

Managerial Approach of International Initial Public Offerings Valuation

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Abstract

Initial public offerings (IPO) of financial instruments on international financial markets represent one of the most important financing channels not only for developed countries, but for emerging ones too. The most sensitive element of international IPOs that could determine the success or failure of them is the initial price mentioned in the prospectus. This initial price used to sell securities to individual or institutional investors is always compared with real market price and is essential for investment decision. For this reason, in almost cases of international IPOs, the underpricing effect is present. This paper discusses the problem of underpricing effect and highlights the most sensitive problems with securities' valuation methods that are commonly used by financial managers to decide and to act in this case.

Keywords: *Initial Public Offering, underpricing effect, stock valuation, rating, discounting, discount rate*

JEL classification: G12, G11, G15, F37

Introduction

Initial Public Offerings (IPO) was used for the first time in 1602 by Dutch East India Company that was the first company that decided to issue stocks and bonds in the world. IPO is the mechanism used to issue financial securities to the market for the first time. From this selling of securities emerges the primary market for such securities that will be later traded on secondary market (if investors want to sell them before maturity). An IPO is considered to be an international one in the following situations: (1) if IPO is addressed only to the local market but is coordinated by an international investment bank (or group of banks); (2) if IPO is addressed simultaneously on two different markets; (3) if IPO is addressed on several

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markets (this is the real version of an international IPO) and (4) IPO is addressed to Euromarkets (not to a local one).

1. Underpricing effect of an international IPO

One of the common practices of Initial Public Offerings (IPO) in capital markets all around the world is systematically selling equity at significant discount compared to its true value. The empirical data shows that the price change between the offer price and the first day closing price at the stock exchange (the investors' initial return) is usually higher than 10%, and very often it can reach 45-50%.

There are numerous theoretical models that conclude that underpricing results from the information asymmetry that characterizes the IPO market. Thus, underpricing is used as an incentive to stimulate the uninformed agents acting on the IPO market to act in the interest of the informed ones.

Asymmetry of information can be found in the firm - investment banker relation. Baron (1982) uses a principal-agent model for a IPO underpricing based on this type of information asymmetry. The investment bank has superior information concerning the firm's, in its capacity of an agent of the firm. His remuneration is a function of the income from issue and the post-flotation price. This price discount is the incentive for the investment banker to put enough effort in advising and selling the firm's shares. On the other hand, the research conducted by Muscarella and Vetsuypens (1989) on investment banks going public, refuted this model. Underpricing was found to be significant even in IPOs of investment banks; in these cases no asymmetric information existed since issuers acted as their own agents in the issuing process.

Another approach was based on differential information of investors participating in the IPO market. Rock's model (1985) explores information asymmetry between investor groups: informed and uninformed. The informed ones are able to avoid buying low value IPO shares. Uninformed agents have no or less information on firms' value, resulting in a bias in their purchases towards less profitable equity issues. Anticipating this rationing bias, the uninformed group is reluctant to participate in buying shares. Underpricing is the necessary incentive to make this group enter the IPO market.

Rock's reasoning was pursued by Beatty and Ritter (1986) who tried to measure underpricing as a function of ex-ante uncertainty concerning firm value. Any increase in uncertainty would result in a raise in information asymmetry, and consequently higher underpricing. In order to approximate this uncertainty, Beatty and Ritter used the share price post flotation variability. Between this proxy and the discount involved in the offer price a positive relationship was found. Since small firms have more volatile prices, this model may imply a negative relationship between firm's size and the level of discount.

This hypothesis is supported through empirical studies conducted on equity issues on the US market where the underpricing of large firms' offerings seem to be lower. The conclusion is that measures of informational asymmetry such as size

and post flotation price volatility can and should be regarded as explanatory factors for underpricing.

Other theories regarding underpricing draw the attention on another type of asymmetry: differential information between firms and investors. These models state that the selling entrepreneur is the one with superior information about the value of the IPO firm. To overcome adverse selection, companies with favourable prospects try to signal their value in order to convince potential investors to buy shares. Signaling models for IPOs differ, based on the mechanism through which signaling occurs.

