Regulatory Framework and Research: A Review of IPO Research Conducted in the U.S., China, and India

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Abstract

Although the area of research is the same, i.e. IPO underpricing, however, there are many apparent differences between the methods of research, focus of the research , amount of the research, and the findings of the research across countries and time periods. These differences become wide if compared between the U.S., China, and India. In the U.S., the focus of IPO research has been on the role of the underwriters and discretionary power of share allocation. While in China, the focus is on the effect of frequently changed regulatory framework on IPO underpricing. In India, it can be seen that most of the studies are based on the publicly available information, considering IPO firm's and the issue's characteristics as the main study variables. The present study aims to review the literature of IPOs in the U.S., China, and India. The major differences in the methods of pricing and other related regulations should be the major concerns while applying the IPO market models across countries. The present review study covers the time period from 1970s to 2012.

Keywords: **IPO, regulatory framework, IPO research**

JEL Classification: G12, G14

It would be interesting and significant to review and compare research conduced on IPOs in the U.S., China, and India. The U.S. has been the largest IPO market, China is the most underpriced IPO market, and India is an emerging IPO market. As documented by Ritter (2011), the maximum number of IPOs in China were more than 300 during the year 2010, and in the U.S., the number was 700 during 1999. The largest equally weighted average first day returns in the U.S. were 70 percent during the year 1999, and in China, the returns were more than 600 percent during the year 1991. In India, after the implementation of the financial reforms, the number and amount of IPOs increased tremendously from 33 IPOs raising INR 1821.42 crore to 64 IPOs raising INR 37534.65 crore in 2010 (PRIME Database). The average first day returns on IPOs in the U.S. during the period from 1990-2010 were 18 percent, whereas the figure was 156 percent for China. Su and Fleisher (1999) documented average initial returns of 949 percent in China during 1987-1995. In India, the returns were 99.20 percent during 1992-2001(Sehgal & Singh, 2007), 32.92 percent during 2001-2009 (Deb, 2009), and Deb and Marisetty (2011) reported average underpricing of 20.59 percent during 2006-09. In the U.S., the number of IPOs reduced drastically in the last decade as compared to the previous decade, whereas in China, the number of IPOs increased during the last decade as compared to the previous decade. In the year 2010, the average underpricing in China was 40.4 percent, which is comparatively low. The reason for increased number of IPOs and reduced average underpricing in China may be attributed to changed regulatory structure in the IPO market. Although the average first day returns decreased in China and the U.S. during the last decade, but it is still very high as compared to other countries. Loughran and Ritter(1995) reported that in the U.S., companies going public left more than $27 billion on the table during 1990-1998, whereas fee paid to the investment bankers during this period was $ 13 billion. These companies generated $8 billion profit in the year before going public. Thus, the amount of money left on the table represents more than three years of aggregate profits.

Due to the vast IPO market and high IPO underpricing in the U.S, IPO research has been a favorite topic in academic research. As documented, there were 335 research papers on U.S. IPOs till 2003 (Varshney & Robinson, 2004). Yong (2007) extensively reviewed the research on IPOs, focusing on Asian IPOs and documented that the research on IPOs in Asia is quite preliminary as compared to extensive investigation on the U.S. IPOs.

As enormous literature on IPOs is available, especially with reference to U.S. IPOs, it was impossible to document the review of all the studies in the present paper; hence, I will focus on the well-known and unique findings only.

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Objective of the Study

The focus of the present paper is to discuss the differences in the regulatory framework of the IPO market in the U.S., China, and India, and then to review the IPO literature available on these countries and see the differences in the focus areas of IPO research in these three countries.

IPO Pricing Method in the U.S., China, and India

In the regulatory framework of an IPO market, the main regulations are focused on the methods of IPO pricing, IPO allocation, and the pre-requisites of listing. Therefore, my focus in this section is on a brief discussion on these three main aspects of IPO regulations. Procedure of IPO pricing in the U.S. is as follows (Ritter, 2011):

> Companies first distribute a preliminary prospectus, typically 3 weeks before going public, which lists the no. of shares to be offered and a price range, such as $14-16 per share (the range between the minimum and maximum is almost always $2 in the U.S). A marketing campaign is then conducted, known as a road show, and indications of interest are collected from potential investors. Based upon this demand, the issuer and book runners then decide on a final offer price and the number of shares to be offered. Underwriters use their discretion in allocating the securities if there is excess demand at the offer price, as is normally the case.

