

THE STOCK MARKET LISTING OF CHINESE ENTERPRISES

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1. ABSTRACT

This paper is a research on listing activities of Chinese enterprises on public stock exchanges or quoting activities on OTC stock market. First, this paper gives a background information on Chinese stock market and enterprises, which choose to list on one of three board markets or to not list. Then, I compares Chinese OTC market (NEEQ board) with US OTC market and shows that there are many similarities in the structure of Chinese and US capital market but differences in their size and trading activities. The background section also talks about considerations when companies are making these choices: become public or remain private, financing through equity or debt, issue an IPO or not with a special IPO suspension period policy in China. I also address Chinese state-owned enterprises and governmental policy issues that frame Chinese stock market with Chinese characteristics.

Later, I look for data and do descriptive statistics of Chinese enterprises, and hypotheses are formed to test two models. The first model is to discover listing activities on Chinese stock exchanges and OTC market (NEEQ board). This model is based on the method used in Michael D. McKenzie's paper "International Evidence on the Determinants of the Decision to List" (2007). I will call it McKenzie's study in this paper. He sampled 38 exchanges across the world, except China. I will apply his resulted linear regression model to Chinese stock market to find the determinants of the decision of a Chinese company to list. By doing so, I found out that McKenzie's model applies to Chinese public stock exchanges but not OTC market (NEEQ board). Specifically, past listing activities affect the current level of listings on Chinese stock exchanges but not on NEEQ board, and IPO suspension affects the number of new listings on Chinese stock exchanges but not on NEEQ board. It is not only because NEEQ is an over-the-counter market, but also because NEEQ is so new that the number of its new listings increases every month and does not follow a static time series regression. However, both new listings of stock exchanges and NEEQ are influenced by stock market and business condition.

The second model is to find the relationship between IPO suspension and stock market condition represented by the market index SZ&SH Composite 300 Index. The result shows that if Chinese stock market performs badly in the current month, it is more likely to have an IPO suspension next month. Moreover, a bad stock market performance increases the chance of closing IPOs and a good stock market performance increases the chance of reopening IPOs during IPO suspension.

2. INTRODUCTION

2.1 Motivation and Purpose

China has over 50 million small to middle-sized enterprises, consisting of 99% of total number of enterprises in China, and an incremental of several million new enterprises every year. However, not every company can be publicly offered and borrowing from banks requires time and efforts. It was shown by studies that direct financing of Chinese small to middle-sized companies comprises less than 2% and debt financing comprises less than 25% of the total funding amount from various finance channels. (Gong & Xuan, 2015) For a technology company I have interned at before, it took many years of preparation before an IPO, which costs the company a lot money, time and resources.

From an internship at Yiding Venture Capital this past summer, I got a chance to become familiar with a new financing channel for Chinese firms, which does not require an IPO: NEEQ board. It is Chinese OTC stock market for trading primary stocks for investors and an alternative financing platform for firms. Yiding Venture Capital is headquartered in Shanghai with a registered capital of 30 million yuan. It finds and evaluates local companies to list on NEEQ board and helps these companies to sell secondary offerings to qualified investors through NEEQ board. The venture capital is specially interested in NEEQ companies in services, health, ecological protection, manufacturing and IT industries. (Yiding, n.d.) I interned at this company to study status quo of Chinese stock market and equity financing of Chinese enterprises. I attended the company's training sessions and learned about how to read and analyze stock market, stock-index futures and commodities trading market. I also got some knowledge about Chinese multi-level capital market. I remember the most when my supervisor explained to me how Chinese capital market is structured just like a pyramid. Based on the knowledge I learned from this internship, I thought it would be interesting to write my honors thesis on topics related to Chinese stock market with some emphasis on NEEQ board.

Later, as I talked about my thoughts to my thesis advisor Professor Kochin, he gave me more insights into what I can potentially do for my research. He asked me to read literatures and do an in-depth study on Chinese stock market and NEEQ board. He asked me to look at governmental ownership and IPO regulations in China such as IPO suspension periods, which would have prevented companies from IPOs and forced them to enter NEEQ board instead. In the end, I finalize my topic to study listing of companies, including a statistical analysis of the determinants of the firms' decisions to list.

2.2 Significance

Firms listed on either stock exchanges or OTC market are representatives of many firms in China. They show the status quo of the economics growth in China. Especially small to middle-sized enterprises become more and more important to Chinese economy since the 1978 economics reform. These companies are the mainstay of national economic and social development in China, since they commit over 60% of GDP, 50% of tax and over 80% employment (SH). (Lu, 2013) Chinese government values these companies and has dedicated years to ensure their growth. It enforces many

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policies to encourage high-tech and entrepreneurship, policies such as “The Recruitment Program of Global Experts”, the establishment of high-tech and entrepreneur experimental districts, as well as the establishment of NEEQ board. (Baidu Baike, n.d.) The former two policies aim to provide firms ground and infuse them with fresh blood, while the later grant them lubricate and oil to the engine that determine how fast and how far they can run.

Chinese government is also particularly concerned with the slow-down of GDP growth rate in China, which dropped from the peak of 14% to a 7% today since the financial crisis. (WorldBank, n.d.) To sustain a steady growth rate, it is important to grant sufficient funds to ensure the growth of companies at stake. Therefore, it is significant to study listing activities and stock performances of Chinese enterprises to secure their healthy growth.

3. BACKGROUND

3.1 Chinese Enterprises

3.1.1 DEBT VS. EQUITY FINANCING

Financing is the act of providing funds for business activities of a company. (Investopia, n.d.) There are two categories of financing channels: debt financing and equity financing. Debt financing is to collect funds through borrowing from the bank. Equity financing is the process of raising capital through the sale of shares in an enterprise. (Investopia, n.d.) Since it is not easy to get funding from the bank in weak years of the economy, equity financing becomes a better option for companies in growth stage. Moreover, equity financing evolves less risks for a company because the company does not have the pressure for interests and debt repayment. Another advantage is that existing shareholders can sell more easily either in the initial offering or after the shares are listed. However, the downside of equity financing is that the controlling power of large shareholders will be diluted and large shareholders have to share the company’s profits with other shareholders. But the de facto control of existing large shareholders will remain more nearly intact if the shares are sold to many new shareholders rather than one or a few new shareholders.

For small-to-middle-sized firms, equity financing is a more accessible option. According to Yue Tan and Zhibo Zhao’s research in the relationship between the company size and the financing structure, it is shown that the smaller the size of the company, the company is less accessible to the debt market and it will be less likely to do debt financing compared to equity financing. (Tan & Zhao, 2012)

3.1.2 PRIVATE VS. PUBLIC COMPANIES

In 2016, there are 3.44 million privately held registered companies with a registered capital of 61 trillion yuan, whereas there are 3052 publicly traded companies with a market value of 557.5 trillion yuan. (2016 China Statistics Yearbook, n.d.)

Some large firms prefer not to be publicly offered. Large hi-tech companies that evaluated more than 1 billion dollars are called Unicorns. Examples are Uber, Airbnb, Xiaomi (China), which are funded

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by private equity companies and large institutional investors. There are several reasons that these companies are not publicly offered:

- a) Do not want too many shareholders that will diffuse the company's profits and large shareholders' power;
- b) Do not want too much information exposed to the market;
- c) Already have sufficient cash flow and can collect enough capital through other financing channels (such as debt financing or NEEQ listing);
- d) Less expenses and operating pressure if not being public.

There are also several disadvantages:

- a) Less exposure to the public means lower reputation in the industry and more difficult to attract customers to expand the market;
- b) Less funds and harder to expand the company;
- c) Increase the risk for the company if financing through debt;
- d) Less liquidity for shareholders to trade shares;
- e) Less likely to get advices from outside advisors and the public.

3.1.3 TYPES OF COMPANIES IN CHINA

In 2015, there were about 12.6 million registered enterprises in China. The number and proportion of Chinese enterprises by types is shown in Table 1. 98% are domestic enterprises, the remaining are Hongkong-Macao-Taiwan invested enterprises and foreign-invested enterprises.

Type of Enterprises	Registered number	Percentage
State-owned enterprises	133,631	1.06%
Collectively-owned enterprises	144,856	1.15%
Joint-equity cooperative enterprises	68,593	0.545%
Partnerships	21,006	0.167%
Limited liability companies	2,219,754	17.63%
Corporations	158,864	1.26%
Privately-owned enterprises	8,656,494	68.74%
Domestic enterprises total	12,355,798	98.11%
Hongkong-Macao-Taiwan invested enterprises	115,168	0.915%
Foreign-invested enterprises	122,288	0.97%
All Chinese enterprises	12,593,254	100%

Source: (2016 China Statistics Yearbook, n.d.)

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Domestic enterprises can be categorized based on the property of the firm. In particular, state-owned enterprises, collectively-owned enterprises and joint-equity cooperative enterprises are unique types of enterprises under socialist planned economics. State-owned enterprises are enterprises fully or partially owned by the local or the central government; Collectively-owned enterprises are enterprises fully owned by employees of the company; Joint-equity cooperative enterprises are funded by some employees and social funding and dividends are distributed by the number of shares. These three socialistic types of enterprises now only compose of less than 3% of all Chinese enterprises in number, whereas before 1978, 100% of companies in China are state-owned or collectively-owned. (2016 China Statistics Yearbook, n.d.)

3.1.4 STATE-OWNED ENTERPRISES

State-owned enterprises (SOEs) are fully owned or partially owned by the local or central government. A major characteristic of the state-owned enterprise management mechanism was its administration-driven, unified and collective governance. Its production is to meet government plan targets and there is no incentive to improve business performances. After 1949, all business entities in the People's Republic of China were created and owned by the local or central government. In the late 1980s, the government began to reform the state-owned enterprise, and during the 1990s and 2000s, many SOEs were restructured into Limited liability companies or limited joint-stock companies. (OECD, 2011) The number of non-state firms grow exponentially. As the stock exchanges have developed during this period, the number of listed companies also grow rapidly.

Nowadays, there are a number of different corporate forms which result in a mixture of public and private capital. State-owned enterprises are mostly governed by both local governments' SASAC (the State-owned Assets Supervision and Administration Commission) and SASAC of the State Council in the central government. There are now 118 state-owned companies owned by the central government. However, some state-owned enterprise were governed by China Investment Corporation, as well as under the governance of Ministry of Education for the university-run enterprises, or some financial institutes that were under the governance of the Ministry of Finance. There are 18 state-owned banks. (Wikipedia, n.d.)

SOEs in China have added value to 33% of national GDP in China, whereas SOEs in the United States only cover 5% of national GDP in the US. (Wikipedia, n.d.) Chinese SOEs do businesses in a broad range of industries, while SOEs in the United States are only allowed to do businesses in industries, such as postal, public transport and many other public services and military industry. SOEs in the United States are also less common to be publicly traded.

There are three types of SOEs in China. State-owned exclusive companies are solely owned by the government as legal entity and regulated by special laws, such as resources and public services company. State-owned holding companies having more than 50% of shares are owned by the government but regulated by the Company Law, a law introduced in 2006 to develop a corporate governance framework in China. Companies with state-owned shares are partially owned by the government. (Baidu Baike, n.d.)

3.2 Chinese Stock Market

Chinese stock market only has 30 years history. It was born and developed under Chinese various governmental policies.

3.2.1 HISTORY

In 1986: the first securities and exchange counter Jing'an Securities Exchange opened in Shanghai and the first stock Shanghai Feiyue was traded.

In 1990: China opened its two national stock exchanges – the Shanghai stock exchange and the Shenzhen stock exchange.

In 1990.12 - 1992.5: Chinese first bull market. The only 8 stocks listed on SHSE raised Shanghai stock index from 95 to 1429 points in 17 months.

In 1992.1.19: President Deng took a southern tour to Shenzhen and rebuilt investors' confidences in the Chinese stock market.

In 1992.8.10: first IPO was issued on the SZSE, hitting heavily on the SHSE.

In 1992.10.12: China Securities Regulatory Commission (CSRC) was built.