The first mechanism is signalling by equity retention. Leland and Pyle (1977) consider that the equity retention at initial share issues relates positively to the firm's value. The managers of profitable companies try to send messages about their quality to investors: retaining equity might be a signal of high quality. Retaining equity can serve as a credible signal, since it is a costly strategy for firms that produce lower than average results. The higher the level of equity retained by the owners of a low value firm, the lower is the value of their residual investment and the higher the undiversified risk of their portfolio. Signalling good quality by ownership retention is then only in the interest of high value firms. There are several empirical tests that support these results (Downes–Heinkel; 1982, Ritter; 1984, Keasey–McGuinness; 1992).

Signalling by equity retention implicitly assumes that the firm has only one opportunity to sell equity in the short term. In reality, most entrepreneurs sell off their equity holdings in several stages. Underpricing is another type of signalling mechanism.

Welch (1989), Allen and Faulhaber (1989) and Grinblatt and Hwang (1989) proposed models that assume that the IPO underpricing is deliberately done by the issuing firms to allow investors to realize larger proceeds from secondary issues. Pricing initial offerings at a discount is a credible signal of firm quality: only good firms are expected to recoup the loss due to initial underpricing.

A firm that retains a large proportion of its equity doesn't necessarily need to discount substantially the offer price. Observing the equity retention, investors rationally assume the firm makes a good investment since managers have information on the firm's true quality. Alternatively, when the issuer wants to sell a large proportion of its ownership, underpricing might be necessary to convince investors that the firm is of high value. Equity retention and underpricing appear to be substitute signals, which *ceteris paribus*, results in a negative relationship between them.

Besides underpricing and quantity retained, there are other signals available. Advising agents of high reputation may be hired in order to reinforce the public's confidence in high firm value and bring about a reduction in asymmetric information and subsequently, the required underpricing. There are several papers that address the relation between pricing and quality of the advising agents. Titman and Trueman (1986) consider emphasize the choice of an auditor to be an important signal, while Booth and Smith (1986) focus on the the quality of the

underwriter. The correlation between these variables and firm's value is well supported by empirical findings (Keasey–Short; 1997).

2. Mechanism of international IPOs and reason for underpricing

International IPO is a complex and lengthy process, mobilizing significant funds from the capital holders from different markets. A significant number of intermediaries are involved in the process; each holding an important role in the issuance process. IPO is coordinated by an investment bank or by a syndicate of banks if the value or complexity (more markets) of it is high.