As a part of economic reforms, the Chinese stock market was established in the early 1990s. Unlike the U.S. and India, in China, the offer price of IPOs has been under restriction due to the CSRC (China Securities Regulatory Commission). From 1990-1995, IPO offer price was determined based on a multiple of book value. From 1996 to June 1999, the offer price was based on maximum price-earning (P/E) ratio of 15. From July 1999 until June 2002, auctions were used, in which the offer price was determined based on online bidding received from retail investors. Again, from July 2002 to the end of 2004, CSRC returned to P/E controlled system with a maximum P/E ratio of 20. In early 2005, the P/E cap system was dropped, but in practice, IPOs with P/E ratio of greater than 30 were not approved by the CSRC. Next, the Govt. allowed the private sector companies to go public. Earlier, IPOs were allowed only for state-owned enterprises. In October 2009,the Shenzhen Stock Exchange opened a new market for young growth companies called ChiNext. Unlike IPOs on the main boards in Shanghai and Shenzhen, IPOs on this market are not required to have positive earnings in each of the three years prior to going public. The CSRC also controls the timing of the IPOs. Unlike the U.S., in China, investment bankers cannot use discretionary power in allocation of IPO shares. As the ceiling on offer price is based on a common P/E ratio cap, regardless of the firm's characteristics and growth potentials, it leads to severe underpricing for low risk and high growth potential firms. Disclosures are very less in China as compared to other countries, and this causes difficulties for investors in evaluation of IPOs before investing, which results in greater uncertainty about the firm value. It has been documented that most of the IPO firms soon come for SEOs (seasoned equity offerings). As documented in the earlier studies in China, application of IPOs are selected based on political considerations (Ritter, 2011; Su & Fleisher,1999 ; Yau & Steele, 2000; Yu & Tse, 2006; Zhou & Zhou, 2010).

In India, the regulatory framework of the IPO market is very different from what it is in the U.S. and China. Before May 1992, as per the Capital Issue (Control) Act, 1947, the office of the Controller of Capital Issue (CCI) had full control over the pricing of new issues in India. In May 1992, CCI was abolished and the Securities and Exchange Board of India (SEBI) was formed under the SEBI Act, 1992. During the period from 1992 to 1999, the issuers were free to determine the issue price on the basis of their own discretion . This method of free and fixed price suffered from high overpricing and underpricing because it was difficult for the issuer to decide an appropriate price without any involvement of the market. Therefore, the book building method was introduced in October 1995 on the recommendation of an expert committee under the chairmanship of Mr. Y. H. Malegram appointed by SEBI. The SEBI Guidelines, 1995 define book-building as "a process undertaken by which a demand for the securities proposed to be issued by a body of corporates is elicited and built up, and the price for such securities is assessed for the determination of the quantum of such securities to be issued by means of a notice, circular, advertisement, document or information, memoranda or offer document." Thus, book building in India is a process of determining price and gauging the market demand on the basis of bids received from the investors. The development of the book building method in India has gone through many amendments in the guidelines. The first IPO that came out through the book building route was

Hughes Software Systems Limited in September 1999. Though the fixed price route is still available to the issuers, but now, book-built IPOs are more than the fixed price issue IPOs. As the fixed price issues were around 25 percent of the total IPOs during FY 2004-05 to 2009-10, it shows that in India, the book building method of IPO pricing dominates over the fixed price method. The SEBI has fixed the proportions of IPOs to be allotted to each category of investors. These proportions have gone through many amendments and presently, the minimum 35 percent of net offer to the public is to be allocated to retail investors, 15 percent is to be allocated to the non institutional investors, and 50 percent is to be allocated to the qualified institutional investors. The allotment of shares to each category is done on the basis of these proportions.

❖ **Process of IPO Pricing through Book Building in India:** In India, book building starts with a price band decided by the issuer after discussion with the book running lead manager (BRLM). As per the SEBI rule, the price band's upper limit should not be more than 120 percent of the lower limit of the band. For instance, if the lower band is ₹ 100, then the upper band would not be more than ₹120. However, the issuer has the freedom of deciding the upper band up to ₹120 in the given example. After deciding the price band, the issuer opens the price band to the investors to gauge the market demand at various prices within the band. The permitted period for subscription is three to seven working days, extendable by three days in case of any price revision. On the basis of bids received during the subscription period, the issuer decides the maximum of the received prices where the issue is fully sold.

