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Why do firms manage their stock price levels?

Abstract

Building on the catering hypothesis and institutional investor preference literature, we propose a generalized catering hypothesis that managers cater their share price level to different types of investor (individual *vs* institutional) in order to attract them, conditional on the firm's preferences as to ownership mix. We show that an institutional ownership premium provides strong explanatory power to the change in share price norm. This evidence supports our hypothesis that managers cater their share price level to the preference of institutional investors, but only when there is substantial benefit in doing so. Further tests reveal that the premium is higher for long term than for short term investors.

JEL classification: G02, G10, G12

Keywords: Institutional ownership; Share price puzzle; IPO; Stock split; Norm hypothesis; Catering hypothesis

1. Introduction

It is widely accepted that firms actively manage their nominal share price level, targeting a specific trading range for their shares (Angel 1997, Baker et al. 2009, Chan et al., 2017, Dyl and Elliott 2006, Weld et al. 2009). Moreover, it is documented that US nominal share prices have remained relatively stable since the Great Depression. Weld et al. (2009) examine the annual average share price of stocks listed on the NYSE and AMEX from 1933 to 2007. They report that the annual average price of securities has stayed close to $35 per share throughout the entire period. To explain this fairly constant average price level over such a long period of time they propose their norm hypothesis, suggesting that firms follow norms to set their optimal trading range, and that no economic driver explains the stable nominal price level. In contrast, the catering hypothesis presented by Baker et al. (2009) suggests that "when investors place higher valuations on low-priced firms, managers respond by supplying shares at lower price levels, and vice versa" (p. 2559).

In this study we shed light on managers' decisions in determining nominal share price level. Understanding the determinants factors of the share price level has practical implications for corporate decision making given the fact that boards actively manage the nominal share price of their firms (Baker et al., 2009), lower share price level improve informed trading and enhance price informativeness (Chan et al., 2017), trading costs depends on nominal prices (Angel, 1997), managers believe of an optimal trading range (Conroy and Harris, 1999), managers split to adjust share prices to attract particular investors (Easley et al., 2001), share price levels affects analysts incentive to generate information about the firm (Brennan and Hughes, 1991), and share price level affects financial distress likelihood (Fernando et al., 2004). Therefore, understanding the potential factors affecting the preferred price range by managers would have significant economic impact on firms.

To understand price level decisions, we consider the influence of different stakeholders (including firm managers, investors, dealers and stock exchanges) in determining price level. In the field of marketing research, pricing and bundling take into account the preferences of consumers and distributors (Ingenbleek et al. 2013). In the financial market, by analogy, the consumers are investors and the distributors are dealers facilitated by stock exchanges. Thus any changes in investor taste or dealer preference would be important determinants of price level on the demand side. Equally important, on the supply side, is how responsive a firm's managers are to such changes and to the evolution of the distribution network.

Catering theory (Baker et al. 2009) proposes a neat framework of analysis which connects the demand and supply determinants. It suggests that nominal share price levels are influenced by catering incentives: there is a supply response to demand shifts. Baker et al. examine proxies of demand shifts such as low price premium. They show that when investors place higher valuations on low-priced firms, managers respond by supplying shares at lower price levels, and vice versa. Although this finding provides an explanation for the differences in incentive for managers to supply shares at lower price levels, it misses one important consideration: that investor demand with respect to price level may be heterogeneous. For example, the literature suggests that institutional investors prefer higher priced stocks while individual investors prefer lower priced stocks (see e.g., Birru and Wang, 2016, Falkenstein 1996, Fernando et al. 2004 and 2012, Yan and Zhang 2009). Given this context, whose preference should a manager cater to and why?

We offer an extension to this analysis by connecting the catering hypothesis with the literature on institutional investor preference. Our analysis can be seen as a generalized catering hypothesis: managers supply stocks at different price levels given investor demand, in order to maximize their

market valuation.[1] Specifically, we propose that the evolution of price level is driven by both the shift in investor preference as the investor mix changes (demand side) and the willingness to supply lower priced stocks, given the differential benefits of such changes (supply side).

More specifically, if managers use price level as a tool to manage investor mix, when the benefit of having a higher proportion of institutional ownership is greater, the price level will be higher.