In 1995.1.1: T+1 trading rule was started in China.

In 1996.12.16: set a 10% price limit on stocks on the Chinese stock exchanges.

In 1999.7.1: the Securities Law was established in China.

In 2001.1: State-owned shares started to reduce.

In 2004.1.31: "Several opinions on further promoting the healthy development of the capital market" was established by Chinese State Council.

In 2005: the split-share reform started. (Baidu Baike, n.d.)

3.2.2 TYPE OF LISTING

Many premium companies in China are listed on foreign exchanges in the developed countries today. There are several reasons that attract domestic companies to list abroad. First, it is easier to get listed on foreign exchange without long audit period. Second, the market and the investors of developed countries are more mature. Third, the company can get more exposure and further earn market share of the foreign market. Forth, it is easier to issue secondary offerings on the foreign exchange. Fifth, there is less supervision and regulations in the foreign market.

According to the origin of investors and the location of listing, there are five types of shares a company can issue: (Baidu Baike, n.d.)

A-shares: stocks negotiated on the Shanghai and Shenzhen stock markets in renminbi only by domestic investors and Qualified Foreign Institutional Investor (QFII).

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B-shares: stocks on the Shanghai and Shenzhen stock exchanges that are traded in foreign currencies. B-shares was officially named Domestically Listed Foreign Investment Shares.

H-shares: the shares of companies incorporated in mainland China that are traded on the Hong Kong Stock Exchange. The first H stock is Qingdao Beer Co., Ltd.

N-shares: the shares of companies incorporated in mainland China that are traded on the New York Stock Exchange. Alibaba, listed on NYSE in 2014, has a market value of 2400 billion dollars as the world second largest internet company.

S-shares: the shares of companies incorporated in mainland China that are traded on the Singapore Stock Exchange.

A company can issue shares on different exchanges if approved by CSRC. For example, China Mobile is listed on New York Stock Exchange, Singapore Exchange and Hong Kong Exchange.

3.2.3 OTC STOCK MARKET

Whereas exchanges or in-board markets are centralized, regulated markets, where securities trade in a safe, standardized, fast and publicly transparent manner (Investopedia), over-the-counter market is a place for small-to-middle sized companies that do not meet the listing requirement for an open exchange: these unlisted companies trade through decentralized dealer networks. NEEQ board is such a national OTC stock market in China. Prices do not disclose publicly until after the trade is complete. Company's information is less publicly informed. Thus, stocks on OTC market is less liquid and riskier than stocks on in-board market.

3.2.3(a) Regional OTC market

NEEQ board is the national OTC market in China. There are also regional OTC markets in China. Named "the fourth board", it is a lower level market than NEEQ board, the third board. Regional OTC market is supervised by local government and will only manage equity exchange businesses of local companies. It is to provide equity and bond transfer and financing services for enterprises in a specific area. There are 37 regional OTC market centers in China. Beijing and Shanghai equity exchange center are the largest in the country. (Wind Info, n.d.)

3.3 NEEQ Board

The National Equities Exchange and Quotations (NEEQ) is the over-the-counter (OTC) stock market that provides additional financing options for Chinese Mainland small-to-medium enterprises. NEEQ is the only OTC exchange regulated by the China Securities Regulatory Commission (CSRC). It means that it is the only national regulated OTC stock market in China. NEEQ is also called "the New Three Board" as the third board other than the main board: Shenzhen and Shanghai Stock Exchanges (SZSE, SHSE) and the second board: growth enterprise market (GEM). (Baidu Baike, n.d.) Born in 2006 in Beijing, expanded nationwide in 2013 and really took off in 2014, NEEQ now comprises of around 11,000 companies in March, 2017.

The goal of NEEQ board:

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- a) Improve Chinese OTC market
- b) Solve the problem of stock transfer of companies that are delisted from the main board or have stopped trading publicly.
- c) Provide a place for high-tech growth oriented enterprises to raise funds without IPOs

3.3.1 HISTORY

In 1990s: STAQs (Securities Trading Automated Quotations System) and NETs (National Exchange and Trading System) were established. They are the first over-the-counter trading systems in China that based on internet for securities trading, quotation, clearing, settlement, registration, trusteeship and consulting. Two systems were shut down in 1999 when illegal activities was rampant at regional OTC during Asian financial crisis. (Baidu Baike, n.d.)

In 2001: the old third board was established as a place for delisted companies and STAQs and NETs companies to continue to trade and exchange equities.

In 2006: Zhong-guan-cun brokerage system replaced STAQs and NETs for agency trading in privately issued shares of private companies from Beijing's high-tech hub, the Zhong-guan-cun Park. The system combines the idea of Chinese "Silicon Valley" and "OTCBB". But only private companies from Zhongguancun Technology Hub were able to list on NEEQ in 2006.

In 2012: more private companies from technology hubs in Wuhan, Shanghai and Tianjin were added to this system.

In 2013: formally named as NEEQ board, the system was finally facing toward private companies nationally, without limits on company types and locations. It functions as a market-making system trading securities of non-listed public companies. The Beijing-based NEEQ, the Shanghai Stock Exchange, and the Shenzhen Stock Exchange complete the market structure of China's equity markets. (Yao, 2013)

3.3.2 NEEQ LISTING REQUIREMENT

NEEQ's listing requirement is lower than the first and the second board. Companies, to apply for shares listed on the stock transfer system (NEEQ), without being limited by the shareholders' ownership and not limited to high-tech enterprise, shall meet the following six conditions: (Listing requirements for NEEQ board, n.d.)

- (1) Lawfully established more than 2 complete accounting years as a stock corporation. If the company has more than 200 shareholders already, it has to get approval from CSRC before applying for listing. Shareholders can be either state-owned or foreign, high-tech or non-high-tech.
- (2) Has strong business operating profitability and sustainability (e.g. no loss in the past two years.).
- (3) A sound corporate governance mechanism and standardized legal operation.
- (4) Legal equity, stock issuance and transfer; no illegal activities or legal dispute.

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(5) The company for listing should be recommended by market-makers and get supervision from them; it should have signed Recommend and continuous supervision agreement with market-makers.

(6) Others

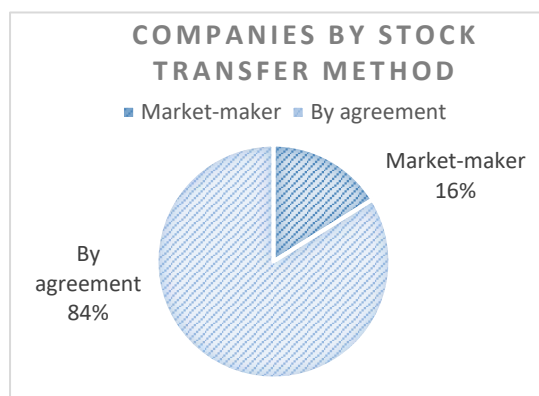
3.3.3 NEEQ STRATIFICATION

NEEQ companies can be stratified into about 10,000 basic layer companies and 941 innovative layer companies. (NEEQ Official Website, n.d.) The innovative layer companies are high quality companies that meet stringent financial requirements in profit, growth and market value. However, there are no financial requirements for basic layer companies. Financial requirements for innovative layer companies are as follows: (Yi J. , 2016)

- 1) Profitable for the consecutive 2nd year with average net profit no less than 20 million yuan; average income rate of net assets in latest two years is no less than 10 percent; average number of shareholders is no less than 200 per day.
- 2) Revenue constantly increases in recent two years, with compound growth rate no less than 50 percent; average revenue of the latest two years is no less than 40 million yuan; capital stock is no less than 20 million yuan.
- 3) Average daily market value in recent three months is no less than 600 million yuan; stockholders' equity is no less than 50 million yuan at the end of the latest year; the number of market-maker is no less than six.

The innovative layer companies also face greater information exposure to the public but at the same time are given financing policy privileges in return.

3.3.4 METHOD OF TRADING



Stocks have three ways of trading: auction, equity transfer agreement or market-making transfer. While the first and second board are traded by auction, NEEQ is traded through the latter two methods. Equity transfer agreement is a deal completely by the buyer and the seller directly. This method is more common but less liquid. A market-maker is a broker-dealer firm that assumes the risk of holding a certain number of shares of a particular security in order to facilitate the trading of that security. (Investopia, n.d.) Currently, there are 90 market-makers in

China. (Wind Info, n.d.) Market-maker system was adopted from US NASDAQ market, where stocks on NASDAQ mainly trade through market-maker system.

In regards to the rule of trading, the company should confirm one method of trading before listing. If the company wants to change the method of trading, it should get approval by both company's market-maker and the NEEQ committee. (NEEQ Official Website, n.d.) There are 10 to 30 companies change the method of trading from equity transfer agreement to market-making transfer every month, and there is never companies doing such change backward until recent half year. (Wind Info, n.d.) The

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reason is that many companies target to issue IPOs and being unable to control the number of shareholder can cause problems when the company goes through CSRC's audit.

Table 2 - Method of Trading on NEEQ Board

Method	Rule	Advantages/ disadvantages
Transfer agreement	<ul style="list-style-type: none"> ● The seller trades with the buyer directly by signing an agreement. 	<ul style="list-style-type: none"> ● Easier and faster if stocks can be traded directly ● Can control the number of shareholders
Market-making transfer	<ul style="list-style-type: none"> ● The buyer cannot trade with the seller directly. The seller sells stocks to the market-maker and the market-maker then sells these stocks to desired buyers at a fair price. ● Have to have over 2 market-makers. ● One of the market-maker has to be the market-maker who recommended the company on board. ● If less than 2 market-makers for over 30 days, the method of stock transfer will be switched directly to transfer by agreement. 	<ul style="list-style-type: none"> ● Provides more liquidity to the market ● A fairer price with an intermediary ● But market-maker has too much power ● Hard to control the number of shareholders

Source: (NEEQ Official Website, n.d.)

3.3.5 ADVANTAGES OF NEEQ BOARD

3.3.5(a) Company's perspective

NEEQ is a trading platform that CSRC seeks to solve the problem of financing difficulty and inefficiency of small and middle-sized firms in China. There are certain benefits for companies: (Baidu Baike, n.d.)

- Flexibility: NEEQ provides a new financing tool for firms that have difficulty in financing from the banks or that need flexible financing that banks cannot provide;
- Easy to entry: listing requirements are lower on NEEQ than on the exchanges that smaller companies have easier access;
- Variability of trading system: stocks can be traded through market-maker system or through equity-transfer agreement;
- Slack management and policy support: stratification policy enforced in May 2016 was aimed to encourage companies in enhancing their performance and to give better performed companies' prerogative to transfer to higher board and get access to greater and broader financing stage to meet their financing needs. The board is mostly filled with hi-tech firms, which are supported by national supportive policy in hi-tech industry;
- Cheap financing for development: prices are set by both parties in equity-transfer agreement or by traders through dealers' system. This system avoids cost of intermediate agencies.

3.3.5(b) Investor's prospective

For investors, NEEQ board is a place of high-risk and high return. Primary stocks have prices that reflect the real value of company and they are less affected by the outside environment. Investors in this market requires sophistication, expertise and strong financial ability. There are requirements for investors to enter this market: (amy0128, 2014)

1. For Institutions

Over 5 million yuan of registered capital as a legal institution or partnership;

2. For Individual investors

a) Over 3 million yuan value of capital under the investor's name, including stocks, bonds, securities or portfolio assets;

b) Over 2 years of securities investing experience on SZ/SH stock exchange, or professional background in accounting, finance or investment;

c) Employees or shareholders of the company can participate if satisfying the above 2 requirements;

d) Foreign investors have to be QFII (Qualified Foreign Institutional Investors) and RQFII.

The number of qualified investors constitutes only 2.5% of the entire common investor population in China, but it is necessary to ensure the safety and rigidity of the market. (Yan, n.d.)