Thus, it can be seen that there are obvious differences in the pricing method and regulatory framework. These differences can be stated as **1)** in China, the IPO offer price is highly controlled by the regulatory body, while this control is the least in the U.S., **2)** the Chinese IPO market has been under frequently changing regulatory environment, whereas the U.S. IPO market is the most stable in terms of regulatory changes, **3)** the U.S. IPO market is the most developed and old, while it has been very immature in China, **4)** in the U.S., underwriters have the discretionary power to share allocation, whereas this discretionary power is not available to underwriters in China and India, **5)** time lag from offering to listing is least in the U.S., and it is extremely high in China. As documented in Deng and Dorfleitner (2008), the time period from the IPO offer date to the issue date is typically one day in the U.S.; in China, among the IPOs issued before 1992, the time lag between the offer date to the listing date averaged over 1000 days. The longest institutional lag was almost 10 years from November 1988 to May 1998 (Gu, 2003). Su and Fleisher (1999) reported a time lag of 260 calendar days for A-shares (shares for domestic investors) and 72 calendar days for B-shares (shares for foreign investors) from 1987 to 1995. Hence, it would be interesting to review IPO research in these countries and see how the procedure of listing and regulatory framework caused major differences in the approach and focus of research on the same issue.

Review of IPO Research in the U.S.

Research on IPOs started in the U.S. mainly during the 1970s.

1) Timing of IPOs and Explanation of Underpricing : There are numerous models and empirical evidences on the timings when firms prefer to offer their IPOs. Here, I would discuss a few popular models. The hot market hypothesis proposed by Ibbotson and Jaffe (1975) suggested that issuers can get maximum pricing during cold markets. They defined hot markets as the periods when after market performance of IPOs is abnormally high and cold markets are the periods when the average short term returns and long term returns are low. They also explained that the rationing of shares occurs during hot issue markets when investors pay indirect commission to the investment bankers for getting underpriced shares. Similarly, there are evidences that in the U.S., firms prefer to come for IPOs during a high valuation period. It is called as window of opportunity hypothesis (Baker & Wurgler ,2000 ; Loughran & Ritter,1995; Ritter,1991). There are studies that reported that firms going public during an IPO wave have different characteristics than the firms going off the wave. Chemmanur and He (2011) reported that the firms going public during an IPO wave will have lower productivity and lower post-IPO profitability, but larger cash holdings than those going public off the wave.

A related study by Cloak and Gunay (2011) showed (theoretically and empirically) that in a rising IPO cycle, high quality firms strategically delay its issuance to get more information about the market condition. This strategic waiting can reduce the uncertainty about the economic and market condition. The researchers tested 9013 U.S. IPOs issued during 1973-2007.

2) Information Asymmetry and Underpricing: One category of research is based on the information asymmetry between an issuer of IPOs and an investment banker. Baron (1982) and Benveniste and Spindt (1989) argued that investment bankers are better informed than the issuers. Therefore, to deal with this information asymmetry, the issuer delegates the offer price decision to the investment banker. For using superior information while getting advised on the offer price, the issuer offers compensation to the investment banker by underpricing, which helps the issuer in distribution of the issue. This is called as the underwriter's monopsony hypothesis.

The second category of IPO research based on information asymmetry assumes information asymmetry among investors as Rock's (1986) model assumes that there are two types of investors **1)** informed investors, who have sufficient information about the prospects of the issue. Therefore, this class of the investors subscribe for highly underpriced IPOs only, **2)** uninformed investors, who get allocation in those IPOs for which informed investors do not subscribe i.e. overpriced IPOs . The model proves that to avoid under subscription of overpriced or less underpriced IPOs, the issuer attracts the uninformed investors by underpricing the IPOs. In literature of IPO pricing, this model is called as "winner's curse hypothesis" or adverse selection hypothesis. Unlike Rock's (1986) model, Lundtofte's (2010) model assumes rationing scheme in share allocation, according to which investors' orders are filled as completely as possible. Whereas, Rock's model (1986) is based on the assumption of random allocation of shares to the investors. Similarly, unlike Laffont and Maskin's model (1987), this model assumes that monopoly (investment banker) faces a group of professional investors who have superior information regarding the firm's quality. Laffont and Maskin (1987) also assumed that investment bankers have superior information. The model derives the proposition that offer price is lower in the IPOs in which investment bankers meet the investors who have superior information as compared to the IPOs in which they do not face these investors. The researchers derived the conjecture that the absolute underpricing is positively related to the per-capital supply, the dividends' variance, the fraction of informed investors and the risk aversion, but is negatively related to the interest rate.