This hypothesis builds directly on the catering hypothesis. We extend the analysis of managerial catering incentive to the firm's preferences regarding investor mix (individual *vs* institutional). In fact, the positive relationship between institutional ownership and return, especially in the short term, has been well documented in the literature.[2] Minnick and Raman (2014) show a decline in the size of split factors historically in the US market that is associated with an increase in institutional ownership of equity. However, they failed to identify significant associations between number of stock splits and institutional ownership[3]. We argue that this is partly because the relationship between price level and institutional ownership is not linear and it is conditional on the benefit of having institutional ownership. When such benefit is strong, it provides incentive for managers to cater their share price to the preference of institutional investors.

Empirically, we start our analysis by documenting shifts in the price norm. Using a series of equity price levels in the US from 1925 to 2013, we identify two structural breaks in the average

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[1] The incentive for managers to maximize firm valuation in the short run may be due to performance-related compensation.

[2] Nofsinger and Sias (1999) find that changes in institutional ownership forecast next year's returns, suggesting that institutional trading levels hold information about future returns. Wermers (1999) shows that stocks heavily bought by mutual funds during a given quarter outperform stocks heavily sold by funds in that quarter, over the subsequent six months. Sias (2004) finds that institutional demand is positively correlated with returns over adjacent quarters and also positively related to returns over the following year. A positive relationship between institutional ownership and future stock returns is also documented by Gompers and Metrick (2001). Other papers finding evidence of a positive correlation between institutional demand and future returns include Grinblatt et al. (1995), Cohen et al. (2002) and Chen et al. (2002).

[3] They find significant relationship between household equity ownership and number of splits.

price level, one in 1968 and the other in 1990. Importantly, the latter break marks the start of increasing average price levels. This evidence is consistent with our catering hypothesis from the demand side of the argument. If managers cater their share price to investor preference, the change of investor mix (individual vs institutional) at an aggregate level would change the aggregate demand for shares at different price levels. It adds to the literature on the differential price level preferences of individual and institutional investors (see e.g., Falkenstein 1996, Fernando et al. 2004 and 2012, Minnick and Raman 2014, Yan and Zhang 2009). Specifically, individual investors prefer lower priced stocks and are attracted to stock split events – possibly for behavioral reasons (Barber and Odean 1999, Barber and Odean 2008, Daniel et al. 2002). In contrast, institutional investors, given their liquidity and transaction cost concerns, prefer higher priced stocks (Dyl and Elliott 2006, Fernando et al. 2004). Over the past century, there have been substantial changes in investor mix. Institutional investors have only become dominant players in the stock market since the 1990s. The increase in the proportion of institutional ownership in recent decades lead to an increase in price level.

To test the generalized catering hypothesis, we run regression analyses on average share price level, initial public offering price level and number of splits. To measure managers' catering incentive for institutional ownership, we construct the premium for excess institutional ownership which is measured by the difference between the value-weighted average market-to-book ratio of stocks with high levels of institutional ownership and that of stocks with normal levels of institutional ownership. To avoid reversed causality, we used one period lag of this variable to explain the three price related dependent variables. We show that this variable positively and significantly explains both average share price level and initial public offering (IPO) price level, and negatively explains the aggregate proportion of splits. Importantly, this effect is not subsumed by the low price premium or another similar measure designed to capture the demand shift from investors.

This supports the notion that managers cater their share price level to the preference of institutional investors when the relative benefit of having more such ownership is greater. Our results are also robust to controls for changes in liquidity level and past price movements.

Overall our study makes two important contributions. First, we extend the work of Weld et al. (2009) by showing that the nominal price norm changes over time, and more specifically that there has been an increasing trend since 1990. Theoretical literature suggests that the norm can evolve over time and can be changed by prominent players (Acemoglu and Jackson 2015). In this study, we demonstrate that both investor and manager preference play a significant role in setting the price norm. We show that as the investor mix changes over time, the "target price level", or price norm, also changes. This finding complement Minnick and Raman (2014) who document number of stock splits has declined with the drop of household equity holding. This finding has practical implications for managers when choosing their stock price range. The increasing dominance of institutional investors decreases the need for reducing price levels to attract retail investors. Firms can save substantially by trading their shares in a higher than previously accepted price range[4].

