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Comparative Performance of IPO in Japan and United States

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Hideki Takei and Massood Samii¹

Abstract

The increase in the initial public offerings (IPOs) in recent years has created a considerable interest in the study of their behavior. The price performance of post IPO has been studied extensively. However, these studies have focused on the US market and there is very little systematic analysis on the comparative performance of IPOs in various international markets. In this paper we evaluate post IPO performance of stocks in the US and in Japan. The major conclusion is that while the over all pattern of price performance is the same in both markets, there are differences that distinguish the two markets.

Introduction

In recent years Initial Public Offerings (IPOs) have increased tremendously. IPOs provide an easy way to increase initial investors wealth and to raise cash for future expansion of the company. This was particularly noticeable in the technology related stocks in 1990s. In many cases there were clear indications that IPOs would not reach profitability in the foreseeable future. However investors, anxious not to miss the boat, would invest in these offerings on the expectation of capital gain as a result of an increase in the stock prices. This euphoria created a hot market condition fuelling an increase in the stock prices until such a time that market sentiment changed. IPOs can be highly volatile and risky for investors but they can also provide a very higher return if the proper investment strategy is implemented. The IPO risk are two-fold, first is the short-term market fluctuation, second is the risk associated with a change in market perception. Once market perception and investor expectation changes, price would begin to decline precipitously.

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Structure of IPO Market

The IPO market goes through three stages. Stage I is the bandwagon stage in which the price increases, Stage II is the under-performance stage when the price declines, and Stage III is the readjustment stage that moves towards long-term price equilibrium (Rajan and Servanes, 1997, and Ritter, 1991, 1998).

The first stage, the bandwagon stage is when price of an IPO increases sharply. There are a number of reasons for this initial price increase. First, the IPO is generally sold in the market at a price lower than market expectation, because investment firms underwriting the stock would like to make sure that the IPO is successful and that there are enough subscribers to the IPO. Second is the asymmetry of information. If the initial prices are low and the price starts to increase then those investors that are not well informed and only look at price performance, will enter into the market because of the of bandwagon effect. The increase in price, and the eventual shift in the market perception, can be explained by the winner's curse hypothesis (Ritter, 1998). This hypothesis maintains that the poorly informed investor can get all of the stocks that they want when the well-informed investor decides to sell. In this case, information asymmetry among investors causes the adverse selection problem (Leland and Pyle, 1977). Additionally, information asymmetry determines the magnitude of the under pricing (Rock, 1986). This adverse selection problem leads poorly informed investors into buying a particular IPO stock when its price is increasing, and not necessarily to the fundamental strength of company. The bandwagon effect can be caused when potential investors pay more attention to other

investors and their opinion than the analysis of information about the company in their investment decision.

The second stage is when the stock price declines after a peak is reached. Usually, this slow decline continues for a number of years according to Ritter (1998). There are a number of explanations including the “window of opportunity” explanation that maintains, while an investor may react positively in the boom period, they might over react during the bust. Moreover, the role of analysts in creating the boom and bust is also important. While initially, analysts create a euphoria about an IPO, in the long run they may not have a strong interest in supporting the stock in its declining phase Dugar and Nathan (1995) and Lin and McNichols (1995). They are either interested in the short-term performance of the stock and capital gain or opposed to a longer-term relationship with the company.

Finally, in stage III, the fundamentals become the driving force and prices recuperate toward the long run equilibrium level. In this case the stock has passed the stage of being an IPO and its behavior would resemble that of others in its own industry group. In this stage, the risk and return relation, the overall market condition, and the fundamental strength of management and the operation would be the driving forces of stock price.

In evaluating the pattern and performance of IPOs, Ritter used average matching firm-adjusted returns and cumulative average returns for 36 months for a large number of new stock issues in the United States. He then calculated relative wealth as a measure of IPO

performances in different industries, the year it was offered, and the age of the firm offering the stock. To test whether the results are statistically significant, ordinary least square (OLS) was used. The conclusion was that the underperformance of the IPOs did exist in the second stages and the underperformance was both economically and statistically significant (Ritter, 1991).