3.3.5(c) Government's perspective

For Chinese securities, the innovation of NEEQ is not only an attempt to expand and develop OTC stock market in China, but also a place for the execution of government supportive policies for high-tech industries. The benefits for the government include: (Wang, 2014)

1. Less reliance on government subsidies or bank borrowing;

2. Supervision of traders by CSRC reduces the risk of Chinese OTC stock market in general;

3. Diversify the investing options for investors.

Although as an OTC stock market, NEEQ board is less liquid, less transparent in information and is restricted to less investors, its constitution is still a breakthrough for Chinese securities exchange, providing convenience and efficiency to investors, financing eager companies and the national economics as a whole.

3.4 IPO

An initial public offering (IPO) is the first time stocks of a company are publicly offered on exchange. IPOs are issued by either large companies who want to be publicly offered or companies who seek capitals to expand. (Investopia, n.d.)

3.4.1 IPO VS. NEEQ LISTING

IPO imposes stringent requirements on companies that stop many unqualified small companies from entering the stock exchanges. Since companies on NEEQ are not publicly offered companies, they do not require an IPO before listing. Therefore, listing on NEEQ has different requirements from an IPO.

3.4.1(a) Fee

Other than application initial fee and annual fee on board, fees for IPO include agency fees for underwriters, lawyers, certified public accountants, CSRC experts, etc. An IPO can cost a company on average 40 million yuan on the main board and a half of that amount on the second board. In contrast, listing on NEEQ is much cheaper: about 2-3 million yuan. Governmental subsidy can also carry a great proportion.

Application fees are adjusted by the company's size. The bigger the company, the higher the fees. The application initial and annual fee is higher in the main board compared to fee for second and third board. Details are shown in the following chart.

Table 3 - Application Fee for Listings on Three Boards in China

<i>(in yuan)</i>	Capital	Application fee	Annual fee
Main Board (SZ/SH exchanges)	<2 billion	300,000	50,000
	2-4 billion	450,000	80,000
	4-6 billion	550,000	100,000
	6-8 billion	600,000	120,000
	>8 billion	650,000	150,000
Second Board (GEM)	<2 billion	75,000	25,000
	2-4 billion	100,000	40,000
	4-6 billion	125,000	50,000
	6-8 billion	150,000	60,000
	>8 billion	175,000	75,000
Third Board (NEEQ)	<20million	30,000	20,000
	20-50million	50,000	30,000
	50-100million	80,000	40,000
	>1billion	100,000	50,000

Source: (NEEQ listing fee, 2016)

Other than application initial fee and annual fee on board, listing fees include agency fees for underwriters, lawyers, certified public accountants, CSRC experts, etc. Underwriters play a big role in helping companies to get listed. They collect sponsor fee and underwriting fee. Sponsor fee is collected to help with planning and to coordinate the company with the government. It is collected before listing. The largest portion of the expense is collected as underwriting fee. According to company's size, the underwriter can take 6-8% of the raised capital after listing has been successful. Accounting fee is related to the workload. For example, China Construction had a total accounting fee of 1.72 billion because of its tremendous accounting work. Both accounting and lawyer fee are periodic payments.

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Assessment fee is paid for asset evaluation of the firm. Other fees include fees for road show and propaganda, and implicit fees such as tax repayments.

Table 4 - Agency Fee for Listings on Three Boards in China (in yuan)

	Underwriting	Sponsor	Lawyer	Accounting	Assessment	Others	Total
Main board (SZ/SH exchanges)	6-8% of raised capital (if succeeded), about 20-40 million	3-5 million	1-4 million	2-5 million	About 200,000	4-6 million	About 40 million
Second board (GEM)	6-8% of raised capital, about 8-16 million	2-4 million	700,000-1,200,000	800,000-1,500,000	100,000-500,000	1-3million	About 16 million
Third board (NEEQ)	About 1.5 million	100,000	50,000-100,000 per year	100,000-150,000 per year			About 2-3 million

Source: (NEEQ listing fee, 2016)

3.4.1(b) Listing capital requirement

In Table 5, IPO listing capital requirement stop smaller sized companies from entering. NEEQ board has very low capital and performance requirement compared to the second board and the main board. Specifically, there is no capital requirement for NEEQ board basic layer companies.

Table 5 – Listing Capital Requirement on Three Boards in China (in yuan)

Main Board (SZ/SH Stock Exchanges)	Second Board (GEM)	Third Board (NEEQ)	
		Basic layer	Innovative layer
1) Over 30 million net profit for the latest 3 years;	1) Over 10 million net profit for the last 2 consecutive years;	None	1) Average profit in the past 2 consecutive years no less than 20 million;
2) Over 50 million of net cash flow;	2) Or over 50 million net profit last year;		2) ROE no less than 10%;
3) Or over 3 billion of revenue for the latest 3 years;			3) Revenue no less than 40 million;
4) Intangible asset / total asset no less than 20%;	3) Total asset no less than 20 million;	None	4) CGAR no less than 50%;
5) Publicly held shares no less than 25%;	4) Publicly held shares no less than 25%;		5) Market cap no less than 20 million;
6) Publicly held shares no less than 10% if capital is greater than 4 billion;	5) Issued shares no less than 4 billion shares;		

- 7) Market cap no less than 30 million before listing and 50 million after listing

Source: (Listing requirements for NEEQ board, n.d.)

3.4.1(c) Waiting time

It costs 2-3 years for an IPO compared to 6 months for listing on NEEQ. In addition, during the audit for an IPO, the company is restricted in acquiring financing from other sources. It also cannot make big company movements such as changing the board members, merger or acquisition, operational or industry change, etc.

In 2016, over 200 companies had IPOs and the IPO pass rate is below 10%. But there are still over 600 companies waiting in queue for China Securities Regulatory Commission’s audit for an IPO in 2017. (qianzhanipo, 2017)

3.4.2 IPO SUSPENSION PERIOD

The first IPO was issued on the Shenzhen Stock Exchange in August 1992. In China, IPO issuing serves as a regulatory tool that can adjust the stock market temperature. When the stock market performs very well, more IPOs are allowed to share the expanding market. When the stock market

Time	length of time (in full months)
1994.7.21-1994.12.7	5
1995.1.19-1995.6.9	5
1995.7.5-1996.1.3	6
2001.7.31-2001.11.2	3
2004.8.26-2005.1.23	5
2005.5.25-2006.6.2	12
2008.9.16-2009.7.10	9
2012.11.3-2014.1	14
2015.7.4-2015.11.6	4

Source: (Sina finance, 2015)

performs badly over some periods of time, IPO is banned. Suspension periods are implemented by the government in certain circumstances. Most IPO suspensions are due to drastic drop in price caused by economic depressions, such as the suspension caused by the financial crisis in 2008. Econometric analysis of this factor is in Model 2. Moreover, the preparation for the establishment of a new policy can suspend IPOs. For example, the establishment of the sponsor system in 2005 created the longest IPO suspension period in history

China had 9 IPO suspensions in history, which can last from 3 months to over 1 year. In the past

22 years, 1/5 of time the stock market is in IPO suspension period. The suspension period affects company’s decision to list, taking desired companies’ longer time to issue IPOs.

3.4.3 IPO ON THE EXCHANGES OF DEVELOPED COUNTRIES

The biggest difference between IPO on the exchanges of developed countries and developing countries is that IPO on the stock exchanges of developing countries is more important than that of developed countries. High growth rate of the economy of developing countries gives births to many new high-growth companies to list on the stock exchanges. China has the greatest IPO market in the world stock market. 7 of the ten greatest IPOs were issued in China in 2009. According to Zhang’s research, on the Shenzhen stock exchange in 2010, 78% of the fundraising amount was from issuing

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IPOs and only 22% was from secondary offering. On the contrary, New York stock exchange's secondary offering amount is much greater than funds raised through IPOs, which is only 15% of total fundraising amount in 2010. (Zhang, 2010) Low secondary offering activities in China explains why some Chinese enterprises rather list on the foreign exchanges.

3.5 Multi-level capital market

3.5.1 COMPARISON OF US AND CHINESE STOCK MARKETS

Multi-level capital market in the United States is the oldest that has developed over the past hundred year. Its capital market is the most complicated and most developed one. It has three markets targeted for companies of different sizes. NYSE is the central of national stock exchange market. As the second board market, NASDAQ is an American exchange platform designed to help investors to trade on stocks on a telecommunication network. OTCBB and OTC Markets Group's Pink Sheet (three categories: OTCQX, OTCQB and OTC Pink) contain about 10,000 unlisted stocks, constituting the OTC market in the United States. (Investopia, n.d.)

Table 7 - Comparison of US and Chinese Stock Markets

	<i>NYSE</i>	<i>NASDAQ</i>	<i>OTC</i>	<i>SHSE/ SZSE</i>	<i>GEMs</i>	<i>NEEQ</i>
Market type	Auction market: Broker contacts specialist floor trader or enters it into UTP	Dealer's market: Market-maker system or uses online form	Market-maker system	Auction & Electronic system	Auction & Electronic system	Market-maker system or transfer by agreement
Company type	Well-established companies, more stable stocks	Dominated by high-tech stocks that are more growth oriented and potentially more volatile	Various sizes of companies from different industries	Well-established companies, including many large SOEs	High-growth companies	Various sizes of companies from different industries
Market value <i>(dollars)</i>	28 trillion	10.6 trillion	0.9 trillion	7.7 trillion	0.7 trillion	0.44 trillion
Number of listed companies	Around 2,800	Around 2,600	Around 10,000	Around 2,600	Around 600	Around 11,000

Source: (Wind Info, n.d.)

Chinese stock market has less than 30 years' history, incomparable to US mature stock market. Started in 1990, Shanghai and Shenzhen stock exchange were the first stock exchanges in China. They now comprise of around 3000 stocks and have market capitalization of 57 trillion yuan, which is nearly 2/3 of GDP in China. US NYSE has around 2800 listed companies and a market value of 28 trillion dollars,

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about 1.5 times of GDP in the US. Since the market value of the stock market in proportion to national GDP is higher in the US than in China, US stock market is larger and more active.

The second board GEM (growth enterprises market) started in 2009 and the third board NEEQ initiated in 2012. (Yi J. , 2015) These are two very young markets compared to the correspondent markets in the US. Therefore, Chinese stock market is in a primitive stage, but it is fast growing as it has adopted policies from US stock market.

Chinese stock market shares many similarities with US stock market such as the capital market structure. They all have a three-level capital market:

Table 8 - Capital Market Structure Comparison

	US	China
The first board	NYSE	SZ/SHSE
The second board	NASDAQ	GEM
The third board	OTCBB/ PINK SHEET	
	OTCQX	OTCQB
	OTC Pink	Basic layer
		Innovative layer

Chinese government aims to perfect this multi-level capital market structure to provide marketplace for all kinds and sizes of firms. As the first step to accomplish this goal proposed in “Several opinions on further promoting the healthy development of the capital market (2014)” by Chinese State Council, NEEQ board is an institutional innovation for Chinese capital market. From the only experimental unit in Beijing in 2006, to three other units in major cities in 2012, starting in 2013 NEEQ operates formally. (Yi J. , 2015) NEEQ adopted NASDAQ’s market-dealer system, stratification policy that is implemented in 2016, and a more impeccable board transfer system which is expected to start next year.

Learning from advanced capital structuration in the US, Chinese market strive to renovate for a faster and more developed multi-level capital market that will be beneficial to Chinese companies and the economy as a whole.

3.5.2 COMPARISON OF US AND CHINESE OVER-THE-COUNTER MARKET

The categorization of Pink Sheet is very similar to the stratification of NEEQ board in China. NEEQ is divided into two layers (categories) of companies: basic and innovative layer. Pink Sheet’s three categories separate OTC companies according to their market value and size. OTCQX is the top marketplace with largest OTC companies trading, and only 370 out of over 9000 companies are in this marketplace. (Investopia, n.d.) OTCQB and OTC pink are middle and low marketplace in which there is less or no filling or financial requirement.

