Divergence of Opinion, Short-sales Constraints and Stock Returns: Evidence from Japanese seasoned equity offerings

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The unique characteristics of the Japanese SEO process permit a clean test of Miller's (1977) divergence of opinion hypothesis. Japanese SEOs include stocks both with and without short-sales constraints. We find that SEOs of short-sale constrained stocks are associated with market underreaction. We also show that our divergence of opinion proxy, especially for short-sale constrained stocks, is negatively related to stock returns both at SEO announcement and on the issue day. These results indicate that the demand curve for short-sale constrained firms' common stock steepens as divergence of opinion for the stock increases. These findings are consistent with Miller's prediction.

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Keywords*:* Divergence of opinion, Short-Sales Constraints, Seasoned equity offerings.

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1. Introduction

Miller (1977) argues that stocks with a wide divergence of opinion regarding their intrinsic value are likely to be overpriced if they are short-sales constrained, since less optimistic investors do not participate in the price discovery process. The effect of the divergence of opinion on firms that raise additional equity through seasoned equity offerings (SEOs) provides an ideal setting for examining Miller's proposition. However, prior research has not been able to conduct a conclusive test of the hypothesis in the context of SEOs. It has not been feasible to disentangle effects related to divergence of opinion from the temporary price pressure and information-asymmetry related explanations; and all three factors could affect stock returns around SEOs' issue day. The unique institutional characteristics of Japanese SEOs permit a clean examination of Miller's (1977) divergence of opinion hypothesis.

The focus on the Japanese equity issue market offers distinct advantages. First, there are two types of Japanese markets for short sales of common stock. Only a certain number of stocks are eligible for short selling on the centralized market in Japan; the rest of the stocks face short sales constraints. Since "Eligible" stocks for the centralized market are selected by liquidity, firm size and ease of borrowing shares, short-sales constraints for these stocks are less binding than they are for "Non-Eligible" stocks.[1] Further, short selling regulations, such as *U.S. Securities and Exchange Commission*'s Rule 10b-21 or Rule 105, did not exist in Japan until recently in December 2011.[2] Under this setting, we are able to control for the effect of short-sales constraints by comparing SEOs drawn from these two distinct groups of Japanese stocks.

An important distinction between SEOs in Japan and the U.S. is that in the U.S. issuing firms frequently change the number of shares offered, through amendments, during the registration process. Chan, Nayar, Singh and Yu (2013) present evidence that the amended offer size, from the amount filed initially to the final offer size on the issue date, signals the quality of the SEO. Further, Ritter (2003) posits that a firm may amend the proposed number of shares if there is an unusually negative reaction to the SEO's announcement. He argues that existing empirical studies examining U.S.-based SEOs do not take this endogeneity into account. In sharp contrast, the number of shares to be offered in Japanese SEOs is announced initially and then never revised upwards (or downwards). Accordingly, Ritter's concerns would be allayed in the Japanese setting.

[1] A more detailed discussion of the classification of stocks with and without short-sale constraints (Non-Eligible and Eligible respectively) follows in Section 2.

[2] In the U.S., S.E.C. Rule 10b-21 (brought into effect in 1988) made it illegal for investors to cover a short position with stock purchased in a new offering if the short position was established between the SEO's filing date and the distribution date. Rule 105 of Regulation M, adopted in 2007, prohibits the short sale of an equity security during a restricted period (generally five business days before a public offering) and the purchase of that same security through the offering. In Japan, Financial Instruments and Exchange Act (FIEA) 26-6 prohibits the use of the allocated new shares to cover short positions created between SEO announcement and price determination date.

There are other unique attributes of the Japanese equity issuance process that provide an opportunity to examine the slope of the issuers' demand curve in isolation. For Japanese SEOs the offer price is determined a minimum of five days before the issue day. The separation of the price determination day from the issue day in Japan implies that the effects of manipulative short selling, if any, should be isolated to the offer-price determination day.[3] Accordingly, on the actual SEO issue day, the impact of manipulative short selling should be minimal to none. Instead, temporary price pressure effects due to the increased supply of shares, if there are any, should be observed on the issue day. Further, we posit that whereas price pressure would create a temporary impact, a permanent stock price decline on the issue day would be consistent with a divergence of opinion effect. Thus, an examination of Japanese SEOs' issue dates permits us to distinguish between the divergence of opinion and temporary price pressure effects, free of confounding effects of manipulative short selling and information effects related to the SEO's offer-price determination and the revisions in the offer size. Thus Japanese offers are not subject to the simultaneous confounding effects surrounding U.S. SEOs' issue date.

Chen, Hong and Stein (2002), among others, formally develop a model in which the slope of the demand curve becomes steeper as divergence of opinion among investors widens. Consequently, these models predict that with a downward sloping demand curve, a change in the supply of shares will lead to a change in stock price, unrelated to any new information about the firm. Based on Miller (1977) and Chen et al. (2002), we expect prices for the short sales constrained Non-Eligible stocks to reflect more optimistic valuations (than they do for Eligible stocks) when faced with divergence of opinion. Further, with respect to SEOs, models including Chen, Hong and Stein (2002) imply that the increased supply of shares has to be absorbed by relatively pessimistic investors with a poorer opinion of the stock. Therefore, in the presence of short sales constraints, abnormal returns around SEOs' issue date should be lower for firms with a larger divergence of opinion.[4] Chen et al. (2002) do not distinguish between a SEO's announcement date (AD) and its issue date (ID). We posit that it should logically be the issue date (ID) where the predicted reaction is observed because that is when the new shares have to be absorbed by the pessimistic investors.

Japanese SEOs present another important reason to review them. A large number of U.S.-based studies document a significant price drop at announcement of the proposed SEO. In contrast, using a pre-1994 sample, Cooney, Kato and Schallheim (2003) document a positive stock price reaction for Japanese equity offer announcements. However, among other significant changes, Japan gave up fixed-price offers and adopted the book-building method for SEOs in 1994. Eckbo (2007) wonders if the Cooney et al (2003) results would still obtain for more recent Japanese SEOs.

We address these questions and our major findings are as follows. First, we employ a post- Cooney, Kato and Schallheim (2003) sample of Japanese SEOs from 1998-2011. For this more recent sample period, the Cooney et al. (2003) results do not hold and our findings are not consistent with theirs. We document a significant price drop on the SEO announcement day for both types of stocks; [5] those that are eligible for centralized margin short sales, and those that are not. However, the abnormal stock price decline at announcement, of the short-sales eligible sample is significantly more negative than that of the Non-Eligible stock sample. This result is consistent with Nagel (2005) who argues that constrained stocks underreact to bad news because the short sale constraints "hold negative opinions off the market". (p. 278).

Berkman, Dimitrov, Jain, Koch and Tice (2009) also argue that prices of stocks subject to high differences of opinion and short-sales constraints are biased upward. Berkman *et al* (2009) argue that the announcement underreaction should dissipate gradually over time. Our results indicate that the announcement period underreaction goes away by the issue date (ID). We find that the size and significance of the price reactions reverse themselves on the issue day for each of the two types of stocks. On the SEO's issue day, stock prices decline significantly *only* for the Non-Eligible stock sample and the difference in the ID price reaction between the two types of stocks is economically and statistically significant.

In Miller's (1977) model, the divergence of opinion, in and of itself, does not affect stock returns in the absence of short-selling constraints. Boehme, Danielsen and Sorescu (2006) argue that "…Miller's theory proposes that firms that are both short-sales constrained and subject to high dispersion of investor opinion are overvalued, but neither characteristic is independently sufficient to generate overvaluation."(p. 459) Consistent with this idea, Berkman *et al* (2009) also argue that an investigation of overpricing in the simultaneous presence of divergence of opinion and short-sales constraints provides a more powerful setting. Accordingly, to test the robustness of the divergence of opinion hypothesis, we split the sample based on proxies for divergence of opinion (high versus low). We find that announcement-day returns are negatively related to the issue size. However, a negative relation of announcement returns with the issue size is consistent with both the asymmetric information and divergence of opinion explanations.

We find next that the issue size is associated with a significant *and* permanent price drop on the issue date *only* for the Non-Eligible sample. The result that the issue-size effect is found only for the short-sales constrained stocks supports the idea that the increased supply of shares has to be absorbed by relatively pessimistic investors. We argue that the new issue effect is not

[3] In contrast, the offer price for U.S. SEOs is typically determined the day before or on the issue day. Accordingly, previous studies using U.S. data have not been in a position to separate the issue-day effect from the effects associated with the determination and announcement of the offer price, and any related information effects contained in the offer-price discount. In addition, several studies, such as Henry and Koski (2010), document the effect of manipulative short selling on stock prices around the offer-price determination/issue day in the U.S.