The third category of information asymmetry based research assumes the information asymmetry between an issuer and investors. Allen and Faulhaber (1989) developed a model in which they assumed that a firm knows its prospects better than the others. The firm signals its good prospects by underpricing. Investors take underpricing as a signal of a good firm because only good firms can recoup the cost of this signal from subsequent offerings. Bad firms know they would not be coming for subsequent offerings (due to poor profitability after the IPO) ,therefore, they cannot afford underpricing. This model is known as signaling model of IPO underpricing. There are some empirical evidences that have supported the signaling model (Firth & Liau- Tan, 1997 ; Jegadeesh, Weinstein, & Welch,1993 ; Welch, 1989), while some have rejected it (Chi & Pedgett, 2005; Michaely & Shaw,1994). Similarly, it has been documented that the IPO is a market event for the issuing firm, and an IPO works as a publicity tool by generating additional investors' demand as well as additional product revenue from greater brand awareness (Chemmanur,1993; Demers & Lewellen,2003).

There have been frequent studies testing signaling models with various samples, yet Ritter (2011) argued that theories of information asymmetry failed to explain the high underpricing ; rather, the high underpricing can be explained by other reasons like institutional constraints, agency problem between issuers and underwriters, and willingness of the issuers to focus on factors other than maximizing the proceeds from IPOs. The researcher argued that adverse selection is not the reason of underpricing, but it is a result of underpricing (due to oversubscription of underpriced IPOs) which also does not arise due to discretionary power of an underwriter in share allocation. Furthermore, the researcher argued that the adverse selection problem arises only in fixed price method where underwriters do not have any interaction with the investors before deciding the offer price, but now in the book building method, there are repeated interactions between these two parties, and the underwriters have discretionary power in allocation of shares; hence, adverse selection problem does not arise.

Ritter (2011) also criticized the signaling models of underpricing (Allen & Faulhauber,1989; Grinblatt & Hwang, 1989 ; Welch,1989) and called them as "silly academic theories". The researcher supported the argument of Daniel and Titman (1995) that high-quality firms use underpricing (which is a very expensive way of quality signal) as a signal only if strategy space (for instance "Loyalty bonuses" for retail investors documented by Keloharju, Knüpfer, & Torstila , 2008) is severely restricted.

3) Certification Hypothesis and Underpricing : Research in this category assumed that any certificate of the firm quality affects the underpricing of IPOs. Carter and Manaster (1990) developed a model in which underpricing is

negatively related to an underwriter's reputation. They argued that low risk firms reveal their low risk to the market by selecting prestigious underwriters. In the IPO literature, it is called as investment banker's reputation hypothesis. Beatty & Ritter (1986) found lower underpricing if the issue is managed by reputed underwriters.

The literature on IPO market has documented several studies on certification backed IPOs and showed contradictory results as some studies found that certification backed IPOs reduces information asymmetry and eventually, investors have to bear low cost of information acquisition (Chemmanur & Fulghieri,1999). However, some other studies showed that certification backed firms are high-quality firms, and they signal their quality by high underpricing (Allen & Faulhaber,1989; Chemmanur,1993; Grinblatt & Hwang,1989 ; Welch,1989).

Barry, Mauscarella, Peavey, and Vetsuypens (1990) and Megginson and Weiss (1991) found lower underpricing for VC backed IPOs. This finding supports that lower information acquisition cost is borne by investors in case of VC backed IPOs (Chemmanur & Fulghieri,1999),while in contradiction to that, Lee and Wahal (2004) and Ritter and Welch (2002) reported higher underpricing for VC backed IPOs. They argued that higher underpricing is due to preferential allocation in VC backed IPOs. Furthermore, the IPO literature on U.S. IPOs has two contradictory conjectures on impact of group affiliation and firm quality. The "certification" hypothesis and "co-insurance" hypothesis assert that group affiliation reduces uncertainty, and the group companies provide financial support to each other (Khanna & Palepu, 2000 ; Khanna & Yafeh, 2005). On the other hand, the "tunneling" hypothesis asserts that in family owned business groups, companies have higher risk of cash flow tunneling from one firm to another group firm depending on owners' controlling rights (Faccio & Lang, 2002).

4) Other Hypotheses : Beatty and Ritter (1986) related the level of ex-ante uncertainty surrounding the intrinsic value of an IPO to the level of underpricing - the higher the uncertainty level, the higher is the level of underpricing. It is known as ex-ante uncertainty hypothesis. Welch (1992) asserted the information cascades hypothesis as when shares are sold sequentially, the latter investors learn from the decisions of the former investors. This leads to information cascading, and latter investors imitate the former investors. This model explains the behavior of the investors in an IPO market. It can be derived that underpricing can be reduced if the underwriter is able to have a good deal with the earlier investors. A model developed by Brennan and Franks (1997) asserts that underpricing occurs due to oversubscription. The oversubscription is intended by owners to discriminate applicants of shares and to allocate shares in favor of small applicants and in against of large applicants. After IPO, the small block holding reduces outside monitoring in the firm. It is called as the reduced monitoring hypothesis. Habib and Ljungqvist (2001) argued that the degree of underpricing can be reduced by the owners through the choices they make in promoting an issue, such as which underwriter to hire and on what exchange to list. The extent to which the owners are interested in promoting the issue depends on the magnitude of shares they are diluting in an issue. Larger dilution leads to more wealth losses and eventually, more incentive to reduce the underpricing. The argument was empirically supported by using a sample of U.S. IPOs listed on the NASDAQ between 1991 and 1995.