However, US OTC stock market is much more active than Chinese OTC stock market. About 95% of companies on US OTC market and 45% of companies on OTCBB trade daily, whereas only 10% of companies on NEEQ trade everyday. (US OTC market, 2015) Moreover, Chinese stock market does not have direct transfer system between boards yet. Companies have to exit NEEQ before applying to higher board. Although CSRC has formally issued documents about the privilege of IPOs for companies from NEEQ board, it is true that the requirements for IPO will not be lower for NEEQ

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companies. Until March 2017, there are only 17 NEEQ companies entered a higher board. 34 NEEQ companies went public on exchanges through acquisition or merger. 65 NEEQ companies are waiting for IPO audit by CSRC in 2017. (Wind Info, n.d.)

But in the US, If the company meets certain criteria, it is able to transit to higher boards directly. (Nasdaq, n.d.)

- If a company's capital reached 4 million dollars or after-tax profits reached over 0.75 million dollars or market values reached 50 million dollars, with no less than 300 shareholders and stock price no less than 4 dollars, it can enter NASDAQ small cap market.
- A company can enter NASDAQ national market if net capital reached over 10 million dollars.

4. DATA & STATISTICS

4.1 Data source

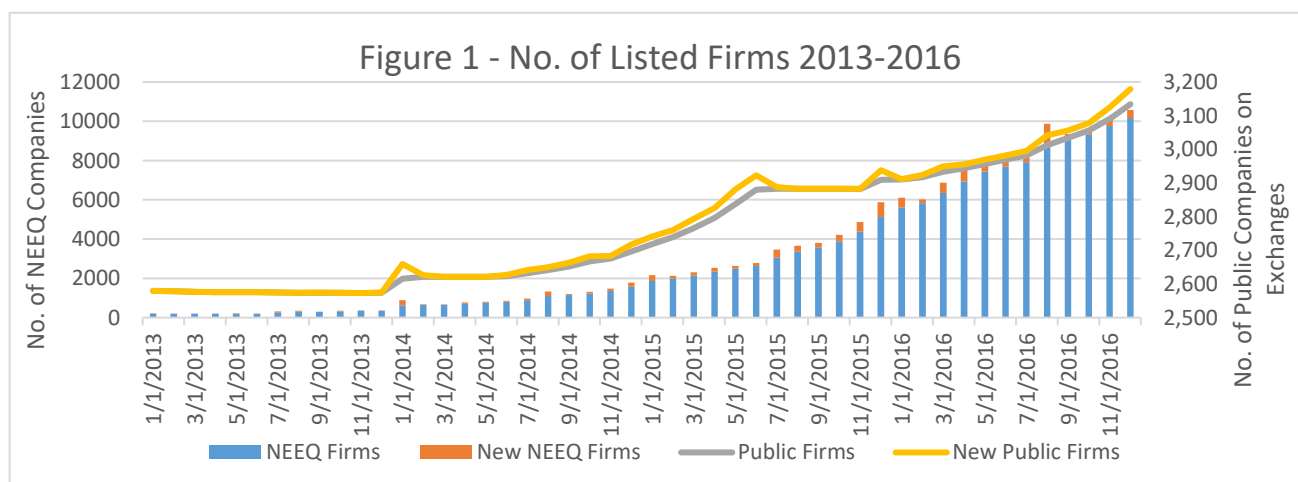
Data are from Wind Information, where I can get market statistics and individual stock's financial figures. Data for modeling are time series monthly data.

Statistics and information in this section are from Wind Information loaded into Excel. All charts and graphs below are plotted by myself in Excel. In the modeling section, all data in Excel will be loaded into R for analysis. This paper will mainly use R for statistical and econometrical analysis.

4.2 Statistics

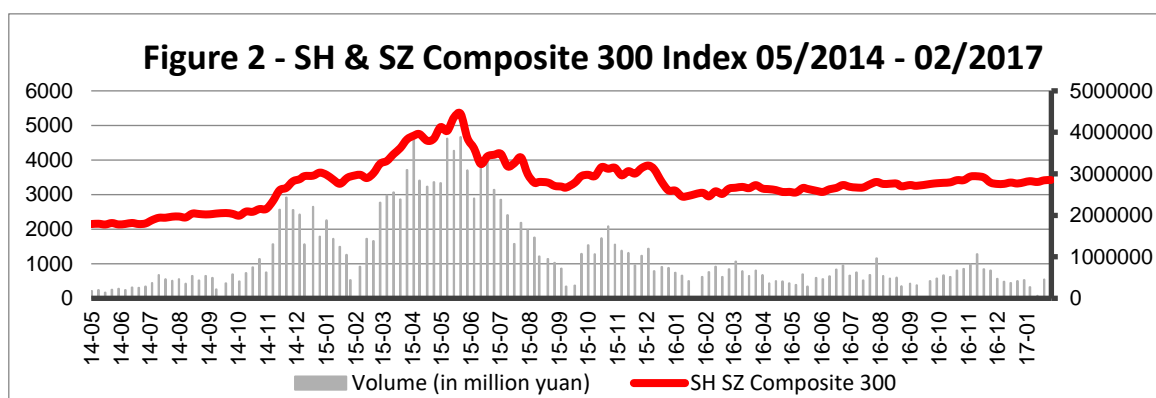
4.2.1 LISTING STATISTICS

Figure 1 shows the number of public listed firms on Chinese exchanges and the number of NEEQ firms from 2013 to 2016. The number of public companies on Chinese exchanges increases by the number of IPOs issued every month. IPO suspension period can stagnate the growth of the number of listings on exchanges. Without a governmental restriction on listings, the number of NEEQ firms grows faster at a rate of 2600 new companies per year and 220 new companies per month.

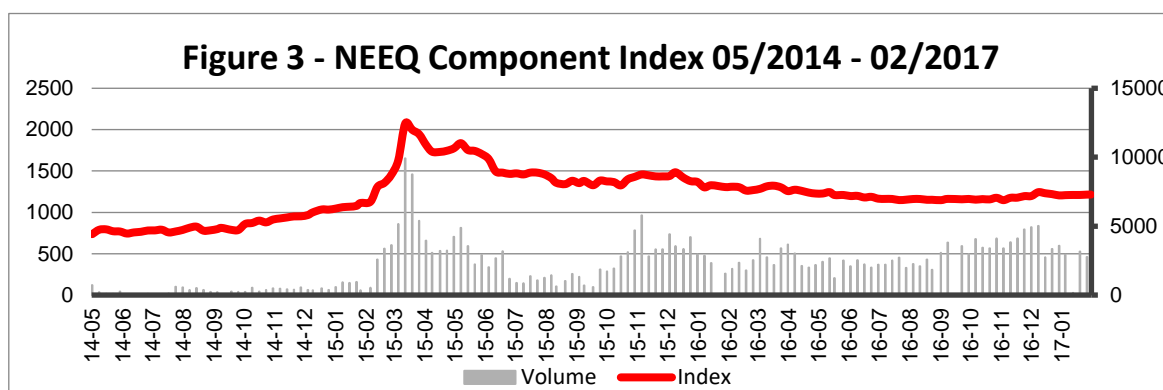


4.2.2 STOCK MARKET INDEX

SH & SZ Composite 300 Index is an index for stocks on Shenzhen and Shanghai stock exchanges. It takes 300 sample stocks that are large in size and volume. These 300 stocks are top 300 graded stocks based on their daily total value, average daily float market value, the average number of shares outstanding, the average daily turnover and the average number of shares in a given year. The index is weighted by the ratio of float shares of a stock. If a stock's float shares is 35%, 40% of volume of total shares is counted toward the index. The greater the ratio of float shares, the greater percentage of total shares is weighted in the index. Third Board Composite Index also used this method to weight stocks. The company composition of SH & SZ 300 Index is changed twice a year, while the composition of Third Board Composite Index is changed 4 times a year.



There are two indexes for NEEQ board, both started in March 2014. 89001 is NEEQ component index, representing the entire third board market. The index now includes 1538 companies that have the greatest market value. The market value of these companies covers 85% of total market value of the third board market. 89002 is NEEQ Market-making index, representing stocks that are traded through market-makers and are active. These two indexes all have a basis of 1000 points. From Figure 3, there is a sharp increase at the beginning of 2015 and now stays around 1000 basis points.



Third board component index and Market-making index are correlated with the market activities on the main and second board. The correlation coefficient calculated in R is 0.89, which is very high correlation. Their trend look also very similar. By looking at SH & SZ Composite 300 Index, the stock

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market reaches the peak in March 2015 as both SH & SZ Composite 300 Index and Third Board Component Index have the highest volume of trading.

4.2.3 SHAREHOLDING STRUCTURE OF LISTED FIRMS IN CHINA

The split-share reform was started in 2005. It separated company's shares into two categories: tradable shares and non-tradable shares. Tradable shares are shares issued since IPO and held by public investors. Non-tradable shares are pre-IPO restricted shares, including state legal person shares (partial SOEs), foreign shares, domestic legal person shares, executive shares and government shares (sole SOEs). These shares can only be transferred through bidding or signing an agreement under the supervision of SASAC.

Table 9 - Shareholding Structure of Listed Firms in China 2017

	<i>Publicly Listed Companies</i>	<i>NEEQ Companies</i>		
Tradable A-shares	4,11,648,560,807	72.56%		
Tradable B-shares	28,084,383,894	0.5%		
Tradable H-shares	713,035,130,843	12.58%		
Total Tradable Shares	4,852,653,241,613	85.66%	253,890,562,594	49.01%
Government shares	655,196,400	0.0116%		
State legal person shares	1,779,365,088	0.0314%		
Domestic legal person shares	3,162,626,055	0.0558%		
Non-tradable A-shares	806,743,497,969	14.24%		
Non-tradable B-shares	120,421,883	0.002%		
Total Non-tradable Shares	814,224,604,638	14.25%	348,599,383,133	50.99%
Total Shares	5,666,877,846,251	100%	602,489,945,727	100%

From (Wind Info, n.d.)

According to Table 9, 85.66% of total shares on Chinese stock exchanges are tradable. 85% of tradable shares are A-shares traded domestically in Chinese yuan and 14.7% are H-shares traded in Hongkong. By Table 10, state-owned enterprises, collectively-owned enterprises and joint-equity cooperative enterprises altogether comprise of 32% of the number of total public listed companies on the stock exchanges in 2017. However, the government now holds a very small proportion in number of shares but the value of these shares is still remarkable. For the NEEQ board, 49% of total shares are tradable.

Table 10 – Number of Enterprises by Types 2017

Type of Enterprises	No. Public Companies
State-owned enterprises	1,050
Collectively-owned enterprises	23
Joint-equity cooperative enterprises	4
Privately-owned enterprises	2,152
Others: Institutions, Universities	29
Foreign-invested enterprises	144
Total	3,402

From (Wind Info, n.d.)

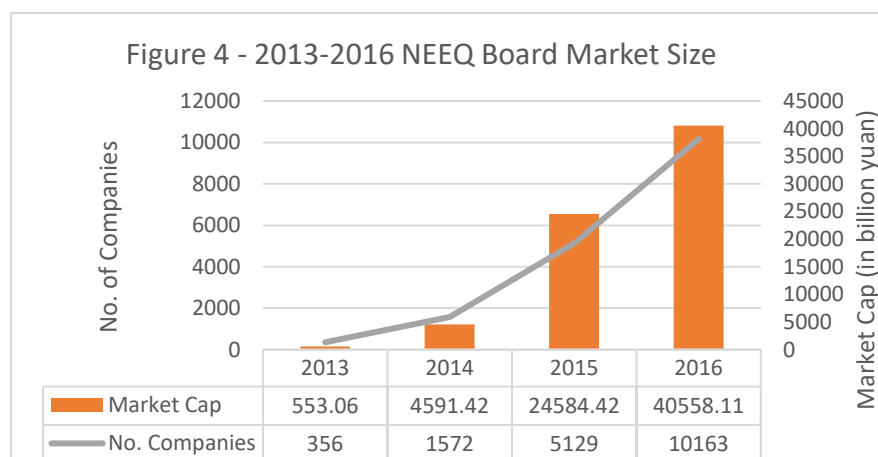
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4.2.4 NEEQ BOARD STATISTICS

4.2.4(a) NEEQ Market Size

NEEQ market size grow exponentially every year. The number of NEEQ companies increase from 356 to over 10,000 and the market value increases seven times in four years.