[4] Diamond and Verrecchia (1987) show that, even with short-sale constraints, stocks do not become overpriced in a rational expectations framework. However, they do not take the divergence of opinion into account.

[5] Possible reasons for the change in the results for the more recent sample are presented in Section 6.

fully captured earlier, and is not exhibited sooner, due to the more binding constraints for Non-Eligible stocks which restrict pessimistic investors from selling short.

Probing further into this result, we find that even within the Non-Eligible stocks, the issue size is negatively related to the issue-day returns *only* for the group of stocks with a high divergence of opinion. The finding that a negative relation between issue size and issue-day returns exists *only* for the high divergence of opinion sub-group specifically within the Non-Eligible sub-sample is supportive of the Miller (1977) and Chen et al. (2002) models. Finally, unlike Meidan (2005), we do not find a post-issue price recovery for either the Eligible or the Non-Eligible sample. Thus, the temporary price pressure hypothesis, caused by an excess supply of new shares, is not supported.

The remainder of the paper is organized as follows. Section 2 describes Japanese SEO procedures and short sales. We discuss our hypotheses in Section 3. Section 4 describes the data and empirical methods. In Section 5, we report the empirical results and discuss our findings. The possible reasons for the change in the announcement period returns from earlier studies are explored in Section 6. Section 7 concludes the paper.

2. The Institutional Framework of the Japanese SEO Market

2.1 Timing of the Announcement, Pricing, and Issue Dates

In Japan, firms conduct an official board meeting to approve the SEO and publish the preliminary prospectus/"red herring" on the same day as the board meeting. We use the publication date of the red herring as the SEO's announcement day. Book-building occurs in three-to-five business days following the release of the preliminary prospectus. The offer-price determination day (PD) occurs immediately after the book-building period ends. The firm and their lead underwriter set the offer price based on the stock's closing price on PD and the expected demand as determined in the book-building process. A final prospectus is published on PD, the offer-price determination day. Rule 280 (3-2) of the Japanese Commercial Law indicates that issuers must issue the new shares at least five business days after PD, the offer price determination day. As noted before, the extended period from the offer-price determination day to the issue day is a key difference between U.S. and Japanese SEOs. The new shares are allocated to investors on the issue day. However, investors receive notice of their allocation a few days before the issue day. Figure 1 summarizes the timeline for Japanese SEOs.

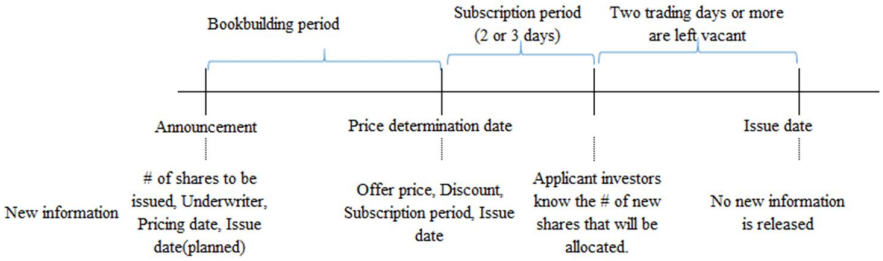

Figure 1 *The Schedule of the Announcement Date to the Issue Date for Japanese Seos*

2.2 The Market for Short Sales

As described in Hirose, Kato, and Bremer (2009), investors can sell stock short using either "negotiated" or "standardized" margin transactions. Negotiated margin transactions are usually between financial institutions and the terms and fees of negotiated margin transactions are determined by the respective parties. Any stock can be sold short using negotiated margin transactions. On the other hand, not all stocks under the standardized margin transactions are eligible for short sales. Only certain stocks, called "*taishaku*" stocks, selected by the stock exchange based on liquidity, firm size, and shares outstanding, are eligible for short sales.[6] Under the standardized margin transactions, the *non-taishaku* stocks can be used for margin buying only and are not eligible for short sales.

Short sale transactions using standardized margin transactions must follow the rules determined by the exchange. Although detailed information is not available, search and borrowing costs are usually lower for taishaku stocks than non-taishaku stocks. Consistent with these lower costs, Hirose, Kato, and Bremer (2009) show that about 90% of taishaku stocks had positive short interest during the period 2003-2009. For non-taishaku stocks, only 20% had positive short interest during this period; and even for those stocks with non-zero short interest, the size of their short interest was relatively small compared to taishaku stocks.

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[6] For *taishaku* stocks, most of the stocks listed on the First Section of the Tokyo Stock Exchange are included. The process of standardized margin transactions is presented in Figure 2. Securities companies accepting orders from investors for standardized margin transactions will check their inventory of stock, and match the order with other orders for the same stock by other investors. If the amount of stock ordered by an investor cannot be met with the stock on hand at the securities company and those made available by the matching process, then, the securities companies will go to securities finance companies to fill the gap. Standardized margin transactions have mainly been used by individual investors whose credit base is weak, as the transactions are quite convenient for them in that various conditions such as interest rates are fixed by the system regardless of their creditworthiness.

In summary, short sales constraints are less likely to be binding for taishaku stocks than for non-taishaku stocks due to lower transactions costs. For the remainder of the paper, taishaku stocks are termed "Eligible stocks" and the rest of the stocks are termed "Non-Eligible stocks." [7]

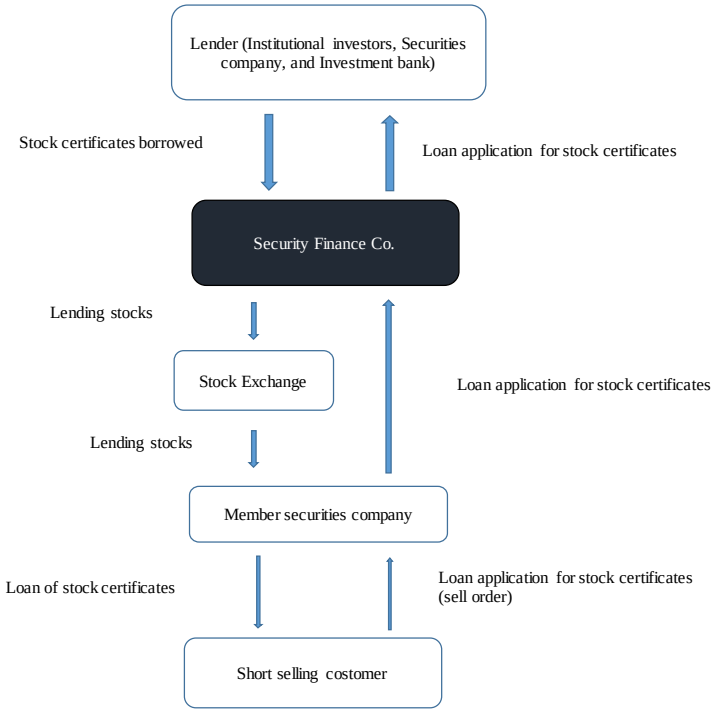

Figure 2 *Outline of Short Selling Transactions (margin trading) in Japan*

3. Hypotheses and Previous Evidence

Stock price reactions to equity issues have been widely used to examine the slope of the demand curve. However, the stock price reactions associated with these events are also consistent with price pressure and information effects. In addition, short sellers' trades impact stock prices during the SEO, further confounding any inferences. We will briefly explore each strand of literature, frame our hypothesis and summarize the predictions.

3.1 Divergence of Opinion

Miller (1977) argues that investors' heterogeneous belief affect stock price when short sales constraints are binding. Accordingly, stocks with a wide divergence of opinion regarding their intrinsic value are likely to become overpriced if their stocks are short-sales constrained such that less optimistic investors are restricted from participating in the price discovery. As a result, the demand curve for each stock will be downward sloping and a change in the supply of shares will lead to a change in stock price which is unrelated to information about the firm. Miller predicts that, given short-sales constraints, the greater the divergence of investors' opinions the steeper should be the slope of the demand curve. Hence, the divergence of opinion hypothesis predicts that issue size will be negatively related to contemporaneous returns and the relation is predicted to be significant for stocks with greater divergence of opinion but only when there are short-sales constraints.

Miller (1977) predicts that short sale activity itself will result in increased volatility of stock returns as well as stock price declines. An opening of a short position increases the supply of shares, while the closing of a short position decreases the supply of shares. Thus the net effect of short-sales transactions leads to stock price declines and increased volatility. Since Eligible stocks are less subject to short sales constraints, they should experience larger price declines and increased volatility on and after the SEO announcement. On the other hand, for the Non-Eligible sample, price declines should be smaller and volatility may not significantly change because of binding short-sales constraints.

