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Abstract

Recently, Chinese firms have become more active in attempting to go public on the Frankfurt Stock Exchange (FWB). This paper uses multivariate probit analysis to test the motivations of Chinese firms to list on the FWB. In general, Chinese firms are driven by the following motivations. Firstly, they pursue relatively more stringent listing standards and closer monitoring than the Hong Kong Growth Enterprise Market (GEM) and the London Alternative Investment Market (AIM) provide. Secondly, they are motivated by emerging needs for external financing. Moreover, this paper also examines the post-issue performance of Chinese listings on the FWB. It turns out that Chinese firms listed on the FWB show bad operating performance as well as bad stock performance. However, these are no exceptions since many Chinese firms listed on other foreign stock exchanges also underperform the market average.

JEL-Codes: F23, F31, G10, G15, M20, M40

Aus welchen Gründen gehen kleine chinesische Unternehmen an die Frankfurter Börse?

Zusammenfassung

In letzter Zeit ist zu beobachten, dass chinesische Unternehmen vermehrt einen Börsengang an der Frankfurter Wertpapierbörse (FWB) anstreben. Dieser Artikel prüft mittels multivariaten Probit-Analysen, mit welcher Motivation chinesische Firmen den Börsengang in Frankfurt anstreben. Im Allgemeinen sind chinesische Firmen durch die folgenden Aspekte motiviert. Erstens herrschen an der Frankfurter Wertpapierbörse strengere Zulassungsregeln und eine sorgfältigere Überwachung als am *Growth Enterprise Market* (GEM) in Hong Kong oder am *Alternative Investment Market* (AIM) in London. Zweitens werden chinesische Unternehmen für einen Börsengang in Frankfurt durch neuen Bedarf an externer Finanzierung motiviert. Außerdem untersucht dieser Artikel auch den Erfolg chinesischer Börsennotierungen an der FWB nach dem Börsengang. Dabei stellt sich heraus, dass chinesische Firmen, die an der FWB notiert sind, nicht nur im operativen Geschäft, sondern auch bei der Kursentwicklung schlecht abschneiden. Dies ist jedoch nicht außergewöhnlich, da die Wirtschaftsleistung vieler chinesischer Unternehmen, die an ausländischen Börsen notiert sind, ebenfalls unter dem jeweiligen Marktdurchschnitt liegt.

Im Internet unter:

http://www.wiwi.uni-muenster.de/io/forschen/downloads/DP-IO_11_2014.pdf

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Why Do Small Chinese Firms List on the Frankfurt Stock Exchange?*

1. Introduction

Chinese companies started going public abroad in the early 1990s. Since then, Chinese firms have never slowed down the pace of overseas financing. Among all major stock markets around the world, the Hong Kong Stock Exchange (SEHK) and the various US stock exchanges are favoured most by Chinese firms. However, in recent years, the interest of the US stock exchanges in small Chinese firms has declined due to a series of accounting frauds. Moreover, the Securities and Futures Commission of Hong Kong has also tightened up the listing process, partly because of the poor performance of newly listed companies (Mavin 2013). Simultaneously, small Chinese firms are not optimistic about the chances of listing on their domestic stock exchanges. By the end of 2012, more than 800 companies were waiting to be approved by the China Securities Regulatory Commission (Tan 2013), which reflects a long and complicated listing process.

Nevertheless, this does not reduce Chinese firms' enthusiasm for going public abroad. Recently, many firms were seeking to be listed on European stock exchanges. There is even a small wave of Chinese listings on the Frankfurt Stock Exchange (FWB). In 2011, 5 of the 18 initial public offerings (IPOs) on the Frankfurt Stock Exchange were from Chinese issuers (Torry 2012). In 2012, only 2 Chinese firms went public in the US. However, 7 firms have been successfully listed on the Frankfurt Stock Exchange in 2012. At present, according to the official data of the *Deutsche Börse*, 24 Chinese firms are listed on the Frankfurt Stock Exchange and 14 of them went public between 2011 and 2013.

This paper compares the market capitalisation of Chinese firms listed on five major stock exchanges around the world. Chinese firms listed on the New York Stock Exchange (NYSE), the main board of London Stock Exchange (LSE) and the main board of SEHK have an average market capitalisation of 10.620 billion Euros, 5.556 billion Euros and 3.297 billion Euros respectively. Even NASDAQ, which is mostly favoured by small and high growth technology firms, has an average capitalisation of Chinese firms of 561 million Euros. However, Chinese firms listed on the FWB only have an average market capitalisation of 50 million Euros. This

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indicates that Chinese listings on the FWB are small firms rather than large ones. So it is interesting to investigate why those small Chinese firms list their shares on the FWB rather than listing on a small and medium sized enterprise board (SME board) or growth enterprise board, which are more suitable for them.