Taking statistics from 1/13/2017, there are 11 new listings on that day and end with a total number of



10244 listed companies on NEEQ board. About 16% of listed companies trade stocks through market-maker and 84% by agreement. 951 of the listed companies are in innovative layer. It is typical in a trading day that 10% shares of all listed companies are traded on NEEQ. (NEEQ Official Website, n.d.)

A larger proportion of companies traded through market-maker. This justifies the claim that stock transfer by market-maker provides more liquidity. However, stock transfer by agreement has greater amount and volume of trading per traded stock. It is because of the advantage of this stock transfer method that companies that transfer stock by agreement attract large and more sophisticated investors. Moreover, nearly a half of the innovative layer companies are trading, whereas only 6% of basic layer companies are trading on that day. Innovative companies also have higher stock price on average. This shows that innovative layer companies are more active since these companies are more prospective companies.

Table 11 - NEEQ Board Company Statistics 1/13/2017

Quantity	Stock Transfer method		Market layers/groups		Total
	<i>Market-maker</i>	<i>By agreement</i>	<i>Basic</i>	<i>Innovative</i>	
Listed Company	1650	8594	9293	951	10244
New Listed Company	0	11	11	0	11
Market Cap (in billion yuan)	1554.47	4348.23	4878.45	1024.24	5902.69
Outstanding shares (in billion)	860.94	1571.81	1859.36	573.4	2432.76
Traded Stock	681	321	570	432	1002
Amount (in ten thousands yuan)	47567.98	41610.3	39521.7	49656.57	89178.3
Volume (in ten thousands share)	7610.78	8021.21	9875.26	5756.72	15632

Source: (NEEQ Official Website, n.d.)

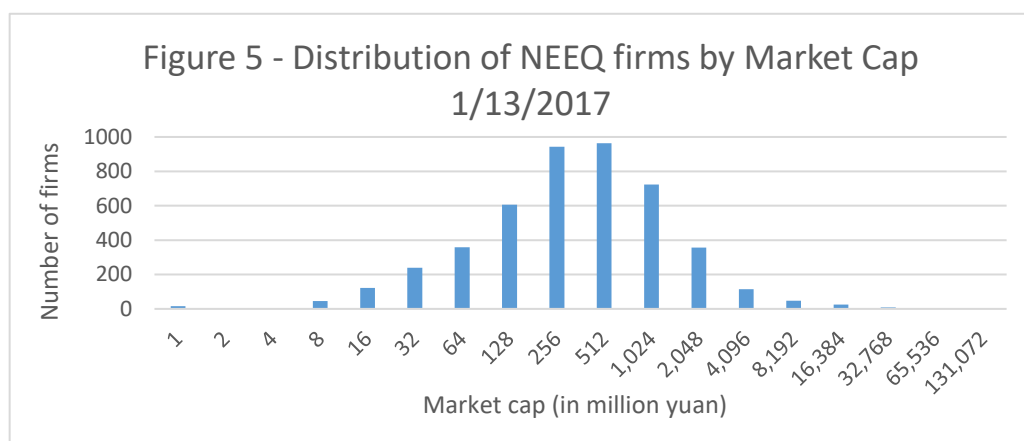
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4.2.4(b) Distribution of NEEQ firms by size

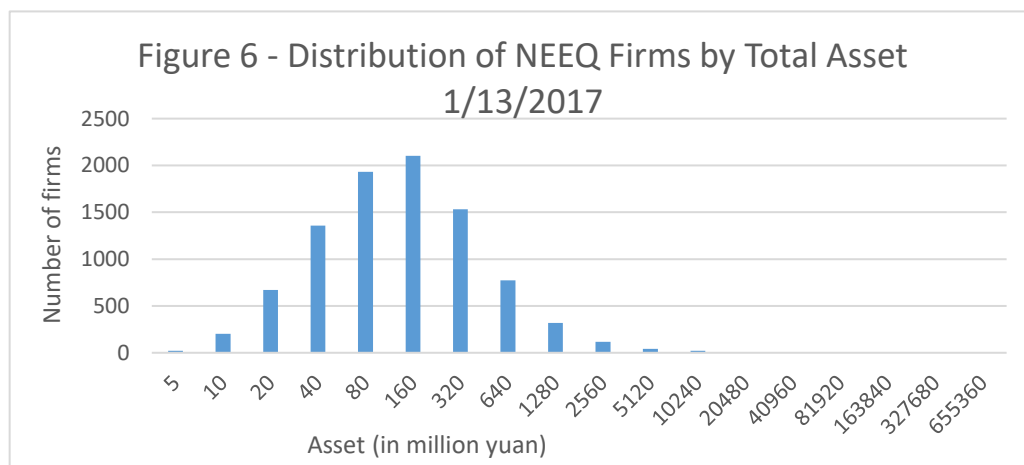
According to Table 11, only 4561 of 10244 listed companies have ever issued stocks on NEEQ. Although companies on NEEQ are mostly small to middle enterprises, there are large company trading on NEEQ.

The distribution of NEEQ firms by total asset and market cap show the number of firms in a certain range of total asset value or market value. Shown in Figure 3, NEEQ companies have market capitalization between 10 thousands and 100 billion yuan. About 80% of companies actively trading on NEEQ have market capitalization greater than 50 million yuan. It means that the market cap requirement is not a barrier for most companies on NEEQ to list on the stock exchanges.

Shown in Figure 4, 80% of the companies have total asset between 20 million yuan to 1 billion yuan. The largest company is Qilu Bank, having a total asset of 173 billion yuan. The smallest company on NEEQ is Jiayin Online with a total asset of 5 million yuan.



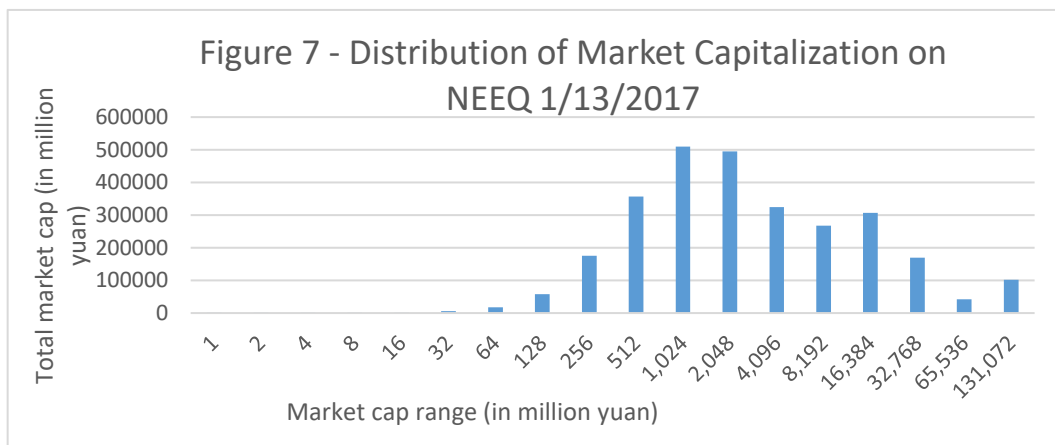
(Wind Info, n.d.)



(Wind Info, n.d.)

Figure 7 is the distribution of market capitalization. X-axis is the range of market capitalization of every firm on NEEQ. Y-axis is the total market capitalization of firms in that range, which is the sum of market capitalization of all firms in that range. Market capitalization of the third board are concentrated on firms that have greater than 100 million yuan in market cap.

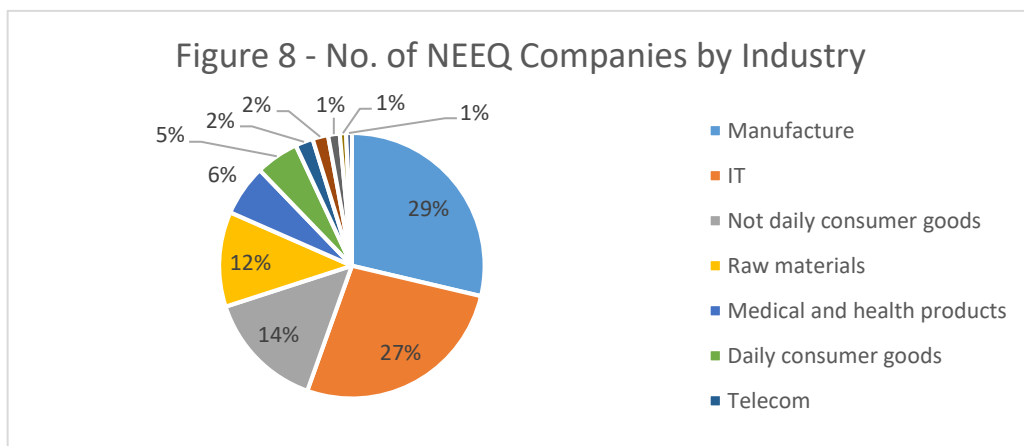
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(Wind Info, n.d.)

4.2.4(c) NEEQ Industry and Region Statistics

NEEQ consist of mostly high-tech companies. Industry statistics is shown in Figure 8. 27% of the companies are in IT industry and 29% are doing manufacturing. These two categories composes over half of companies on NEEQ. (Wind Info, n.d.)

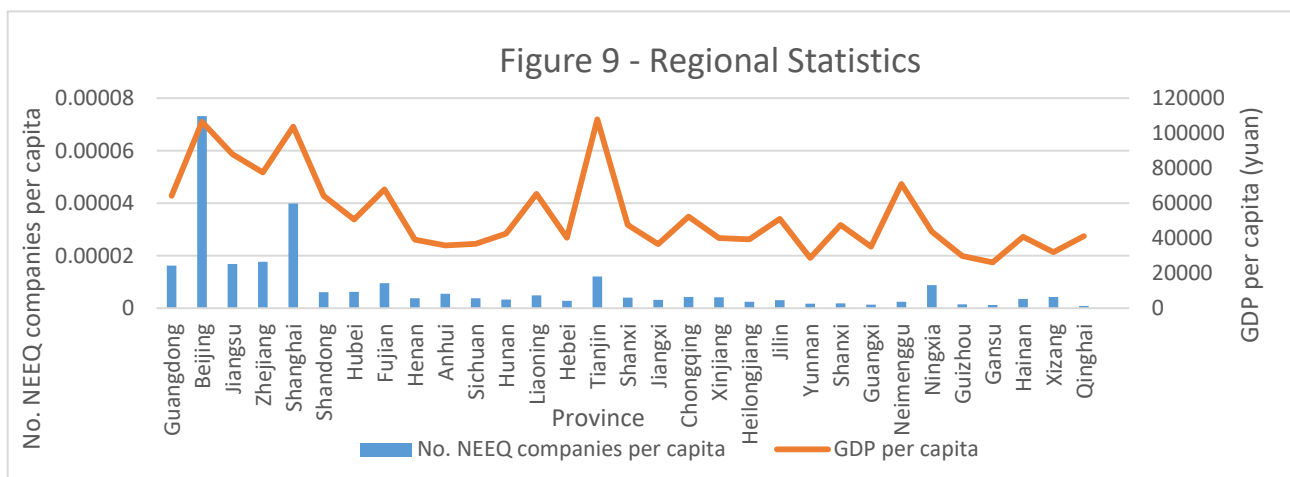


(Wind Info, n.d.)