Chen, Hong and Stein (2002) among others (Harrison and Kreps (1978), Mayshar (1983), and Varian (1985)) formally develop models in which divergence of opinion about a firm's prospects lead to a downward sloping demand curve for its stock. In the Chen et al. (2002) model, the slope of demand curve becomes steeper as divergence of opinion among investors widens. The model implies that SEOs by firms with greater divergence of opinion should have lower returns. The Chen et al. (2002) model predicts that the impact of an increase in the float is adverse and it increases with divergence of opinion. Therefore, we hypothesize that on the issue day, an increased supply of new shares should affect stock prices significantly,

[7] Non-eligible stocks include both non-taishaku stocks and non-marginable stocks under the standardized margin transactions.

within the short-sales constrained Non-Eligible sample. Specifically within the Non-Eligible sample, consistent with Chen et al. (2002), this effect should be observed for stocks experiencing a greater divergence of opinion.

Prior research, based on samples of U.S. SEOs, has not been in a position to disentangle these issues. In the offering process for U.S. based SEOs, the offer-price determination day is typically the issue day (or the day before). Accordingly, none of the prior studies can isolate the increased supply effect on the issue day from the information effects related to the offer-price determination. Finally, previous studies implicitly assume that all firms are subject to similar short selling constraints. That assumption does not hold for the sample of Japanese SEOs.

3.2 Information Asymmetry

The adverse selection model proposed by Myers and Majluf (1984) predicts that firms' stock prices react negatively to announcements of their SEOs. Myers and Majluf attribute the average negative return at SEO announcements to an information asymmetry between corporate insiders and outside investors. If managers are better informed than outside investors, firms are more likely to issue equity when their stock is overvalued. Thus, the announcement of an equity offering conveys negative information about firm value. Krasker (1986) extends the Myers and Majluf model to show that there is negative relation between the price reaction and the size of the equity issue.

Altinkilic and Hansen (2003) examine the offer-price discount; that is, the discount at which the new shares are offered relative to the prevailing pre-SEO market price of the issuer's stock. Altinkilic and Hansen (2003) find that the offer-price discount conveys significant information to investors on the issue date. Moreover, Chan et al (2013) find that the amended offer size, that is, the final offer size on the issue date relative to the amount filed initially, signals the quality of the SEO. However, by regulation in Japan, the SEO price determination date (PD) is kept at least 5-days away from the issue date (ID). The separation of PD and ID implies that one can study the Japanese SEO's issue-day effect free of the confounding effects observed around the issue dates in the U.S.

Several studies indicate that short sales may also convey negative private information to the stock market. Henry and Koski (2010) examine whether short selling is abnormally high around the SEO announcement day which is typically unanticipated. Henry and Koski examine the relation between abnormal return around the announcement day and the size of abnormal short sales; but they are not in a position to examine the relation with and without short sales constraints. Regardless, the minimum 5-day separation between PD and ID, implies that the effects of manipulative short selling should be felt on the price-determination day.

3.3 Temporary Price Pressure

Manipulative short sellers establish short positions prior to seasoned equity offerings for the sole purpose of producing an artificial discount in the price of the to-be-issued new shares in the SEO. Later, short sellers cover their positions with shares purchased in the SEO at a large discount. Manipulative short selling is expected to occur more often in Japanese offerings because no regulations restricting short sales around SEOs existed in Japan prior to December 2011.

Gerard and Nanda (1993) argue that temporary price pressure is exerted by a manipulative short selling before the offer-price determination day. Their model indicates that when traders are confident in their ability to cover their short positions with discounted new shares, they sell in the secondary market even when they have positive information about the stock. If a large number of manipulative trades occur before the offer-price determination day, secondary market prices drop temporarily on that day and recover in the post-pricing period market.

Alternatively, if the price pressure is caused by the issue of new shares, a larger offering size will be associated with a larger price decline on the issue date and prices will recover in the days after the offering. Several prior studies find evidence of price pressure around the SEO's issue date. Barclay and Litzenberger (1988) find a significant price recovery on the issue date using daily and intra-day stock return data. Barclay and Litzenberger argue that the price recovery after issue date is a sweetener to compensate investors for the portfolio re-balancing cost incurred from including the new shares in their portfolio. Meidan (2005) finds that the offer size (relative to the size of the issuing firm) is associated with negative abnormal returns before the issue date and positive abnormal returns after the issue date and argues that these results are consistent with a temporary price pressure effect.[8] Corwin (2003) finds that the new issue size is positively associated with SEO underpricing (issue discounts measured from the previous trading day's close to the SEO offer price) and argues that the underpricing reflects compensation "…specifically targeted to investors who purchase shares in the SEO."(p. 2255)

3.4 Summary of the Predictions

Table I summarizes the predictions of our hypotheses on the announcement (AD), and the issue day (ID). If the demand curve for stocks is downward sloping, the markets will fully reflect such information. Investors will anticipate the shift in supply and adjust their demand accordingly on the announcement day. Therefore, we expect SEOs with a larger issue size to have more negative announcement returns relative to the announcement of smaller offers. However, as per Krasker (1986), the information hypothesis also predicts the same relation. If the information hypothesis holds, the mean abnormal return for the larger SEOs should be more negative. Further, as argued earlier, we expect less negative returns for the short-sales constrained stocks on the announcement date.

[8] This result is also consistent with Field and Hanka (2001) and Bradley, Jordan, Roten and Yi (2001) who find that stock prices drop permanently around the lock-up expiration day, even when no new information is released.

The table summarizes the predictions of the three hypotheses on the announcement and issue days.

Table I *Summary of Empirical Predictions Related to SEO Price Drops*

		Prediction	
	Short sales constraints	Announcement-day return	Issue-day return
Divergence of opinion	Constraints (Non-Eligible stock)	Market underreaction (Negatively associated with issue size)	Permanently Negative. (The price reaction should be negatively associated with diversity of opinion variable and issue size)
	Unconstrained (Eligible stock)	More Negative price reaction than for Non-Eligible stocks (Negatively associated with issue size)	No effect
Information asymmetry		Negative (Negatively associated with issue size)	No effect
Price pressure		No effect	Temporary effect. That is, Negative before/on issue date and Positive after issue date (Associated with issue size)

If the information hypothesis is valid, significant abnormal returns should not be observed on the issue day since no new information is released. A short lived price drop caused by an excess supply of newly issued shares may be observed on the issue day (ID) if the temporary price pressure hypothesis is valid. On the other hand, if the demand curve is downward sloping consistent with the divergence of opinion hypothesis, a permanent price decline is expected on, and after the issue day. Further, on the issue date, consistent with Miller's (1977) model, we expect a negative price reaction for the Non-Eligible (short sales constrained) sample, especially for the stocks exhibiting a greater divergence of opinion.

4. Description of Sample and Variables

4.1 Data

The data used in this study cover seasoned equity issues of Japanese stocks listed on all Japanese markets (JASDAQ, OSE, NSE, and TSE) between January 1, 1998, and December 31, 2011. The book building method was introduced in Japan in January 1994. The first book built offer was for "Nihon Jumbo," on March 20, 1994. Since then, all SEOs in Japan have used the book building procedure.

We use the Nikkei NEEDS Financial Quest (FQ) and the eolESPer databases to obtain information on the SEO announcement, the price-determination and the issue dates, the offer price, and proceeds for our sample of Japanese SEOs. Financial data are obtained from the FQ database. Data on stock prices, stock returns and the three-factor portfolio returns is from the Nikkei Media Marketing database. The total number of offerings during the 1998-2011 sample period is 967. In conformance with previous studies, we exclude financial institutions and securities firms. In addition, we exclude firms with SEOs that occur within 250 days of their IPO. These screens reduce the sample to 755 SEOs.

4.2 Description of Variables

4.2.1 Abnormal Returns

This paper examines the three competing hypotheses by computing abnormal returns around the SEO. Using the three factor model suggested by Fama and French (1993), abnormal returns are computed as follows.[9]

$$AR_{i,t} = Return_{i,t} - \hat{\alpha}_i - \hat{\beta}_i RM_t - \hat{s}_i SMB_t - \hat{h}_i HML_t \quad (1)$$

$$CAR_i[d,T] = \sum_{t=d}^{T} AR_{i,t} \quad (2)$$

where $Return_{i,t}$ is the stock return on day *t* for firm *i*, *RM* is the value-weighted return of all listed firms, *SMB* (Small Minus Big) is a mimicking portfolio to capture risk related to size, and *HML* (High Minus Low) is a mimicking portfolio to capture risk associated with book-to-market characteristics. $AR_{i,t}$ is the abnormal return for firm *i* on day *t*. The coefficient estimates

[9] We also conduct the same analyses using the market model to compute abnormal returns. The results remain qualitatively unchanged.