In addition, he pointed out two other interesting findings. First, investors are periodically overly optimistic about the growth potential of young growing companies. As a result of the initial over optimism, the IPO tended to have an initial under-pricing and then under-performance. Second, firms tend to use these windows of opportunity to raise more capital from the financial markets during periods when investors are overoptimistic (Ritter, 1991).

Rajan and Servanes (1997) further studied the findings of Ritter. They focused on the extent, to which an IPO has been under-priced, the systematic errors that occurred in forecasting the performance of the firm after IPO, the degree of optimism on new IPOs, and finally, the long run performance of IPOs that analysts felt optimistic about. In analyzing the long run performance of IPOs, they also argue that in the long-run underperformance is the result of an initial overly optimistic attitude of analysts on the long-term prospects of the stock price of the firm. This leads to continuous overestimation of the long-term performance of the IPO. Under-pricing of initial IPOs could also be intentional to attract those investors that systematically over estimate the

value of stock. However, in the long run, this strategy could lead to the long-term under performance of stock (Rajan and Servanes, 1997).

It is also possible to see whether this pattern of IPO is a 1990s phenomenon. There have been structural changes in terms of IPOs in the 1990s relative to previous years. During the 1990s a large number of small and medium size hi-tech companies used the IPO market to raise capital. These small and medium companies that quickly managed to raise substantial amounts of capital were able not only to expand operation, but also to fund their research and development. Structural changes in the IPO market were apparent beginning in the early 1990s. Dawson and Davis (1991) argued that IPOs in 1990s might have different characters from those of 1970s and 1980s. They pointed out that both small and medium sized companies have aggressively participated into the IPO markets to raise their capital. Additionally, they predicted that the future of IPOs for small and medium sized companies could be bright and welcomed by investors who seek higher yields for their investment. This prophecy turned out to be correct. These two points, aggressive participation in the IPO markets and the bright future of small and medium sized companies, contributed to the change in character of IPOs during the 1990s.

By the end of the 1990s, however, the picture had changed and IPOs were not performing as was expected. Information technology, the most attractive market, was indeed getting into difficulty. Elliot (1998) reported that IPOs in the Information Technology (IT) sector had poor performances in 1997. Those who analyzed the conservative investment environment of the later 1990s were not surprised since the investment climate of 1996

was abnormally optimistic (Elliot. 1998). In addition, the overall market down turn and conservative investment climate led investors to stay away from the young high growth but risky IT companies and move towards the well established larger companies with a history of stable financial performance and strong well diversified business portfolios.

Conceptual Framework

An interesting issue is whether IPOs in other countries follow the same pattern as that of United States. This paper focuses on the comparative structure of post IPO performance of U.S. and Japanese companies. In particular, it attempts to determine whether Japanese IPOs also go through the three stages of bandwagon under performance and readjustment described above and identified by (Ritter, 1991), and Rajan and Servanes (1997). Clearly there are structural differences that would make one believe that Japanese IPOs may have a different pattern than those in U.S. markets. In particular, Japanese companies governance includes an interlocking structure and strategic alliances between groups of companies and supported by financial institutions that would lead one to expect that there would be less.

The corporate governance structure would indicate that any reaction to market changes would be more long term in contrast to that of the U.S. market. In the U.S., market reaction focuses on the speed of adjustment. That is, those who first predict the direction of the movement of stock prices and react to it more quickly than others, benefit the most. The first in first out (FIFO) is the winning strategy. In Japan, one would expect that there would be resistance to the major fluctuation and that those investing in new IPOs would

have long-term strategic interest. Therefore they would resist market temptations of quick profit for as long as possible before taking corrective action.