On a similar line with the above hypothesis, the ownership dilution theory and evidence which says underpricing causes wealth losses to the owners up to the extent they sell their shares in IPOs , Laughran and Ritter (2002) applied the prospects theory (an alternative model of expected utility theory) for explaining the IPO underpricing. They argued that underpricing results in wealth gains to the owners up to the extent they hold shares in the IPO. The prospect theory predicts that in most situations occurring in the IPO market, issuers will sum the wealth loss from leaving money on the table with the larger wealth gain on the retained shares from a price jump, producing a net increase in wealth for pre-issue shareholders. Daniel (2002) also empirically supported the prospects theory. Ljungqvist and Wilhelm (2005) tested the plausibility of prospects theory (behavioural model) by looking at the CEOs decision in selection of underwriters for SEOs. They found that CEOs choose the same underwriters if they perceived wealth gain in IPOs due to offer price revision, and they switched the underwriter in case of dissatisfaction. With the behavioural biases, underwriters also benefit in the sense that they extract higher fees for SEOs involving satisfied decision-makers. Aggarwal, Prabhala, and Puri (2002) tested a data set of U.S. offerings between 1997 and 1998. They found a positive relationship between institutional allocation and underpricing. The explanation given is that the underwriter extracts favorable pre-market demand information from the institutions, which helps to revise the offer price upward and then, the underwriters allocate more shares to the institutions in those IPOs where first day returns are likely to be high. It is called the institutional allocation hypothesis. Tinic (1988) and Hughes and Thakor (1992) argued that the issuer underprices the IPO to reduce legal liability. Drake and Vetsuypens (1993) did not find any evidence supporting this

hypothesis. Ritter (2011) criticized this hypothesis of lawsuit-avoidance hypothesis as **1)** leaving money on the table is an efficient way of avoiding litigation risk; **2)** the litigation environment is a unique phenomenon in the U.S., whereas underpricing has been an international phenomenon ; **3)** Hao (2011) found no relation between underpricing and subsequent litigation risk for U.S. IPOs from 1996-2005. Kim, Le, and Walker (2008) studied a sample of 2391 U.S. listed IPOs during 1996-December 2002. They tested the proposition that a high degree of pre-IPO leverage gives a positive signal of a firm's quality as it forces a firm's managers to adhere to tough budget constraints and found that this is true for low-tech IPOs only, and high debt causes increased risk and uncertainty for high-tech IPOs.

Ritter (2011) argued that in the book building method, the single factor which explains maximum underpricing is a revision in the offer price from the midpoint of the original file price range. If the offer price is revised downward, the underpricing is very less, and if it is revised upward, the underpricing is very high. This pattern of revision in offer price is called as partial adjustment phenomenon. The author stated that this pattern of partial adjustment was first documented by Hanley (1993). Ritter explained the partial adjustment phenomenon in detail. There are three theoretical analyses of this phenomenon. Benveniste and Spindt's (1989) model provides the argument that if the regular investors disclose positive information about the issue, the price will be revised upward partially, while if the investors disclose negative information, the offer price will be revised downward with little or no underpricing. This is called conditional underpricing. The same phenomenon was explained by Loughran and Ritter (2002) by using Kahneman and Tversky's (1979) prospect theory. They assumed an agency problem between issuers and underwriters. When there is a strong demand during book building, firm executives are happy because of the expected high market price after listing and take the advantage of this psychological state of the firm executive, while the underwriters do not incorporate positive information in the offer price. Edelen and Kadlec (2005) also presented an explanation for the partial adjustment phenomenon. They argued that firms are less willing for failure of the issue in case of good news, while they are more willing for failure of the issue in case of negative information, so there is a tradeoff between the expected underpricing and the probability of a withdrawn offer, and there will be more underpricing when there is an upward revision in the offer price, and there will be less underpricing for the downward revisions.

❖ **CLAS Controversies:** Ritter (2011) documented an extremely high average first-day return (67 percent) and money left on the table ($ 67 billion) in the U.S. during 1999-2000. The researcher claimed that such high returns during "bubble" years cannot be explained with traditional theories of IPO pricing; rather, the researcher gave a new explanation in terms of CLAS controversies: excessive Commissions, Laddering, Analyst conflict of interest, and Spinning.