$\hat{\alpha}, \hat{\beta}, \hat{s},$ and $\hat{h}$ are obtained from an OLS regression on the estimation period returns. The estimation period is +51 days to +250 days after the issue date. $CAR_i[d,T]$ is the cumulative abnormal return for firm *i* from day *d* to day *T*.

4.2.2 Other Variables

The diversity of opinion hypothesis suggests that the abnormal returns on both the announcement and the issue dates are related to the offer size. We use *RelOffSize* as a proxy of the offer size. *RelOffSize* is defined as the number of new shares issued divided by the number of shares outstanding on the day prior to the offer date. The degree of short sales constraints is measured by whether the issuer's stock is eligible or not eligible. *Eligible* is an indicator variable that is equal to one if the SEO is of an eligible taishaku stock. Consistent with Boehme, Danielsen and Sorescu (2006), we use the mean square error, *MSE*, as a proxy for the divergence of opinion among investors. The mean square error is computed as the deviation from the value predicted by the Fama-French three factor model for the period from -70 days to -11 trading days before the announcement date.[10]

The degree of information asymmetry is represented by the firm size. We use ln(*Asset*), measured as the natural logarithm of the market value of equity on the last day preceding the SEO announcement plus book debts as of the end of the previous fiscal year.[11] We adjust for inflation using purchasing power as of the year 2005. Cooney and Kalay (1993) argue that the opportunity to invest in a positive net present value project is positively related to SEO announcement returns. We use the book-to-market ratio, *BTM*, as a proxy for the opportunity to invest.

5. Empirical Results

5.1 Summary Statistics

Table II provides summary statistics for our SEO sample. Column one shows the summary statistics for all SEOs. Columns two and three show the summary statistics for the Eligible and Non-Eligible samples. Eligible issuers tend to be larger than Non-Eligible issuers. Though issue proceeds are larger for the Eligible sample, the relative issue size is similar. The mean *RelOffSize* of the total sample is 13%, which is smaller than the typical SEO in the U.S. For example, Corwin (2003) finds a mean relative issue size of 23.8% in his U.S. sample covering the period from 1980 through 1998.

This table provides summary statistics for the SEO sample. The first column shows summary statistics for the total sample. The second and third columns provide summary statistics for the Eligible and the Non-Eligible samples. *RelOffSize* is defined as (total shares issued)/(shares outstanding the day preceding the offer). *Asset* is the sum of the market value of the firm's equity at the last day of the month preceding the SEO announcement and the book-value of assets, as of the previous fiscal year end. *Proceeds* are the total proceeds of the offering. *Assets and Proceeds* are adjusted for 2005 purchasing power. *MSE* is defined as the mean square error and is computed as the deviation from the value predicted by the Fama-French three factor model for the period from -70 trading days to -11 trading days preceding the announcement. *BTM* is the book-to-market ratio. *Issue discount* is defined as negative one times the return from the previous day's closing transaction price to the offer price. The sample consists of 755 SEOs of Japanese listed firms from 1998-2011. The sample excludes financial institutions and securities firms and also SEOs within 250 trading days of the firm's IPO.

Table II *Summary Statistics*

		Total	E	NON_E	Difference	t-statistics
RelOffSize	Mean	0.138	0.144	0.135	0.008	1.69 *
	Median	0.127	0.126	0.128		
	Sd.dev.	0.065	0.078	0.056		
Proceeds	Mean	11.53	26.23	3.95	22.28	7.42 ***
(billion yen)	Median	2.28	5.08	1.73		
	Sd.dev.	40.47	65.74	9.43		
MSE	Mean	2.991	2.348	3.322	-0.974	-9.86 ***
	Median	2.740	2.180	3.160		
	Sd.dev.	1.365	1.078	1.381		
Asset	Mean	315.1	765.0	82.8	682.2	5.57 ***
(billion yen)	Median	44.7	127.1	32.4		
	Sd.dev.	1626.8	2687.7	367.9		
BTM	Mean	0.506	0.606	0.454	0.153	5.07 ***
	Median	0.409	0.510	0.344		
	Sd.dev.	0.399	0.420	0.378		
Issue discount	Mean	3.476	3.095	3.673	-0.577	-8.48 ***
	Median	3.060	3.030	3.500		
	Sd.dev.	0.928	0.866	0.898		
N		755	257	498		

[10] We also use the change in the breadth of mutual fund ownership, and the daily return volatility over the thirty trading days ending 10 trading days before the announcement day as proxies for the divergence of opinion. Since the results are qualitatively similar, we only report the results using MSE in this paper. We also use dispersion of analysts' earnings forecasts and as a proxy for the divergence of opinion. The sample size for which analysts' forecasts are available is significantly smaller but the results are essentially the same.

[11] Ln(Asset)= ln(Capitalization + Book Debt)

Higher *MSE* are observed for Non-Eligible stocks, which indicates a greater divergence of opinions among investors. As Miller (1977) predicted, *BTM* is lower for Non-Eligible stocks, which is consistent with overpricing when short-sales constraints are more binding. *Issue discount* is defined as negative one times the return from the previous day's closing transaction price to the offer price, a notion consistent with Corwin (2003). The average *Issue discount* is 3.52%, which is similar to discounts in the U.S. The *Issue discount* is smaller for the Eligible sample. This is consistent with overpricing for Non-Eligible stocks.

5.2 Hypothesis Testing

5.2.1 Announcement and Issue Day Price Behavior

In order to examine the three competing hypotheses, we compute abnormal returns around both the announcement and issue days. Table III shows the results. The results reported in Panel A of Table III show that, for the full sample, the announcement day abnormal return is significantly negative; and significantly negative abnormal returns are also observed surrounding the issue day. No price recovery is observed after the issue day. Permanent negative returns on and after the issue day are consistent with the divergence of opinion hypothesis. The issuing firm's shareholders lost, on average, 7.37% in excess returns during the SEO period.

This table shows the average abnormal returns (AR) and cumulative abnormal returns (CAR) around the announcement day and the issue date for the total sample. Panel B shows the AR and CAR for the sample divided by the short sales constraints (Eligible vs. Non-Eligible). Statistical significance levels of the average AR and CAR are based on a cross-sectional *t*-statistic.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests.

Panel A: Total

Table III *Abnormal Returns and Cumulative Abnormal Returns around the SEO*

(N=755)	Mean	t-stat	# of negative sample	% of negative sample
CAR[AD-45, AD-2]	-3.12	-3.41 ***	429	56.82%
AR[AD]	-2.56	-11.30 ***	564	74.70%
CAR[AD-1, AD]	-2.50	-9.63 ***	548	72.58%
CAR[AD+1, ID-1]	-2.48	-5.22 ***	487	64.50%
CAR[AD-1, ID-1]	-4.98	-8.96 ***	531	70.33%
CAR[AD-1, ID]	-6.79	-12.01 ***	565	74.83%
AR[ID]	-1.81	-11.01 ***	521	69.01%
CAR[ID+1, ID+10]	-0.50	-1.38	425	56.29%

The effect of short sales constraints is examined by splitting the sample based on whether stocks are eligible for short selling. Figure 3 shows that the CARs of Eligible stocks are distinguishably different from those of Non-Eligible stocks on both the Announcement (AD) and the Issue days (ID). Panel B of Table III examines the effect of short sales constraints and confirms the results depicted in Figure 3. The price drop on the announcement day (AD) for Eligible stocks is significantly more negative than that for Non-Eligible stocks. This result is consistent with Nagel (2005) who argues that constrained stocks underreact to bad news because the short sale constraints "hold negative opinions off the market". (p. 278). Stock price revision in response to the new information for the Non-Eligible sample may be upwardly biased due to a widening of the divergence of investor opinions on the announcement day. Non-Eligible stock prices may reflect more optimistic valuations than the average opinion of potential investors.