Japanese stock market has had structural differences in terms of institutional stockholders. Traditionally, Japanese institutional stockholders have a long-term orientation. However, the difference between individual shareholders and institutional shareholders is a sense of speculation. Most likely, the institutional shareholders do not expect speculative profits from the stock but a long-term relationship with the companies by having their stocks. This character may affect the hot market issue phenomenon as well as the initial under-pricing of the IPOs.

Finally, the number of IPOs in Japan is considerably less than in the US and the market is much thinner. The small size of the market would imply that the information asymmetry maybe less prevalent in the Japanese IPO market than in the US.

Methodology:

To test the pattern of performance of IPOs in the United States and Japan we focus on a sample of seventeen IT companies both from Japan and the United States. While the size of the sample may look too small particularly for the United States, the limitation of data for Japan and our objective to maintain equal sample size for the two countries were the reason for limiting the number of US companies in our sample. The US companies were taken from NASDAQ and the Japanese from the Tokyo Exchange OTC. The IT industry was defined to include Communication and Networking, Electronic and Computer

Hardware, Information Services, Semiconductors, and Software, which is consistent with definitions used by others (Elliot, 1998). For calculation purposes, average daily prices were used for a period of 757 days for US companies and 1009 for Japanese Companies. Data was collected from the DataStream database and Yahoo Finance database.

Average stock prices were summed together for each day over the sample of companies. Dollar value was used for the Japanese IPO stock. This would indicate prices and return from a US point of view. The IPO data for the US and Japan are shown by graph I. The horizontal axis shows the number of days and the vertical axis shows the change in the IPO price. The two graphs clearly show the three stages of bandwagon, under performance and readjustment. It can be observed that initial offerings are under-priced in both countries and that prices increase overtime. Eventually, there is a turn around once the bandwagon effect is gone and the market's attitude toward the IPO changes leading to a decline. Prices in this case decline sharply before they eventually turn around.

Figure I

PERFORMANCE OF US IPO

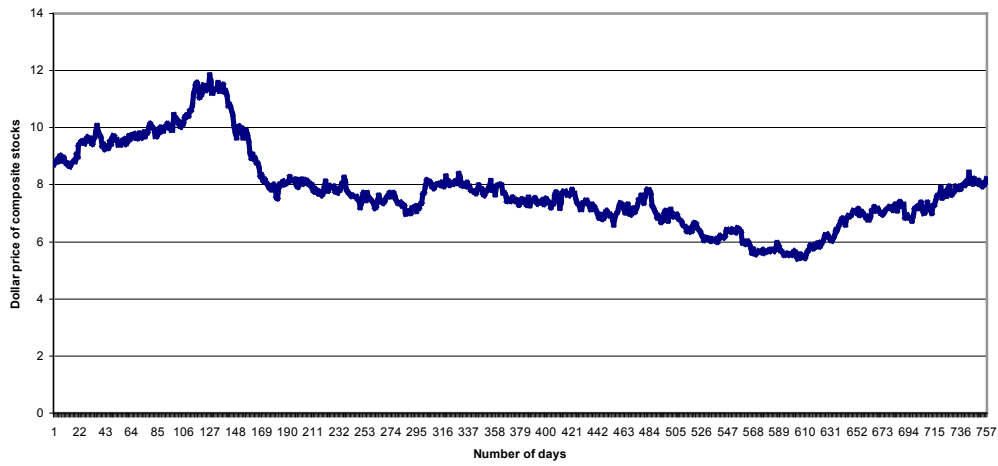
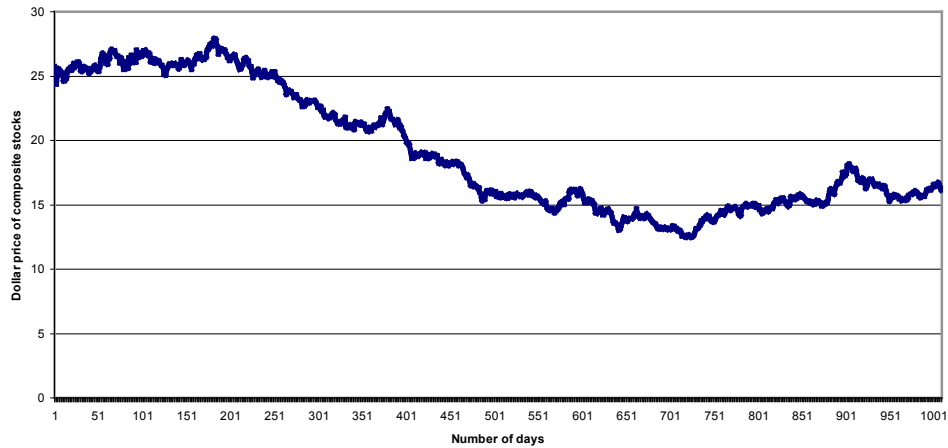


