Analysis* 45, 2010, pp. 685-706.
[62] Jennifer N., Carpenter and Robert F. Whitelaw, *op. cit.*
[63] "History of HKEX and its Market" [https://www.hkexgroup.com/About-HKEX/Company-Information/About-HKEX/History-of-HKEX-and-its-Market?sc_lang=en].

1980, the different exchanges merged and the new Stock Exchange of Hong Kong Limited (SEHK) was established. On April 2, 1986, the new exchange started trading through a computer-assisted system. In 1989, the Hong Kong Securities Clearing Company Limited (HKSCC) was established in order to implement a central system for securities transactions, and then in 1992 it created the Central Clearing And Settlement System (CCASS)[64]. In 1999 there was a great development of small and medium enterprises that tried to fulfil the requirements in order to be listed in the stock market, and this has led to the establishment of the Growth Enterprise Market (GEM) [65] that provided growth companies' fund raising opportunities and promoted the expansion of technology industries in the region. As a consequence, in the same year the Hong Kong Financial Secretary proposed a comprehensive market reform in order to increase the competitiveness of the Hong Kong stock exchange. On the basis of this reform, the Stock Exchange of Hong Kong Limited, Hong Kong Futures Exchange Limited and Hong Kong Securities Clearing Company Limited joined together in one holding company, the Hong Kong Exchanges Clearing Limited (HKEX), that came into effect on March 6, 2000, and it was listed on SEHK on June 27, 2000[66].

Shortly before China joined the WTO, Hong Kong's small and medium-sized enterprises were afraid of losing their competitiveness. In this regard, the HK Chief Executive Tung Chee-hwa stated that the future of Hong Kong's economy and its contribution to the Mainland would have lied in an increased integration and co-development with Guangdong Province and its role as a Chinese city. As a consequence, consultations on China and Hong Kong Closer Economic Partnership Arrangement (CEPA) started in May 2001, the request for this possible agreement was accepted in December 2001, and finally Mainland and Hong Kong signed the first text of the Closer Economic Partnership Arrangement, CEPA, on June 29, 2003[67]. This cooperation strengthened when, in November 2014, the Shanghai-Hong Kong Stock Connect program was launched and then, in December 2016, the Shenzhen-Hong Kong Stock Connect program was launched. These events mark a breakthrough in mutual market access between China and Hong Kong since foreign investors are allowed to purchase Chinese A-shares listed in the Mainland.

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[64] "History of HKEX and its Market" [https://www.hkexgroup.com/About-HKEX/Company-Information/About-HKEX/History-of-HKEX-and-its-Market?sc_lang=en].

[65] Pauluzzo R., Geretto E., "Stock Exchange Markets in Hong Kong: Structure and Main Problems", *Transition Studies Review*, 2013, pp. 33-48.

[66] "History of HKEX and its Market" [https://www.hkexgroup.com/About-HKEX/Company-Information/About-HKEX/History-of-HKEX-and-its-Market?sc_lang=en].

[67] Victor F., S. Sit, "China's WTO Accession and its Impact on Hong Kong-Guangdong Cooperation", *Asian Survey* Vol. 44, 2004, pp. 815-835.

The most important and one of the earliest Hong Kong stock market indices is the Hang Seng Index (HSI), launched on November 24, 1969. On January 2, 1985, its 50 constituent stocks have been grouped into four sectors so as to easily show the price movements of major industrial areas. Sectors are Finance, Utilities, Properties, and Commerce and Industry. It is the main indicator of the performance of the HKEX[68]. Table 2 shows the list of the 50 Hang Seng Index constituent shares, their sector classification and their share type updated to July 2020.

Table 2: List of companies shares, Shares sector division and share types.

| N. | Company Name | Sector | Share Type |
|---|---|---|---|
| 1 | HSBC Holdings | Finance | HK Ordinary |
| 2 | Hang Seng Bank | Finance | HK Ordinary |
| 3 | HKEx | Finance | HK Ordinary |
| 4 | China Construction Bank | Finance | H-share |
| 5 | AIA Group | Finance | HK Ordinary |
| 6 | ICBC | Finance | H-share |
| 7 | Ping An Insurance | Finance | H-share |
| 8 | BOC Hong Kong | Finance | HK Ordinary |
| 9 | China Life | Finance | H-share |
| 10 | Bank of Communication | Finance | H-share |
| 11 | Bank of China | Finance | H-share |
| 12 | CLP Holdings | Utilities | HK Ordinary |
| 13 | Hong Kong & China Gas Company | Utilities | HK Ordinary |
| 14 | Power Assets Holdings | Utilities | HK Ordinary |
| 15 | Cheung Kong Infrastructure Holdings | Utilities | HK Ordinary |
| 16 | Henderson Land Development Company | Properties | HK Ordinary |
| 17 | Sun Hung Kai Properties | Properties | HK Ordinary |
| 18 | New World Development | Properties | HK Ordinary |

[68] "Hang Seng Index and Sub-indexes", [https://www.hsi.com.hk/eng/indexes/all-indexes/hsi], *Hang Seng Indexes.*

| | | | |
|---|---|---|---|
| | Company | | |
| 19 | Sino Land Company | Properties | HK Ordinary |
| 20 | Hang Lung Properties | Properties | HK Ordinary |
| 21 | China Overseas Land & Investment | Properties | Red Chip |
| 22 | The Link REIT | Properties | HK Ordinary |
| 23 | China Resources Land | Properties | Red Chip |
| 24 | CK Property Holdings | Properties | HK Ordinary |
| 25 | Country Garden | Properties | Other HK-listed Mainland Co. |
| 26 | Wharf Holdings | Properties | HK Ordinary |
| 27 | CK Hutchison Holdings | Commerce & Industry | HK Ordinary |
| 28 | Swire Group | Commerce & Industry | HK Ordinary |
| 29 | Galaxy Entertainment Group | Commerce & Industry | HK Ordinary |
| 30 | MTR Corporation | Commerce & Industry | HK Ordinary |
| 31 | Want Want China Holdings | Commerce & Industry | Other HK-listed Mainland Co. |
| 32 | Geely Auto | Commerce & Industry | Other HK-listed Mainland Co. |
| 33 | CITIC Pacific | Commerce & Industry | Red Chip |
| 34 | WH Group | Commerce & Industry | HK Ordinary |
| 35 | Sinopec Corp | Commerce & Industry | H-share |
| 36 | Techtronic Industries | Commerce & Industry | HK Ordinary |
| 37 | Tencent Holdings | Commerce & Industry | Other HK-listed Mainland Co. |
| 38 | China Unicom (HK) | Commerce & Industry | Red Chip |
| 39 | PetroChina Company | Commerce & Industry | H-Share |
| 40 | CNOOC | Commerce & Industry | Red Chip |
| 41 | China Mobile | Commerce & Industry | Red Chip |
| 42 | Hengan International Group Co. | Commerce & Industry | Other HK-listed Mainland Co. |
| 43 | China Shenhua Energy | Commerce & Industry | H-share |
| 44 | CSPC Pharmaceutical Group | Commerce & Industry | Other HK-listed |

| | | | |
|---|---|---|---|
| | | | Mainland Co. |
| 45 | Sino Biopharm | Commerce & Industry | Other HK-listed Mainland Co. |
| 46 | Sands China | Commerce & Industry | HK Ordinary |
| 47 | AAC Tech | Commerce & Industry | Other HK-listed Mainland Co. |
| 48 | Shenzhou International | Commerce & Industry | Other HK-listed Mainland Co. |
| 49 | Mengniu Dairy | Commerce & Industry | Red Chip |
| 50 | Sunny Optical | Commerce & Industry | Other HK-listed Mainland Co. |

*Source:* Hang Seng Indexes, July 2020.

Another major index is the Hang Seng China Enterprises Index (HSCEI) which reflects the general performance of the 50 largest and most liquid Chinese shares listed in the Hong Kong Stock Exchange[69].

HKEX includes different kinds of shares[70]:

- H-shares, securities of Chinese companies priced in RMB and traded on the Honk Kong Stock Exchange in Hong Kong dollars;
- Red Chips, shares of Mainland China companies incorporated outside China and traded in Hong Kong. They are directly or indirectly controlled by state entities;
- P-shares, which are similar to the Red Chips but they are controlled by Chinese companies or individuals.

## 2.3 The Shanghai-Hong Kong Stock Connect

The QFII program was the first attempt through which some licensed foreign investors could use RMB to invest in specific Chinese financial assets. After this first program, in 2011 the Renminbi QFII (RQFII) plan was jointly established with the purpose of allowing licensed

[69] "Hang Seng China Enterprises Index", [https://www.hsi.com.hk/eng/indexes/all-indexes/hscei], *Hang Seng Indexes*.
[70] FTSE Russell, "Guide to Chinese Share Classes", *FTSE Russell* Vol. 15, December 2019, [https://research.ftserussell.com/products/downloads/Guide_to_Chinese_Share_Classes.pdf].

foreign investors to invest in China's security and bond markets, whereas previously investors had to apply for additional quotas to access this market. This program could be considered as part of China's capital account liberalization process or as a strategy to stimulate a wider participation in the offshore RMB market. Unlike the QFII, that has not been granted specific quotas, RQFII program is available to foreign investors who operate in a jurisdiction that has received a quota by the Chinese authorities. Originally, the RQFII program was available only to Hong Kong investors with a quota's worth that raised from RMB 20 billion at the beginning of 2011 to RMB 270 billion at the end of the year. Comparing to the QFII, the RQFII program has several advantages from the investor's point of view, such as the possibility to invest part of the RMB jurisdiction's quotas in China's bond market[71].

In addition to the RQFII program, another important initiative aimed at increasing a mutual market access between mainland and foreign investors is the Shanghai-Hong Kong Stock Connect program[72]. The program, which was launched on November 17, 2014, allows the so-called Northbound trading, through which foreign investors buy or sell the A-shares listed on the Shanghai Stock Exchange, and the so-called Southbound trading, through which Chinese investors buy or sell the H-shares listed on the Hong Kong Stock Exchange. All these trading operations are subjected to daily quotas: foreign investors can transact a daily quota of SSE shares worth RMB 13 billion, and Chinese investors can transact a daily quota of HKEX shares worth RMB 10.5 billion. This is an important difference with RQFII that can trade according to their individual quotas. The major advantage of the SH-HK Stock Connect over the RFQII program is that through the former all foreign investors can purchase A- or H-shares, whereas through the latter only investors that have received RQFII quotas by Chinese authorities can operate in both the stock exchanges. In addition, the process of gaining RQFII quotas and licenses takes a long time, even though today many investors continue to use this program[73].

Currently, there are 101 dual listed companies A and H shares in both the SSE and the HKEX (see Table 3 below).