Panel B: Short Sales Constraints

	E (a)		Non_E (b)		(a) - (b)	t-statistics
	Mean	t-statistics	Mean	t-statistics		
CAR[AD-45, AD-2]	-3.86 ***	-3.32	-2.73 **	-2.19	-1.12	-0.58
AR[AD]	-4.43 ***	-12.69	-1.59 ***	-5.63	-2.84	-6.09 ***
CAR[AD-1, AD]	-4.79 ***	-12.34	-1.33 ***	-4.05	-3.46	-6.48 ***
CAR[AD+1, ID-1]	-3.78 ***	-5.71	-1.81 ***	-2.86	-1.97	-1.97 **
CAR[AD-1, ID-1]	-8.56 ***	-11.16	-3.14 ***	-4.29	-5.43	-4.69 ***
CAR[AD-1, ID]	-8.81 ***	-10.98	-5.75 ***	-7.69	-3.06	-2.57 **
AR[ID]	-0.24	-1.34	-2.61 ***	-11.78	2.37	7.06 ***
CAR[ID+1, ID+10]	-0.51	-1.27	-0.50	-0.97	-0.01	-0.01
N	257		498			

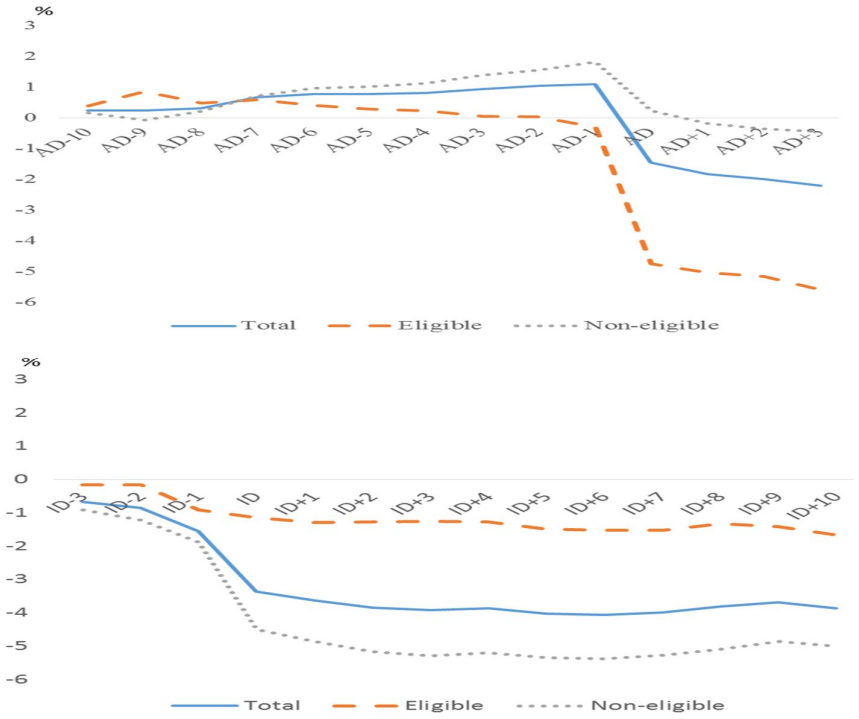

Figure 3 *Announcement and Issue Day Cumulative Abnormal Returns around Our Japanese SEOs Sample*

Consistent with the above line of reasoning, the pattern reverses itself on the issue day (ID). Panel B of Table III shows that there is a significantly negative price reaction for Non-Eligible stocks *only*. The price drop on ID for Eligible stocks is insignificant. The difference between the two is both economically and statistically significant. The supply effect observed on the issue day is consistent with short-sales constraints. These findings indicate that, at the SEO announcement, information about new issues is not fully reflected in the stock prices of the Non-Eligible sample. These findings are consistent with the idea that under tighter short sales constraints, stock prices do not reflect the new information in a timely manner. Since no price recovery is observed for Non-Eligible stocks following the issue day (ID), the results do not support the temporary price pressure hypothesis. Instead, we consider the results to be consistent with the divergence of opinion hypothesis.

Panel a of Table IV presents the supply effect (offer size or *RelOffSize*) on stock prices during the SEO period: The larger the number of new shares issued, the more the stock price declines on both the announcement and the issue day. Panel B of Table IV presents the effect of the divergence of opinion (*MSE*) on stock prices around SEOs. While the announcement-day returns are less negative, the issue-day returns are significantly more negative for stocks with higher divergence of opinion.

We next conduct multivariate regression analyses of announcement day (AD) and issue day (ID) returns. The results for the announcement-day analysis are presented in Table V. Both the Eligible and the Non-Eligible sample are significant and negatively related to issue size as predicted. However, the issue-day returns analyzed in Table VI, present a contrast with the announcement-day results of Table V. The issue-day returns are significantly negatively related to *RelOffSize* (issue size) *only* for the Non-Eligible sample.

Panel A: Issue size

Table IV *Issue Size, Diversity of Opinion and Abnormal Returns around the SEO*

	High RelOffSize (a)		Low RelOffSize (b)		(a) - (b)	t-statistics
	Mean	t-statistics	Mean	t-statistics		
CAR[AD-45, AD-2]	-1.17	-0.90	-5.05 ***	-3.95	3.88	2.13 **
AR[AD]	-3.27 ***	-9.49	-1.85 ***	-6.38	-1.42	-3.17 ***
CAR[AD-1, AD]	-3.34 ***	-8.74	-1.67 ***	-4.80	-1.68	-3.25 ***
CAR[AD+1, ID-1]	-3.51 ***	-2.23	-1.45 ***	-5.10	-2.06	-2.18 **
CAR[AD-1, ID-1]	-6.85 ***	-8.36	-3.11 ***	-4.21	-3.74	-3.39 ***
CAR[AD-1, ID]	-9.22 ***	-11.40	-4.36 ***	-5.65	-4.86	-4.35 ***
AR[ID]	-2.37 ***	-9.74	-1.24 ***	-5.74	-1.13	-3.46 ***
CAR[ID+1, ID+10]	-0.67	-1.18	-0.34	-0.74	-0.33	-2.04 **
N	377		378			

Panel B: Diversity of opinion

	High MSE (a)		Low MSE (b)		(a) - (b)	t-statistics
	Mean	t-statistics	Mean	t-statistics		
CAR[AD-45, AD-2]	-5.44 ***	-3.29	-0.81	-1.04	-4.63	-2.54 **
AR[AD]	-1.58 ***	-4.16	-3.53 ***	-14.79	1.95	4.36 ***
CAR[AD-1, AD]	-1.42 ***	-3.22	-3.58 ***	-13.43	2.16	4.20 ***
CAR[AD+1, ID-1]	-1.36	-1.61	-3.59 ***	-8.35	2.22	2.35 **
CAR[AD-1, ID-1]	-2.78 ***	-2.85	-7.16 ***	-13.85	4.38	3.98 ***
CAR[AD-1, ID]	-4.96 ***	-4.97	-8.60 ***	-16.46	3.65	3.25 ***
AR[ID]	-2.17 ***	-7.75	-1.44 ***	-8.52	-0.73	-2.25 **
CAR[ID+1, ID+10]	-0.27	-0.41	-0.73	-2.21	0.46	0.63
N	376		379			

This table shows ordinary least square regressions of the abnormal return on the announcement day for the total sample, and the Eligible and Non-Eligible sub-samples. We determine short-sales constrained stocks by whether the issuer has an eligible stock or not. We use *MSE* as a measure of the divergence of opinion. *MSE*, defined as the mean square error, is computed as the deviation from the value predicted by the Fama-French three factor model for the period from -70 days to -11 trading days before the announcement date. High *MSE* (Low MSE) is a group where *MSE* is higher (lower) than the median of the *Eligible* and the *Non-Eligible* sub-samples. *RelOffSize* is defined as (total shares issued)/ (shares outstanding the day prior to the offer). *Eligible* is a dummy variable that is equal to one if the issuer is an eligible stock and takes a value of zero otherwise. Ln(*Asset*) is the natural logarithm of the sum of the market value of the firm's equity at the last day of the month preceding the SEO announcement and the book-value of assets, as of previous fiscal year end. *Assets* are adjusted for 2005 purchasing power. *BTM* is the book-to-market ratio. Heteroskedasticity-adjusted *t*-statistics are presented in parentheses below the regression coefficients.

*, **, and *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Table V *Ordinary Least Square Regressions of the Abnormal Announcement-Day Return*

	Total		E	Non_E
	Model 1	Model 2	Model 3	Model 4
RelOffSize	-15.18***	-16.88***	-17.47***	-21.62***
	(-3.41)	(-3.98)	(-3.12)	(-3.77)
Eligible		-2.10***		
		(-4.20)		
MSE		0.54**	0.62	0.60**
		(2.40)	(1.26)	(2.52)
ln(Asset)	-0.58***	-0.15	0.51**	-1.06***
	(-3.60)	(-0.83)	(2.43)	(-3.41)
BTM	-0.27	0.91	0.88	0.41
	(-0.44)	(1.37)	(0.86)	(0.51)
Constant	13.99***	2.10	-17.08***	24.80***
	(3.40)	(0.45)	(-2.78)	(3.14)
Observations	755	755	257	498
Adjusted R^2	0.042	0.077	0.044	0.056

This table shows the cumulative abnormal returns (CAR) around the announcement day and the issue date for the samples divided by issue size, and diversity of opinion. Panel A shows the abnormal returns for the sample divided by the issue size (High *RelOffSize* vs. Low *RelOffSize*). Panel B shows the abnormal returns for the sample divided by the diversity of opinion (High *MSE* vs. Low *MSE*). Statistical significance levels of the average abnormal returns are based on a cross-sectional *t*-statistic.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively, in two-tailed tests.