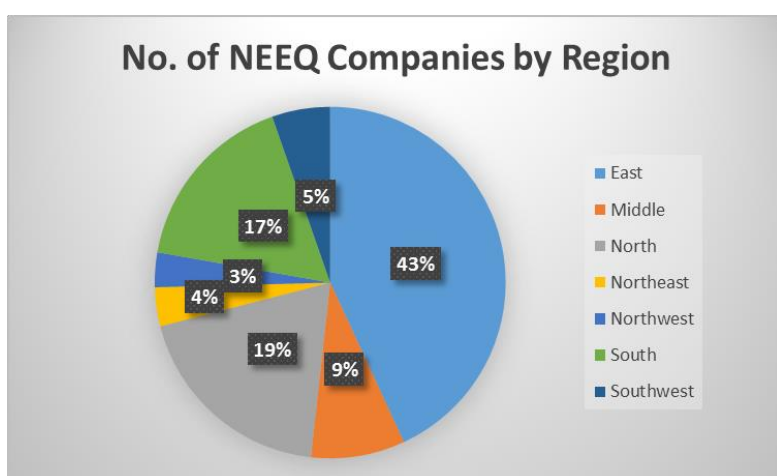
The number of NEEQ companies can also be categorized based on regional factors. According to the following graphs, companies are concentrated on the east coast of China, which is the most prosperous region in China. Guangdong province has the greatest number of companies. China’s capital Beijing has second many companies, most of whom are in Zhongguancun Village, China's first state-level high-tech industrial development zone, also called Chinese “Silicon Valley”.

Also by comparing number of NEEQ companies in a certain province to its GDP per capita, one can see a positive relationship. It means that the greater GDP per capita of a province, the greater the number of NEEQ companies per capita. Data about GDP is from 2016 China Statistics Yearbook.

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Source: (2016 China Statistics Yearbook, n.d.)



(Wind Info, n.d.)

5. MCKENZIE'S STUDY

INTERNATIONAL EVIDENCE ON THE DETERMINANTS OF THE DECISION TO LIST

By Michael D. McKenzie – Australian Journal of Management (June 2007)

This paper offers empirical insights into the determinants of listing activity using annual data sampled across 38 exchanges. Listing activity in developed countries stock markets is influenced by a range of variables which capture stock market and business conditions. The single most important factor in explaining the current level of listing activity, however, is the past level of listing activity. For emerging stock markets, none of the variables tested possessed any real explanatory power. Evidence is also found to suggest that high listing activity is accompanied by an increase in seasoned equity issues.

This paper took data from The World Federation of Exchanges (WfoE), a private organization which collects market statistics directly from member exchanges. It took annual estimates of the number of new listings for 38 stock exchanges sampled over the period 1995 to 2002, providing a total of 304 observations. Grouped by geographic region, these exchanges are: North America (Amex, Mexico,

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Nasdaq, NYSE, TSX Toronto Stock Exchange), South America (Buenos Aires, Lima, Santiago, Sao Paulo), Europe, Africa and the Middle East (Athens, Copenhagen, Deutsche Börse, Euronext, Helsinki, Irish, Istanbul, Italian Exchange, JSE South Africa, London, Luxembourg, Oslo, Spanish Exchanges, Stockholm, Swiss Exchange, Tel-Aviv, Vienna, Warsaw), and the Asia-Pacific (Australian, Hong Kong, Jakarta, Japan, Korea, Kuala Lumpur, New Zealand, Philippines, Singapore, Taiwan, Thailand). (McKenzie, 2007) There is no statistics for China in this database and the data taken by the author is old.

Dependent variable: $LIST_{i,t}$ is the percentage change in the number of companies for exchange i in year t . The total number of newly listed firms each year is expressed as a percentage of the total number of listed firms.

Independent variables are separated into five groups:

- 1) Listed Company Capital Raising: Seasoned Equity Issues
- 2) Stock Market Performance: Dividend Yield, P / E Ratio, Price-Book Value Ratio, Market Return, Delistings / No. Listings
- 3) Stock Market Activity: No. Transactions per Capita, No. Shares Traded per Capita, Avg. Trade Value, Tot Val Shrs Traded / Mkt Cap
- 4) Business Condition: Inflation, GDP, Short Term Interest Rates, Interest Rate Spread
- 5) Bond Market Performance: Market Value of Bonds (%), Value of Bond Trading (%), Long Term Bond Yield

To avoid multicollinearity problem, the author used a block testing procedure in which the potential determinants of listing activity are grouped together and each of the five groups above is considered separately. Once the significance of each proxy variable has been established within this group framework, a final regression equation is to be estimated that brings together each of these individually significant variables.

The estimation results suggest that stock market performance and activity, as proxied by price-to-book value ratio, market return, the number of transactions and average trade value, influence the level of listing activity most significantly. Thus, the author put these significant variables into the final

$$LIST_{i,t} = \alpha_0 + \alpha_1 PBV_{i,t} + \alpha_2 R_{i,t}^{Mkt} + \alpha_3 NT_{i,t} + \alpha_4 ATV_{i,t} + \varepsilon_t \quad (6)$$

regression equation.

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According to the regression result in Table 12, only the average trade value is significant as the number of transactions is now insignificant. The explanatory power of this equation is low and the most significant factor in determining current listing activity is the past listing activity.

Dependent variable: <i>new_list</i>		
Independent variables	Coefficients	t-value
<i>PB</i>	7.6102	1.96
<i>Market_return</i>	-0.2103	2.19
<i>Trade_val</i>	21.2036	6.95
<i>AR(1)</i>	0.8997	28.87
<i>Constant</i>	36	1.07
No. observations = 240		
Adjusted R-squared with AR(1) = 0.8285		
Adjusted R-squared without AR(1) = 0.2053		

The author also did a comparison between emerging stock market and developed stock market and concluded that determinants of their listing activities are quite different. Although the past listing activity remains the most significant variable for either the emerging or the developed stock market, stock market and business conditions appear to possess greater explanatory power for the developed stock market in accounting for the number of new listings. The number of delisting and the short-term interest rate are added to the variable set for the developed stock market.

Short-term interest rate is also included in the variable set for the emerging stock market but has an opposite sign, which explains a cancelling effect that the short-term interest rate becomes an insignificant factor in the whole sample result.

Zhongxiao Jiang from Stanford University Graduate School department of management science and engineering also did a research on the determinants of public listing of Chinese enterprises. He uses a logistic model based on a company's accounting information to classify listed companies from unlisted companies, and shows that the listing odds depend on the size, profitability and debt-assets ratio of a company, but not on its revenue growth. His data is based on 658 public companies listed and over 4000 unlisted companies during 1995–1999. I wanted to use his approach to classify listed companies on the stock exchanges, NEEQ companies and unlisted companies in China using newer data. However, I do not have access to data source for Chinese unlisted companies. But it will a great addition if I am able to find such data to do the analysis.

6. MODELING

6.1 Model 1

Model 1 is to find factors that would determine the number of new listings in a month of the year. This model will test for two questions: does past listing activities affect the current listings, a takeaway from McKenzie's study? Does IPO suspensions affect the number of new listings?

Model 1.1 is to predict the number of IPOs, whereas Model 1.2 is to predict the number of new listings on NEEQ board . For each sub-model, I will use the final regression resulting from a block testing procedure of McKenzie's study and then try forward selection method, which is a method that picks variables that are most significant in the variable set.

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My approach will be as follows: first, independent variables related to this problem are picked by hand as shown in 6.1.1. Then, I use R to calculate the correlation matrix of these variables and get rid of variables that have high correlation with each other to avoid multi-linearity problem. Later, I will use finite distributed lag model by adding lag terms of each variable to the linear regression and do a forward selection ordinary least squares. In this way, I am able to finalize my explanatory variables for my linear regression model.

6.1.1 VARIABLES

The following is variables that are relevant in order to predict the number of listings. These variables can be separated into several groups. “Note” shows what the variable is and why the variable is considered.

Table 13 - Variables for Model 1

Groups	Variables	Note
Listed Company Capital Raising	Secondary Offering	The value of secondary offering
Stock Market Performance	Dividend Yield	The total dividends distributed by domestic companies in the main index relative to the market capitalization. Falling yields signals rising prices and greater listing activity.
	P / E Ratio	
	Price-Book Ratio	Value Favorable expectations about a particular industry (proxied by the price-to-book ratio) are argued to lead to higher levels of listing activity.
	Market Return to Market Index	Market returns potentially capture changes in investment demand, investor sentiment as well as other unknown dynamics.
	Number of Delisting	Reflect financial distress
	Number of Listing	Dependent variable. Number of companies on the board
Stock Market Activity	No. Transactions	The greater the general level of investor interest in the stock market, the more potential interest investors may have in new listings.
	No. Shares Traded	
	Trade Value	The total value of share trading
	Total Value Traded / Market Capital	Shares Expressed relative to market capitalization to account for growth in the market
Business Condition	Inflation rate	
	GDP / GDP growth rate / GDP per capita	An improvement in the commercial climate leads to higher levels of investment and so, an increase in the number of firms attempting to raise capital through new listings.
	Change in Short Term Interest Rates	3 month interest rate

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		Interest Rate Spread	Difference between borrowing and lending rates
		Term premium	Measured as the difference between the yield to maturity on ten-year government bonds and the three-month money market interest rate.
Bond Performance	Market	Market Value of Bonds (%)	The change in the total value of domestic and foreign bond trading during the year. Domestic bonds include private and public sector listed bonds, governments and municipal bonds. Foreign bonds are bonds listed on the stock exchange and issued by non-resident institutions. The poorer the bond market performance, the better for the stock market as an alternative.
		Value of Bond Trading (%)	The change in the market value of listed domestic and foreign bonds.
		Bond Yield	The 10-year government bond yield
Others		IPO fee	The more fees to issue an IPO, the less likely for a company to be publicly listed.
		IPO waiting time	The longer the waiting time for an IPO, the less likely for a firm to be publicly listed.
		IPO suspension periods	The longer the suspension period for an IPO, the less likely for a firm to be publicly listed.

6.1.2 MODEL 1.1 FOR IPO

This model is to predict the number of IPOs. I used monthly data from Jan. 2002 to Jan. 2017. Due to the restriction of information and data I can get, I pick the following variables:

- IPO: number of IPOs in a given month of a year. This is the dependent variable.
- Fundraise_amt: the value of secondary offering (in billion yuan) in a given month of a year
- Total_shares: total shares (in billions) on the stock exchanges in a given month of a year
- PE: average price to earning ratio of all companies on exchanges in a given month of a year
- PB: average price to book ratio of all companies on exchanges in a given month of a year
- Market_return (%): market return of SZ & SH composite 300 index in a given month of a year
- GDP_per_capita: GDP per capita (in yuan) of that year
- Trade_val: trade value on the stock exchanges in a given month of a year
- Tradeval_cap: trade value divided by market capitalization
- Bond_val: market value of bonds in a given month of a year

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- Bond_yield: 10-year government bond yield

From the correlation matrix, GDP_per_capita, PB, PE, bond_val have high correlation with each other. This is because the higher GDP per capita and the better the economy, the higher the price of both the bond and stock market as more people invest in bonds and stocks. So I pick only one variable PB among them and omit others. Total_share is highly correlated with trade_val and tradeval_cap is a function of trade_val. At last, it ends up with following variables: PB, fundraise_amt, tradeval_cap, market_return, bond_yield, which are summarized in Table 14.

6.1.2(a) Descriptive statistics

Table 14 – Summary Statistics of Companies on Exchanges Monthly Data 2002 - 2016

	<i>IPO</i>	<i>PB</i>	<i>market_return</i> (%)	<i>fundraise_amt</i> (billion yuan)	<i>Tradeval_cap</i>	<i>Bond_yield</i> (%)
Mean	6.61	1.98	0.55	310.22	0.86	74.55
Sd	9	0.15	8.83	413.51	0.64	13.64
skewness	0.78	0.2	0.18	2.03	1.91	0.21
kurtosis	0.15	-1.22	0.92	4.31	7.65	-0.64
No. obser	136	136	136	136	136	136
Min	0	1.75	-24.22	0	0.07	44.78
Median	9	1.96	0.48	239.38	0.73	72.94
Max	33	2.22	27.93	2463.55	4.63	105.72

There are 136 observations (136 months) in this dataset from 2002 to 2016. In Dec. 2016, there are 33 IPOs issued in that month, the greatest among all months. A month can have no IPOs during an IPO suspension. The average number of IPOs since 2002 for a month is about 6 to 7. The mean value of PB ratio is 1.98 on Chinese stock exchanges. PB and PE ratios are standardized ratio and can serve as a benchmark for investors used to indicate whether or not a stock is worth buying. If a stock has a high PE/PB ratio compared to standardized PE/PB, this stock is overvalued and is not worth buying, and vice versa.