This paper focuses on exploring the motivations of Chinese firms listed on the FWB by comparing them with those firms listed on the Hong Kong Growth Enterprise Market (GEM) and the London Alternative Investment Market (AIM). First, Chinese firms listed on the GEM and AIM have relatively similar firm size compared to those listed on the FWB. Second, the GEM and AIM are selected in this paper because the GEM is typical for Asian markets while the AIM is typical for European markets that normally attract small firms. Besides, the FWB has also been divided into three segments (entry standard segment, general standard segment and prime standard segment) that can provide different firms with different transparency standards, admission requirements and follow-up obligations. However, investigating the market capitalisation of Chinese firms in each of these segments, there are not any significant differences to be found. This indicates that most Chinese firms listed on the FWB have similar scales, which is why this paper will not distinguish between Chinese firms listed in different segments on the FWB. Multivariate probit analysis is used to test the motivations of Chinese firms to list on the FWB. The post-issue performance of Chinese firms listed on the FWB is examined, too.

This paper makes some contributions to the existing literature. It is the first comprehensive study of the motivations of Chinese firms to list on the FWB. Former studies focused either on investigating the state-owned enterprises' decision of listing abroad (Sun and Tong 2003, Wang et al. 2004) or the motivations of Chinese firms' overseas listing decisions in general (Zhang and King 2010). Since 2007, there has been a dramatic growth in the number of listing destinations that attract Chinese firms, especially small firms. Among them, FWB is one of the most favoured markets. So it makes great sense to study the motivation of Chinese firms to list on the FWB and their post-issue performance. Moreover, as China goes through a rapid evolution of financial markets, small firms will be the dominant force of seeking to internationalise and access capital in the nearer future. Thus this study will provide some new insights to Chinese firms, foreign investors and major stock exchanges in making decisions.

The rest part of this paper is structured as follows. Section 2 introduces related literature and hypotheses. Section 3 presents descriptive statistics. Section 4 uses multivariate probit analy-

sis to test the motivations of Chinese firms listed on the FWB. Section 5 examines the post-issue performance of Chinese issuers. Section 6 concludes and discusses policy implications.

2. Related Literature and Hypotheses

Zhang and King (2010) argue that Chinese firms, especially those firms that have issued American deposit receipts (ADR), are motivated to list abroad due to better legal systems or higher accounting standards. A better legal system could protect the profit of investors and shareholders more efficiently while a higher accounting standard signals the transparency of the firm performance. China is still among the developing countries, which indicates that the legal or financial systems are still not mature enough. According to La Porta et al. (1998), developed regions or countries like Hong Kong, the US, the UK and Germany all show better scores for both their judicial system and accounting standards than developing countries. Firms in developing countries like China want to pursue these advantages and issue their shares in these developed regions and countries. However, it is hard to test whether all firms are motivated by these factors regardless of their characteristics. For Germany, a better legal system and a higher accounting standard could not be regarded as specific factors that would motivate Chinese firms to list on the FWB since other developed markets have the same advantages.

Culture, language and geographic factors could affect a firm's decision of listing abroad because of improving investor recognition, visibility and the information environment. Firms are encouraged to list on overseas markets that are characterised by common culture and language. Sarkissian and Schill (2004) find that overseas listings from India and Malaysia tend to be in their former colonial state, the UK, while Chinese firms prefer Hong Kong and Singapore. Yang and Lau (2006) show that Chinese firms listed in Hong Kong have a better information environment than those listed in the US. Moreover, the firms with a Hong Kong listing are normally not financially constrained but those listed in the US are always constrained. Geographical factors also play an important role in influencing the listing locations of firms. For example, Coval et al. (1999) provide empirical evidence that geographical proximity influences investors' portfolio choices. However, compared to Hong Kong, the US or the UK, Germany has neither geographic nor linguistic advantages to attract Chinese firms to list there. Therefore the Chinese firms that have listed in Germany are probably not motivated by these reasons.