This table shows ordinary least square regressions of the abnormal return on the issue day. Panel A shows the ordinary least square regression results for the total sample, and the Eligible and Non-Eligible sub-samples. Panel B shows results of the ordinary least square regressions for the groups divided by the short sales constraints (*Eligible* and *Non-Eligible*) and divergence of opinion (High *MSE* and Low *MSE*). We determine short-sales constrained stocks by whether the issuer has an eligible stock or not. We use *MSE* as a measure of the divergence of opinion. *MSE*, defined as the mean square error, is computed as the deviation from the value predicted by the Fama-French three factor model for the period from -70 days to -11

trading days before the announcement date. High *MSE* (Low MSE) is a group where *MSE* is higher (lower) than the median of the *Eligible* and the *Non-Eligible* sub-samples. *RelOffSize* is defined as (total shares issued)/ (shares outstanding the day prior to the offer). *Eligible* is a dummy variable that is equal to one if the issuer is an eligible stock and takes a value of zero otherwise. Ln(*Asset*) is the natural logarithm of the sum of the market value of the firm's equity at the last day of the month preceding the SEO announcement and the book-value of assets, as of previous fiscal year end. *Assets* are adjusted for 2005 purchasing power. *BTM* is the book-to-market ratio. Heteroskedasticity-adjusted *t*-statistics are presented in parentheses below the regression coefficients.

*, **, and *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Total Sample

Table VI *Ordinary Least Square Regressions of the Abnormal Issue-Day Return*

	Total		E	Non_E
	Model 1	Model 2	Model 3	Model 4
RelOffSize	-8.69**	-8.59**	-2.75	-15.25**
	(-2.24)	(-2.18)	(-1.00)	(-2.32)
Eligible		2.06***		
		(6.06)		
MSE		-0.07	0.18	-0.24
		(-0.46)	(0.96)	(-1.31)
ln(Asset)	0.66***	0.32***	0.08	0.47**
	(6.73)	(2.86)	(0.77)	(2.33)
BTM	-0.47	-1.02**	-0.18	-1.97***
	(-1.04)	(-2.14)	(-0.37)	(-2.94)
Constant	-16.68***	-8.47***	-2.26	-10.23**
	(-6.93)	(-3.08)	(-0.78)	(-1.99)
Observations	755	755	257	498
Adjusted R^2	0.058	0.092	-0.004	0.064

Table VI focuses on the divergence of investor opinion and the impact of the supply shock from the newly issued shares. The issue-day return is significantly negatively related to issue size for the high volatility group of the Non-Eligible sample. Miller argues that since the slope of the demand curve is steeper for the higher disagreement group with short sales constraints, a supply shock should be larger for this high volatility sample of Non-Eligible stocks. On the other hand, the demand curve is close to horizontal for low volatility stocks, so the supply shock impact on stock returns is negligible. Our results are consistent with Miller's (1977) proposition of downward sloping demand curves for stocks with short-sales constraints.

Panel B: Short Sales Constraints and Diversity of Opinion

	E		Non_E	
	High MSE	Low MSE	High MSE	Low MSE
RelOffSize	-2.74	-2.08	-24.01**	-5.18
	(-0.60)	(-0.64)	(-2.37)	(-1.05)
ln(Asset)	-0.02	0.14	0.31	0.57***
	(-0.12)	(1.15)	(0.89)	(2.71)
BTM	-0.92	0.61	-1.36	-2.04***
	(-1.37)	(0.86)	(-1.21)	(-2.70)
Constant	1.22	-4.12	-6.40	-14.46***
	(0.26)	(-1.22)	(-0.71)	(-2.78)
Observations	127	130	248	250
Adjusted R^2	0.003	-0.010	0.076	0.061

Miller (1976) argues that "A sufficient amount of short selling could increase the volume of the security outstanding until its price was forced down to the average valuation of all investors."

When the stock price is overpriced (i.e. when new negative information such as SEO announcement is released), a sufficient volume of short sales of the Eligible stocks could increase the volume of the security outstanding until its price is forced down to the average valuation of all investors. We conclude our analyses with an examination of this logic using abnormal trading volume (ABVOL) where:

$$\text{ABVOL}_{i,t} = \frac{Turnover_{i,t}}{AveTurnover_i} - \frac{Turnover_{market,t}}{AveTurnover_{market}}$$

$Turnover_{i,t}$: Volume/outstanding share before issue of firm *i* on date *t*
$Turnover_{market,t}$: Value weighted average market turnover of all public companies on date *t*
AveTurnover: Average daily turnover (daily volume/daily outstanding share) from AD-46 to AD-95. (50 days)

The findings are reported in Table VII. We find that ABVOL of Eligible stocks is higher *only* in the period from the SEO's announcement to the day before the issue date (AD to ID-1) relative to the ABVOL of short-sales constrained stocks. *On* the issue date ID, the abnormal trading volume for the two sub-samples is not different; similarly in periods before AD and after ID-1, the ABVOL for the eligible stocks is not different from that of the short-sales constrained stocks sample.

This table shows the abnormal trading volume (ABVOL) around the announcement date and the issue date. ABVOL is defined as follow,

$$\text{ABVOL}_{i,t} = \frac{Turnover_{i,t}}{AveTurnover_i} - \frac{Turnover_{m,t}}{AveTurnover_m}$$

$Turnover_{i,t}$ is defined as daily volume/outstanding share before issue of firm *i* on date *t*. $Turnover_{m,t}$ is defined as value weighted average market turnover of all public companies on date *t*. *AveTurnover* is defined as average daily turnover (daily volume/daily outstanding share) from AD-95 to AD-46. ABVOL is winsorized at the 99th percentile & 1st percentile.

Table VII *Abnormal Volume around Announcement Date and Issue Date*

	Total	E	NON_E	Difference	t-statistics
AD-10	0.089	0.21	0.03	0.187	1.56
AD-9	0.115	0.26	0.04	0.224	1.98 **
AD-8	0.155	0.13	0.17	-0.037	-0.34
AD-7	0.158	0.07	0.20	-0.133	-1.02
AD-6	0.190	0.13	0.22	-0.091	-0.74
AD-5	0.127	0.06	0.16	-0.108	-0.93
AD-4	0.100	0.10	0.10	0.008	0.07
AD-3	0.183	0.19	0.18	0.011	0.09
AD-2	0.270	0.20	0.31	-0.108	-0.80
AD-1	0.418	0.38	0.44	-0.056	-0.33
AD	1.854	2.21	1.67	0.541	2.09 **
AD+1	1.490	2.39	1.02	1.371	4.46 ***
AD+2	0.712	1.25	0.43	0.818	4.11 ***
AD+3	0.518	1.04	0.25	0.788	4.50 ***
ID-3	1.231	2.04	0.81	1.230	5.62 ***
ID-2	1.056	1.75	0.70	1.054	4.99 ***
ID-1	1.389	2.60	0.77	1.834	8.39 ***
ID	10.394	10.40	10.39	0.015	0.01
ID+1	3.279	2.98	3.43	-0.450	-1.08
ID+2	2.608	2.29	2.77	-0.483	-1.23
ID+3	2.347	2.11	2.47	-0.364	-1.05
ID+4	1.938	1.86	1.98	-0.120	-0.37
ID+5	1.838	1.59	1.97	-0.377	-1.24
ID+6	1.903	1.84	1.94	-0.103	-0.30
ID+7	1.906	1.53	2.10	-0.569	-1.55
ID+8	1.860	1.41	2.09	-0.680	-1.87 *
ID+9	1.689	1.29	1.90	-0.607	-1.87 *
ID+10	1.489	1.38	1.54	-0.159	-0.59

These results imply that the SEO announcements of Eligible stock, which convey negative information (stock is overvalued), increase the volume of the security outstanding until its price falls to its average value across all investors. On the other hand, although SEO announcement of the Non-Eligible stocks also conveys negative information, the price reaction and the trading volume is lower (than that of the Eligible stock sample) because of short-sales constraints.

6. Japanese SEO Process: Pre- and Post-1994

Using a sample of Japanese SEOs from 1974-1991, Cooney, Kato and Schallheim (2003) document a positive stock price reaction for Japanese equity offer announcements. Eckbo (2007) wonders "…whether this surprising result holds up in samples of Japanese SEOs after 1992, as well as internationally as other countries start to adopt the firm commitment method, remains an interesting issue for future research."(p. 321). Book-built, firm-commitment offering process was introduced in

Japan in 1994. The first book built offer was for "Nihon Jumbo," on March 20, 1994. Since then, all SEOs in Japan have used the book building procedure. Eckbo's (2007) conjecture is very apt. The introduction of the book-built SEOs did indeed change the landscape.