Table 3: SSE Listed A- and H-shares:

[71] Song L., Garnaut R. Fang C. and Johnston L., "China's Domestic Transformation in a Global Context", Book chapter 11, *ANU Press*, 2015, pp.271-296.
[72] Goldman Sachs, "The Stock Connect", [https://www.goldmansachs.com/insights/pages/stock-connect/].
[73] Song L., Garnaut R. Fang C. and Johnston L., *op. cit.*

| N. | Name | Symbol HKEX | Symbol SSE | Sector |
|---|---|---|---|---|
| 1 | First Tractor | 0038 | 601038 | Capital Goods |
| 2 | Sichuan Express | 0107 | 601107 | Transportation |
| 3 | Tsingtao Brew | 0168 | 600600 | Consumer |
| 4 | Jiangsu Express | 0177 | 600377 | Capital Goods |
| 5 | Jingcheng Mac | 0187 | 600860 | Capital Goods |
| 6 | CSSC Group | 0317 | 600685 | Transportation |
| 7 | Maanshan Iron | 0323 | 600808 | Basic Materials |
| 8 | Shanghai Petrochemical | 0338 | 600688 | Basic Materials |
| 9 | Jiangxi Copper | 0358 | 600362 | Basic Materials |
| 10 | China Petroleum & Chemical | 0386 | 600028 | Services |
| 11 | China Railway | 0390 | 601390 | Capital Goods |
| 12 | Guangshen Railway | 0525 | 601333 | Transportation |
| 13 | Shenzhen Expressway | 0548 | 600548 | Transportation |
| 14 | Nanjing Panda | 0553 | 600775 | Technology |
| 15 | Zhengzhou Coal Mining | 0564 | 601717 | Capital Goods |
| 16 | Beijing North Star | 0588 | 601588 | Capital Goods |
| 17 | Sinotrans | 0598 | 601598 | Transportation |
| 18 | China East Air | 0670 | 600115 | Transportation |
| 19 | Air China | 0753 | 601111 | Transportation |
| 20 | Xinhua Winshare | 0811 | 601811 | Services |
| 21 | Petrochina | 0857 | 601857 | Energy |
| 22 | Guangzhou Baiyunshan Ph | 0874 | 600332 | Healthcare |
| 23 | Huaneng Power | 0902 | 600011 | Utilities |
| 24 | Anhui Conch Cement | 0914 | 600585 | Capital Goods |
| 25 | China Construction Bank | 0939 | 601939 | Financial |
| 26 | China Suntien | 0956 | 600956 | Utilities |
| 27 | SMIC | 0981 | 688981 | Technology |
| 28 | Datang Power | 0991 | 601991 | Utilities |
| 29 | Anhui Expressway | 0995 | 600012 | Transportation |
| 30 | CITIC Bank | 0998 | 601998 | Financial |

| | | | | |
|---|---|---|---|---|
| 31 | Sinopec Oilfield Service | 1033 | 600871 | Basic Materials |
| 32 | Chongqing Iron | 1053 | 601005 | Basic Materials |
| 33 | China Southern Airline | 1055 | 600029 | Transportation |
| 34 | Tianjing Capital | 1065 | 600874 | Services |
| 35 | Huadian Power | 1071 | 600027 | Utilities |
| 36 | Dongfang Electric | 1072 | 600875 | Basic Materials |
| 37 | China Shenhua | 1088 | 601088 | Energy |
| 38 | Luoyang Glass | 1108 | 600876 | Capital Goods |
| 39 | Cosco Ship Engy | 1138 | 600026 | Transportation |
| 40 | Yanzhou Coal | 1171 | 600188 | Energy |
| 41 | China Railway Cons | 1186 | 601186 | Capital Goods |
| 42 | ABC | 1288 | 601288 | Financial |
| 43 | Dynagreen Env | 1330 | 601330 | Services |
| 44 | New China Life Ins | 1336 | 601336 | Financial |
| 45 | People’s Ins Group China | 1339 | 601319 | Financial |
| 46 | Fudan-Zhangjiang Bio-Ph | 1349 | 688505 | Healthcare |
| 47 | Central China Securities | 1375 | 601375 | Financial |
| 48 | ICBC | 1398 | 601398 | Financial |
| 49 | Guolian Sec | 1456 | 601456 | Financial |
| 50 | Red Star Macalline | 1528 | 601828 | Services |
| 51 | Metallurgical Corp China | 1618 | 601618 | Capital Goods |
| 52 | DaZhong Utilities | 1635 | 600635 | Utilities |
| 53 | Postal Savings Bank China | 1658 | 601658 | Financial |
| 54 | CRRC Corp | 1766 | 601766 | Transportation |
| 55 | Shandong Gold Mining | 1787 | 600547 | Basic Materials |
| 56 | China Comm Cons | 1800 | 601800 | Capital Goods |
| 57 | Junshi Biosciences | 1877 | 688180 | Healthcare |
| 58 | China Coal | 1898 | 601898 | Energy |
| 59 | Cosco Shipping Hold | 1919 | 601919 | Transportation |
| 60 | Minsheng Bank | 1988 | 600016 | Financial |
| 61 | BBMG | 2009 | 601992 | Capital Goods |
| 62 | China Zheshang Bank | 2016 | 601916 | Financial |

| | | | | |
|---|---|---|---|---|
| 63 | China Aluminum Int Corp | 2068 | 601068 | Services |
| 64 | Fosun Pharma | 2196 | 600196 | Healthcare |
| 65 | Guangzhou Auto Group | 2238 | 601238 | Consumer |
| 66 | Ping An Ins | 2318 | 601318 | Financial |
| 67 | Great Wall Motor | 2333 | 601633 | Consumer |
| 68 | Wuxi AppTec | 2359 | 603259 | Healthcare |
| 69 | Aluminum Corp China | 2600 | 601600 | Basic Materials |
| 70 | China Pacific Ins | 2601 | 601601 | Financial |
| 71 | Shanghai Pharma | 2607 | 601607 | Healthcare |
| 72 | Guotai Junan Sec | 2611 | 601211 | Financial |
| 73 | China Life Ins | 2628 | 601628 | Financial |
| 74 | Shanghai Electric | 2727 | 601727 | Capital Goods |
| 75 | Cosco Shipping Dev | 2866 | 601866 | Services |
| 76 | Dalian Port | 2880 | 601880 | Transportation |
| 77 | China Oilfield Services | 2883 | 601808 | Energy |
| 78 | Zijin Mining | 2899 | 601899 | Basic Materials |
| 79 | Bank of Communications | 3328 | 601328 | Financial |
| 80 | Qinhuangdao Port | 3369 | 601326 | Transportation |
| 81 | Fuyao Glass | 3606 | 600660 | Capital Goods |
| 82 | Chongqing Rural Comm Bank | 3618 | 601077 | Financial |
| 83 | Orient Securities | 3958 | 600958 | Financial |
| 84 | China Merchants Bank | 3968 | 600036 | Financial |
| 85 | China Railway S&C | 3969 | 688009 | Capital Goods |
| 86 | Bank of China | 3988 | 601988 | Financial |
| 87 | China Molybdenum Luoyang | 3993 | 603993 | Basic Materials |
| 88 | CITIC Sec | 6030 | 600030 | Financial |
| 89 | CSC Financial | 6066 | 601066 | Financial |
| 90 | China Merchants Sec | 6099 | 600999 | Financial |
| 91 | La Chapelle Fashion | 6116 | 603157 | Consumer |
| 92 | Everbright Securities | 6178 | 601788 | Financial |
| 93 | Cansino Biologics | 6185 | 688185 | Healthcare |

| | | | | |
|---|---|---|---|---|
| 94 | Qingdao Port | 6198 | 601298 | Transportation |
| 95 | China Everbright Bank | 6818 | 601818 | Financial |
| 96 | Haohai BioTec | 6826 | 688366 | Healthcare |
| 97 | Haitong Sec | 6837 | 600837 | Financial |
| 98 | Flat Glass | 6865 | 601865 | Technology |
| 99 | Yangtze Optical Fibre & Cable | 6869 | 601869 | Basic Materials |
| 100 | China Galaxy Sec | 6881 | 601881 | Financial |
| 101 | Huatai Sec | 6886 | 601688 | Financial |

*Source*: [http://www.aastocks.com/en/stocks/market/ah.aspx?sort=1&order=1&filter=1].

## 2.4 Hypotheses about A-share premium in Chinese stock markets

An important fact that needs attention is that, when there are shares issued by domestic investors and otherwise identical shares issued by foreign investors in different stock exchanges, foreign shares are generally priced at premium over domestic shares in emerging and segmented markets such as Thailand[74], Switzerland, Indonesia, Mexico and Norway[75]. There have been conducted different studies about this topic. Eun and Janakiramanan[76] stated that international investment restrictions (such as exchange and capital controls) imposed by governments can restrict foreign access to local markets or can reduce the amount of local shares that foreigners can own. Such restrictions, viewed as a means of ensuring control over those domestic firms that are considered as strategically important, affect the capital market equilibrium in both developed and developing countries. Table 4 shows data on governments restrictions on foreign equity ownership of local firms.

[74] Bailey, Warren, and Julapa Jagtiani, "Foreign ownership restrictions and stock prices in the Thai capital market", *Journal of Financial Economics* 36, 1994, pp. 57–87.
[75] Bailey W., P. Chung, and J. K. Kang, "Foreign ownership restrictions and equity price premiums: What drives the demand for cross-border investments?", *Journal of Financial and Quantitative Analysis* 34, 1999, pp. 489-511.
[76] Eun C. S. and Janakiramanan S., "A model of international asset pricing with a constraint on the foreign equity ownership", *Journal of Finance* 41, 1986, pp. 897-914.

Table 4: List of legal restrictions in developed and developing countries.

| Country | Restrictions on Foreign Ownership |
|---|---|
| Australia | 10% in banks, 25% in Uranium mining, 20% in broadcasting, and 50% in new mining ventures. |
| Burma | Investment is not allowed. |
| Canada | 20% in broadcasting, and 25% in banks and insurance companies. |
| Finland | Limited to 20%. |
| France | Limited to 20%. |
| India | Maximum of 49%. |
| Indonesia | Maximum of 49%. |
| Japan | Maximum of 25–50% in a group of 11 major firms. Acquisition of over 10% of the shares of a single firm requires approval of the Ministry of Finance. |
| South Korea | Maximum of 15% of the major firms eligible to foreigners for investment. |
| Malaysia | 20% in banks, 30% in natural resources, and a maximum of 70% in other firms. |
| Mexico | Maximum of 49%. |
| Netherlands | No restrictions in listed securities. Special permission needed if investment is in unlisted securities. |
| Norway | 10% in banking industry, 20% in industrial or oil shares, 50% in shipping industry, and 0% in pulp, paper, and mining. |
| Spain | Maximum of 50% with no investment in defense and public information. |
| Sweden | 20% of voting shares and 40% of total share capital. |
| Switzerland | A local firm can issue either bearer shares or registered shares. Foreigners can hold only bearer shares. |

*Source:* Eun C. S. and Janakiramanan S., "A model of international asset pricing with a constraint on the foreign equity ownership", Journal of Finance 41, 1986.

The authors assumed the existence of only two countries in the world, one domestic and one foreign. Domestic country does not restrict investment by foreign participants in domestic firms, while foreign country restrict investment by domestic investors in foreign firms. The results showed the existence of two prices, one higher for domestic investors and one lower for foreigners, and that both the premium and the discount are determined by the foreign risk: the higher the risk, the higher the premium domestic investors pay.