Second, our study unifies the norm (Weld et al. 2009), the catering (Baker et al. 2009) and the investor base (Dyl and Elliott 2006) hypotheses. We show that the managerial catering incentive, measured by the premium for institutional ownership, is a key driver of the recent change in the nominal price norm. This finding directly extends Baker et al. (2009) and contributes to the general catering literature on managerial decisions (see e.g., for studies on dividend policies, Baker and Wurgler 2004a and 2004b, Li and Lie 2006). Furthermore, we expand on Dyl and Elliott's (2006) investor base hypothesis, by showing that managerial preference regarding investor base or, more

[4] For example, as suggested by Easley et al. (2001), splits increase the fees paid by firms to have their shares listed on exchanges.

specifically, investor mix, is time varying, which tends to explain changes in the aggregate price level trend.

The rest of the paper is organized as follows. Section 2 reviews the literature and develops the hypothesis. Section 3 describes the sample and data and provides a historical account of the evolution of the price norm. Section 4 presents the tests of the generalized catering hypothesis. Finally, section 5 concludes the paper.

2. Literature Review and Hypothesis Development

The literature on the share price puzzle provides both economic and non-economic explanations as to why firms select different trading ranges for their shares; there are three main explanations. First, managers actively manage the price level to maximize shareholders' wealth. Baker et al. (2009) posit the catering hypothesis, according to which firms manage nominal share prices in response to investor demand for stocks in different price ranges. Thus managers act to bring prices down when investors are willing to pay a premium for low-priced securities, and vice versa. Second, firms actively manage their price range through split, in order to enlarge their investor base. This investor base hypothesis is put forward by Dyl and Elliott (2006). Third, based on the non-economic explanation, managers and other market participants are attracted to a certain price norm. Weld et al.'s (2009) norm hypothesis proposes that firms follow such norms and traditions when they choose their optimal trading range. Weld et al. suggest that there is no economic rationale behind price level decisions but, rather, a norm-based mechanism that has kept US share prices constant for more than 70 years.

How can the views of the above studies be reconciled to offer a more unified explanation? Specifically, with respect to the norm explanation, the interesting question that arises is how the norm evolves. It is important to look at these explanations from the perspective of different

stakeholders: managers (supply) *vs* investors (demand). The catering hypothesis of Baker et al. (2009) provides a general framework for analyzing the evolution of price level. Managers supply shares at a given price level conditional on the demand of their existing and potential investors, in order to maximize stock valuation, even though it can only be a short-term effect. We offer an extension to this analysis by considering the potential heterogeneity of investor demand for shares at different price levels. Our analysis can therefore be seen as a generalized catering hypothesis, whereby we propose that price norm evolution is driven by both the shift in investor preference as the investor mix changes (demand side) and the willingness to supply stocks at different price levels, given the benefits of having a different investor mix (supply side).

2.1 Literature

Our hypothesis development stems from two lines of argument in the literature. First, different types of investor demand different stock price levels (see for example Bennett et al., 2003, Fernando et al., 2004, Yan and Zhang, 2009 for institutional investors' preference for high share price stocks and Fernando et al., 1999, Muscarella and Vetsuypen, 1996, Schultz, 2000, for individual investors' preference for low share price stocks). Second, managers cater their share price to take advantage of investor preference (Baker et al., 2009).

Expanding on the first of the above, it is well documented that individual investors are more attracted to lower priced stocks while institutional investors favor higher priced stocks. Why do individual investors prefer lower price levels? Baker et al. (2009) suggest that some investors may suffer from a nominal illusion in which "they perceive that a stock is cheaper after a split, has more 'room to grow' ($10 is farther from infinity than is $25), or has 'less to lose' ($10 is closer to zero than is $25)" (p. 2562). For example, after Apple Inc. announced its stock split in 2014, CNN (2014) reported that some investors believed the shares had become more affordable to the average investor. Inexperienced investors may confuse low-priced stock with small cap stock, since

information on market capitalization is more difficult to obtain than information on price. This behavioral bias is typically found in naïve individual investors, whose interest may be captured by such a price change, given the limited attention effect (Barber and Odean 1999, Barber and Odean 2008, Daniel 2002). Birru and Wang (2016) shows that investors suffer from a nominal price illusion in which they overestimate the room to grow for low-priced stocks relative to high-priced stocks.