To analyze the changes that have taken place since the Cooney et al (2003) study, we need to briefly reacquaint ourselves with the institutional arrangements in their sample period (1974-1993) and then discuss the changes and their effect. In the pre-book-building period underwriters were exposed to significant price risk. Cooney et al (2003) argue that the positive price reaction to SEO announcements reflect the underwriters' exposure to that risk. Thus their decision to underwrite an SEO was viewed as a certification of the issuer. (p.955)

In Japan, the investment banker is exposed to price risk as soon as the offer price has been determined until the end of the subscription period. Once the firm-commitment price is set, the underwriter is exposed to price risk from any new information about the issuer which can potentially move the issuer's stock price below the SEO's offer price. In such an event, the investors will choose not to buy any of the new shares from the offer and the entire offer will devolve on the underwriter. It is for this reason that underwriters are allowed to provide price support during the subscription period. Nonetheless, if the underwriter were to provide price support, she would be exposed to the possibility of purchasing and holding the new shares of stock.

The empirical findings are reported in Table VIII. First, in the post-1993 period the number of days of exposure to price risk for the investment banker has been reduced. The subscription period is now significantly shorter relative to the Cooney et al (2003) sample period. The average number of days in the subscription period has been reduced from an average of approximately 8 days to 3. Second, the investment banker now prices the SEO after considerable information-acquisition from building the book in the pre-offer price determination period. The SEO process allows the underwriter to augment its information set with help from informed investors during the bookbuilding procedure. Accordingly, the underwriting risk is considerably reduced. Third, in the Cooney et al (2003) sample period the underwriting fees were fixed in Japan. Thus, the underwriter could not be compensated for taking on the additional risk of issuing stock in a potentially overvalued firm.
This table shows that the frequency of withdrawn SEOs from 1980-2011. It also shows the average number of days in the subscription period from 1980 to 2011.

Table VIII *Withdrawals and Subscription Periods of SEOs from 1980 to 2011*

	Withdraw			Subscription period			
				Fixed offerings		Book-building offerings	
Year	# of withdraw	# of issue	%	Average days	# of issue	Average days	# of issue
1980	0	205	0.00%	8.05	133		
1981	0	238	0.00%	7.79	166		
1982	0	201	0.00%	8.38	155		
1983	1	69	1.45%	8.65	43		
1984	0	119	0.00%	7.71	62		
1985	0	98	0.00%	7.95	62		
1986	0	74	0.00%	7.53	45		
1987	3	100	3.00%	7.41	66		
1988	0	167	0.00%	7.41	68		
1989	3	244	1.23%	6.74	73		
1990	27	156	17.31%	7.03	33		
1991	7	39	17.95%	6.27	15		
1992	0	6	0.00%	4.80	5		
1993	0	11	0.00%	4.70	10		
1994	1	33	3.03%	4.00	5	2.33	27
1995	0	29	0.00%			2.03	30
1996	0	96	0.00%			2.00	100
1997	3	45	6.67%			2.21	38
1998	0	26	0.00%			2.58	26
1999	2	92	2.17%			2.73	94
2000	1	80	1.25%			2.79	80
2001	0	33	0.00%			3.00	36
2002	1	36	2.78%			3.17	46
2003	1	66	1.52%			3.10	68
2004	0	140	0.00%			3.04	161
2005	1	127	0.79%			2.74	121
2006	3	108	2.78%			2.70	105
2007	0	64	0.00%			2.71	59
2008	2	21	9.52%			2.33	21
2009	0	50	0.00%			2.08	48
2010	0	49	0.00%			2.20	44
2011	1	48	2.08%			2.00	33
Total	57	2,870	1.99%	7.70	941	2.63	1,137
(1) 1980-1993 excluding 1990-1991	7	1532	0.46%				
(2) 1990-1991	34	195	17.44%				
(3) 1994-2011	16	1143	1.40%				
Diff (1)-(3) or fixed - bookbuilding			-0.94%			5.07	
t-statistics			-2.61***			76.09***	

Underwriters can alleviate their price-support risk by using higher discounts (lower offer price relative to the concurrent stock price). In untabulated results we find that (i) the offer price discount is higher for Non-Eligible SEOs, (ii) the offer price discount for Non-Eligible SEOs, is positively associated with subscription period whereas the offer price discount for Eligible stock SEOs is not and (iii) the offer price discount for Non-Eligible stock SEOs is positively associated with MSE whereas the discount for Eligible stock SEOs is not. These results indicate that the underwriter anticipates greater price risk from short-sales constrained SEOs.

Also, as can be seen in Table VIII, with the exception of the very atypical real-estate bubble bust period of 1990-1991, the number of withdrawn SEOs was very limited in the 1974-1989 period. They have increased significantly since 1994. The ability to withdraw an SEO allows the investment banker to reduce its price risk.

Perhaps the most important feature was that in the pre-1994 period, the underwriting fee was fixed. Investment bankers were not permitted to charge variable fees based on the perceived riskiness of the issuer. Accordingly, only well-established issuers came to the market with their SEOs. There has been considerable change since 1994. Now bankers can and do charge underwriting fees based on the riskiness of the issuer. In Table IX, we show the variability in the fees charged for Eligible and short-sales constrained issuers. The difference charged is significant. In Table X, we run a cross-sectional regression and find that the underwriting fee is significantly higher for the short-sales constrained SEOs. We also find that the underwriting fee is positively related to the divergence of opinion, and is higher when the subscription period is longer.

Table IX *Summary Statistics of Underwriting Fee*

(N=730)		Total	E	Non_E	Diff	t-statistics	
Underwriting fee	Mean	5.36	4.76	5.67	-0.91	-13.93	***
	Median	5.21	4.64	5.67			
	Std.dev	0.93	0.80	0.85			
Subscription period	Mean	2.72	2.64	2.76	-0.11	-2.81	***
	Median	3.00	3.00	3.00			
	Std.dev	0.52	0.64	0.44			
Major UW	Mean	0.74	0.78	0.71	0.06	1.83	*
	Median	1.00	1.00	1.00			
	Std.dev	0.44	0.42	0.45			

This table shows ordinary least square regressions of the underwriting fee for the total sample, and the Eligible and Non-Eligible sub-samples. The dependent variable is *Underwriting fee* which is defined as (total underwriting fee)/ (total proceeds of the SEO). *Eligible* is a dummy variable that is equal to one if the issuer is an eligible stock and takes a value of zero otherwise. *RelOffSize* is defined as (total shares issued)/ (shares outstanding the day prior to the offer). Ln(*Asset*) is the natural logarithm of the sum of the market value of the firm's equity on the last day of the month preceding the SEO announcement and the book-value of assets, as of the close of the previous fiscal year. *Assets* are adjusted for 2005 purchasing power. We use *MSE* as a measure of the difference of opinion. *MSE*, defined as the mean square error, is computed as the deviation from the value predicted by the Fama-French three factor model for the period from -70 days to -11 trading days before the announcement date. *BTM* is the book-to-market ratio. *Subscription period* is the number of days in the subscription period from the pricing date to the subscription deadline date. *Major UW* is a dummy variable that is equal to one if the lead underwriter is one of the top 3 underwriters (i.e. Nomura, Nikko, Daiwa) and takes a value of zero otherwise. Heteroskedasticity-adjusted *t*-statistics are presented in parentheses below the regression coefficients.
*, **, and *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.

Note: The number of observations in this table is 730. Underwriting fee data for 18 observations and subscription period data for another 9 observations could not be found from press release documents on eolESper database.

Table X *Ordinary Least Square Regressions of the Underwriting Fee*

	Total	E	Non_E
Eligible	-0.34***		
	(-5.16)		
RelOffSize	0.86*	0.98	0.67
	(1.83)	(1.29)	(1.03)
Asset	-0.36***	-0.31***	-0.41***
	(-15.69)	(-11.18)	(-11.57)
MSE	0.08***	0.13**	0.08**
	(2.62)	(2.02)	(2.23)
BTM	0.24**	-0.01	0.35**
	(2.46)	(-0.11)	(2.48)
Subscription period	0.22***	0.08	0.32***
	(3.30)	(1.09)	(4.47)
MajorUW	0.08	-0.01	0.14*
	(1.29)	(-0.13)	(1.93)
Constant	13.26***	12.18***	14.02***
	(20.79)	(14.25)	(14.88)
Observations	730	247	483
Adjusted R-squared	0.48	0.44	0.31

These findings are consistent with the idea that underwriters realize that the Non-Eligible stocks underreact to bad news because they are short-sales constrained and are thus more likely to be overvalued. They also realize that there is a risk that some overvalued stock may fall to their intrinsic price during the subscription period. Accordingly, underwriters demand higher compensation for bearing price-support risk during the subscription period. Therefore, the compensation for underwriter (underwriting fee) of short-sales constrained is higher for longer subscription periods.