Sharing a similar industry in the home country with targeted listing locations is normally regarded as one of the motivations for firms to list on certain stock exchanges. For example, resource based firms are more likely to list on a resource based market since the investors there are more familiar with the industry (Brainard 1997). Pagano et al. (2002) found that high-technology firms prefer to list on NASDAQ and that financially orientated firms tend to issue shares on the LSE due to the same reason. For this paper data have been collected on the subsectors of Chinese listed firms on the FWB. About one third of these firms are from the clothing and footwear industry. Meanwhile, only few Chinese listings specialise in the leading German industries like machinery manufacturing, automobile manufacturing or the chemical industry. It seems that most Chinese firms listed in Germany may not pursue the advantage of industry similarities.

While institutional conditions, culture, language, geographic factors and market attributes may shed some light on the foreign listing locations of firms but are not that important for Chinese firms listed on the FWB, the very decision to list abroad depends on firm-specific characteristics that will be analysed in this paper. Since the firms that listed on the FWB are all small firms, it makes sense to set the hypotheses by comparing them with similar-sized firms that list on the GEM and AIM.

Firms from developing countries are drawn to a foreign exchange because of tougher listing standards and closer regulatory monitoring. By committing themselves to an increased level of disclosure in major exchanges, firms become more credible for potential investors and this can increase firm earnings in the long run (Coffee 2002). Besides, larger firms and more profitable firms are more likely to pursue tougher listing standards and closer monitoring regardless of costs. Table 1 compares the listing standards of six major stock exchanges. It shows that the NYSE and the main board of SEHK have the most stringent listing requirements regarding the operating history, market capitalisation, free float and listing costs. Although the Shanghai Stock Exchange (SSE) has relatively easy listing requirements, the waiting period is much longer. The main board of the LSE and the FWB require only a very low capitalisation whereas the GEM and AIM have the easiest regulations. However, the listing fee of main board LSE is the highest. For large firms, the higher requirements of capitalisation, free float or listing costs of the NYSE, SEHK or LSE do not constitute immense obstacles. However, for small firms that cannot reach the higher listing threshold of big exchanges and cannot afford the higher listing costs but still want to bond themselves to a more developed market, the FWB can be an interesting option.

Listing Standards	SSE	NYSE	NASDAQ	SEHK		LSE		FWB
				Main board	GEM	Main board	AIM	
Operating history (years)	3	3	2	3	2	3	3	3
Market capitalisation (€ million)	5.85	80	N/A	20	N/A	0.84	N/A	1.25
Free float	25%	2.5 Mio. shares	1.25 Mio. shares	25%	25%	25%	N/A	25%
Listing fees (euro)	3,900	200,000	180,000	65,000	20,000	489,100	86,640	5,500
Annual fees (euro)	750	79,600	79,600	118,800	20,000	54,800	6,120	10,000
Time period (months)	6-24	12-24	12-24	6-12	6-12	4-24	3-24	4-12
Accounting standard	PRC GAAP	US GAAP/ IFRS	US GAAP/ IFRS	US GAAP/ IFRS	US GAAP/ IFRS	IFRS	IFRS	IFRS

Note: This table provides the highest requirements of each stock exchange, that means the requirements of A shares on Shanghai Stock Exchange, the requirements of the main board of the Hong Kong and London Stock Exchange, the requirements of the global selected market on NASDAQ and requirements of the premium market of Frankfurt Stock Exchange.

Source: Ernst & Young (2012) and The Smart Cube (2012).

Table 1: Comparison of the six main stock exchanges for Chinese overseas listings

Hypothesis 1: Chinese firms that prefer to be listed on the FWB are larger and more profitable than firms listed on the GEM and AIM, such that they can bear the listing costs and bond themselves to more stringent listing rules and closer regulatory monitoring.

The most basic motivation for firms to list abroad is to raise capital. This motive is the strongest if the firm needs to raise capital but the financial constraints in the home country are significant. In China, the state-owned enterprises often have access to more financing resources. For example, it is easier for them to get a policy-loan from the state-owned bank system. However, small enterprises find it more difficult to gain access to the capital market or to obtain loans from the state-owned banks (Fung et al. 2007). When these firms are experiencing high growth and have difficulties in financing by debts, going public is a possibility. Since going public on the NYSE, SEHK and the LSE is harder and more complicated, some small firms choose to list on markets that have faster listing processes and a lower entry threshold. Compared to the markets like the GEM and AIM, the FWB is an even better choice since it is a more mature market with higher liquidity. According to these considerations, this paper assumes that the Chinese firms listed on the FWB have strong financial needs.