In addition, from an operational point of view, lower share prices would make it easier for investors to construct a diversified portfolio with a relatively small amount of capital (Dyl and Elliott 2006). Empirically, Muscarella and Vetsuypens (1996) and Fernando et al. (1999) provide support for the notion that lower share prices make stocks more attractive to individual investors. Schultz (2000) documents a large number of small buy orders following stock splits. Easley et al. (2001) report an increase in the number of uninformed trades following stock splits and note that a new clientele for a firm's shares may tolerate higher spreads in order to increase the diversification of their holdings.

Conversely, why do institutional investors prefer higher priced stocks? These investors value attributes such as liquidity and low transaction costs, which are more evident in firms with high share prices (Dyl and Elliott 2006). With regard to transaction costs, Weld et al. (2009) report that institutional investors (at least since the mid-1970s) tend to pay a fixed brokerage commission per share; therefore higher share prices are more attractive to them. In addition, lower priced stocks are known to have greater bid–ask spreads as a percentage of their average price (see Blume and Stambaugh 1983, Conrad and Kaul 1993, Kothari et al. 1995). Hence the greater transaction costs of these small, low-priced stocks account for institutional investor aversion towards them, even aside from the realm of risk preferences (Falkenstein 1996). Regarding the liquidity argument, Fernando et al. (2004) suggest that institutional aversion towards low-priced stocks may be due to their illiquidity

(Brennan and Subrahmanyam 1996, Gompers and Metrick 2001, McInish and Wood 1992) or because of a positive relationship between price and size (Stoll and Whaley, 1983).

Empirically, it is widely documented in the literature that institutional investors prefer higher priced stocks (Fernando et al., 2012). For example, Falkenstein (1996) documents that mutual funds show an aversion to low-priced stocks (less than $5). Bennett et al. (2003) also show that institutional investors consider share price an important characteristic and prefer to hold higher priced stocks. Fernando et al. (2004) find that higher priced IPOs experience a higher proportion of institutional investment. Moreover, Yan and Zhang (2009) find that both short- and long-term institutional investors prefer stocks with higher share prices.

Expanding on the second argument from the literature, Baker et al. (2009) propose that nominal share prices are influenced by catering incentives: the supply response to demand shifts. The economic reason for catering is to take advantage of investor preference to maximize the firm's valuation. This could be due to the compensation incentive. In addition, an argument related to the catering hypothesis is that price level is used as a tool to manage a firm's investor base. Merton's (1987) recognition theory shows that an increase in the relative size of a firm's investor base (i.e., the group of investors and potential investors who are aware of the firm) increases market value. Dyl and Elliott (2006) argue that a firm may therefore attempt to select a trading range for its shares that enlarges its investor base: "Firms whose owners are less wealthy are most concerned with the trading range, and so these firms opt for lower share prices to expand their investor bases" (p. 2054). However, the decision-making mechanism is problematic in this argument as it relies on the existing shareholders deciding to attract new investors of a similar kind. What if it is better (in terms of valuation) for a firm with smaller investors to attract larger, institutional investors? For example, if there is benefit in having institutional investors on board, managers of smaller firms may like to "play big" by imitating large firms in choosing a higher price. Rather than treating investors as a

homogeneous group, managers would need to cater their price level to different investor clienteles. Thus when the benefit of having one type of investor is higher than another, managers will shift their focus to satisfy the preferred investor type.

2.2 Hypothesis

The above discussion gives rise to two predictions. First, if managers cater their share price to investor preference, as the aggregate investor mix (individual *vs* institutional ownership) in the stock market changes over time, the average stock price level should also change accordingly. There is evidence that institutional investors exert indirect influence on firms through their trading and preferences. Hartzell and Starks (2003) report that firms may adopt compensation structures preferred by some institutional investors (for example, structures with greater pay-for-performance sensitivity), in order to attract them as shareholders. Furthermore, the literature suggests that institutional investors have indeed become dominant over the past three decades. Gompers and Metrick (2001) study the changing pattern of US equity ownership and report that large institutional investors nearly doubled their share of the common stock market from 1980 to 1996. In particular, they show that by December 1996 large institutions held discretionary control over more than half of the US equity market. Therefore, we expected that a higher proportion of aggregate institutional ownership will lead to an increase in price level (i.e., a change in price norm).