Stulz and Wasserfallen[77] focused on the fact that foreign investors face restrictions on owning domestic shares; in Switzerland these foreign equity investment restrictions are imposed by the companies and maximise firms' value. They show that first of all, firms impose ownership restrictions intentionally, and the shares without restrictions (foreign shares) are traded at a higher price than the shares with restrictions (domestic shares); when the supply of foreign shares increases but simultaneously the domestic shares restrictions relax, the price of foreign shares decreases and so the value of foreign shares decreases too. Moreover, firms with ownership restrictions sometimes eliminate them. In their model, the demand functions for

[77] Stulz René M, and Wasserfallen W., "Foreign equity investment restrictions, capital flight, and shareholder wealth maximization: Theory and evidence", *Review of Financial Studies* 8, 1995, pp. 1019–1057.

domestic shares differ between domestic and foreign investors since they accept deadweight costs (such as information acquisition costs, transaction costs etc.) for holding risky assets that change across investors and countries, and so in the presence of different demands, domestic firms discriminate between domestic and foreign investors. Such discrimination explains why firms carry out foreign ownership restrictions for domestic shares. Their study was supported by the analysis of the Swiss stock market data: they observed that when Nestlé increased the supply of foreign shares and relaxed the ownership restrictions for domestic shares, the price of the former fell, while the price of latter rose. Domowitz *et al.*[78] examined the effects of ownership restrictions on the Mexican Stock Exchange's equity prices and they found that these restrictions create market segmentation in domestic market in the sense of foreign shares premium relative to domestic shares. These results support previous findings that investment restrictions have an impact on share prices. Among these emerging markets, several academics have paid attention on the highly segmented Chinese stock market in which the opposite situation occurs, since A-shares, that are domestic ones, are traded at a premium over the foreign B-shares and H-shares, and such premium has an impact on shares' price discrepancies. As noted by Bailey[79], a possible source of high A-shares price can be the optimistic behaviour of Chinese investors, the information availability or the differential liquidity. There are different studies, related to different hypotheses, that have been conducted by several experts in order to demonstrate this particular phenomenon.

### *2.4.1 Asymmetric Information Hypothesis*

In 1998 Chakravarty, Sarkar and Wu sustained the asymmetric information hypothesis by claiming that local investors have more information than foreign ones. According to the authors, such asymmetric information occurs because of language barriers, different accounting principles and lack of reliable information about the Chinese economy and companies[80]. This is in line with the proposal of Merton[81] that investors prefer to hold stocks

[78] Domowitz I., Glen J. and Madhavan A., "Market segmentation and stock prices: Evidence from an emerging market", *Journal of Finance* 52, 1997, pp. 1059–1085.
[79] Bailey W., "Risk and return on China's new stock markets: Some preliminary evidence", *Pacific-Basin Finance Journal* 2, 1994, pp. 243-260.
[80] Chakravarty S., Sarkar A., and L. Wu, "Information asymmetry, market segmentation and the pricing of cross-listed shares: Theory and evidence from Chinese A and B shares", *Journal of International Financial Markets,* 1998,I*nstitutions and Money* 8, pp. 325-355.
[81] Merton R.C., "A simple model of capital market equilibrium with incomplete information", *Journal of Finance* 42, 1987, pp. 483–510.

associated with a richer information environment, but it is in contrast with Chui and Kwok[82], who argued that, because of information barriers in China, foreign investors receive information more quickly than local Chinese investors do. Thus, their result indicates that information moves from B-share prices to A-share prices, meaning that it flows from foreign to domestic investors. Consequently, local Chinese investors gather more information from trading B-shares than from the trade of A-shares. However, asymmetric information and inside trading have always been a problem in Chinese economy. While in an efficient market the share price level is a source of information for firms' managers and investors, in Chinese market the government ownership of listed companies cannot be used as an instrument to value such companies efficiently[83], since it reflects the changes on government policies or the intentions of the insider investors who have control over these policies. So, the Chinese stock market is not a reflection of the real economic condition or listed companies' financial status, but it just reflects government position and preferences. Karolyi and Li[84] studied the previous and following effects of the event that took place on February 19, 2001, when the CSRC allowed Chinese investors to own B-shares that were previously restricted to foreign investors. They found that the average B-share discount effectively decreased from 80% to 40% after the deregulation, but their analysis also showed that the firms with the greatest declines in B-share discounts were the firms with lower level of state ownership. According to this work, in 2008 Lee *et al*[85]. and Chan *et al.*[86] provided additional papers that supported the asymmetric information hypothesis.

### *2.4.2 Liquidity Hypothesis*

As stated before, the Chinese stock market was established in order to allow SOEs to raise their capital and assure that the government maintains the control over these enterprises by owning their shares. An important theory about the price differences between A- and B-shares is the illiquid B-share market theory postulated by Amihud and Mendelson, in which due to

[82] Chui A. C.-W. and C. C.-Y. Kwok, "Cross-autocorrelation between A-shares and B-shares in the Chinese stock market", *Journal of Financial Research* 12, 1998, pp. 333-353.
[83] Carl E. Walter, Fraser T. J. Howie, C. Walter, and F. Howie, "To Get Rich Is Glorious!: China's Stock Markets in the '80s and '90s", *Studies on the Chinese Economy Hardcover*, 2001, pp. 61-71.
[84] Karolyi G. A., L. Li and Liao R., "A (partial) resolution of the Chinese discount puzzle: the 2001 deregulation of the B-share market", *Journal of financial economic policy*, 2009.
[85] Lee B. - S., Rui O. M., and Wu W., "Market segmentation and stock prices discount in the Chinese stock market: Revisiting B-share discounts in the Chinese stock market", *Asia-Pacific Journal of Financial Studies* 37, 2008,pp. 1-40.
[86] Chan K., A. J. Menkveld, and Z. Yang, "Information asymmetry and asset prices: Evidence from the China foreign share discount", *Journal of Finance* 63, 2008, pp. 159-196.

the higher trading costs of illiquid B-shares, investors are compensated with a higher expected rate of return and lower prices for such shares[87]. Chen, Lee, and Rui[88] affirmed that the illiquidity of B-shares could be the primary reason for the price discrepancy. In China, the A-share market is more liquid due to the large number of retail investor than the B-share market that is illiquid due to the small number of such individual investors. Moreover, the H-share market also is less liquid than the Chinese stock market, since Hong Kong is an international stock market and it is constitutes by a large number of international institutional investors.

### *2.4.3 Differential Demand Hypothesis*

In addition to the hypothesis of Amihud and Mendelson, Fernald and Rogers[89] stated that domestic investors accept a lower expected rate of return and pay a higher price than foreigners due to the limited alternative investments available in China. Chan and Kwok[90], in line with this argument, stated that since the retail investors lack of information, they bid up the prices of the A-shares and for this reason price differences occur. Sun and Tong[91] argued that the H-shares and the Red Chips are good alternatives for the B-shares, since more H-shares and Red Chips are listed in Hong Kong, so that foreign investors' demand for B-shares becomes quite elastic.

### *2.4.4 Differential Risk Hypothesis*

Several analyses have demonstrated that foreign share ownership restrictions affect share prices. The work of Ma[92] provides evidence to combine the China B-share discounts with investors' risk attitude, the correlations between B-shares and foreign markets' shares, and investors' future expected returns. The author explains such phenomenon as the risk-taking behaviour of Chinese investors, that leads Chinese A-shares prices to raise compared to foreign B-shares (or H-shares) prices. Bailey, Chung and Kang[93] examined 11 different

[87] Amihud Y. and Mendelson H., "Asset Pricing and the Bid-Ask Spread", *Journal of Financial Economics* 17, 1986, pp. 223-247
[88] Chen G. M., Lee B. - S., and Rui O. M., "Foreign ownership restriction and market segmentation in China's stock markets", *Journal of Financial Researc*h 24, 2001, pp. 133-155.
[89] Fernald, J. and J. H. Rogers, "Puzzles in the Chinese stock market", *Review of Economics and Statistics* 84, 2002, pp. 416-432.
[90] Chan C. snd Kwok J. K. H., "Market Segmentation and Share Price Premium: Evidence from Chinese Stock Markets", *Journal of emerging market finance*, 2005, pp. 43-61.
[91] Sun, Q. and W.H.S. Tong, "The Effect of Market Segmentation on Stock Prices: The China Syndrome", *Journal of Banking & Finance* 24, 2000,pp. 1875–1902.
[92] Ma X., "Capital controls, market segmentation and stock prices: Evidence from the Chinese stock market", *Pacific-Basin Finance Journal* 4, 1996, pp. 219-239.
[93] Bailey W., P. Chung, and J. K. Kang, 1999, *op. cit.*

emerging stock markets with shares restricted to locals and otherwise identical shares available only to foreigners. They found that, in such markets, the price premium of shares available to foreigners has no connection with the differences in required returns between domestic and foreign investors.

## 2.5 The Hustle of emerging China: evidence from a finance documentary

As demonstrated by these theories, for many years, in China's emerging stock market price discrepancies between identical shares listed on two different stock exchanges have arisen, and this has led investors to believe that the Chinese market was not a reliable one. Another event that evidences the untrustworthiness of such stock market dates back to 2008, when the whole Western world collapsed because of the biggest economic financial crisis, and investors needed gains quickly. "The China Hustle" is the name of a 2017 finance documentary, produced by Magnolia Picture and directed by Jed Rothstein, that refers to the financial crime on Wall Street implemented by Chinese companies with US listings that had irregular accounting issues.

In 2008, after the crash of Wall Street, there was an exploding market, the only market people were confident would go up: the Chinese market. American investors believed that China, the booming and dynamic country, would become the largest economy in the world and so the solution was to invest in it, since in 2008 there was almost no China-based company that an investor could invest in and would lose money on. One problem was that foreigners could not invest directly in Chinese markets, that's why in Newport Beach, California, a small bank called Roth Capital was established. It found a niche that big banks had overlooked, taking small Chinese companies and listing them directly on US stock exchanges, so that Americans could participate in the Chinese miracle and the bank's salesmen had the chance to attract more and more investors with nobody of them asking whether money would be hold up from China. Roth Capital organized conferences where companies people have never heard of before had the possibility to introduce themselves to American investors, they stated that they would grow revenues 75% the following year, and then conferences turned into entertainment time with special guests, ice sculptures, trains, planes, and *baijiu*, the famous Chinese clear and colourless liquor. The aim of such conferences for Chinese people was to see what kind of person an American investor was. The documentary's narrator tells that some of them

thought: "*the more drunk a person got, the more of his natural persona would come out*". The master of these meetings was Byron Roth, the bank's stage-diving chairman who started his activity in the commodities business when he was 16. Between 2006 and 2011, Roth Capital hosted over a dozen conferences and raised billions for Chinese firms. There was another bank which appeared during the China boom, a small operator in New York named Rodman and Renshaw. It ran investment conferences with a different feel, focused on the political power of its chairman Wesley Clark, a retired general, signed as a NATO Supreme Allied Commander and then engaged into investment banking. Rodman and Renshaw has had a troubled past: it declared bankruptcy in the late 90's, then, thanks to its chairman, it re-emerged as a respectable-looking bank, hosting parties and selling Chinese stocks. It brought over 40 Chinese companies to US markets, with a market capitalization of over $31 billion. While Rodman and Renshaw made fees for bringing Chinese companies to the US, the paydays came when those companies became listed on major stock exchanges: the analysts would recommend the risky stocks as great investments, and then the salesmen would push them on their investment network.