Hypothesis 2: Chinese listings on the FWB are motivated by strong financial needs due to a higher growth and debt ratio.

According to Sultz (1999), listing abroad could reduce market frictions like transaction costs, restrictions for foreign investments and the lack of information for foreign investors. The participation of foreign investors could broaden the shareholder base of listed firms, and further lead to risk sharing and thus lower cost of capital. For Chinese firms, the drop in the cost of capital for firms with more risk is more significant than for firms that already have an international reputation. So firms that are more risky are more likely to list abroad (Zhang and King 2010). Since the Chinese firms on the FWB have a similar firm size with other Chinese firms listed on the GEM and AIM, this paper expects that Chinese firms listed on the FWB have more risks. They are also motivated to reduce market frictions and to broaden their shareholder base.

Hypothesis 3: More risky Chinese firms want to list on the FWB in order to reduce market frictions and broaden their shareholder base.

3. Descriptive Statistics

In this paper, the term “Chinese firms” refers to firms that mainly generate their revenues from mainland China or firms with big shareholders in mainland China. In order to avoid the approving process of the CSRC, some Chinese firms also register holding companies in target listing locations. However, they still have their main business in mainland China. Therefore, these firms are also considered as Chinese firms. Besides, Hong Kong is regarded as a separate market from the Chinese market due to the “one country, two system” policy. Thus, Chinese firms that issue shares on the main board of the SEHK or GEM are regarded as Chinese overseas listings.

In the multivariate probit analysis and the post-issue performance analysis, the sample data cover all Chinese firms listed on FWB, GEM and AIM to the end of 2013. Some Chinese overseas listings were delisted for various reasons, thus these firms will not be included in the analyses. There are in total 97 Chinese firms in the data set, including 24 firms listed on the FWB, 30 firms listed on the GEM and 43 firms listed on the AIM. After excluding the issuers with missing information, the final sample includes 74 firms. The accounting data of listed firms were collected from company annual reports. The information of issue dates were obtained from company profiles on Bloomberg and the official websites of the FWB, GEM and

AIM. The stock return data were collected from Yahoo Finance. The data on exchange rates were collected on the website fxtop.com while the data on Consumer Pricing Index (CPI) were obtained from the official website of National Bureau of Statistics of the People's Republic of China.

This paper also includes data on Chinese firms listed on the main board of SSE, the main board of SEHK, NASDAQ and the NYSE. All of the data were collected either from the official websites of the above mentioned stock exchanges or company profiles on Bloomberg.

This paper explores Chinese firms' motivation to list on the FWB by comparing with firms listed on GEM and AIM. The multivariate probit analysis will be used to examine how the likelihood of listing on the FWB is affected by several firm characteristics. The dependent variable is a dummy variable. If a firm lists on the FWB, the dummy variable equals to one, and if the firm lists on the GEM and AIM, the dummy variable equals to zero. The independent variables are firms' characteristics based on the hypotheses above. All the variables are measured in year "-1", whereas year "0" refers to the issue year.

The set of independent variables includes the following firm characteristics: Log(total assets) is the logarithm of total assets and is used as a measure of firm size. It will be used to test hypothesis 1. The debt ratio is calculated as total debt over total assets and is used to test hypothesis 2. Following Zhang and King (2010), this paper also chooses the value of property, plant and equipment (PP&E) divided by total assets as a measure of the firm's risk to test hypothesis 3. Note that the lower the PP&E/total assets is, the higher is the risk. Return on assets (ROA) and return on sales (ROS) are proxies for firm profitability. They are included to test hypothesis 1. Asset growth and sales growth are used to measure firm growth to test hypothesis 2. Table 2 provides a brief summary of the variables included in this paper. For a given variable, this paper only reports mean and median. Since the mean can be driven by extreme values, this paper mainly focuses on using the median to make analyses.

In general, Chinese firms listed on the FWB are relatively larger than those listed on GEM and AIM with regard to their total assets, total sales and operating income. However, the debt ratio of firms listed on FWB is relatively lower compared to other firms listed on GEM and AIM. In addition, the profitability of the firms listed on FWB is much higher whereas the risk ratio of these firms is between the firms listed on GEM and AIM. Lastly, the Chinese issuers on the FWB have a higher asset turnover rate than the firms listed on GEM and AIM.