The norm hypothesis suggests that price levels would "stick" in a certain range. We predict, rather, that the norm evolves, reflected by an increasing price level trend in recent decades. The main economic argument for this hypothesis is that as the investor mix changes, so does the demand for stocks at a given price level. It follows that, as institutional investors become more prominent in the shareholder base, for example in a more recent period, the share price level will more closely reflect their preferences.

This line of argument is consistent with Minnick and Raman's (2014) study of the number of splits. They find that the benefits of stock splits have declined over time which is potentially due to increasing household wealth and the prevalence of institutional trading vehicles, such as mutual funds. However, this discussion ignores the company's preference for their investor mix. It implicitly assumes that more institutional ownership is desirable.

The second prediction from the foregoing discussion is that, if firms manage price level in order to control investor mix, then when the benefit of having a higher proportion of institutional ownership is greater, the price level should be correspondingly higher. This is in the same vein as the catering hypothesis. It is a conditional test of the first prediction, in the sense that the demand for higher priced shares from institutional investors may not be automatically met by a firm's supply. Managers supply stocks at higher prices only if there is significant benefit in doing so. The increasing importance of institutional investors since the 1990s is well documented (Bennett et al. 2003, Fernando et al. 2012, Friedman 1996, Gompers and Metrick 2001), as is the preference of institutional investors for higher priced stocks (Bennett et al. 2003, Falkenstein 1996, Yan and Zhang 2009). If having greater attention from institutional investors is beneficial to a firm's valuation,[5] then we would expect firms to break away more readily from the norm, generating a higher price level with the intention of attracting increased institutional ownership.[6]

Given the above, our generalized catering hypothesis is as follows:

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[5] Boehmer and Kelley (2009) show that the presence of institutional investors improves the information environment of a firm. Cornett et al. (2007) find a significant relation between a firm's operating cash flow returns, on the one hand, and both the percentage of institutional ownership and the number of institutional stockholders, on the other. Gompers and Metrick (2001) document a positive relationship between institutional ownership and future stock returns.

[6] It is important to note that price level is not the only tool used by managers to attract institutional investors. A number of studies suggest that better disclosure practice attracts institutional investors. For example, Bushee (2004) found that higher disclosure quality was associated with higher ownership by institutional investors. Healy et al. (1999) report that sustained increases in analysts' assessments of corporate disclosure practices result in higher levels of institutional ownership, which they cite as a benefit of improved disclosure. Bushee and Noe (2000) also report that firms with higher disclosure rankings have greater institutional ownership.

Hypothesis. The value premium generated from excess institutional ownership will positively affect the price norm.

3. Empirical Analyses – Evaluation of Price Norm

3.1 Sample and Data

Our initial sample includes all common shares traded on the NYSE, AMEX and Nasdaq between 1925 and 2013. We obtained stock data from the Center for Research in Security Prices (CRSP). Drawing on the CRSP Monthly Stock Files, the whole sample includes 3,546,610 firm–month observations. Ownership data was derived from the Thomson Reuters Institutional (13f) Holdings Stock Ownership Summary File, available on a quarterly basis since 1980.[7] Given that ownership data is key to our regression analysis, the last part of our analysis is based only on data from 1980 onwards.

3.2 History of Price Norm

In this subsection, we first present a historical analysis of the price norm. In order to quantify the potential changes in the price norm, we examine possible structural breaks and discuss the break points in average price level. We also study two important managerial pricing decisions: IPO price level and stock split. While the average stock price reflects the end result of price level decisions, the IPO price level and stock splits reflect active management of the price level by firms.

Historical *T*rend in *A*verage *P*rice *L*evel in US *M*arkets

First, we examine the historical trend of the nominal price level. Figure 1 shows the average price in US markets between 1925 and 2013. It confirms that the nominal price is relatively stable over the period. In order to identify patterns in price level, we perform a structural break analysis on the

[7] We convert the quarterly ownership data to monthly by keeping the latest data for the month until it is updated in the next quarter.

average price level, as devised by Bai and Perron (2003).[8] The structural break analysis points to three distinct periods in the raw price level.