Once the stocks' price rose high enough, the banks and insiders left others holding the overvalued shares. Listing a company on a stock exchange normally required audits and public vetting, but the banks decided to use a process called reverse merger: it is about a shell company that has a public-traded stock, dollar denominated, and that trades onshore. Chinese companies looking for a way into American exchanges merged with the shell of dismissed US companies that no longer operated but still legally existed and had a listing on the stock exchange; the Chinese companies then took the shell companies' place in the market. That's what happened to companies such as "Longwei Petroleum Hold", "L&L Energy ", "Puda Coal", "China Agriculture", "Ren Ren Group" and so on[94]. Between 2006 and 2012, over 400 Chinese companies were listed on US markets; 80% of them were reverse mergers. Between 2009 and mid-2010, the average China-based reverse merger was up several hundred percent. It seemed like it would never end, had it not been for one earnest young American businessman, Carson Block, who had gone to Shanghai to set up the first self-storage business in the Mainland. Since his father was a stockbroker who wanted to invest in "Orient Paper", a Chinese company brought to the markets through a reverse merger by Roth Capital, Carson went to check out this factory. The company claimed it was doing $100 million in business a

[94] For consulting a small listing of Chinese companies that have committed fraud, "Stop the China Hustle", [http://stopthechinahustle.org/].

year and shipping tons of high-quality paper all over China. It was one of the fast-growing companies that Roth and Rodman had sold and that investors had bought. The goal of this visit to this company in China was to do research, make sure that it was legit and write up some reports, but at Carson's arrival, something seemed strange. There was a country road in poor shape, that could not support the massive trucks that would be going in and out of that factory all day. Into the factory, half the machines were broken or weren't working, no signage, water everywhere, a company that had just claimed to have clocked in $100 million in revenues, which was up from the previous year. This business was a total fraud that was reported by Carson and published at "Muddy Waters Research LLC"[95] once he came back to US. The following day of the report, the Orient Paper ended up trading down as much as 55%. This event is in line with a proverb in chinese, "*muddy waters makes it easy to catch fish*" (水清无鱼 Shuǐ qīng wú yú), that explains what goes on in China: opacity creates opportunities for people to make money. Another reason to believe the company was real was the stamp of approval from a trusted source like Deloitte[96], one of the most important company in the world.

Together with the Carson's report, there was a website called "Alfred Little" which published interesting reports stating that all the companies in China were fraud. Posing as Alfred Little, an investor with 35 years of experience and who lived in Shanghai, had served Mr Jon Carnes well, but when the website started to question Silvercorp Metals in 2011, a mining company in rural Henan province, the company's stock prices dropped, and the Chinese police began to threaten Little's chief researcher, Kun Huang, detaining him for days, demanding to reveal whom he was working for, pretending he would denounce Alfred Little; he refused and he was finally detained in late 2011 for two years.

The amount of public pensions and retirement funds lost because of such situation has been about $14 billion, and the majority of the investors who suffered such loss was retail investors, people playing the American stock market who believed the financials. Their money has gone to the bankers and lawyers who helped set up the deals, and to the Chinese executives who made millions while their companies collapsed, like Ming Zhao, the Puda Coal's CEO who

[95] "Orient paper: another fraud", [http://chinesecompanyanalyst.com/china-marine-food/], *Chinese company*, 2010.

[96] Deloitte Touche Tohmatsu is a leading global provider of auditing, consulting, financial advisory, tax, and related services. The company is one of the Big Four, the world's largest audit firms, along with PwC, EY and KPMG. For more details visit "About Deloitte. Learn about our global organization", [https://www2.deloitte.com/global/en/pages/about-deloitte/articles/about-deloitte.html].

has stolen $116 million, or Tao Li, China Green Agriculture's CEO who misappropriated $72 million and so on. Just for Rodman and Renshaw there was not a happy ending: during the peak period of the reverse-merger boom, it distributed $18 billion in bonuses to their executives, but in 2012 it paid a $315.000 fine and gave up the broker's license. Soon after, it declared bankruptcy.

This event is an example of the effects that different information in two markets, together with the irrational behaviour of investors - focused on easy money in a time of financial destabilization - can cause.

# CHAPTER 3

# EVIDENCE OF PRICE DISCREPANCIES BETWEEN THE SSE AND THE HKEX: TECHNICAL CHARTS

The following chapter reports the evidence of price differences between China's A-shares and Hong Kong's H-shares over three specific periods of time through the support of technical charts. After a brief introduction of the three critical events that have shaken up the world's stock exchanges, the aim of this study is to prove that, in China, equal securities have different price fluctuation in two different markets and at two identical dates. Such a different fluctuation is shown on visual charts and it is demonstrated by the analysis of the shares percentage ratio between the Shanghai and the Hong Kong stock markets. The concluding remarks offer some clarification on the possible reasons for such marked divergences in price.

## 3.1 First Period: The 2008 global financial crisis

The first period analysed is the financial crisis that wreaked havoc in markets in the U.S. and all over the world since August 2007. It has its origin in an asset price bubble associated with financial innovations that masked the risk, with companies that failed to follow their risk management systems, and with supervisors who failed to hold excessive risk taking. The asset price bubble developed from the mid-90s to 2006, when the home prices across the U.S. increased moving away from fundamentals such as the family income. As individuals saw rising prices in their neighbourhood and across the country, they began to expect those prices to continue to rise[97]. The main reason for the spread of the crisis was the securitization process, through which banks granted mortgage loans and had a direct profit: a bank that had assets in some mortgages, transferred these mortgages to a company, named Special Purpose Vehicle (SPV), that was for example an offshore company. The SPV issued Mortgage Backed Securities (MBS), debt securities based on loans, that merged with other theoretically secure investment elements and thus generated investment packages. Such packages were evaluated by Credit Rating Agencies (CRA) and, those having the highest rating (AAA), were sold to investors, generating profits for them and for banks, as long as the borrowers would have paid

[97] Baily M. N., Litan R. E., Johnson M. S., "The origins of the financial crisis", *Business and Public Policy*, 2008, pp. 7-67.

their mortgage. The securitization process allowed banks to transform loans into CDO (Collateralized Debt Obligations), in order to limit the risks. For the purpose of easy profits, banks expanded their mortgage lending activity in families with low credit quality[98]. On this basis the housing price bubble inflated because of the rise of risky subprime lending: mortgages in 2000 were worth $468,000,000,000, and reached their peak worth $2.8 trillion in 2003; such risky mortgages have been embedded in the financial system, as mortgage-related securities were packaged, and sold to investors around the world; people who had low incomes could get easier a mortgage at low rates. When the bubble burst, hundreds of billions of dollars in losses in mortgages and mortgage-related securities shook markets and financial institutions that borrowed heavily against them. This happened not just in the United States but worldwide. The crisis reached unbelievable proportions on September 15, 2008, with the failure of Lehman Brothers, one of the major investment bank holding companies, and the collapse of the insurance giant American International Group (AIG). The lack of transparency of the balance sheets of major financial institutions caused the credit markets to seize up. The stock market tanked and the economy experienced the so-called "Great Recession"[99].

## 3.2 Second Period: The 2019-20 Hong Kong protests

The second period chosen for the analysis of price discrepancies between the two stock markets is the period of Hong Kong anti-government protests, which started last year in March against a proposed extradition bill that would have allowed the transfer of fugitives to China, along with other jurisdictions. This draft legislation was proposed in response to a murder: in February 2018, a 20-year-old woman from Hong Kong was killed by her boyfriend during a trip to Taiwan. The boyfriend came back to Hong Kong and has been jailed for lesser crimes. Unable to prosecute him for such murder beyond the city's jurisdiction and without legal bases to send him to Taiwan, the city's chief executive, Carrie Lam, urged to draft a bill that would allow the killer to be extradited. But this event sparked the protests of lawyers, students, business-people and others, who have considered the extradition bill as a threat not just to criminals but potentially to anyone whose behaviour hurts the Communist Party

[98] Karamitrou M., Markou A., "The causes of the 2008 economic crisis", *International Journal of Economics, Commerce and Management* Vol. 2, 2014, pp. 1-10.
[99] The Financial Crisis Inquiry Commission, "The financial crisis inquiry report", *Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*, 2011.

leadership[100]. It is also a threat to the "One country, two systems" principle because democracy supporters fear the abolition of the separation of region jurisdiction from mainland China laws run by the Communist Party. The first marches on the streets happened in March and April 2019, then, starting from June, several manifestations which attracted hundreds of thousands of people took place. Such demonstrations turned soon into violent fights between protesters and police, that led to the "death" of the proposed legislation[101]. After the assault on the Hong Kong University of Science and Technology, the pro-democracy group's election victory in November and the outbreak of Covid-19 pandemic in early 2020, the protests seemed to relax. In May 2020, following Beijing's decision to enact a "National Security Law" for Hong Kong, tensions raised again. The decision of Beijing has been seen as a threat to fundamental political freedoms and civil liberties established in the Hong Kong's Basic Law. The National Security Law was finally approved on June 30, 2020 at 11 p.m., by the National People's Congress Standing Committee. It is divided into 6 chapters comprising 66 articles, with the aim at banning secession, subversion, terrorism and collusion with foreign countries[102], by prescribing harsh penalties for the tactics used last year during the anti-government protests by demonstrators. As some groups attacked police stations, shops and restaurants and paralyzed the airport last year, under the new law, damaging government buildings or sabotaging transport would be considered an act of subversion punishable by life imprisonment if it damages public or private property. In the same way, the law sends a warning to the U.S. and other countries. For Beijing, foreign countries' influence, especially United States', triggered the last violent fights in Hong Kong and sowed chaos in China, aiming at bringing down the Communist Party. Moreover, Chinese officials have spread theories suggesting that Western countries have funded and directed the activists' action. Through the approval of the Security Law, Beijing strengthened its control over Hong Kong's legal affairs. It has been established in Hong Kong a system of security forces, including a national security committee and a national security office, made up of mainland Chinese officers who handle cases according to Chinese law[103]. The Hong Kong pro-democracy

[100] Solomon F., "Hong Kong Is on the Frontlines of a Global Battle For Freedom", *Time,* [https://time.com/longform/hong-kong-protests/].
[101] Kuo L., Yu V., "Hong Kong: Carrie Lam says extradition bill is dead but will not withdraw it", *The Guardian,* 2019, [https://www.theguardian.com/world/2019/jul/09/hong-kong-carrie-lam-says-extradition-bill-is-dead-but-stops-short-of-withdrawal].
[102] To the full officially translated text, visit "Hong Kong national security law full text", *South China Morning Post,* [https://www.scmp.com/news/hong-kong/politics/article/3091595/hong-kong-national-security-law-read-full-text].
[103] Hernandez J. C., "Harsh Penalties, Vaguely Defined Crimes: Hong Kong's Security Law Explained", *The New York Times*, [https://www.nytimes.com/2020/06/30/world/asia/hong-kong-security-law-explain.html].

activists Joshua Wong, Agnes Chow and Nathan Law withdrew from their pro-democracy organization "Demosisto" established in 2016 as a political party, since Wong affirmed:

*"The legislation has marked the end of the Hong Kong that the world knew before. From now on, Hong Kong enters a new era of reign of terror, just like Taiwan's White Terror, with arbitrary prosecutions, black jails, secret trials, forced confessions, media clampdowns and political censorship. With sweeping powers and ill-defined law, the city will turn into a secret police state. Hong Kong protesters now face high possibilities of being extradited to China's courts for trials and life sentences."*[104]

The law's enactment has caused the U.S. reaction, since President Donald Trump on July 15, 2020, has signed a legislation, the Hong Kong Autonomy Act, to impose sanctions on entities that help violate the autonomy of Hong Kong and financial bodies that do business with them. Moreover, Trump has signed an executive order to end preferential economic treatment for Hong Kong. He stated that such decision was made because probably Hong Kong would no longer be able to compete with other free markets, since its freedom and its rights have been taken away by China's imposition[105].