	FWB		GEM		AIM		GEM and AIM	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Total assets (€ million)	74.25	74.39	24.00	19.98	31.24	21.22	27.55	21.07
Total sales (€ million)	89.30	84.34	24.05	16.67	35.91	19.80	29.87	17.68
Operating income (€ million)	23.51	20.33	3.77	2.79	6.89	3.16	5.30	2.98
Total debt (€ million)	22.47	16.98	12.45	7.39	15.42	6.63	13.91	7.07
Debt ratio (%)	33.71	30.20	54.24	47.46	54.30	50.75	54.27	47.70
ROA (%)	34.85	37.27	16.30	14.68	16.68	21.27	16.49	18.36
ROS (%)	33.90	24.71	-5.44	19.70	-4.42	17.10	-4.94	19.66
Asset growth (%)	98.44	54.93	201.17	60.53	83.42	57.75	145.63	60.18
Sales growth (%)	32.09	33.84	61.46	15.63	56.88	25.05	59.30	22.55
PP&E/total assets (%)	20.74	21.35	29.53	23.94	14.87	10.71	22.33	20.82
Asset turnover (%)	118.06	115.22	96.6	88.45	116.16	108.19	106.20	92.17

Note: The sample consists of 19 firms listed on the FWB, 28 firms listed on the GEM and 27 firms listed on the AIM. All the variables are measured at the year-end immediately prior to the issue date.

Table 2: The characteristics of the Chinese firms listed on the FWB, GEM and AIM

Before the multivariate probit regression analysis, Spearman rank correlation is conducted to analyse the relations among explanatory variables. The correlation matrix is presented in table 3. The variable ROA and ROS have a high correlation of 0.74. However, these two variables will not be analysed in the same model. Thus, the high correlation will not be a problem for the following regressions.

	Log (total assets)	Debt ratio	PP&E/ total assets	ROA	Sales growth	ROS	Asset growth
Log(total assets)	1.0000						
Debt ratio	-0.2869**	1.0000					
PP&E/ total as.	0.0116	0.2149	1.0000				
ROA	0.1564	-0.2480**	0.0618	1.0000			
Sales growth	-0.1981	0.0465	-0.0163	0.0138	1.0000		
ROS	0.1232	-0.4129***	0.1368	0.7442***	-0.0668	1.0000	
Asset growth	-0.3249***	-0.0239	-0.0144	-0.0315	0.4791***	0.0447	1.0000

Notes: The sample consists of 19 firms listed on the FWB, 28 firms listed on the GEM and 27 firms listed on the AIM. Spearman rank correlation was conducted to investigate the relations among explanatory variables. ***, ** and * denote significance at 0.001, 0.01 and 0.05 levels.

Table 3: Correlation matrix of explanatory variables used in regressions

4. Empirical Results

The descriptive statistics in section 3 only provide some preliminary evidence concerning the motives why Chinese firms list on the FWB. To compare the explanatory power of the hypotheses and filter out spurious correlations, one must turn to regression analysis (Pagano et al. 2002). Part A of table 4 reports the results of a multivariate probit analysis concerning the probability of Chinese firms to be listed on the FWB compared to being listed on the GEM and AIM taken together. Part B and C show the regression results for the probability of Chinese firms to be listed on the FWB compared to either GEM or AIM. Besides, four different models are designed to analyse the motivations of Chinese firms to list on the FWB.

In part A the Log(total assets) is significantly positive in all of the four models. This indicates that Chinese firms listed on the FWB are significantly larger than firms listed on the GEM and AIM. ROA has a significantly positive effect. Finally, asset growth has a significantly positive effect in model 3, whereas statistically insignificant effects should not be interpreted.

In general, the results are consistent with hypotheses 1 and 2 mentioned above. That is to say, compared to Chinese firms listed on GEM and AIM, relatively larger firms and firms with higher profitability are motivated by tougher listing requirements and closer monitoring, and therefore prefer to list on the FWB than on the GEM and AIM (hypothesis 1). Apart from that, growth firms prefer to list on stock exchanges such as FWB, which have a lower threshold and a faster listing process (hypothesis 2). Lastly, there is no evidence that more risky firms have a higher motivation to list on the FWB since no significant result has been found. (hypothesis 3).