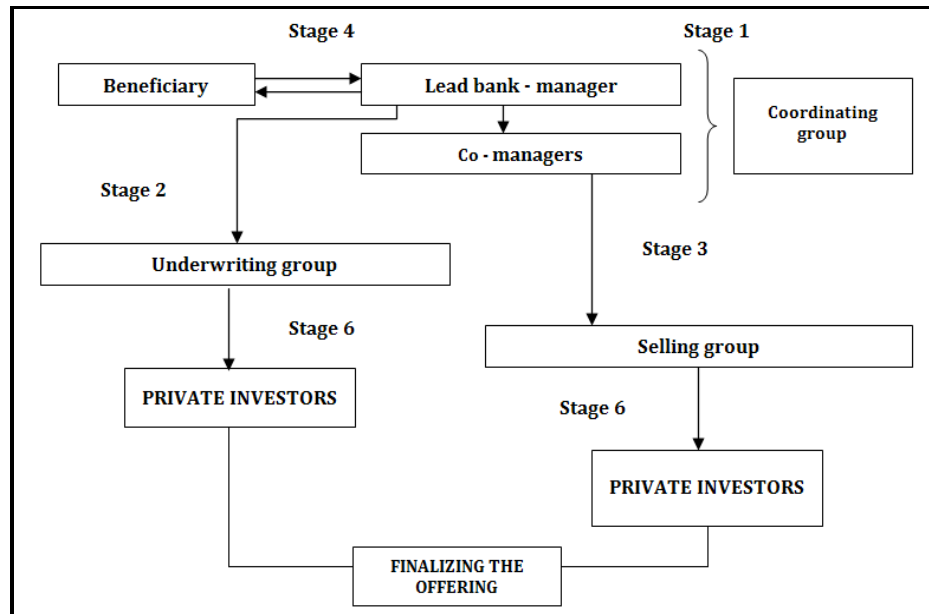


Figure 1 Mechanism of an international IPO

In the first stage the beneficiary (issuer of bonds or equities on international financial markets) will chose the leadership bank that will coordinate the entire process. When the leader bank will be selected, the financial manager of the issuer should be aware not to the financial strength but to the experience and notoriety of this institution on international financial markets. The leader bank will decide if it is necessary or not to create a syndicate of banks as **coordinating group** of banks (this is necessary only if the bank will consider that the IPO is too complex). Coordinating group will establish the **underwriting group** of banks that are financial institutions involved in the selling of securities on international financial markets within underwriting clause (in case of failure of selling these securities, the financial institutions from underwriting group will include these unsold securities in their portfolio). This underwriting condition acts as a guarantee for issuer (around 70% of securities are sold through this clause).

Another very important syndicate of banks is **selling group** composed by financial institutions involved only in the selling activities. This group of banks will sell the securities without any obligations of including securities in their portfolio in case of not selling situation. Selling group will contact potential investors that could be interested to participate to primary market for these securities.

After the contractual creation of these syndicates of financial institutions (coordinating group, underwriting group and selling group), the next step is to make a deep analysis of the financial situation of issuer in order to establish: (1) the initial condition of international IPO (value, number of securities, countries, duration, type of securities to be issued); (2) content of IPO prospectus and (3) strategies in case of IPO failure on the market. Next step is the creation of IPO prospectus in accordance with international financial markets requirements. This prospectus will be transmitted (through underwriting group and selling group) to potential investors. **IPO prospectus** is the most important tool for attracting investors into the process. The content (clarity, quality of information, data) of IPO prospectus will convince the investors to participate or not with their capitals to the future issuer's projects (for which are requested them).

Based on IPO prospectus, underwriting group and selling group will contact the investors and will start to sell the securities according with the conditions stated in that document (issuing price, maturity etc.). If the investors will be interested to buy securities they will do it. The primary market will be created by taking into consideration of these investors. One of the most important elements in this moment is issuing price in IPO mentioned in the prospectus. This initial price gives us the proper measure of initial underpricing of IPO. Always this price from primary market is compared with market value for these securities that will be used for a further selling on secondary market. When investors will consider issuing price low enough for their profit projection they will be more interested to buy such securities. The dimension of IPO undervaluation is important for attracting more risk adverse investors into primary market.

In case of failure for an international IPO (the securities are not interesting for investors and they are reluctant to buy securities in the conditions announced in the IPO prospectus), there could be used different strategies to improve the situation:

- Road – show: is used to promote the issue of securities on international markets more “aggressively”. The specialists of leadership bank will start presentations for potential investors, highlighting the advantages and strengths of issuer and its project;
- Changing the conditions in IPO prospectus offering a different issuing price (higher IPO underpricing) if investors are reluctant;
- Transferring the IPO risk by paying an additional guarantee assumed by leadership bank (or coordinating group). In this case, if IPO will be not entirely subscribed, the remaining unsubscribed securities will be included in the portfolio of coordinating group;

- Accepting only subscribed capital and accepting the partial failure of that international IPO (it is less used because syndicates of banks have a direct interest in the success of an IPO and any failure in this case could affect the reputation of banks involved in this process).

The IPOs could be only partial unsuccessfully due to the existence of underwriting group for about 70% of securities (this group of banks will assume a higher risk than selling group and will be paid more from all fees and commissions). The capacity of creating a strong underwriting group is related to the coordinating group (or leadership bank).

3. Evaluating underpricing of an IPO

Underpricing effect in case of an IPO is related with the price difference between the issuing of securities on primary market (at the price mentioned in the IPO prospectus) and the market price in the upcoming moment on secondary market.

This underpricing effect could be evaluated before and after the issue of securities on the market. The formula used, in this case, to evaluate the underpricing effect is:

$$RET_{IPO} = \frac{P_1}{P_0} - \frac{I_1}{I_0} \quad (1)$$

Where: RET – is the return after the first day on capital market or is the IPO underpricing gain,

P_1 – is the price at the end of first day of trading,

P_0 – is the IPO issue price,

I_0 – is the value for the capital market index at the beginning of the trading first day

I_1 – is the value for the index at the end of the day.