To sum, we infer that institutional attributes of SEOs changed significantly in the post-1993 period. The revised norms have removed the "certification" effects documented by Cooney et al (2003) for their sample period. There is greater variability in the quality of the issuers and the fact that investment bankers are more closely assessing their risk from underwriting a more varied clientele implies that they are no longer "certifying" issuers as they may have done in the past.

7. Conclusions

Miller (1977) proposes that short-sales constrained stocks are likely to be overpriced if there is a wide divergence of opinion regarding their intrinsic value since pessimistic investors are kept at abeyance in the price discovery process. A clean test of Miller's (1977) proposition, in the context of seasoned equity offers (SEOs) is hampered by the fact that U.S.-based studies are not in a position to disentangle the confounding effects surrounding the offer's issue date. In the US, the offer-price determination date coincides with the offer's issue date. Hence, the effects related to manipulative short-sales, the information content of the offer price discount, the offer-size amendment and the possible temporary price effects related to the size of the offer, all potentially impact the offer-date price reaction.

The use of Japanese SEO data serves to circumvent these problems and offers several advantages. First, the Japanese underwriting process separates the offer-price determination date from the issue date by a minimum of five days. Second, there are groups of stocks in Japan with and without short-sales constraints. We call the short-sales constrained stocks Non-Eligible and the unconstrained stocks are termed Eligible. We are able to directly examine Miller's proposition in an ideal setting where we simultaneously have the divergence of opinion caused by a SEO announcement and short-sales restrictions on certain stocks. Our findings are as follows.

First, we find a significant price drop on the announcement day for both the Eligible and the Non-Eligible samples. However, the abnormal returns of the Non-Eligible sample are significantly less negative than that of the Eligible sample. We argue that this effect, consistent with Nagel (2005), is due to the short-sales constraints.

On the SEO issue date, the price reaction is significantly negative only for the Non-Eligible issuer's stock. The difference between the two types of issuers is economically and statistically significant. We posit that the more restrictive short-sales constraints do not permit investors with relatively poorer opinion of the Non-Eligible stock's prospects from joining in the price discovery process and as a result, the market underreacts to the information initially. However, on the issue day, Non-Eligible stock's price declines to fully capture the new issue effect because the increased supply of new shares must be picked up by the more pessimistic investors. Hence the price drop on the issue day, only for the Non-Eligible stock SEOs, is consistent with Chen et al (2002).

Second, announcement-day returns are negatively related to the issue size for both sub-samples. However, we find that the size of the new issue is associated with a significant permanent price drop on the issue date only for the Non-Eligible sample. We do not find such a relation for the Eligible sample. When we split the Non-Eligible sample based on the degree of divergence of opinion, the issue-day return of only the high degree of divergence group has a significant relation with the issue size. Our results are consistent with Miller (1997) who argues for a downward sloping demand curve given both the divergence of opinion and short sales constraints.

Unlike Meidan (2005), we do not find a post-issue price recovery for either the Eligible or the Non-Eligible sample. Thus, the theory that temporary price pressure is caused by an excess supply of new shares is not supported. A permanent negative price reaction on the issue day is consistent with the divergence of opinion hypothesis.

8. References

1. Asquith, P., and D.W. Mullins, 1986. Equity Issues and Offering Dilution. *Journal of Financial Economics*, 15, 61–89.
2. Barclay, M.J., and R.H. Litzenberger, 1988. Announcement Effects of New Equity Issues and the Use of Intraday Price Data. *Journal of Financial Economics*, 21, 71–99.
3. Berkman, H., V. Dimitrov, P. Jain, P. Koch, and S. Tice, 2009. Sell on the News: Differences of Opinion, Short-sales Constraints, and Returns around Earnings Announcements. *Journal of Financial Economics*, 92, 376–399.
4. Boehme, R. D., B. R. Danielsen and S. M. Sorescu, 2006. Short-Sale Constraints, Differences of Opinion, and Overvaluation. *Journal of Financial and Quantitative Analysis*, 41, 455-487.
5. Bradley, D.J., B.D. Jordan, I.C. Roten, and H.C Yi, 2001,Venture Capital and IPO Lockup Expiration: An Empirical Analysis. *Journal of Financial Research*, 24, 465–494.
6. Chatterjee, S., K. John., and A. Yan, 2012, Takeovers and Divergence of Investor Opinion. *Review of Financial Studies*, 25, 227-277.
7. Chan, K., N. Nayar, A.K. Singh and W. Yu, 2013. Information Content of Offer-Date Revelations: A Fresh Look at Seasoned Equity Offerings. Working Paper, Lehigh University.
8. Chen, J., H. Hong, and J.C. Stein, 2002. Breadth of Ownership and Stock Returns. *Journal of Financial Economics*, 66, 171–205.

9. Cooney, J.W. and A. Kalay, 1993. Positive Information from Equity Issue Announcement. *Journal of Financial Economics*, 33, 149-172.
10. Cooney, J.W., H.K. Kato, and J.S. Schallheim, 2003. Underwriter Certification and Japanese Seasoned Equity Issues. *Review of Financial Studies*, 16, 949–982.
11. Corwin, S.A., 2003. The Determinants of Underpricing for Seasoned Equity Offers. *Journal of Finance*, 58, 2249–2280.
12. Diamond, D.W., and R.E. Verrecchia, 1987.Constraints on Short-selling and Asset Price Adjustment to Private Information. *Journal of Financial Economics*,18, 277–311.
13. Diether, K.B., 2004.Long-Run Event Performance and Opinion Divergence. Working Paper, Ohio State University.
14. Field, L., and G. Hanka, 2001. The Expiration of IPO Share Lockups. *Journal of Finance*, 56, 471–500.
15. Gerard, B., and V. Nanda, 1993. Trading and Manipulation around Seasoned Equity Offerings. *Journal of Finance*, 48, 13–245.
16. Harrison, M.J, and D.M. Kreps, 1978.Speculative Investor Behavior in a Stock Market with Heterogeneous Expectations. *Quarterly Journal of Economics*, 92, 323–336.
17. Henry, T.R., and J.L. Koski, 2010. Short Selling around Seasoned Equity Offerings. *Review of Financial Studies*, 23, 4389–4418.
18. Hirose, T., H.K. Kato, and M. Bremer, 2009.Can Margin Traders Predict Future Stock Returns? *Pacific Basin Finance Journal*, 17, 41–57.
19. Kang, J., and R. Stulz, 1996. How Different is Japanese Corporate Finance?: An Investigation of the Information Content of New Security Issues. *Review of Financial Studies*, 9, 109–139.
20. Kato, H., K. and K. Suzuki, 2011, A Revisit Of Japanese Announcement Returns in Seasoned Equity Offerings, Working Paper, Kobe University.
21. Krasker, W.C.,1986. Stock Price Movements in Response to Stock Issues Under Asymmetric Information. *Journal of Finance*, 41, 93-106.
22. Leland, H.E., and D.H. Pyle, 1977. Informational Asymmetries, Financial Structure, and Financial Intermediation. *Journal of Finance*, 32, 371–387.
23. Mayshar, J., 1983. On Divergence of Opinion and Imperfections in Capital Markets. *American Economic Review*, 73, 114–128.
24. Meidan, D., 2005. A Re-Examination of Price Pressure around Seasoned Equity Offerings. Working Paper, Northwestern University.
25. Miller, E., 1977. Risk, Uncertainty and Divergence of Opinion. *Journal of Finance*, 32, 1151-68.
26. Myers, S., N. and N. Majluf,.1984. Corporate Financing and Investment Decisions when Firms Have Information that Investors do not. *Journal of Financial Economics*, 13, 187–221.
27. Nagel, S., 2005. Short Sales, Institutional Investors and the Cross-section of Stock returns. *Journal of Financial Economics*, 78, 277-309.
28. Ritter, J.R., 2003. Investment Banking and Securities Issuance. *Handbook of the Economics of Finance*, *1*, Elsevier, 255-306
29. Ross, S.A., 1977. The Determination of Financial Structure: The Incentive-Signaling Approach. *Bell Journal of Economics*, 8, 23–40.
30. Scholes, M., 1973. The Pricing of Options and Corporate Liabilities. *Journal of Political Economy*, 81, 637–654.
31. Varian, H. R., 1985. Divergence of Opinion in Complete Markets: A Note. *Journal of Finance*, 40, 309–317.