1) Commissions : The author explained that money left on the table is recoup by the underwriter in terms of commissions charged from rent seeking investors for allocating underpriced IPOs to them. This argument has empirically been supported by Reuter (2006) and Nimalendran, Ritter, and Zhang (2007). This commission is called as "Soft dollars". The soft dollar revenue gives incentive to underprice the IPO.

2) Laddering: The author stated that laddering is a practice in which shares are allocated on the condition that in the immediate aftermarket, investors buy additional shares. The buying of additional shares raises the aftermarket price unless there is short selling, and this eventually leads to high underpricing.

3) If underwriters themselves take analyst coverage, then due to their favorable recommendation about the issue, the underpricing would be more than in cases when an analyst is different from the underwriter.

4) Spinning : Is the practice in which an underwriter allocates shares to the executives of the issuing firm. Investment bankers underprice the shares to influence these executives who decide which investment banker to hire and what direct and indirect fees to pay. In such practices, IPOs are more underpriced as compared to IPOs where such practices do not exist. The researcher documented that regulatory responses to CLAS controversies has placed restrictions on both spinning and analyst conflicts of interest since 2003.

Thus, IPO research in the U.S. has covered a wide range of problems and issues associated with IPOs. It can also be concluded that most of the theoretical models of IPO underpricing and then empirical evidences of these models were tested on U.S. IPOs.

IPO Research in China

As discussed earlier, the IPO market in China has been highly controlled by the regulatory bodies. Therefore, the focus of the research has been on finding the impact of various regulations, especially of controlled price on the underpricing of IPOs.

The research on determinants of severe underpricing of IPOs in China frequently suggested some variables causing underpricing such as the high equity retention by the state, a long time lag between offering and listing, ex ante risk of new issues ,larger allocation to individual investors, firms with lower expected profitability, lottery system with a fixed number of lottery forms, small size of firms, frequent SEOs, the quota system, P/E cap, and pre-IPO leverage (Chau, Ciccotello, & Grant,1999; Chen, Firth, & Kim, 2000; Chen, Firth, & Kim, 2004; Chi & Padgett, 2002 ; Gu, 2003; Kim, Rui, & Xu, 1998; Mok & Hui, 1998; Su & Fleisher,1999).

There is a contradiction in the findings of Chau et al. (1999) - that the initial returns are smaller when the government retains a large proportion of ownership - and Mok and Hui (1998) that inside equity retention by state government increases underpricing. Chau et al. argued that investors rely on insider ownership to reduce agency costs. Gu (2003) found evidence of negative correlation between state owned equity and initial returns, which is similar to Chau et al.,while Chen et al.(2004) found that when state ownership is high, agency costs increase and liquidity decreases; hence, underpricing increases to compensate investors for their increased risk exposure. Liu (2003) studied 1124 IPOs during 1991–2000, and found that the listing quota and pricing caps imposed by the CSRC explains more than half of the IPO underpricing in China. Su (2004) found that debt does not convey the positive signal of firm quality in China. Using data of 283 Chinese IPOs, the researcher found that larger the pre-IPO leverage, the higher is the degree of IPO underpricing. The researcher also found that in China, underpricing is high for the issues having low promoters' stake. The reason attributed by the author is that larger insider ownership reduces the information asymmetry and lowers the need to underprice. Thus, this finding indicates that in China, underpricing is more for the firms which have larger pre-IPO leverage and low promoter holding. The researcher also found that age of the firm is not a significant variable of underpricing. It was found that the degree of underpricing is relatively small when market conditions surrounding an IPO are favourable (i.e., the accumulated 30-day stock-market return is high while the standard deviation of returns is low). Deng and Dorfleitner (2008) studied 237 new A-shares from 2002 to 2004, and found excess demand and the generally positive sentiment in China's secondary/after-IPO market for new shares .

Yu and Tse (2006) found strong evidence of winner's curse hypothesis and ex-ante uncertainty hypothesis and in contrast to Su and Fleisher (1999), no evidence was found for the signaling hypothesis. They found that frequent SEOs are caused by market feedback, and not because of high underpricing of IPOs. On the basis of the study results, the researchers suggested that firms' ex ante uncertainty causes higher underpricing; therefore, more information disclosure will help in reducing winner's curse problem in China. Instefjord, Coakley, and Shen (2007) also supported winner's curse in China using a sample of 562 Chinese IPOs, in which allocation was done by using the pure lottery method, in which the oversubscribed issues did not discriminate between orders of different sizes, and the investors were exposed to the risk of being allocated no shares.