It is not necessary to calculate underpricing by taking into consideration only the first trading day of securities on secondary market. The difference between the prices in the first trading day and prices announced through IPO prospectus is always compared with the market dynamic, in order to adjust underpricing effect with the normal dynamic of the market induced by changes in the fundamentals of the market.

The conclusions of the most important studies of IPOs are the following:

- Underpricing negatively depends on firm's size. Large firms price their issues more accurately.
- The level of underpricing is a positive function of risk, which is to be measured by the ex-post variability of share price returns.
- Underpricing and equity retained by the issuer are negatively related, since they are substitutable methods of signalling high firm value.

- Underpricing is lower when the advising agents of the issuing firm have good reputation. Thus we emphasize a negative relationship between the quality of underwriter and underpricing.
- The more indebted the firm, the more its shares are underpriced at an IPO. High level of indebtedness, potentially a bad quality signal, must be outweighed by other means, like underpricing. A positive relationship is supposed therefore.)

Underpricing effect could be measured by financial managers or investors before the decision to issue securities or to buy them from primary market. Underpricing effect is important for both parties involved on financing mechanism: the issuer will decide issuing price by taking into consideration its perception regarding own risk and the investor will accept this price comparing it with the real market value. When financial managers try to estimate underpricing effect, there should be calculated a potential market price for these assets for secondary market. Any price of a financial security depends on the future cash flows generated by that security and discount rate that will be used by each investor:

$$P_{\text{security}} = \sum_n^{\text{Maturity}} \frac{CF_n}{(1+k)^n} \quad (2)$$

Where: CF_n – is future cash flow generated by security

k – is discount rate used to obtain present value for these future cash flows.

In case of bonds issued on international financial markets, the value of future cash flows is composed by principal (number of bonds multiplied by face value of bonds) paid back to the investors at the maturity and coupon value (interest paid according with the bond provisions). The income of a bond (future cash flow) is considered to be more fixed and more certain than in case of equities. Equities are more risky and difficult to be evaluated due to the lack of precise maturity and uncertainty of dividends paid in accordance with the decision of owners of the company. In case of equities different assumptions are used to obtain an image about future price: dividend is constant, dividend has a constant growth rate. When we cannot make assumptions about the growth rate of dividends will be less possible to estimate the price for this kind of securities.

For example, let suppose that a company decided to issue bonds on financial markets with the following characteristics: value of issuing is 1.000.000 Euro, face value is 10 Euro, issuing price (mentioned in the prospectus) is 8 Euro and the maturity is 10 years. The bond will be called back entirely at the maturity. Coupon rate is 10% and it is paid annually by issuer. The first step that should be made by financial manager is to draw the amortization table for such bonds.

Financial manager will determine the price of such bond by taking into consideration the value of CF_n . In our case these values are expressed in Euro. International IPOs are evaluated by local investors by taking into consideration the forecasted exchange rate that will be used to transform these cash flows into their

local currency. So, one of the most sensitive variables for calculating future price of a bond sold through international IPO is exchange rate.

Amortization table for a bond issue

Table 1

| Years | Bonds called | Nominal Value | Coupon | Premium | CF(n) | Remaining capital |
|-------|--------------|---------------|--------|---------|---------|-------------------|
| 1 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 2 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 3 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 4 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 5 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 6 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 7 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 8 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 9 | 0 | 0 | 100000 | 0 | 100000 | 1000000 |
| 10 | 100000 | 1000000 | 100000 | 200000 | 1300000 | 0 |

The unknown variable from the formula of price is discounting rate k . The use of discounting rate is justified in financial analysis when we are talking about future or past financial cash flows that will be compared with present values (or investments). Discounting procedures are useful not only for cost of capital but for giving values (prices) for financial securities. The price of financial securities is sensitive to the forecasted value of k . This k is unique for each investor (or manager) acting into financial markets. This k is different when we are analysing cash flows denominated into different currencies (if bonds are issued in Euro the k will be different that bonds are issued in USD). If k is higher the price will be lower (the financial asset will be under valuated comparing with its nominal value or accounting value). If k is lower (or decrease in time) the price will be higher (the financial asset will be over valuated). The investors that under valuate financial assets will be interested to buy such securities (considering that the price is low and will increase) and the investors that over valuate financial assets will be interested to sell such securities (considering that the price is high and will decrease in the near future). The actions of investors depend on their perception on discount rate “ k ”. Financial managers should understand this investment behaviour when they try to sell financial securities.