## 3.3 Third period: The Covid-19 pandemic

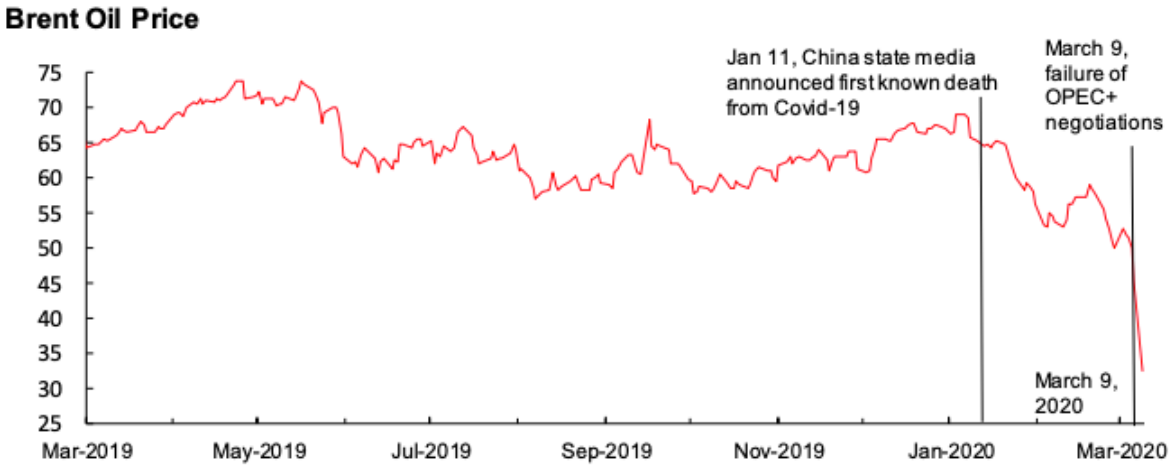
The third event that triggered some turmoil in financial markets has been the spread of Covid-19 pandemic which burst in Wuhan city, Hubei province of China. The first pneumonia cases have been registered on December 30, 2019, and associated with a seafood and animal market in Wuhan. Shortly after, cases in Hong Kong, Japan and Thailand have occurred[106]. The World Health Organization (WHO) declared the pandemic on March 11, 2020, with more than 30 million cases reported in 188 countries so far. Extraordinary measures taken in China, such as travel restrictions and lockdown of the whole population, have resulted in a decline in cases in China[107]. The disease tends to mainly spread among people who are close, since its

[104] "Hong Kong security law: Minutes after new law, pro-democracy voices quit", *BBC News*, [https://www.bbc.com/news/world-asia-china-53231158].
[105] "Trump signs Hong Kong autonomy act, ending trade preferences", *Al Jazeera*, [https://www.aljazeera.com/news/2020/07/trump-signs-hong-kong-autonomy-act-trade-preferences-200714183911232.html].
[106] Xu X, Chen P, Wang J, Feng J, Zhou H, Li X, et al., "Evolution of the novel coronavirus from the ongoing Wuhan outbreak and modeling of its spike protein for risk of human transmission", *Science China Life Sciences* 63, 2020, pp. 457-460.
[107] MacIntyre C. R., "Global spread of COVID-19 and pandemic potential", *Global Biosecurity*, 2020, pp. 1-3.

transmission is possible via droplets produced during breathing, coughing, sneezing etc. It may also be transmitted through contaminated surfaces. The most important difference between Covid-19 and SARS, another epidemic that hit the world in 2003, is that the former has a higher transmission rate: people who have no symptoms can spread the virus as well, and infected people can remain contagious from 7–12 days in moderate cases, and up to two weeks in severe cases[108].

The pandemic has caused global social and economic disorder, since the world is facing the worst recession since the Great Depression of 1930: many people have lost their job or suffered a reduction of their income due to the coronavirus crisis[109]. On February 20, 2020, a global stock market crash, also called "2020 stock market crash" has begun. From February 24 to 28, stock markets all over the world recorded their largest week declines since the 2008 financial crisis[110]. On March 9, the so-called "black Monday" has occurred, most stock markets have plummeted because of the coronavirus and the Russia-Saudi Arabia oil price war, triggered after Russia refused the OPEC's request for oil production cut for the second quarter of 2020. The aim of such proposal was to maintain oil price stability, but Russian rejection has led to a rise in production by both Russia and Saudi Arabia, with the consequent largest price drop since the Gulf War of 1990-1991 (Figure 1).

Figure 1: 2020 oil price collapse




*Source*: [https://voxeu.org/article/oil-price-wars-time-covid-19].

[108] "Transmission of Covid-19", *European Centre for Disease Prevention and Control*, [https://www.ecdc.europa.eu/en/covid-19/latest-evidence/transmission].
[109] Szu P. C., "Coronavirus: World faces worst recession since Great Depression", *BBC News* [https://www.bbc.com/news/business-52273988].
[110] Smith E., "Global stocks head for worst week since the financial crisis amid fears of a possible pandemic", *CNBC*, 2020, [https://www.cnbc.com/2020/02/28/global-stocks-head-for-worst-week-since-financial-crisis-on-coronavirus-fears.html].

Subsequently, the global markets have recovered ground thanks to governments intervention. Nevertheless, some analysts state they could be volatile until fears of another wave of the pandemic diminished. Together with the global financial crash, there are other economic sectors that have suffered the effects of the Covid-19, such as the transport sector, since from March to June many countries have introduced travel restrictions to contain the virus, or the retail sector, with shoppers and salespeople staying at home in order to stop the virus spread, and so on[111].

Today the pandemic is still on-going around the world and the hope is that a second wave of infection, which would bring the world economy down, will not occur again.

## 3.4 Dual-listed market shares and relative charts

In the following section, the eight market shares of the Chinese companies listed in both Shanghai and Hong Kong Stock Exchanges are described and their price fluctuation during the three periods of time mentioned above is analysed. To show the A- and H-shares price development, it is considered the difference in percentage between the Hong Kong market price and the Shanghai market price over the following three time periods: the global financial crisis, from 1/12/2007 to 1/12/2008, the Hong Kong protests, from 1/3/2019 to 1/7/2020, and the Covid-19 pandemic, from 31/12/2019 to 1/9/2020. To make the experiment as accurate as possible the prices of H-shares, traded in Hong Kong dollar, are converted into RMB at the average exchange rate of HKD/RMB=0.9. A trading volume examination is also carried out: the trading volume indicates the number of shares traded in a stock market. In general, the relationship between price and volume must be equal – increasing price on increasing trading volume or decreasing price on decreasing volume - to provide an indicator of market strength: when prices rise on decreasing volume, a reversal might arise; when prices drop on increasing volume, the trend strengthen to the downside[112]. The aim of such analysis is to highlight the price discrepancies between the two markets and to provide potential reasons for such differences. The study will be supported by technical charts. All the securities belong to the secondary and tertiary sectors, specifically:

[111] Jones L., Palumbo D. and Brown D., "Coronavirus: A visual guide to the economic impact", *BBC News*, 2020, [https://www.bbc.com/news/business-51706225].
[112] Mitchell C., "How to Use Volume to Improve Your Trading", *Investopedia*, [https://www.investopedia.com/articles/technical/02/010702.asp].

- Transportation: Air China and China Eastern Airlines
- Energy: PetroChina and China Shenhua
- Services: China Petroleum & Chemical
- Capital Goods: Anhui Conch Cement
- Consumer: Tsingtao Brewery
- Technology: Nanjing Panda Electronics

Air China company was founded in Beijing in July 1988. It principally provides air passenger transportation, transport of goods, postal transportation and maintenance services in Mainland China, Hong Kong, Macau and foreign countries. The Company is also involved in domestic and international business aviation activities, aircraft maintenance, duty free and retail activity on boards, and aviation accident insurance business[113]. It has a Market capitalization worth RMB 117.65 billion.

China Eastern Airlines company was founded in Shanghai in June 1988. It provides airline transportation and extended services. it is involved in activities of airline passenger, cargo, delivery of email, tour operations and other services. The Company is also engaged in general aviation transportation, aircraft maintenance, manufacturing of aviation equipment, e-commerce, airline supermarket, and retail business. The Company operates in domestic and foreign markets[114]. It has a market capitalization worth RMB 87.4 billion.

China National Petroleum Corporation, known as "PetroChina", is the largest oil and gas producer and seller in China's oil and gas industry, one of the companies with the largest market capitalization in China, worth RMB 781.5 billion, and one of the largest oil companies in the world. The company was established in Beijing in November 1999. It is engaged in exploration, development, production and sales of crude oil and natural gas, and crude oil and petroleum products refining, transportation, storage and sales[115].

China Petroleum & Chemical Corporation, also called “Sinopec Corp”, is one of the largest integrated energy and chemical companies in China, founded in Beijing in 2000, after it was incorporated by China Petrochemical Corporation, also known as “Sinopec Group”. It is mainly engaged in oil and natural gas exploration and development, pipeline transportation, production, sale, storage and transportation of petrochemical products, coal chemical and

[113] Air China Company profile, [https://www.investing.com/equities/air-china-ss-company-profile].
[114] China Eastern Airlines company profile, [https://www.investing.com/equities/china-east-air-ss-company-profile].
[115] PetroChina Company Limited profile, [http://www.petrochina.com.cn/petrochina/gsjj/gsjs_common.shtml].

other chemical products, import/export businesses, and research, development and application of technologies and information. The company's market capitalization is worth RMB 480.65 billion[116].

China Shenhua Energy Company Limited was established by Shenhua Group in Beijing in November 2004. It is principally engaged in coal and electricity production and sale, railway, port and shipping transportation. The combination of coal, power, railway, port, shipping and coal chemical into one operation chain is the company's typical operation and profitability model. Its market capitalization is worth RMB 331.5 billion[117].

Anhui Conch Cement Corporation was founded in 1997 and headquartered in Wuhu City. The company is mainly engaged in the production and sales of cement and commercial clinker, its production capacity and process technology has been improved over time, and currently its products are known and sold throughout the country and overseas. The company's main cement products are used in construction projects of large-scale such as railways, expressways, airports etc[118]. Its market capitalization's worth RMB 316.6 billion.