Since the GEM has more cultural, linguistic and geographic advantages to attract Chinese firms, it is interesting to explore the likelihood of listing on the FWB and GEM or the likelihood of listing on the FWB and AIM separately. Part B and C of table 4 present the results using the same four models as used in part A. The Chinese firms listed on the FWB are significantly larger than firms either on the GEM or AIM. Compared to the firms that listed on the GEM, firms listed on the FWB have a higher profitability and higher growth, which indicates that better performing firms are more likely to issue shares on the FWB. However, the motivations for firms listed on the FWB and AIM are similar as there are no other significant results in part C besides size. These results suggest that Chinese firms that are drawn to European markets are in better shape than those listed on the GEM.

Variables	Model 1	Model 2	Model 3	Model 4
Part A: Comparing the probabilities of Chinese firms listed on the FWB and the GEM & AIM				
Log(total assets)	0.9318 ***	0.8314***	0.9803***	0.8687***
Debt ratio	-0.0023	-0.0053	-0.0026	-0.0060
PP&E/total assets	-0.0032	-0.0002	-0.0029	-0.0007
ROA	0.0368***		0.0370***	
ROS		0.0102		0.0110
Asset growth			0.0016**	0.0011
Sales growth	0.0011	0.0019		
Constant	-4.8322***	-3.6432***	-5.1085***	-3.7979***
Pseudo R-square	0.3750	0.2973	0.3903	0.3105
Part B: Comparing the probabilities of Chinese firms listed on the FWB and the GEM				
Log(total assets)	1.2735***	1.6798***	1.4185***	1.7502***
Debt ratio	-0.1140	0.0009	-0.0128	0.0015
PP&E/total assets	-0.0391*	-0.0077	-0.0411*	-0.0089
ROA	0.1059***		0.1200***	
ROS		0.0958**		0.0969***
Asset growth			0.0044***	0.0034***
Sales growth	0.0086	0.0147*		
Constant	-6.1643***	-8.9263***	-7.0136***	-9.0831***
Pseudo R-square	0.6718	0.5903	0.6972	0.5759
Part C: Comparing the probabilities of Chinese firms listed on the FWB and the AIM				
Log(total assets)	0.7783***	0.6467**	0.9037***	0.8152***
Debt ratio	-0.0019	-0.0073	-0.0025	-0.0071
PP&E/total assets	0.0137	0.0158	0.0145	0.0166
ROA	0.0277		0.0226	
ROS		0.0063		0.0046
Asset growth			0.0035	0.0040
Sales growth	-0.000	-0.0007		
Constant	-4.0012***	-2.6285**	-4.6307***	-3.6242***
Pseudo R-square	0.2935	0.2556	0.3201	0.2977

Notes: The sample consists of 19 firms listed on the FWB, 28 firms listed on the GEM and 27 firms listed on the AIM. The regression results are presented in panel A, B and C. Besides, four models are designed to analyse the motivations of Chinese listings on the FWB. ***, ** and * denote significance at 0.001, 0.01 and 0.05 levels.

Table 4: Multivariate probit regressions of probability of listing on the FWB

5. Post-issue Performances

Besides the listing motivations, another important and interesting research question is how well Chinese firms on FWB perform after listing. In this section, the post-issue operating performance as well as the post-issue stock performance is investigated. Regarding the operating performance, fives measures (ROA, ROS, PP&E/total assets, debt ratio and asset turnover)

are examined from the year"-1" to year "+3" (where year "0" is the issue year). Regarding the stock performance, this paper presents the first three years stock returns after issuing.

5.1. Post-issue Operating Performance

This subsection reports operating changes of Chinese firms that are listed on the FWB, GEM and AIM respectively. The year "-1" is used as the base year to compare operating performances before and after issuing. Wilcoxon matched-pairs signed-rank tests are used to test the significance with the aim of reducing the effects of extreme values. Table 5 shows the results.

	Compare year -1 to 0	**Compare year -1 to 1**	**Compare year -1 to 2**	**Compare year -1 to 3**
Listing year = year 0	**Median**	**Median**	**Median**	**Median**
Part A: Post-issue operating performance of Chinese firms listed on the FWB				
ROA	-3.702***	-2.803***	-2.023**	-1.826*
ROS	-2.173**	-2.800***	-2.000**	-1.830*
PP&E/ total assets	-2.374**	-1.478	0.405	-0.365
Debt ratio	-3.219***	-2.395**	-2.020**	-1.820*
Asset turnover	-3.702***	-2.803***	-1.753*	-1.800*
Part B: Post-issue operating performance of Chinese firms listed on the GEM				
ROA	-3.302***	-3.256***	-3.393***	-3.892***
ROS	-1.731*	-2.414**	-2.687***	-2.595***
PP&E/ total assets	-2.141**	-1.822*	-0.706	-0.745
Debt ratio	-3.552***	-1.662*	-0.797	0.000
Asset turnover	-3.848***	-3.279***	-1.731*	-2.186**
Part C: Post-issue operating performance of Chinese firms listed on the AIM				
ROA	-2.435**	-1.241	-2.166**	-1.778
ROS	-0.928	-0.827	-1.475	-1.551
PP&E/ total assets	-1.951	0.052	-0.220	-0.711
Debt ratio	-2.731***	-2.792***	-2.229**	-1.956**
Asset turnover	-3.377***	-1.603	-1.664	-1.689