For discounting future cash flows are used: expected inflation (if we compare the investment with consumption), expected interest rate (assuming that this interest rate is an alternative to return offered by investment in such securities) or the return offered by alternative investments. In almost cases expected interest rate is considered to be the most appropriate measure for discount rate. So, before trying to evaluate the value of any kind of financial security is important to forecast the evolution of interest rate on financial markets. Usually, when the economic situation is worsening the interest rate will increase and, therefore, the price of financial securities will decrease.

Discounted cash flows for different discount rates “k”

Table 2

| Years | k=12% | k=11% | k=10% | k=9% | k=8% | k=7% | k=6% |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 89286 | 90090 | 90909 | 91743 | 92593 | 93458 | 94340 |
| 2 | 79719 | 81162 | 82645 | 84168 | 85734 | 87344 | 89000 |
| 3 | 71178 | 73119 | 75131 | 77218 | 79383 | 81630 | 83962 |
| 4 | 63552 | 65873 | 68301 | 70843 | 73503 | 76290 | 79209 |
| 5 | 56743 | 59345 | 62092 | 64993 | 68058 | 71299 | 74726 |
| 6 | 50663 | 53464 | 56447 | 59627 | 63017 | 66634 | 70496 |
| 7 | 45235 | 48166 | 51316 | 54703 | 58349 | 62275 | 66506 |
| 8 | 40388 | 43393 | 46651 | 50187 | 54027 | 58201 | 62741 |
| 9 | 36061 | 39092 | 42410 | 46043 | 50025 | 54393 | 59190 |
| 10 | 418565 | 457840 | 501206 | 549134 | 602152 | 660854 | 725913 |

Using different discount rates financial managers will obtain different present values and, therefore, different projections about the price of bonds in the first transaction day on secondary market.

Initial bond price in different “k” scenarios

Table 3

| Discount rates | k=12% | k=11% | k=10% | k=9% | k=8% | k=7% | k=6% |
|----------------|-------|-------|-------|------|------|------|------|
| Initial price | 9,5 | 10,1 | 10,8 | 11,5 | 12,3 | 13,1 | 14,1 |

Initial price seems to be “independent” of issuing price established by issuer. In fact, the issuer will use the same valuation methodology and will establish this price in accordance with market conditions. In our example, if the issuer will establish an issuing price of 9.7 Euro / bond and the major part of the investors will consider that discount rate is around 12% (the average interest rate for next 10 years), there will be no initial market for such bonds and the IPO will fail to find buyers for such over-valuated securities.

The forecast of interest rate is useful to establish a value for discount rates. Without this forecast is impossible to have an initial price of financial assets and will be impossible to decide if these securities should be bought or not. This forecast could be made by using different techniques: (1) linear regressions using as dependent variables income, inflation rate, economic growth, public deficits or dynamic of broad money; (2) yield curve and “pure expectation theory” that states a strong relationship between short term interest rate and long term interest rate and (3) time series methodology (the use of prediction based on derivatives like futures contracts on interest rate are not useful here due to the long term maturity of such securities).

Finally, we should mention that the intervention of state into financial markets by issuing “cheap” money as capitals destroy the natural relationship between interest rate and the availability of capital on these markets. In this case is quite impossible to forecast something about interest rate (that became unnatural lower during crisis times and not only). For this reason, in modern times of “fiat-

money” is more difficult to associate a correct value for financial assets and the error of financial investments is very high (with cheap fiat money everybody will consider discount rate to be always very low and close to 0 that will generate a false impression about higher prices).