Tsingtao Brewery, first known as German Beer Company Qingdao, is a joint venture founded in Qingdao in August 1903 by a German and a British businessmen. It is the first China's beer industry and among the world's top 500 brands. On July 15, 1993, Tsingtao Brewery became Hong Kong's first H-share listing, the, in August of the same year, Tsingtao Brewery's A-shares were listed on the SSE, becoming the first Chinese company listed simultaneously in both places. At present, the company's export activity involves more than 100 countries, making it the fifth largest brewer in the world[119]. Its market capitalization is worth RMB 102.2 billion.

Nanjing Panda Electronics was founded in Nanjing in April 1992. It focuses on smart manufacturing, digital city and smart city and electronic manufacturing services, it develops smart manufacturing and smart transportation core equipment, electronic manufacturing services with first-class supply chain management capabilities. It develops international

[116] Sinopec Company Profile, [http://www.sinopec.com/listco/about_sinopec/our_company/company.shtml].
[117] China Shenhua Company Overview, [http://www.csec.com/shenhuaChinaEn/1382683238727/ggjj.shtml]
[118] Anhui Conch Cement Company Overview, [http://www.conch.cn/gsjj/index.aspx].
[119] Tsingtao Brewery Company Profile, [http://www.tsingtao.com.cn/about.html?gsjj].

cooperation and it has established many joint-ventures with the Sweden firm Ericsson[120]. Its market capitalization is worth RMB 7.4 billion.

[120] Nanjing Panda Electronics Company Overview, [https://www.panda.cn/gsjj/index_19.aspx].

### *3.4.1 Air China: analysis of its A- and H-share price fluctuation over the three periods*

Chart 1: Air China SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the Air China A-share price, traded at RMB 27.44 on December 1, 2007, with a trading volume of 623.6 million, dropped to RMB 4.10 on December 1, 2008, while the trading volume increased to 1.1 billion. There has been a price percentage decrease of 85% due to the impact of the global crisis.

Chart 2: Air China HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the Air China H-share price, traded at HKD 11.62 (corresponding to RMB 10.46) on December 1, 2007, dropped to HKD 2.40 (corresponding to RMB 2.16) on December 1, 2008. It means there has been a percentage decrease of 79% due to the global crisis influence. The amount of stocks traded at the beginning was worth 528.2 million, at the end it raised to 707.7 million.

Chart 3: Air China SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the Air China A-share price, traded at RMB 10.84 on March 1, 2019, dropped to RMB 6.83 on July 1, 2020. It means that there has been a percentage decrease of 37% because of Hong Kong protests. The trading volume on March 1, 2019, was worth 1.6 billion, and on July 1, 2020, it dropped to 40.3 million as well.

Chart 4: Air China HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the Air China H-share price, traded at HKD 9.66 (corresponding to RMB 8.69) on March 1, 2019, dropped to HKD 4.81 (corresponding to RMB 4.33) on July 1, 2020. It means there has been a percentage decrease of 50% due to the violent fights. The trading volume, that on March 1, 2019 was worth 369.2 million, on July 1, 2020 raised to 551 million.

Chart 5: Air China SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

During the coronavirus pandemic, there has been a slump in Air China A-share prices from RMB 9.69 on December 31, 2019, with an amount of stock trading volume of 64.4 million, to RMB 7.23 on September 1, 2020, with an amount of volume of 45.2 million. The percentage of price decrease in eight months is worth 25% due to the Covid-19 disease.

Chart 6: Air China HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows the slump in Air China H-share prices from HKD 7.91 (corresponding to RMB 7.12) on December 31, 2019, with an amount of stock trading volume of 20.8 million, to HKD 5.38 (corresponding to RMB 4.84) on September 1, 2020, with a decreased amount of volume of 8.4 million. The percentage of price decrease in 8 months is worth 32% due to the pandemic effect.

### *3.4.2 China Eastern Airlines: analysis of its A- and H-share price fluctuation over the three periods*

Chart 7: China Eastern Airlines SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the China Eastern Airlines A-share price, traded at RMB 21.29 on December 1, 2007, with a trading volume of 574.1 million, dropped to RMB 4.13 on December 1, 2008, with a trading volume of 216.1 million. There has been a percentage decrease of 81% due to the impact of the global crisis.

Chart 8: China Eastern Airlines HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the China Eastern Airlines H-share price, traded at HKD 7.71 (RMB 6.94) on December 1, 2007, dropped to HKD 1.17 (RMB 1.05) on December 1, 2008. It means there has been a percentage decrease of 85% due to the global crisis influence. The amount of stocks traded at the beginning was worth 293.7 million, at the end it raised to 788.3 million.

Chart 9: China Eastern Airlines SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the China Eastern Airlines A-share price, traded at RMB 6.94 on March 1, 2019, dropped to RMB 4.41 on July 1, 2020. It means that there has been a percentage decrease of 36% because of Hong Kong protests. The trading volume on March 1, 2019, was worth 1.7 billion, and on July 1, 2020, it dropped to 27.1 million.

Chart 10: China Eastern Airlines HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the China Eastern Airlines H-share price, traded at HKD 5.57 (corresponding to RMB 5.01) on March 1, 2019, dropped to HKD 2.75 (corresponding to RMB 2.47) on July 1, 2020. It means there has been a percentage decrease of 51% due to the violent fights. The trading volume on March 1, 2019, was worth 1.7 billion, and on July 1, 2020, it dropped to 404.1 million.

Chart 11: China Eastern Airlines SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

During the coronavirus pandemic, there has been a slump in China Eastern Airlines A-share prices from RMB 5.81 on December 31, 2019, with an amount of stock trading volume of 55.6 million, to RMB 4.99 on September 1, 2020, with a decreased amount of volume of 47 million. The percentage of price decrease in eight months is worth 14% due to the Covid-19 disease.

Chart 12: China Eastern Airlines HKEX 31/12/2019 – 1/9/2020


*Source:* Investing.com


*Source*: Investing.com

The chart shows there has been a slump in China Eastern Airlines H-share prices from HKD 4.32 (corresponding to RMB 3.89) on December 31, 2019, with an amount of stock trading volume of 5.7 million, to HKD 3.19 (corresponding to RMB 2.87) on September 1, 2020, with an increased amount of volume of 19.6 million. The percentage of price decrease in eight months is worth 26% due to the pandemic effect.

### *3.4.3 PetroChina: analysis of its A- and H-share price fluctuation over the three periods*

Chart 13: PetroChina SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows the A-share price fall from RMB 30.96 on 1/12/2007 with trading volume worth 1.3 billion, to RMB 10.17 on 1/12/2008 with trading volume worth 663.6 million. The percentage decrease of share prices is 67%.

Chart 14: PetroChina HKEX 1/12/2007 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

In the HKEX, the PetroChina H-share prices from HKD 13.90 (corresponding to RMB 12.51) and a trading volume worth 4.6 billion on December 1, 2007, decreased to HKD 6.79 (corresponding to RMB 6.11) and a trading volume worth 2.9 billion on December 1, 2008. The percentage decrease is 51%.

Chart 15: PetroChina SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The PetroChina A-share prices, during the period of protests in Hong Kong, dropped from RMB 7.60 on March 1, 2019 with a trading volume worth 2.5 billion, to RMB 4.45 on July 1, 2020 with a trading volume worth 99.6 million. The percentage decrease between the two dates is 41%.

Chart 16: PetroChina HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The PetroChina H-share prices dropped from HKD 5.09 (RMB 4.58) on March 1, 2019 with a trading volume of 2.2 billion, to HKD 2.69 (RMB 2.66) on July 1, 2020 with a trading volume of 98.6 million. There has been a percentage decrease 42% due to the pro-democracy manifestations.

Chart 17: PetroChina SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

PetroChina A-share prices decreased from RMB 5.83 with a trading volume worth 39.7 million on December 31, 2019, to RMB 4.41 with a trading volume worth 71 million on September 1, 2020. It means there has been a percentage decrease 24% due to the coronavirus.

Chart 18: PetroChina HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com

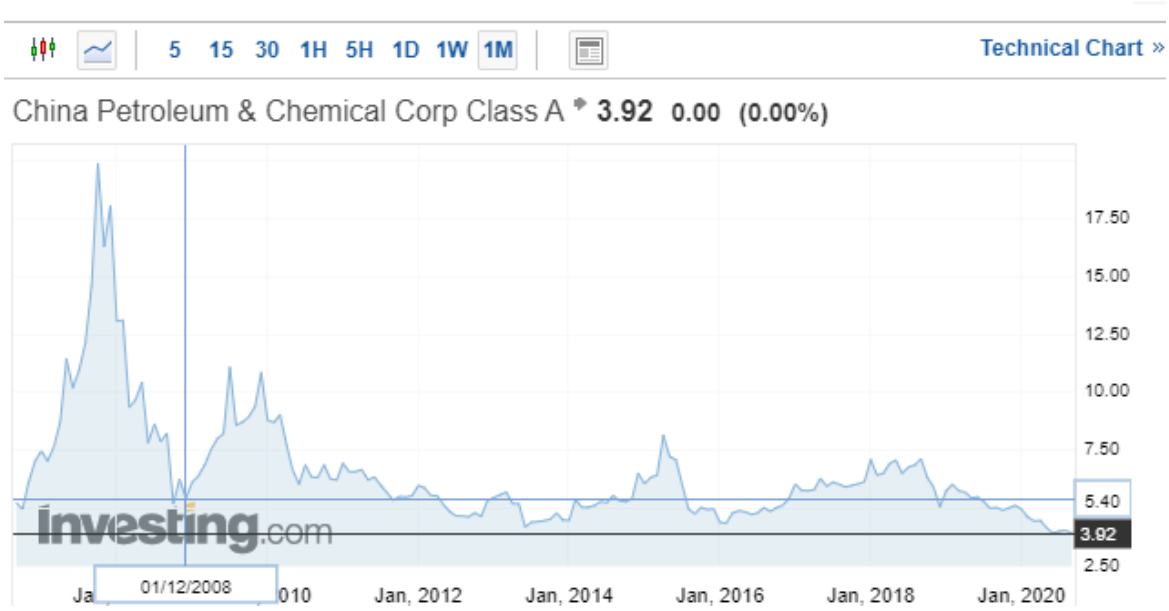

*Source*: Investing.com

The chart shows the PetroChina H-share prices fall from HKD 3.91 (RMB 3.52) on December 31, 2019 with a trading volume worth 49.1 million, to HKD 2.69 (RMB 2.42) on September 1, 2020, with a trading volume worth 70.2 million. There has been a percentage decrease 31% because of coronavirus.

### *3.4.4 China Petroleum & Chemical: analysis of its A- and H-share price fluctuation over the three periods*

Chart 19: China Petroleum & Chemical SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com




*Source*: Investing.com

The chart shows that the China Petroleum & Chemical A-share price, traded at RMB 18.02 on December 1, 2007, with a trading volume of 1.6 billion, dropped to RMB 5.40 on December 1, 2008, with an increased trading volume of 2.4 billion. There has been a percentage decrease of 70% due to the effect of the global crisis.