The average monthly market return of SH&SZ Composite Index is 0.55%. The stock market in China can have potentially a large positive return as well as over 20% negative return during the bad times. The monthly secondary offering amount has been steadily increasing as more companies get listed on the exchanges. Trade value to market cap ratio is about 0.86 on average. 10-year government bond yield fluctuates around the mean value 74.55%.

6.1.2(b) Model from McKenzie's study

In this model, I want to test if past IPO activities have effects on the current level of IPOs. I replicate the model used in the McKenzie's study and apply it to Chinese case. Instead of doing the whole procedure of block testing, I only use his final equation (6). Since I am unable to get enough data for number of transaction, I delete this variable.

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Since there are 5 IPO suspension periods from 2012 to 2016, summing up to 44 months in total. I also exclude months that have no IPOs in the previous month. Shown in Table 15, I deleted 49 months of observations, ending up with 131 total observations for the dataset.

Table 15 - IPO Suspensions 2002-2016	
Months deleted	No. months
2004.9-2005.2	6
2005.6-2006.6	13
2008.10-2009.7	10
2012.11-2014.1	15
2015.7-2015.11	5

Therefore, it result in the following equation:

$$\text{IPO} = 10.07 - 3.096 \text{ PB} + 0.0108 \text{ market_return} + 7.047\text{e-}06 \text{ trade_val} + 0.471 \text{ lag(IPO)} + \text{error (1)}$$

Shown in Table 16, AR(1) and Trade_val are significant variables. The positive coefficient of trade_val indicates that the greater the trading value of the stock market, more number of IPOs are issued given other variables constant. High level of stock market activities suggest a favorable stock market for companies to list. The government is also more willing to approve IPO requests. Low p-value of AR(1) rejects the null hypothesis that the past listing activities have no effect on the level of current listings. This takeaway is the same as in McKenzie's study.

Table 16 – Determinants of the Number of IPOs Using Method from McKenzie's Study

Dependent variable: IPO				
Independent variables	Coefficients	Standard errors	t-value	p-value
<i>PB</i>	-3.096	3.226	-0.96	0.339
<i>Market_return</i>	0.01079	0.05021	0.215	0.830
<i>Trade_val</i>	7.047e-06	1.236e-06	5.7	8.04e-08
<i>AR(1)</i>	4.714e-01	7.506e-02	6.281	5.01e-09
<i>Constant</i>	10.07	6.724	1.497	0.137

No. observations = 130 (1 deleted due to missingness)

R-squared = 0.4408, Adjusted R-squared = 0.423

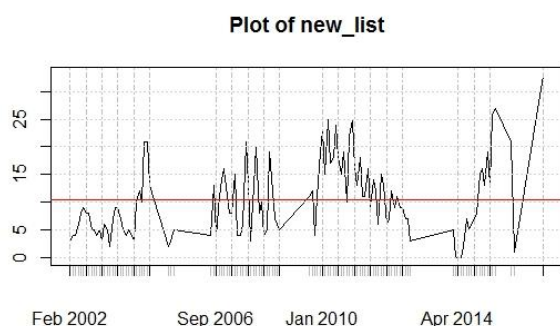
F-statistic = 24.83 on 4 and 126 DF, p-value = 3.607e-15

Note: AR(1) is the lag term of IPO: lag(IPO).

However, since China has IPO restrictions and data during IPO suspension period are excluded in the previous analysis, I also would like to try the linear regression without omitting IPO suspensions. I get a similar result. Lag of IPO suspension is the most significant factor in explaining the current level of listings on Chinese stock exchanges.

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6.1.2(c) Model using forward selection



First, I would like to check if there is a trend in the dependent variable. By looking at the plot of new_list (IPO), one can see the curve variate around a constant mean. The dependent variable IPO is a random walk with a constant drift. I am also going to verify that using Unit root test. By Table 17, since numbers in new_list are integers and there is only mild evidence of the presence of unit root (a very low p-value), I decide to work with time series static linear regression model

Table 17 – Model 1.1 Unit Root Test

Variables	P-value
<i>IPO</i>	0.002557

with new_list as dependent variable.

By forward selection, the following equation produces the most significant result:

$$IPO = -4.869 + 0.0648 PE + 3.813 tradeval_cap + 0.0723 bond_yield + 0.0311 market_return + 0.530 lag(IPO) + error (2)$$

Table 18.1 – Determinants of Number of IPOs by Forward Selection: testing the effect of past listing activities

Dependent variable: <i>IPO</i>				
Independent variables	Coefficients	Standard errors	t-value	p-value
<i>PE</i>	0.06476	0.16202	0.4	0.6901
<i>tradeval_cap</i>	3.81259	0.74957	5.086	1.30e-06
<i>bond_yield</i>	0.07231	0.03417	2.116	0.0363
<i>market_return</i>	0.03109	0.05114	0.608	0.5443
<i>AR(1)</i>	0.53004	0.7616	6.959	1.71e-10
<i>Constant</i>	-4.86919	5.42986	-0.897	0.3716
No. observations = 130 (1 deleted due to missingness)				
R-squared = 0.4385, Adjusted R-squared = 0.4161				
F-statistic = 19.53 on 5 and 125 DF				
p-value = 2.465e-14				

Note: AR(1) is the lag term of IPO: lag(IPO).

Trade value in proportion to market capitalization is used rather than trade value. Tradeval_cap and lag(IPO) are still the most significant variables. Therefore, the past listing activities have a great impact on the current level of IPOs. Furthermore, 10 year governmental bond yield also has a positive linear relationship with the number of new listings on the Chinese stock exchanges. A rise in bond_yield in a month indicates a good market condition, which affects positively on the number of IPOs.

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Since p-value of both model from McKenzie's study and model using forward selection is very small, both equation 1 and 2 are able to explain and predict the number of IPOs on the Chinese stock exchanges.

6.1.2(d) Model to test the effect of IPO suspension

I would also like to test if an IPO suspension period in the previous month would affect the number of IPOs this month by replacing lag(IPO) in the previous analysis by lag(IPO_suspension). I also deleted market_return due to its insignificance. IPO_suspension is 1 if there is a suspension in the current month and is 0 if not. In this case, months that have IPO suspension in the previous month are not excluded and therefore, there is a total of 136 observations. The resulted equation is as follows:

$$\text{IPO} = 13.081 + 0.0252 \text{ tradeval_cap} + 0.0540 \text{ bond_yield} - 0.404 \text{ PE} - 5.598 \text{ lag(IPO_suspension)} + \text{error (3)}$$

Table 18.2 – Determinants of Number of IPOs by Forward Selection: testing the effect of IPO suspension

Dependent variable: IPO				
Independent variables	Coefficients	Standard errors	t-value	p-value
<i>PE</i>	-0.403565	0.177438	-2.274	0.02458
<i>tradeval_cap</i>	0.025249	0.008062	3.132	0.00215
<i>bond_yield</i>	0.054032	0.040482	1.335	0.1843
<i>Lag(IPO_suspension)</i>	-5.597765	2.824458	-1.982	0.0496
<i>Constant</i>	13.081112	5.784004	2.262	0.02538
No. observations = 135 (1 deleted due to missingness)				
R-squared = 0.1899, Adjusted R-squared = 0.165				
Residual standard error = 7.618 on 130 degrees of freedom				
F-statistic = 7.618 on 4 and 130 DF				
p-value = 1.516e-05				

From Table 18.2, Lag(IPO_suspension) is significant at 5% significance level. The null hypothesis is rejected and an IPO suspension period in the previous month would affect the number of IPOs this month if there is no IPO suspension this month. However, the negative coefficient shows that the number of IPOs this month will not jump above the level that would have been predicted on the basis of stock market and business condition and instead will decrease after an IPO suspension.

6.1.3 MODEL 1.2 FOR NEEQ COMPANIES

This model is to predict the number of NEEQ companies. I used monthly data from Jan. 2013 to Jan. 2017 since NEEQ board is started in 2013. Due to the restriction of information and data I can get, I pick the following variables:

- **New_list**: the number of new NEEQ companies in a given month of a year. This is the dependent variable.

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- **Fundraise_amt**: the value of secondary offering (in billion yuan) on NEEQ in a given month of a year
- **Fundraise_main**: the value of secondary offering (in billion yuan) on the stock exchanges in a given month of a year
- **Total_shares**: total shares (in billions) on NEEQ board in a given month of a year
- **Trade_val**: trade value (in billion yuan) on NEEQ board in a given month of a year
- **PE**: average price to earnings ratio of all companies on NEEQ
- **PB**: average price to book ratio of all companies on NEEQ
- **Market_return**: market return of NEEQ composite index in a given month of a year
- **Delisted_main**: the number of delistings on the stock exchanges in a given month of a year
- **IPO_suspension**: a dummy variable that is 1 if the month is in an IPO suspension period
- **IPO_fee**: average fees occurred for each company issuing an IPO (in billion yuan) in the previous month
- **GDP_per_capita**: GDP per capita (in yuan) of that year

I get a correlation matrix of these variables. In order to avoid collinearity problem, I would like to delete variables based on 0.6 correlation threshold. Since *trade_val*, *fundraise_main* and *fundraise_amt* are highly correlated with each other and *trade_val*, *IPO_fee* and *GDP_per_capita* are highly correlated with each other, I eliminate *trade_val*, *IPO_fee* and *GDP_per_capita* in the variable set.

The remaining variables are: *PE*, *PB*, *market_return*, *fundraise_amt*, *fundraise_main*, *delisted_main*, *IPO_suspension*, *IPO_fee*. The summary statistic of the dataset is in Table 19 (including the dependent variable *new_list*).

6.1.3(a) Descriptive statistics

Table 19 – Summary of NEEQ Companies Monthly Data in 2013 - 2016

	<i>New_list</i> (dependent)	<i>delisted_main</i>	<i>PE</i>	<i>PB</i>	<i>market_return</i>	<i>fundraise_amt</i> (billion)	<i>Fundraise_main</i> (billion)
Mean	209	2.229	121.51	13.77	0.01248	66.82	794.12
Std. dev.	218.49	3.137	94.681	18.558	0.086	78.030	708.16
Skewness	1.36	2.67	1.36	1.43	4.07	1.32	2.16
Kurtosis	1.78	7.44	0.94	0.58	22.51	1.41	5.6
No. obser	48	48	48	48	48	48	48
Min	0	0	18.61	-1.88	-0.127852	0.06	93.22
Median	153.5	1	95.33	3.78	0	43.865	625.83
Max	983	15	373.73	65.77	0.51882	317.6	3710.04

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There are 48 observations (48 months) in this dataset. In Aug. 2016, the number of newly listed companies on NEEQ in the greatest among all months from 2013 to 2016. The mean value of PE ratio is 121.51 and the mean value of PB ratio is 13.77 in the NEEQ market. PB ratio of over-the-counter market is much higher than that of the stock exchanges in China.

NEEQ market is particularly doing well at the end of 2016. The average monthly market return of NEEQ Composite Index is 1.25%, higher than the return of the Chinese stock exchanges. NEEQ market has a similar standard deviation with the stock exchanges. It shows the high return quality of over-the-counter market but not necessarily high risk. The mean of secondary offering of publicly traded companies is 794.12, which is about 10 times of the average amount of secondary offering of all NEEQ companies. There is at most 15 companies and on average one company delisted from the main and second board every month from 2013 to 2016.