Conclusions

This paper highlights the main problems with the establishing of a “correct” price for international IPOs by looking to the most important factors that affect the decision in this case. Underpricing of IPOs is a common procedure used to ensure the success of this very complex mechanism. The valuation of a security is based on the perception of investors on the further evolution of discount rate (mostly assimilated with interest rate). Expectations of investors toward interest rate are fundamental for prices on international financial markets. The exchange rate is the other variable used to transform the price into local currency. Underpricing of international IPOs is a very useful tool for financial managers to attract investors into the primary market of those securities. But issuers should be aware to this underpricing effect because it could be very costly for the company by comparing it with the level of risk associated to that IPO. Financial managers should understand that is important to adjust the initial price not only to the market conditions but to the issuer’s risk. If financial managers will establish a lower initial price just only for be sure about the success of their IPO they will fail to act in the interest of shareholders (in order to maximize the value of the company).

References

1. Allen, F. & Faulhaber, G., (1989). “Signalling by Underpricing in the IPO Market”. *Journal of Financial Economics*, pp. 303-323.
2. Butler, A. Keefe & M., Kieschnick R., (2009). *What Can One Million Regressions Tell Us About IPO Underpricing?*. UTD Brown Bag, March 11.
3. Carter, Richard & Steven Manaster, (1990). “Initial Public Offerings and Underwriter Reputation”. *Journal of Finance*, Vol. 45, No.4, pp. 1045-1067.
4. Chen, C.& Mohan, N. (2002). “Underwriter spread, underwriter reputation, and IPO underpricing: a simultaneous equation analysis”. *Journal of Business Finance and Accounting*, Vol. 29 No.3/4, pp. 521-540.
5. Chen, G., Firth M. & Kim J-B, (2004). “IPO underpricing in China’s new stock market”. *Journal of Multinational Financial Management*, n. 14, p. 286.
6. Coakley J., Hadass L. & Wood A., (2009). “UK IPO underpricing and venture capitalists”. *European Journal of Finance, Taylor and Francis Journals*, vol. 154, pp. 421-435.
7. Hill, P., (2006). “Ownership Structure and IPO Underpricing”, *Journal of Business Finance & Accounting*, Vol. 33, Nr. 1-2, pp. 102-126.

8. Karlis, P. L., (2000). "IPO Underpricing". *The Park Place Economist*, vol. VIII, pp. 81-89.
9. Ljungqvist, A., (2006). "IPO Underpricing". Center for Corporate Governance, *Tuck School of Business Dartmouth*, 2, Apr., pp. 36-39.
10. Loughran, T. & Ritter, J., (2002). "Why don't issuers get upset about leaving money on the table in IPOs?". *Review of Financial Studies*, 15; pp. 413-443.
11. Paun, C., Miclaus P. & Ungureanu S., (2010)." Initial Public Offerings underpricing effect in case of Eastern European Capital Markets". *Transformations in Business & Economics*, Vol. 9, No 1 (19), pp. 289 – 305.
12. Purnanandam, A. & Swaminathan, B., (2004). "Are IPOs really underpriced?". *The Review of Financial Studies*, Vol. 17, no. 3, p. 812.
13. Ritter, J. & Welch, I., (2002). "A review of IPO activity, pricing and allocations". *Journal of Finance*, 57, pp. 1795-1828.
14. Rock, K., (1986). "Why New Issues Are Underpriced". *Journal of Financial Economics*, 15, pp. 187-212.
15. Sherman, A. E., (2005). "Global trends in IPO methods: Book building versus auctions with endogenous entry". *Journal of Financial Economics*, Elsevier, vol. 783, pp. 615-649, December.
16. Titman, S. & Trueman, B. (1986). "Information quality and the valuation of new issues," *Journal of Accounting and Economics*, Vol. 8. No. 2, pp. 159–172.
17. Venkatesh, S. & Neupane, S., (2005). "Does Ownership Structure Effect IPO underpricing: Evidence from Thai IPOs", *School of Management Review*, Asian Institute of Technology, Bangkok, Thailand, 2005.
18. Welch, I., (1989). "Seasoned offerings, imitation costs, and underpricing of initial public offerings", *Journal of Finance*, 44, pp. 421-449.
19. Yu, T. & Tse, Y. K. (2005). *An empirical examination of IPO underpricing in the Chinese A-Share Market*, National University of Singapore Review, pp. 14 – 15.