Figure II

PERFORMANCE OF JAPANESE IPO



The pattern was further confirmed by a linear regression for each stage of post IPO separately. The result is demonstrated in table I. The slope of the regression line, price performance with respect to time, for each stage is shown by β , t-statistics indicate that the time variable is significant for all stages. ND shows the average number of days in

each stage. The positive value of β for stage I indicates initial under pricing which leads to the hot-market issue. The negative β of stage II leads to the conclusion that the bandwagon effect eventually results in under-performance. Finally, stage III's positive β shows rebound toward long-term price equilibrium.

Table I
**Comparative Analysis of
 United States and Japan IPO Market**

	USA	Japan
Stage I Bandwagon	$\beta > 0$ $t = 22.7$ ND (2-130)	$\beta > 0$ $t = 7.49$ ND (2-180)
Stage II Under- Performance	$\beta < 0$ $t = -31.57$ ND (131-600)	$\beta < 0$ $t = -31.14$ ND (181-720)
Stage III Re-adjustment	$\beta > 0$ $t = 11.4$ ND (601-)	$\beta > 0$ $t = 34.84$ ND (720-)

While there is generally the same pattern between IPO performance in the United States and Japan, there are also differences that are quite unique and interesting. One factor is that the market adjusts quicker and that stages are shorter in Japan. For example Stage I in US last for 130 days (which is consistent with but somewhat higher than around 90 days reported by other studies) while in Japan it takes as long as 180 days. The same is true for the second stage with the Japanese IPO taking an additional 70 days to hit the bottom and make a turn around. This quicker adjustment can be attributed to the

structural differences in the ownership of the Japanese IPO as compared to the US. In the US market, bandwagon effect attracts a great deal of speculators. Therefore they have no interest other than financial return from their investment. While in Japan, investors remain more loyal to the firm after the bandwagon stage and they take a long-term view and therefore are slower in shifting their perception of the IPO firm and dumping the shares.

Another interesting issue is that at the point of the shift from stage one to stage two, when perception changes, in the United States, adjustment is very quick and very sharp. In Japan the adjustment is even at the initial phase of change and the perception is relatively more moderate. In fact, after the initial sharp downward adjustment of the position, the holders of IPO shares in the US would have more moderate adjustment than those in Japan. This is shown by the standard deviation of stage two of the IPO and the regression line slope. Standard deviation of 4.28 for Japan is almost four times that of the US even with the inclusion of a sharp initial drop. Once we exclude the initial adjustment of stage II, then the standard deviation for the US becomes only 0.73 as compare to 4.28. The slope of the regression line in the US is four times that of Japan. One reason for this could be the exchange rate factor. Since data for Japan is in US dollars, variation in exchange rate, particularly when was declining relative to US dollar would lead to a decline in relative prices. Also, the differences in the over all stock market performances between the two countries could have played a role in this regard.