Notes: Wilcoxon matched-pairs signed-rank test is used to reduce the effects of extreme values. ***, ** and * denote significance at 0.001, 0.01 and 0.05 levels (two-tailed). Besides, some Chinese overseas listings were delisted for various reasons during the study period, thus these firms will not be included in the analysis.

Table 5: Post-issue operating performance of Chinese listings on FWB, GEM and AIM

First, all Chinese firms listed on the three markets experienced a drop in profitability (ROA and ROS) during the first three years after issuing. Second, the change of the risk ratio (PP&E/total assets) of firms listed on all three markets was significantly negative in the beginning. However, the significant effect became weaker and insignificant over time. Third, the asset turnover of the firms on all three markets significantly decreased. Besides, all firms

have lower debt ratio after listing, which indicates listing abroad reduces the debt constrains of these firms.

To sum up, small Chinese firms that choose to list on the FWB, GEM and AIM do not seem to have good operating performance after listing. However, these firms are no exceptions. Zhang and King (2010) have analysed Chinese companies that listed abroad in general and also found that Chinese overseas listings show bad operating performance after listing.

5.2. Post-issue Stock Performance

This paper also explores the changes of post-issue stock returns of Chinese firms listed on the FWB. The stock return is calculated as initial stock price minus ending stock price plus any dividends paid, divided by initial price.

Firstly, in table 6, the post-issue stock return of Chinese firms listed on the FWB is compared to German firms and other international firms on the FWB. Chinese listings on the FWB have significantly lower stock returns than the German firms that are part of the CDAX index in the first three years after listing. Besides, when comparing with the firms that are included in the DAX international (mid) 100 index, Chinese firms also have significantly lower stock returns. The results indicate that Chinese firms listed on the FWB generally underperform the other firms listed on the same market.

After issue year	CDAX	DAX international 100	DAX international 100 mid
1 year	-3.584***	-2.947***	-3.051***
2 year	-3.101***	-3.296***	-3.408***
3 year	-2.090**	-2.395**	-2.497***

Notes: Wilcoxon matched-pairs signed-rank test is used to reduce the effects of extreme values. ***, ** and * denote significance at 0.001, 0.01 and 0.05 levels (two-tailed).

Table 6: Comparison of the post-issue stock performance of Chinese listings on the FWB with other firms on the same market

Secondly, in table 7, the post-issue stock performance of Chinese firms listed on the FWB is compared to the stock performance of Chinese B-shares. The stock performance of the B-shares is the average stock return of firms that qualified to issue B-shares on both the Shanghai stock exchange and the Shenzhen stock exchange. The results show that Chinese listings on FWB underperform the Chinese B-shares in the first three years after listing. The results

mean that for foreign investors it was a better choice to buy the Chinese B-shares than to buy the shares issued by Chinese companies listed on the FWB.

After issue year	Chinese B-shares
1 year	-3.139**
2 year	-2.903**
3 year	-2.366*

Notes: Wilcoxon matched-pairs signed-rank test is used to reduce the effects of extreme values. ***, ** and * denote significance at 0.001, 0.01 and 0.05 levels (two-tailed).

Table 7: Comparison of the post-issue stock performance of Chinese listings on the FWB with Chinese B-shares

Thirdly, in table 8, the stock returns of Chinese firms listed on the FWB, GEM and AIM respectively are compared. Chinese firms listed on the FWB have significantly negative stock returns in the first three years after issuing. Moreover, firms that listed on the GEM and AIM also have negative and decreasing stock returns in the first three years after issuing. However, the small Chinese firms that listed on the FWB, GEM and AIM are not the only ones that underperform on the market. According to Zhang and King (2010), Chinese firms after IPOs in Hong Kong, Singapore and the US also have relatively weaker stock performance than the market average.