6.1.3(b) Model from McKenzie's study

In this model, I want to test if past NEEQ listing activities have effects on the current level of NEEQ listings using McKenzie's method. Therefore, I form the following equation:

$$\text{New_list} = 55.714 + 0.477 \text{ PB} - 264.162 \text{ market_return} + \alpha_3 \text{ trade_val} + \alpha_4 \text{ lag}(\text{new_list}) + \text{error} \quad (4)$$

Table 20 – Determinants of the Number of New NEEQ Companies Using Method from McKenzie's Study

Dependent variable: new_list				
Independent variables	Coefficients	Standard errors	t-value	p-value
<i>PB</i>	0.4767	1.3072	0.365	0.717181
<i>Market_return</i>	-264.1619	280.4081	-0.942	0.351548
<i>Trade_val</i>	1.6911	0.4072	4.153	0.000157
<i>AR(1)</i>	0.1979	0.1403	1.410	0.165822
<i>Constant</i>	55.7136	41.7519	1.334	0.189263
No. observations = 47 (1 observation deleted due to missingness)				
R-squared = 0.5175, Adjusted R-squared = 0.4715				
Residual standard error = 159 on 42 degrees of freedom				
F-statistic = 11.26 on 4 and 42 DF				
p-value = 2.683e-06				
<i>Note: AR(1) is the lag term of new_list: lag(new_list).</i>				

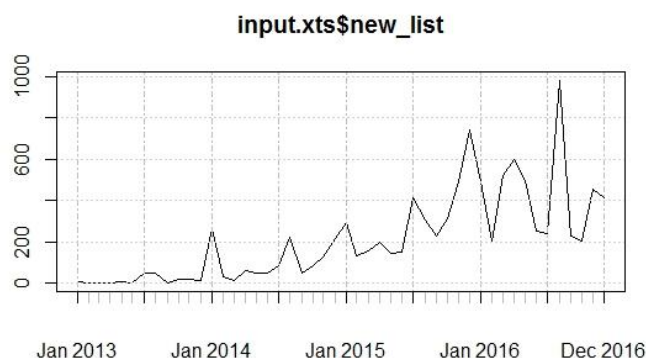
Trade value explains the most variations in the number of new NEEQ listings and is the only significant variable. AR(1) term becomes not significant in this model and I fail to reject the null hypothesis that past NEEQ listing activities have effects on the current level of NEEQ listings. It is a contradiction to McKenzie's conclusion.

It is because McKenzie's model is inapplicable to Chinese NEEQ listing patterns. First, I am unable to do a complete block testing and get as many variables' data as in McKenzie's case. Specifically, I

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have a short time series, which is only 48 months. Second, this model is an analysis on NEEQ board, an over-the-counter market, while McKenzie does regressions on the stock exchanges. Over-the-counter listings might behave differently than a regular stock exchange. Third, there is IPO suspension in China, but not in any other countries in the world. An IPO suspension period is crucial in determining companies whether companies want to wait for an IPO or to be listed on NEEQ instead. McKenzie never had to consider this factor since China is not included in his dataset. Therefore, I would like to try other models that take these facts into consideration.

6.1.3(c) Model to test the effect of IPO suspension



By looking at the plot of the dependent variable `new_list`, it seems that there is a trend for the dependent variable `new_list`. Hence, I would like to try time series linear regression with a constant drift and regression with deterministic trend separately. Using forward selection, it ends up with equation 5 (regression with a constant drift) and equation 6 (regression with deterministic trend).

$$\text{New_list} = \alpha_0 + \alpha_1 \text{PE} + \alpha_2 \text{trade_val} + \alpha_3 \text{fundraise_main} + \alpha_4 \text{fundraise_amt} + \alpha_5 \text{Market_return} + \alpha_6 \text{lag.suspension} + \text{error} \quad (5)$$

Table 21.1 – Determinants of the Number of New NEEQ Companies to Test the Effect of IPO Suspension: Regression with a constant drift

Dependent variable: <i>new_list</i>				
Independent variables	Coefficients	Standard errors	t-value	p-value
<i>PE</i>	0.15939	0.26618	0.599	0.55268
<i>Trade_val</i>	1.6497	0.5003	3.297	0.00205
<i>Fundraise_main</i>	0.07776	0.04515	1.722	0.09272
<i>Fundraise_amt</i>	-0.55497	0.44148	-1.257	0.21603
<i>Market_return</i>	-431.49721	275.21791	-1.568	0.1248
<i>Lag.suspension</i>	81.13596	57.51966	1.411	0.16610
<i>Constant</i>	12.217	51.62204	0.237	0.81413

No. observations = 47 (1 observation deleted due to missingness)

R-squared = 0.5687, Adjusted R-squared = 0.504

F-statistic = 8.79 on 6 and 40 DF

p-value = 3.984e-06

Note: lag.suspension is the 1 lag term of IPO_suspension. It represents whether there is an IPO_suspension in the previous month.

According to Table 21.1, only `trade_val` is significant within 5% significance level. `Fundraise_main` is significant within 10% level. Positive coefficients of `trade_val` and `fundraise_main` indicate an increase

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in the activities of the stock market. The increase in investors' interests in investing in the equity market will also attract more companies to list on NEEQ at the same time.

Market_return and lag.suspension are not significant but have small p-value smaller than 20%. Lag.suspension is not significant enough so that I fail to reject the null hypothesis and conclude that an IPO suspension in the previous month does not affect the number of NEEQ listings. It contradicts to the guess that IPO suspension will affect companies' decision to list significantly by forcing them to switch to a less time-consuming and costly financing channel NEEQ board instead.

In equation 7, adding a t term produces the same result that lag of IPO suspension is not significant in explaining the number of new NEEQ listings. In Table 21.2, the significance of time shows that the number of new listings on NEEQ board indeed follows a linear regression with a deterministic trend. This explains why two hypotheses that succeed for the stock exchanges fail for NEEQ board.

$$\text{New_list} = \alpha_0 + \alpha_1 t + \alpha_2 \text{trade_val} + \alpha_3 \text{fundraise_main} + \alpha_4 \text{fundraise_amt} + \alpha_5 \text{Market_return} + \alpha_6 \text{lag.suspension} + \alpha_7 \text{PE} + \text{error} \quad (7)$$

**Table 21.2 – Determinants of the Number of New NEEQ Companies to Test the Effect of IPO Suspension:
Regression with a deterministic trend**

Dependent variable: <i>new_list</i>				
Independent variables	Coefficients	Standard errors	t-value	p-value
t	13.06542	3.21702	4.061	0.000228
PE	0.39646	0.2334	1.699	0.097359
Trade_val	0.79034	0.47454	1.665	0.103828
Fundraise_main	0.06311	0.0385	1.639	0.109175
Fundraise_amt	-1.46234	0.43635	-3.351	0.001796
Market_return	-309.56371	235.57949	-1.314	0.196506
Lag.suspension	-25.7457	55.47363	-0.464	0.645151
Constant	-145.19581	58.50673	-2.482	0.017491

No. observations = 47 (1 observation deleted due to missingness)

R-squared = 0.6969, Adjusted R-squared = 0.6425

F-statistic = 12.81 on 7 and 39 DF

p-value = 2.082e-08

Note: lag.suspension is the 1 lag term of IPO_suspension. It represents whether there is an IPO_suspension in the previous month.

6.2 Model 2

In Model 2, I would like to see if there is a relationship between stock market performance and IPO suspension period. Since many IPO suspension period start due to an economics recession and stock market decline, I hypothesize that it is more likely to have an IPO suspension period if the stock market performs badly represented by a sharp drop in SZ & SH 300 Index.

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By regressing one lag of SZ & SH 300 Index on IPO suspension (=1 if there is an IPO suspension in a given month) using logit model, I found out a negative relationship between stock market index and IPO_suspension variable. The significance shows that the performance of stock market this month determines if there is an IPO suspension period next month. According to Table 22, the odds of having an IPO suspension next month is 6.072% higher if SZ&SH 300 Index drops by 100 units this month.

Table 22 – Logit Model for IPO Suspension Period

Dependent variable: <i>IPO_suspension</i>					
Independent variables	Coefficients	Standard errors	z-value	p-value	Odds ratio
<i>Lag.index</i>	-0.0006073	0.0001940	-3.130	0.00175	0.9993928
<i>Constant</i>	0.1106931	0.4397502	0.252	0.80126	
(Dispersion parameter for binomial family taken to be 1)					
Number of Observations = 180					
R-squared = 0.159, Adjusted R-squared = 0.1249					
Null deviance: 190.19 on 178 degrees of freedom					
Residual deviance: 178.92 on 177 degrees of freedom					
AIC: 182.92					
<i>Calculations: (0.9993928 – 1) * 100 * 100 = -6.072%</i>					

Furthermore, I want to determine whether the stock market performance will affect the odds ratio of opening or closing of IPOs. 180 months of observations are separated into two datasets based on whether there is a suspension last month. The independent variable *index_growth3* is the percentage change in the index over the past 3 months. Then, I repeat using logit model of the same variables above for each dataset.

Table 23.1 – Logit Model for IPO Suspension Period when last month is a suspension

Dependent variable: <i>IPO_suspension</i>					
Independent variables	Coefficients	Standard errors	z-value	p-value	Odds ratio
<i>Index_growth3</i>	-0.03445	0.02881	-1.196	0.232	0.966139
<i>Constant</i>	2.366	0.60784	3.892	9.92e-05	
(Dispersion parameter for binomial family taken to be 1)					
Number of Observations = 44					
<i>Calculations: (0.966139 – 1) * 100 = -3.3861%</i>					

There are 44 months that have an IPO suspension and 136 months that do not have an IPO suspension. According to Table 23.1, given there is an IPO suspension last month, the odds of opening IPO this month is 3.3861% higher if SZ&SH 300 Index rises by 1% for the past three months. According to Table 23.2, given there is not an IPO suspension last month, the odds of having an IPO suspension this month is 6.9477% higher if SZ&SH 300 Index drops by 1% for the past three months. In general, a bad stock market performance will increase the chance of closing IPOs and a good stock market

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performance will increase the chance of reopening IPOs during IPO suspension. Therefore, the stock market performance affects the odds of opening or closing of IPOs

Table 23.2 – Logit Model for IPO Suspension Period when last month is not a suspension

Dependent variable: <i>IPO_suspension</i>					
Independent variables	Coefficients	Standard errors	z-value	p-value	Odds ratio
<i>Index_growth3</i>	-0.07201	0.03493	-1.061	0.0393	0.930523
<i>Constant</i>	-3.66832	0.63615	-5.766	8.09e-09	
(Dispersion parameter for binomial family taken to be 1)					
Number of Observations = 136					
<i>Calculations: (0.930523 – 1) * 100 = -6.9477%</i>					

7. SUMMARY

From Data & Statistics section, it is shown that the number of NEEQ companies grows much faster than the number of IPOs and stock market price move of the stock exchanges and NEEQ market are correlated. The government now holds shares in fewer companies as a percentage of total number of companies. Most companies on NEEQ meets 50-million-yuan capital requirement.

In Model 1, there is no one equation containing the variables that explain the most in the number of new listings. Variables that capture stock market and business condition can somehow explain the number of new listings. Nevertheless, in Model 1.1, the most significant factor that determines the current level of listings is the past listings, which confirms the result of McKenzie’s study. From Section 6.1.2(d), the number of IPO does not necessarily increase after an IPO suspension. However, in Model 1.2, neither of the above conclusions hold for NEEQ company listings. This suggests that McKenzie’s model does not work for NEEQ companies because NEEQ is an immature and new over-the-counter market in China.

In Model 2, the relationship of stock market listing and IPO suspension that is unique to China is analyzed. The regression result has shown that the governor is more likely to stop the issuance of IPOs when there is a decline in the stock market price in the previous month. A stock market price change affects the opening and closing of IPO issuance.

There are also some limitations in my models. I am unable to get data for some variables that might affect the number of new listing, such as the number of transactions. The time period in model 1.2 is too short for analysis, so there might be a small sample bias for this model.

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