Chart 20: China Petroleum & Chemical HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows the China Petroleum & Chemical H-share prices, traded at HKD 9.06 (corresponding to RMB 8.15) on December 1, 2007, dropped to HKD 3.61 (corresponding to RMB 3.25) on December 1, 2008. It means there has been a percentage decrease of 60% due to the global crisis. The amount of trading volume at the beginning was worth 4.2 billion, at the end it decreased to 4.1 billion.

Chart 21: China Petroleum & Chemical SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The China Petroleum & Chemical A-share prices, during the period of protests in Hong Kong, dropped from RMB 5.74 on March 1, 2019 with a trading volume worth 3.5 billion, to RMB 4.00 on July 1, 2020 with a trading volume worth 140.6 million. The percentage decrease is 30%.

Chart 22: China Petroleum & Chemical HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source:* Investing.com

The China Petroleum & Chemical H-share prices dropped from HKD 6.19 (corresponding to RMB 5.57) on March 1, 2019 with a trading volume of 2.1 billion, to HKD 3.32 (corresponding to RMB 2.99) on July 1, 2020 with an increased trading volume of 2.9 billion. There has been a percentage decrease 40% due to the pro-democracy manifestations.

Chart 23: China Petroleum & Chemical SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The A-share prices of China Petroleum & Chemical decreased from RMB 5.11 with a trading volume worth 89.2 million on December 31, 2019, to RMB 4.03 with a trading volume worth 87.7 million on September 1, 2020. There has been a percentage decrease 21% due to the coronavirus.

Chart 24: China Petroleum & Chemical HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows the H-share prices oh China Petroleum & Chemical dropped from HKD 4.69 (RMB 4.22) on December 31, 2019 with a trading volume worth 39 million, to HKD 3.51 (RMB 3.16) on September 1, 2020, with an increased trading volume worth 136.6 million. There has been a percentage decrease 25% because of coronavirus.

### 3.4.5 *China Shenhua Energy: analysis of its A- and H-share price fluctuation over the three periods*

Chart 25: China Shenhua Energy SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the China Shenhua Energy A-share price, traded at RMB 65.61 on December 1, 2007, with a trading volume of 401.2 million, dropped to RMB 17.54 on December 1, 2008, with a trading volume of 535.2 million. There has been a percentage decrease of 73% due to the impact of the global crisis.

Chart 26: China Shenhua Energy HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

In the HKEX, the China Shenhua Energy's H-share price from HKD 46.60 (corresponding to RMB 41.94) and a trading volume worth 521.2 million on December 1, 2007, decreased to HKD 16.40 (corresponding to RMB 14.76) and a trading volume worth 699.3 million on December 1, 2008. The percentage decrease is 65%.

Chart 27: China Shenhua Energy SSE 1/3/2019 - /17/2020


*Source*: Investing.com


*Source*: Investing.com

The China Shenhua Energy's A-share prices, during the period of protests in Hong Kong, dropped from RMB 19.61 on March 1, 2019 with a trading volume worth 556.1 million, to RMB 15.33 on July 1, 2020 with a trading volume worth 59.3 million. The percentage decrease is 22%.

Chart 28: China Shenhua Energy HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the H-share price of China Shenhua Energy, traded at HKD 17.90 (RMB 16.11) on March 1, 2019, dropped to HKD 12.92 (RMB 11.63) on July 1, 2020. It means there has been a percentage decrease of 28% due to the violent street fights. The trading volume on March 1, 2019, was worth 392.4 million, and on July 1, 2020, it dropped to 34.5 million.

Chart 29: China Shenhua Energy SSE 31/12/2019 – 1/9/2020


*Source:* Investing.com


*Source*: Investing.com

The A-share prices of China Shenhua Energy decreased from RMB 18.25 with a trading volume of 36.3 million on December 31, 2019, to RMB 16.15 with a trading volume of 28.7 million on September 1, 2020. It means there has been a percentage decrease 11% due to the coronavirus.

Chart 30: China Shenhua Energy HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows there has been a slump in China Shenhua Energy H-share prices from HKD 16.28 (RMB 14.65) on December 31, 2019, with an amount of stock trading volume of 19.6 million, to HKD 13.12 (RMB 11.81) on September 1, 2020, with an increased amount of volume of 27.4 million. The percentage of price decrease is worth 19% due to the pandemic effect.

### *3.4.6 Anhui Conch Cement: analysis of its A- and H-share price fluctuation over the three periods*

Chart 31: Anhui Conch Cement SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart indicates Anhui company's price drop from RMB 24.27 on December 1, 2007, to RMB 8.64 one year later. The amount of trading volume increased from 98.2 million to 625.5 million. During the financial crisis, there has been a percentage decrease worth 64%.

Chart 32: Anhui Conch Cement HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The Anhui company's H-share prices dropped from HKD 22.62 (corresponding to RMB 20.36) on December 1, 2007, to HKD 11.88 (corresponding to RMB 10.70) one year later. The amount of trading volume in the HKEX increased from 193.8 million in 2007 to 269.6 million in 2008. The percentage decrease in one year was 47%.

Chart 33: Anhui Conch Cement SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The chart exhibits an increase in Anhui company's A-shares prices from RMB 38.18 on March 1, 2019, to RMB 61.42 on July 1, 2020. It means there has been a percentage rise in prices worth 61%, together with a decrease in trading volume from 856 million to 35.5 million.

Chart 34: Anhui Conch Cement HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The Anhui company's H-share prices, during the manifestations, increased from HKD 47.95 (corresponding to RMB 43.15) on March 1, 2019, to HKD 58.55 (corresponding to RMB 52.69) on July 1, 2020. The company's H-shares trading volume decreased from 225 million to 178.9 million. There has been a percentage growth 22%.

Chart 35: Anhui Conch Cement SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The chart shows that the Anhui A-share price, traded at RMB 54.80 on December 31, 2019, with a trading volume of 33.5 million, grew to RMB 60.30 on September 1, 2020, with a decreased trading volume worth 28.7 million. There has been a percentage growth of 10%.

Chart 36: Anhui Conch Cement HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The chart displays that on December 31, 2019, and on September 1, 2020, the Anhui H-share prices did not change, so there has not been any percentage decrease or increase over 9 months. The amount of trading volume increased from 3.6 million to 7.6 million.

### *3.4.7 Tsingtao Brewery: analysis of its A- and H-share price fluctuation over the three periods*

Chart 37: Tsingtao SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart exhibits the company's A-share prices fall, from RMB 39.14 on December 1, 2007, to RMB 19.99 on December 1, 2008. The amount of stocks traded also dropped from 41.7 million to 37.7 million. The percentage decrease in one year is worth 49%.

Chart 38: Tsingtao HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows a slump in Tsingtao H-share prices from HKD 26.20 (RMB 23.58) on December 1, 2007, with an amount of stock trading volume of 20.9 million, to HKD 16.18 (RMB 14.56) on September 1, 2020, with an amount of trading volume of 30.1 million. The percentage of price decrease in one year of global crisis is worth 38%.

Chart 39: Tsingtao SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

During the period of pro-democracy manifestation in Hong Kong, there has been a rise in Tsingtao A-share prices from RMB 43.17 on March 1, 2019, with an amount of stock trading volume of 194.9 million, to RMB 83.00 on July 1, 2020, with an amount of trading volume of 8.9 million. The percentage of price increase in is worth 92%.

Chart 40: Tsingtao HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

The Tsingtao company's H-share prices grew from HKD 37.00 (corresponding to RMB 33.30) on March 1, 2019 with a trading volume of 75 million, to HKD 69.00 (corresponding to RMB 62.10) on July 1, 2020 with an increased trading volume of 79 million. There has been a percentage increase 86% during the pro-democracy manifestations.

Chart 41: Tsingtao SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

From December 31, 2019, to September 1, 2020, the Tsingtao A-share prices increased from RMB 51.00 to RMB 86.30. It means that the percentage increase is worth 69% during the pandemic period. The amount of trading volume increased from 3.8 million in 2019 to 12.7 million in 2020.

Chart 42: Tsingtao HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

During the pandemic months, the Tsingtao H-share prices raised from HKD 52.35 (corresponding to RMB 47.11) on December 31, 2019, to HKD 67.40 (corresponding to RMB 60.66). The percentage increase is worth 29%, and even the trading volume increased from 483 thousands in December to 46.2 million in September.

### *3.4.8 Nanjing Panda Electronics: analysis of its A- and H-share price fluctuation over the three periods*

Chart 43: Nanjing Panda SSE 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart indicates Nanjing Panda company's price drop from RMB 10.93 on December 1, 2007, to RMB 4.06 one year later. The amount of trading volume increased from 70.7 million to 110.2 million. During the financial crisis, there has been a percentage decrease worth 63%.

Chart 44: Nanjing Panda HKEX 1/12/2007 – 1/12/2008


*Source*: Investing.com


*Source*: Investing.com

The chart shows company's H-share prices fall from HKD 2.84 (RMB 2.56) in 2007 to HKD 1.02 (RMB 0.92) in 2008, with a slight increase in trading volume from 20.9 million to 30.1 million. The percentage decrease of H-share prices is worth 64%.

Chart 45: Nanjing Panda SSE 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source:* Investing.com

It is possible to point out a fall in A-share prices from RMB 12.27 in March 2019 to RMB 8.33 in July 2020, together with a significant drop in trading volume from 1.1 billion in March 2019 to 8.1 million in July 2020. There has been a 32% percentage decrease during the street protests.

Chart 46: Nanjing Panda HKEX 1/3/2019 – 1/7/2020


*Source*: Investing.com


*Source*: Investing.com

Here, it is possible to point out a slight increase in H-share prices, from HKD 3.28 (RMB 2.95) in March 2019 to HKD 5.04 (RMB 4.54) in July 2020. Unlike the SSE, in the HKEX there has been a percentage increase worth 54% during the Hong Kong protests, with a decreased trading volume from 38.4 million to 222 thousands.

Chart 47: Nanjing Panda SSE 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

The Nanjing company's A-share prices, during the period of Covid-19 pandemic, decreased from RMB 10.16 on December 31, 2019 with a trading volume worth 7.1 million, to RMB 8.19 on September 1, 2020 with a trading volume worth 3.9 million. The percentage decrease is 19%.

Chart 48: Nanjing Panda HKEX 31/12/2019 – 1/9/2020


*Source*: Investing.com


*Source*: Investing.com

In the HKEX, the company's H-share prices changed from HKD 4.43 (RMB 3.99) and a trading volume worth 566 thousands on December 31, 2019, to HKD 4.64 (RMB 4.18) and a trading volume worth 418 thousands on September 1, 2020. The percentage increase is worth 5% during the period of coronavirus.