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Figure 1

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Table 1 Panel A reports the summary statistics of the monthly nominal price for the whole period, and for the subperiods identified by the structural break analysis. The average nominal price before 1968 is $31.83. It drops to $16.50 in the second period and recovers to $29.28 in the third period (post 1990). Over this final period, from 1990 to 2013, we see a steady increase in the average price from $12.83 to $64.19. The differences in average nominal price in each of the subperiods are statistically significant when *t*-tests are performed to test the equality of the means across subperiods. In addition, to ascertain whether there is a time trend, we run a regression of average price on the month index number. We find that the slope of the fitted line for the first period is −0.0007 (p-value < 0.0001), for the second period is −0.00139 (p-value < 0.0001), and for the third period is 0.0048 (p-value < 0.0001); thus an increase in average price is evident in the final period.

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Table 1

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The same trend is observed for the median price, though it is generally lower than the mean, suggesting that there are extreme high prices in the sample which create a right skewedness in the distribution.

Table 1 Panel A also shows that although the median price goes up by less than a dollar in the third period compared to the second, the mean average price nearly doubles. Moreover, the standard deviation in price in the third period is extremely high (more than 35 times the mean). These two

[8] They suggest a dynamic programming algorithm which facilitates efficient computation of the estimates of the break points as global minimizers of the sum of squared residuals.

facts together suggest that the recent increase in average price level is mainly driven by an increase in extreme prices. To confirm this, we further examine the difference in movement of different locations of the distribution. Figure 2 depicts price movement at the 50th (median), 90th and 99th percentiles for the final period (between 1990 and 2013). As evident in the figure, although the median price increases slightly over these years, the increase at the other two percentiles, particularly the 99th, is much more pronounced. In fact, prices at the 99th percentile are more than double in 2013 as compared to those in 1990.

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Figure 2

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Overall, the analyses in this section show that average stock price levels fall into three distinct regimes over the past 90 years. Interestingly, there is a clear upward trend in the last two decades which is driven by the changes in the upper quantiles.

Another way to explore the question of possible preferred price level in a given period is to examine the IPO price level over time, as reported in Table 1 Panel B. We also present the historical trend of the average first day price after IPO in Figure 3. This plot presents a similar trend overall to that of the average price discussed above. There seems to be a preferred IPO price level of around $20, with the nominal IPO price starting to increase in more recent years.

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Figure 3

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Historical *T*rend in Stock Splits in US *M*arkets

In this subsection we examine another event in which firms actively manage their price levels: stock split. Table 2 presents the historical trend of the number of splits expressed as a percentage of the number of firms.

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Table 2

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Our analyses in the previous subsection suggests that the increase in average prices since 1990 could be due to the fact that the number of stock splits has declined in recent years. In line with this finding, the results in Table 2 show that the average split percentage, measured as the number of splits expressed as a percentage of the total number of firms, goes down from 7% to 4% between the second period and the third. The average split percentage in the third period is also lower than the average split percentage over the whole period. The table also shows that the average pre-split price in the third period ($52.70) is higher than the average pre-split price in both the second period ($40.01) and the whole period ($50.09). This would imply that, in the most recent period (since 1990), on average firms decide to split their shares only on reaching a higher price level than previously. Furthermore, the average post-split price is higher in the third period ($28.56) than in both the second period ($22.24) and the whole period ($26.56). This indicates that even when firms split their shares, they split to higher price levels in the most recent period than before.[9] Figure 4 presents the time series of split percentages between 1925 and 2013. The figure also shows a decreasing trend in split percentage since 1990 compared to the second and whole periods.

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Figure 4

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Overall, the analysis in this section demonstrates the existence of a price norm (preferred level in nominal price) for a given period and, importantly, the fact that this norm evolves over time. Specifically, during the recent period from 1990, average price level has steadily increased. Our analyses of IPO price level and split decisions confirm that the high price levels are driven by firms whose share prices have appreciated and whose managers decide to maintain prices at the higher

[9] The differences in the average values in each of the subperiods are statistically significant using *t*-tests for equality of means. .

level. In other words, the recent increases in share price level are due to "passive" management by firms as compared to the earlier period when managers more actively managed their share price level down through splitting. Overall this evidence is consistent with Minnick and Raman (2014), that the increase in aggregate institutional ownership places upward pressure on the share price level.