Ma and Faff (2007) documented that fixed price method has been the dominant allocation mechanism in China, though it has taken different forms over time . There are different methods of share allocation of fixed price IPO shares in China, which have been used across time such as - online fixed price offering (OL), saving linkage offering (SL), online fixed price plus secondary market proportional offering (OLSM), secondary market proportional offering (SM), private placement (PP), selling subscription warrants (SW), book building, auction (for details on each of these methods, refer to Ma & Faff (2007), pp. 124-125). The authors studied 942 Chinese IPOs from 1994 to 2003 and compared the above stated six different procedures of IPO allocation and found that the book building method reduces the adverse selection problem as compared to the fixed price method. The book building procedure reduces uncertainty created by low market profitability, high market volatility, and uncertainty induced by the time 'gap' from offering to listing. They found that firms in China preferred IPOs offering or listing during periods of high market return and/or low market volatility.

Kao, Wu, and Yang (2009) studied the impact of regulation constraining IPO offer price to the product of earnings per share (EPS) calculated over a pre-specified time period and price to earnings (P/E) ratio. Their sample consisted of 366 IPOs between January 1, 1996 and February 11, 1999. They found that regulation of product of EPS and PE ratio in setting offer price had induced IPO firms to overstate their earnings to attain more favorable IPO prices. IPO firms that

report better earnings have lower first-day returns and worse post-IPO stock performance than the other firms. To control the overoptimistic earning forecast, CSRC introduced a penalty regulation on December 26, 1996, penalizing firms which realized earnings for the IPO year fall below the earnings forecasts contained in the prospectus by 10 percent or more. Lau (2004) also studied the impact of the above regulations on earning management practices and found similar results that these regulations had induced the earnings management by IPO firms (for regulations of IPO offer price determination, refer to Lau (2004), p. 180). Similarly, Cheung, Ouyang, and Tan (2009) aimed to examine the impact of regulatory changes in China on the underpricing of A-share IPOs using a sample of IPOs listed during the period from 1992–2006. The researchers found that the larger the gap between P/E ratio of an IPO firm and that of the industry, the larger is the underpricing. They also found that underpricing is less for larger size issues because in large issues, the issuer has more bargaining power, which results in less underpricing. On the basis of the study results, they concluded that the regulatory framework of China incredibly contributed in sever underpricing of Chinese IPOs, especially fixed P/E ratio pricing method. Now, adoption of more market-oriented listing requirements that allow underwriters and issuers to have more discretion in determining issue price is leading to a substantial reduction in underpricing.

Tian (2011) found that Chinese IPO underpricing is principally caused by government intervention with IPO pricing regulations and the control of IPO share supplies. The CSRC as a government regulator stipulates IPO quotas and pricing caps. The IPO quota restricts the supply of IPO shares, while pricing caps bring about a demand gap and prompt buying of shares on the first day of public trading. Empirically, these regulations account for more than half of the severe underpricing in China. Tian (2003) reported an average market-adjusted initial return of 132.49 percent, using data on 354 new issues in China from January 1, 1999 to December 31, 2002. The results show that IPO underpricing in China is the result of overpriced secondary market shares under the condition of de facto segmented markets. Higher the P/E ratio of the market (used as a proxy for trading price level in the secondary market), the more is the underpricing of IPOs that shows that in China's primary and secondary markets, money does not flow from one to the other . The researchers suggested that secondary market reforms are essential to mature the primary market and reforms such as making non-tradable shares tradable and introducing short selling or a day-trading mechanism are most important to lower secondary market prices to reasonable levels.

In China, there is a prevailing argument that to ensure their political power, a market-oriented government should underprice shares in fixed-price offers and then ration the shares to median-class voters (Biais & Perotti ,2002 ;

Table 1: Evidences of IPO Underpricing in India

Authors (Year)	Study Period	No. of IPOs	Avg. Initial Returns
Pandey and Kumar(2001)	FY 1993-1995	1243	69.79%
Nandha and Sawyer (2002)	FY 1994-1995	381	101%
Krishnamurti and Kumar (2002)	July 1992-Dec. 1994	386	72.34%
Ranjan and Madhusoodanan (2004)	Jan.1999 -Nov.2003	92	495% (annualized)
Ghosh (2005)	FY 1991-2001	2247	95.86%
Marisetty and Subrahmanyam (2010)	1990-2004	2713	95.36%
Sehgal and Singh(2007)	June 1992-March 2001	438	99.20%
Kumar(2007)	1999 - May 2007	1561	26.35 %
Sahoo and Rajib (2009)	FY 2001-2005	43	46.63%
Deb(2009)	FY 2001-2009	187	32.92%
Pande and Vaidyanathan (2009)	March 2004- Oct. 2006	55	22.62%
Sahoo and Rajib (2010)	FY 2002-2006	92	46.55%
Phani, Kunal, and Katti (2010)	Jan. 2004 - Aug. 2010	346	30%
Deb and Marisetty (2011)	FY 2006-2009	163	20.59%
Jain and Padmavathi (2012)	Jan 2004 to Nov 2009	227	28%