After issue year	FWB	GEM	AIM
1 year	-3.509***	-0.977	-1.403
2 year	-3.432***	-2.087**	-1.753
3 year	-1.784	-2.173**	-2.029**

Notes: Wilcoxon matched-pairs signed-rank test is used to reduce the effects of extreme values. ***, ** and * denote significance at 0.001, 0.01 and 0.05 levels (two-tailed).

Table 8: Comparison of post-issue stock performance of Chinese listings on the FWB, GEM and AIM

6. Conclusions and Implications

This paper firstly examined the motivations of Chinese companies to list on the FWB by discussing some often mentioned motivations for firms to list abroad. It seems that Chinese firms listed on the FWB are not motivated by the better legal system or the higher accounting standards in Germany. Moreover, there are neither cultural, linguistic, geographic nor industrial advantages for Chinese firms to list on the FWB. However, by using the multivariate probit analysis and comparing Chinese firms listed on the FWB with the Chinese firms listed

on the GEM and AIM, it has been found that firms listed on the FWB are possibly driven by the following motivations: First, they pursue stringent listing standards and close monitoring. Second, they are motivated by the emergent external financing needs.

There are also other motivations for Chinese firms to be listed on the FWB. However, they are not easily to be tested empirically. For example, Chinese firms may only pursue to have a reputation of listing on a foreign stock exchange. Furthermore, 14 of the Chinese firms listed on the FWB are from the Fujian province (in the southeast of China). The clustering of firms listing may be explained by the "follow the leader" effect, whereby after one firm in the locality successfully lists, its peers tend to follow in order to gain benefits, prestige and avoid the danger of being left out (Pan and Brooker 2014).

Although some Chinese firms, especially small firms, show weak stock performance on foreign markets, their enthusiasm of listing abroad is still strong as shown by the increasing number of overseas listings. Therefore, another two indirect triggers should be mentioned. First, some Chinese firms are less motived to obtain better stock performance on foreign exchanges but are more interested in potential benefits such as more convenient mergers and acquisitions or simply greater product market visibility and reputation (Halling et al. 2007). Second, the competition among major exchanges to attract Chinese firms is more intense than ever before. Over the past ten years, nearly all major stock exchanges have set up their representative offices in China to persuade potential firms to list on their exchanges. These representative offices organise a variety of events in promoting their stock exchanges. It is possible that some small Chinese firms make the decision to list abroad only because of the fancy future financing blueprint that is provided by foreign exchanges, considering less their current situation.

This paper also examines the post-issue performance of Chinese firms that listed on the FWB. It turns out that Chinese firms that listed on the FWB have not only bad operating performance but also bad stock performance in general. These findings are generally consistent with former studies (Foerster et al. 1999, Zhang et al. 2010), which insist that Chinese overseas listings normally underperform the market average.

It is also noteworthy that Chinese firms have weak performances on other major stock exchanges, too. It could be possible that foreign investors are not familiar with Chinese shares and undervalue some of the shares (or overvalued them in the beginning). However, on a mature capital market, a listed firm is mostly eliminated or abandoned by the market not without

a reason like bad operating performance, opaque information disclosure or poor corporate governance. So for Chinese overseas listings, especially for those small firms with lower international reputations a successful IPO is not the end but the beginning of searching for long term financing. In order to convince investors, listed firms should continue to present investors clear shareholding structures, to improve operating conditions and to make the information disclosure more transparent and open. After all, on a mature capital market a robust stock is much more preferred than a new stock with only a short-term outstanding performance.

With the fast development of the Chinese economy, the confidence of foreign investors on Chinese stocks is growing faster than ever before. Thus, many hope to share the benefit of China's economic growth and transformation by investing in Chinese companies. This could somehow explain why the small Chinese firms can still get the "German money" in the very beginning even though they have smaller size and lower transparency. Although in a mature market, companies with lower transparency and poor corporate governance will be abandoned, the investors that already invested would still suffer a loss. So for foreign investors and stock exchanges, a challenge is to evaluate firms more properly. The largest challenge is to distinguish the risks and the growth potential. To achieve this purpose, the following two points can be recommended. First, the stock exchange should work closely with the regulatory authorities in order to strengthen the supervision of the foreign listed firms. Second, the investors themselves should try to make reasonable investment decisions based on a full understanding of the listed companies instead of buying any Chinese shares.

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