## 3.5 Concluding remarks

The technical charts previously presented provided evidence of the existence of discrepancies between A- and H-share prices over the three periods. Especially in the first period, the prices of A-shares on 1/12/2007 and on 1/12/2008 were significantly higher than those of H-shares converted in RMB. A possible explanation to such phenomenon could be linked to the hypothesis of asymmetric information described in chapter 2: since the SSE was still a close one at that time, international investors received information faster than Chinese ones for different reasons, such as information barriers[121]. Another reason could be that, during the global crisis, the Chinese government promptly intervened in order to avoid a collapse in stock prices: it boosted domestic consumption by tightly controlling both inbound and outbound capital flows[122] and forced the Chinese banks to cut interest rates for the first time in six years[123]. In the second and third periods, on 1/3/2019, 1/7/2020, 31/12/2019 and 1/9/2020 (after the launch of the Shanghai-Hong Kong Stock Connect in 2014) the prices of the A-shares continue to be higher than those of the H-shares. One possible explanation could be that the Chinese government promptly intervened once again to tackle the crisis by approving major monetary packages that have allowed the population to access more cash. In addition, since the domestic investors are the only ones with actual access to the A-stock market and cannot take their savings out of the country, they have probably decided to invest the money received by the government in the SSE[124]. The differences in share prices are not considered only at specific dates, but also over broader time periods. The results are now summarized in Table 1 below, which not only includes the percentage price variation of each share in the same stock market, but also the percentage ratio (delta) between the Shanghai and the Hong Kong stocks, and then further concluding explications about such price differences are provided.

[121] Cfr. Chapter 2 Par. 2.4.1
[122] Morrison M. W., "China and the Global Financial Crisis: Implications for the United States", *Congressional research service*, 2009, pp. 1-9.
[123] Casarini N., "La potenza cinese tra paure e speranze", *Affarinternazionali*, 2008, [https://www.affarinternazionali.it/2008/10/la-potenza-cinese-tra-paure-e-speranze/].
[124] "Il Covid-19 e la resilienza del mercato azionario cinese", 2019, [https://www.investiremag.it/investire/2020/03/26/news/il-covid-19-e-la-resilienza-del-mercato-azionario-cinese-12985/].

Table 1, HKEX and SSE percentage ratio and final comments

| | 1 PERIOD 1/12/2007 - 1/12/2008 | | | 2 PERIOD 1/3/2019 - 1/7/2020 | | | 3 PERIOD 31/12/2019 - 1/9/2020 | | |
|---|---|---|---|---|---|---|---|---|---|
| **SHARE NAME** | **HKEX** | **SSE** | **DELTA** | **HKEX** | **SSE** | **DELTA** | **HKEX** | **SSE** | **DELTA** |
| Air China | -79% | -85% | 6% | -50% | -37% | -13% | -32% | -25% | -7% |
| China Eastern Airlines | -85% | -81% | -4% | -51% | -36% | -15% | -26% | -14% | -12% |
| PetroChina | -51% | -67% | 16% | -42% | -41% | -1% | -31% | -24% | -7% |
| China Petroleum & Chemical | -60% | -70% | 10% | -40% | -30% | -10% | -25% | -21% | -4% |
| China Shenhua Energy | -65% | -73% | 8% | -28% | -22% | -6% | -19% | -11% | -8% |
| Anhui Conch Cement | -47% | -64% | 17% | 22% | 61% | -39% | 0% | 10% | -10% |
| Tsingtao Brewery | -38% | -49% | 11% | 86% | 92% | -6% | 29% | 69% | -40% |
| Nanjing Panda Electronics | -64% | -63% | -1% | 54% | -32% | 86% | 5% | -19% | 24% |

*Source*: Analysis edited by the author, data obtained from previous charts.

Table 1 highlights important differences between the first period and the last two. During the global financial crisis, HKEX's H-share prices generally declined less than SSE's A-share prices. One explanation could be that in 2008 China was the top holder of the largest amount of US public debt securities, surpassing Japan. Since the Chinese government did not allow private investors to invest directly abroad, citizens and businesses entrusted their savings to a government body called the State Administration for Foreign Exchange (SAFE) which invested much of the Chinese savings in US Treasury bonds and US assets: in year 2000 just over US$ 60 billion were invested and in 2008 they reached about US$ 618 billion. In 2008, the investment in US assets accounted for just over 16% of China's GDP, as well as for 30% of total Chinese reserves. This means that about 20% of the US public debt was held by China[125]. Another reason for the greater impact of the crisis in China compared to Hong Kong may be that in those years more than a third of Chinese exports targeted the European and American markets. Furthermore, Japan, which was the third outlet market for "*Made in*

[125] Bagella M., Bonavoglia R., "Il risveglio del dragone. Moneta, banche e finanza in Cina", *Marsilio*, 2009, pp. 1-183.

*China*", was also experiencing a phase of economic stagnation and a slowdown in consumption. This situation has led consumers to lose confidence in the Chinese market. In response to this situation, the Chinese government launched a two-year 4 trillion RMB stimulus package for infrastructure projects to assist 10 major industries (those considered to be vital to China's economic growth) in order to promote their long-term competitiveness[126]. Finally, since the 2008 has been a global event that interested the whole world, it is possible that international investors were more exposed to the risk rather than Chinese ones who did not perceive the risk since they were still trading into a close market.

If during the years of the global crisis the Chinese A-share prices dropped more than Hong Kong H-share ones, in 2019 and 2020, the years of the Hong Kong manifestations and Covid-19 pandemic, a general major fall in H-share prices is recorded. The reason of the current Hong Kong's recession can be the impact of these critical events on the behaviour of investors: international investors are frightened that the Special Administrative Region will go under the full control of the Mainland and thus they are moving huge amounts of capital to Singapore. A Goldman Sachs report estimates that US$3 billion to US$4 billion have already been moved from Hong Kong to Singapore during the summer of 2019, while the local currency deposits have fallen by 1.6% in August 2019[127].

[126] Morrison M. W., *op. cit.*
[127] "Proteste e dazi: Hong Kong piomba in recessione", *Il sole 24 Ore*, 2019, [https://www.ilsole24ore.com/art/proteste-e-dazi-hong-kong-piomba-recessione-ACAihqv?refresh_ce=1].

# CONCLUSIONS

This work has highlighted the peculiarities of the Shanghai stock market, a market heavily controlled by the Chinese government that manages to ensure its continuous development despite the lack of transparency compared to other stock markets. Through a comparison with the Hong Kong stock market, which has always been open to foreign exchanges and has always been considered as the window on the rest of the world for China, this thesis has highlighted the presence of price differences between equal listed securities in two different markets (Shanghai and Hong Kong), as well as the presence of different price fluctuations during longer periods of time between the same securities listed on the aforementioned markets.

In particular, the first chapter has described the major changes in the history of China and Hong Kong, which have led to important breakthroughs in their economy, such as the handover of Hong Kong from British colony to Special Administrative Region in 1997, the principle of "one country, two systems", which grants the recognition of its independence by the Chinese government, and the key role which for years has covered Hong Kong for the Mainland as well as for the Western. This first chapter has also presented the phases of economic development experienced by China since 1979, the year in which the opening reforms by Deng Xiaoping began. Finally, it has described the hypothesis of market efficiency theorized in the 1970s by Eugene Fama, according to which share prices fully reflect all the available information. This theory has been criticized over time by other scholars who were interested in understanding the market functioning. They discovered the existence of other important factors that actually influence the financial markets and the behaviour of their participants (such as asymmetric information or irrational behaviour).

In the second chapter both the Shanghai and the Hong Kong Stock Exchanges, their history, the type of investors that comprise them, their main stock market indices and the main types of shares traded in them have been described. In the Shanghai stock market, there are two main types of shares that can be traded: the A-shares, which are shares of Chinese companies listed in China held only by local citizens and traded in Chinese yuan (RMB), and the B-shares, shares of Chinese companies listed in the Shanghai Stock Exchange which up to 2001 were held only by foreign investors and traded in US dollars. In the Hong Kong stock market, the main shares traded are the H-shares, securities of Chinese companies listed on the Hong

Kong market and traded by international investors in Hong Kong dollars. In order to increase trade with the rest of the world, the establishment of the Shanghai-Hong Kong Stock Connect program on November 17, 2014 was a crucial event: it allowed all foreign investors to trade A-shares, and all domestic ones to trade H-shares. Despite the launch of this program, the Chinese market continues to be not so transparent and for this reason it is still being studied today. Some theories that have been developed in this regard are the asymmetric information hypothesis, linked to language barriers and to the fact that there is a lack of reliable information about the Chinese economic system, the liquidity hypothesis, since B-shares have registered a reduction in liquidity over time and for this reason they have been replaced by Hong Kong H-shares, the differential demand hypothesis and the differential risk hypothesis. To support the hypothesis of asymmetric information in China, a financial documentary entitled "The China Hustle" was produced in 2017 by Magnolia Picture: it explains how Chinese fraudulent companies managed in order to be listed on the American stock market in the first decade of 2000s.

In the third chapter, it is shown the price fluctuation of the following eight stocks of Chinese companies listed in both the Shanghai and the Hong Kong stock markets through the support of technical charts: Air China, China Eastern Airlines, PetroChina, China Petroleum & Chemical, China Shenhua Energy, Anhui Conch Cement, Tsingtao Brewery and Nanjing Panda Electronics. It has been chosen precise days to find out whether there are price differences between the two markets, and periods of time to study the percentage variation in price after one year, eight months and nine months. The dates and the time frames considered to analyse the securities' percentage change in price concern three events that have strongly shaken the markets: the global financial crisis, from 1/12/2007 to 1/12/2008, the Hong Kong protests, from 1/3/2019 to 1/7/2020 and the Covid-19 pandemic, from 31/12/2019 to 1/9/2020. The concluding remarks of this work have highlighted price discrepancies across all reporting periods due to information asymmetries in the Shanghai stock market - as foreign investors who trade in markets around the world may have a greater flow of information than local investors who are mostly engaged in stock trading in the Chinese market - and the fact that Chinese citizens over the past year have received a monetary package to deal with the Covid-19 pandemic and - along with China's inherent savings-oriented nature - have decided to invest the money received from the government in the local stock market. There was also consequent evidence of differences in price fluctuations in the two markets over longer periods of time, probably due to the fact that during the global financial crisis China held the

largest number of American debt securities and, for this reason, the Chinese stocks were more affected by price falls than Hong Kong stocks. The discrepancies affecting the period of protests and the Covid-19 pandemic could be due to the fear among international investors that their savings - held in Hong Kong - will be controlled by Chinese laws following the enactment of the National Security Law in the Special Administrative Region.

Finally, the concrete analysis carried out in the third chapter has highlighted that Chinese A-shares are always traded at premium over the foreign H-shares, and it means that all the theories analysed across the previous first and second chapters of this thesis are confirmed. Some possible reasons for price discrepancies among identical securities are described below: the liquidity of the A-shares over the H-shares leads to overpriced first ones, since the Shanghai stock market is characterized by a large number of retail investors, while the Hong Kong stock market by institutional investors. The illiquid H-shares have a higher expected return and are priced lower in order to compensate investors for the higher trading costs. At the same time, the A-shares have a lower expected return and so Chinese investors agree to pay a higher price than foreigners due to the limited flow of information in China. Moreover, since the Chinese retail investors lack of information, they bid up the A-shares prices and that's why price discrepancies occur. Another reason is that, because of the irrational optimistic behaviour of Chinese investors, they tend to have a risk-taking attitude and, at the same time, the A-shares show a high volatility that reflects on their higher prices over the H-shares. This reason confirms the "differential risk hypothesis". It is important to notice that, after the 2014 Stock Connect launch, the differences between A and H share prices have diminished since more Chinese information has been required to be disclosed in order to attract more foreign investors.

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