Table II
**Volatility of US and Japanese
 Post IPO**

	U.S.A	Japan
Stage I: Bandwagon	$\sigma = 0.74$ ND (2-130) $\beta = 0.0188$	$\sigma = 0.56$ ND (2-180) $\beta = 0.005$
Stage II: Under Performance	$\sigma = 1.09$ ND (131-160)	$\sigma = 4.28$ ND (181-720)
I: Including Initial Drop	$\beta = -0.006$	$\beta = -0.027$
II: Excluding Initial Drop	$\sigma = 0.73$ ND (191-600) $\beta = -0.005$	
Stage III: Re-adjustment	$\sigma = 0.76$ ND (601-757) $\beta = 0.76$	$\sigma = 0.59$ ND (721-1009) $\beta = 0.597$

Besides stage II, in all other stages the Japanese market is more stable than in the United States. However, in the first stage, US IPOs out perform Japanese IPOs by a factor of 3.5. This is consistent with the expectation of a stronger bandwagon effort in the US than in Japan due to differences in information asymmetry in the two countries.

The above model was refined further by adjusting for the exchange rate and for domestic market performance. Each IPO stock price was adjusted by the change in the stock market using Nikkei for Japan and NASDAQ for the US stocks. Additionally, Japanese IPO prices were adjusted for the yen-dollar exchange rate. Regression was performed for

each of the three stages using an autoregressive model with one period lag. Results are reported in Table III.

Table III
Price performance of Post IPO in US and Japan
 (Adjusted for market and change rat variation)

	U.S.A	Japan
Stage I: Bandwagon	$\beta = 0.12$ $\gamma = 0.06$ $R^2 = 0.69$ D.W= 1.93	$\beta = 0.09$ $\gamma = 0.96$ $R^2 = 0.97$ D.W= 2.3
Stage II: Under Performance I: Including Initial Drop	$\beta = - 0.09$ $\gamma = 0.097$ $R^2 = 0.988$ D.W= 2.00	$\beta = -0.06$ $\gamma = 0.98$ $R^2 = 0.99$ D.W= 1.92
II: Excluding Initial Drop (only for US)	$\beta = -0.12$ $\gamma = 0.97$ $R^2 = 0.987$ D.W= 1.96	
Stage III: Re-adjustment	$\beta = 0.35$ $\gamma = 0.88$ $R^2 = 0.98$ D.W= 2.14	$\beta = -0.01$ $\gamma = 0.98$ $R^2 = 0.97$ D.W= 1.74

The above results further confirmed our finding of the three stages of post IPO, with the exception of the third stage for Japan. In that case the coefficient of β was negative, but very small meaning that the regression line was almost horizontal. This could be partly attributed to the choice of the starting time of stage III. Besides this fact, the remaining part of the model seems to be in line with our expectation. The R-square is high and the

independent variable, and AR(1) are all statistically significant. While Durban-Watson statistics for most stages either show an absence of serial correlation or are inconclusive.

Conclusion:

In studying the IPO structure in Japan and the US for the information technology industry, it can be concluded that in both countries the pattern is the same. In both countries, IPOs generally go through three stages; bandwagon, underperformance, and readjustment. The difference in the institutional financial structure of Japan and the US would not affect this overall pattern.

Yet, there are noticeable distinctions in post IPO performances stocks in the two countries that can be attributed to the differences in the institutional factors of each country. In particular it takes a considerably longer time in Japan for an IPO to go from Stage I to Stage II than in the US. This is attributed to the presumably long-term commitment of Japanese investors. It would be an interesting follow-up research project to determine whether there is a difference between the structure of investors in IPOs in Japan and in the US. For example, are investors in Japanese IPO companies that are developing strategic alliances or purely institutional investors?

Another interesting finding of this paper is that in moving from stage I to II, the US IPO drops sharply, while the Japanese IPO has a slower decline. However, in the US, after an initial decline, the market is more stable, while in Japan the market fluctuation continues in the process towards its final adjustment.

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