Source : Literature review

Schmidt , 2000) . Mahmood, Xia, Ali, Usman, and Shahid (2011) reported high underpricing and less number of IPOs in China during the financial crisis. The authors compared two financial crisis: **1)** the Asian Financial Crisis (1997-1999), and **2)** the Global Economic Crisis (2007-2009). They found average first day market adjusted returns of 135.73 percent and 145.20 percent respectively for the said crisis. For the reduced IPO activity, the researchers attributed the reason to high volatility of initial returns and instability of prices in the long run. They reported that impact of Global Economic Crisis is severe as compared to the Asian Financial Crisis on IPO activities and underpricing. They also found that the Chinese stock market was weak form efficient during both the crises, and it follows the random walk.

Thus, from the review of literature, it can be concluded that in China, regulatory constraints on offer price, immature capital market, high ex-ante uncertainty, state owned equity, and time lag between offer date to listing date explain the major portion of underpricing. IPO allocation, winner's curse, and regulatory impact on underpricing have been the favorite topics of IPO research in China.

Review of IPO Research in India

Table 1 indicates that most of the research on Indian IPOs has been on finding out the determinants of underpricing and unlike research conducted in U.S. and China, firm and issue specific characteristics have been the dominant variables of the models used over time. The extant literature has found many significant variables determining underpricing such as insider equity, institutional investors' reservation in the issue, projections of earning per share (EPS), offer size, listing delay, oversubscription, issue mechanism, industry, before market conditions, offer price quotient, syndicate size and structure, age of the firm, daily trading volume, leverage at IPO date, ex-ante uncertainty, timing of the issue, Tobin's Q [Bansal & Desai, 2012; Deb, 2009; Ghosh, 2005; Krishnamurti & Kumar, 2002; Kumar, 2007; Nandha & Sawyer, 2002 ; Pandey & Kumar, 2001 ; Pande & Vaidyanathan, 2009 ; Ranjan & Madhusoodanan, 2004 ; Sahoo & Rajib, 2009 ; Sahoo & Rajib, 2010 ; Sehgal & Singh, 2007].

Pande and Vaidyanathan (2009) found that issues with offer price towards the upper end of the offer price band are more underpriced as compared to issues which are priced towards the lower end of the offer price band and listing delay is positively related with underpricing. Sehgal and Singh (2007) and Deb (2009) found that in the aftermarket, short run investors are not getting any excess return on mis-priced issues. It shows that underpricing does not bring consistent benefits to investors also. Sahoo and Rajib (2010) found the underperformance of IPOs up to 12 months from the listing date followed by over-performance. They found that initial returns, offer size, leverage at IPO date, ex-ante uncertainty, and timing of the issue are statically significant determinants of IPO underperformance in the long run. In a similar line, with the previous evidences, they found underpricing and long run returns to be negatively related.

Jain and Singh (2012) found evidence in support of the proposition that the small investors (less informed investors) follow the big investors' (relatively more informed investors) subscription pattern. Jain and Padmavathi (2012) found that the underpricing is the result of investors' high willingness to pay (high return on opening), high demand of the issue (high subscription) , high firm value (Low pre-IPO leverage), and high fluctuations in the market returns (high index volatility).

In India, only one regulatory change which attracted many researchers was the introduction of the book building method in 1999. In India, future research should be carried out to eliminate many limitations of the extant literature such as : **1)** there are only few studies which have focused on testing the theories of IPO pricing, which are found to be significant in other countries, **2)** replication of the models rather than developing new models, **3)** low explanatory power of the models used, **4)** lack of primary survey based studies.

Conclusion

On the basis of exhaustive review of IPO literature in the U.S., China, and India, it can be concluded that IPO research in the U.S. has covered a wide range of problems, and most of the theoretical models of IPO underpricing and then empirical evidences of these models were tested on U.S. IPOs. Due to differences in the nature of the problem, there is a need of high caution while applying these models in other countries like China and India. In the past, there have been a lot of efforts on applying these models in other countries, but most of the time, either no evidence or very weak evidences were found. Hence, looking at the increasing size of IPO markets in India and China, there is an urgent need

that research on IPO markets should focus on developing some efficient models and incorporating behavioral models to identify and solve the problems of IPO pricing and other related issues.

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