4. Empirical Analyses – Generalized Catering Hypothesis

In this section we present our test on the generalized catering hypothesis. It suggests that managers will cater their price level to investor preference according to their own preference of investor mix. We start our analysis by developing proxies for investor preference with respect to price level, and proxies for the relative benefits of different investor mixes.

4.1 Norm Violation Premium

In the original catering hypothesis study (Baker et al. 2009), investor preference is modeled by their valuation preference for low-priced stocks. In this section, we are more interested in exploring the reason behind the change of price norm: in particular, who drives the price norm up. If managerial catering incentive is a consideration, we suggest that a better proxy for this would be the benefit of having a higher price than the norm. For example, if price norm violators (firms who choose to have their share price much higher than the average) are being valued at a higher premium, it is more likely that other firms may subsequently mimic their behaviors, with this herding behavior then shifting the average price upward and therefore changing the norm.

To measure the managerial incentive to be a price norm violator, we develop a norm violation premium which combines Baker et al.'s (2009) low price premium and Weld et al.'s (2009) price norm violation methodologies. Baker et al. (2009) use variables such as low nominal price premiums to capture the managerial catering incentive for lower share price levels. When differentiating low- from high-priced stocks, they use the 30^{th} and 70^{th} percentiles of NYSE common stocks as the cut-

off points. Such a cut-off point ignores an important industry and size effect that may be associated with the price level. To this end, Weld et al. (2009) provide useful guidance for the study of price level relative to size and industry peers. Specifically, to define stocks that violate the price norm and those that adhere to it, we run the following cross-sectional regression each year:

$$p_i = \propto + \sum_{j=1}^{5} d_j \, Size_j + \sum_{k=1}^{48} d_k \, Industry_k + \varepsilon_i, \quad (1)$$

where p_i is the firm's average annual price, *Size* is a dummy variable for five size quintiles, and *Industry* is a dummy variable for 48 industry classifications by Fama and French. We use the error term from the above regression to rank the firms in ten groups based on their deviation from the price norm. The firms in the 10th decile are price violators (having the highest price among their size and industry peers) and the firms in the 5th and 6th deciles adhere to the price norm.

The norm violation premium is defined as the difference between the value-weighted average market-to-book ratio of price norm violator stocks and that of norm-adherent stocks. Table 3 presents summary statistics for the norm violation premium for the whole sample period and subperiods. The average values for our norm violation premium variable are positive across the whole sample. This suggests that in general the market puts higher valuations on firms that are breaking from the price norm. For the whole sample period between 1925 and 2013, the table shows that norm violators are valued at nearly 100% of their book value higher than the norm-adherent stocks. Results of the *t*-test and median tests (sign and signed rank tests) also suggest that the mean and median of the norm violation premium is significantly different from zero.

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Table 3

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For the subperiod analysis, Table 3 shows that both the mean and median norm violation premium is highest in the third period.[10] This suggests that the market puts a higher premium on firms with extreme high prices in the most recent period. It confirms that the observed increase in the average price level since 1990 may be driven by the increased norm violation premium. Furthermore, it shows that the lowest average norm violation premium is observed in the second period, which is the period with the lowest average price as well. This further confirms our view that the norm violation premium level is associated with average price level.

The norm violation premium is expected to have stronger impact on IPO price, since managers can actively choose to have a higher IPO price. As regards average price levels and split decisions, however, managers who want to violate the norm (by having a higher price level), can in general achieve this only passively, by not doing the split when their share price has appreciated, whereas reverse splits are rare (Lamoureux and Poon 1987).

4.2 Institutional Ownership Premium

To measure the managerial catering incentive for institutional ownership, we develop an institutional ownership premium. As with the norm violation premium, we measure the institutional ownership premium as the difference between the value-weighted average market-to-book ratio of stocks with high levels of institutional ownership (firms with the highest institutional ownership relative to their size and industry peers) and that of stocks with normal levels of institutional ownership (relative to their size and industry peers). Specifically, to identify the firms with high and normal percentages of institutional ownership, we run the following cross-sectional regression each year for which ownership data is available from 1980 to 2013:

$$Institutional\ Ownership_i = \propto + \sum_{j=1}^{5} d_j\, Size_j + \sum_{k=1}^{48} d_k\, Industry_k + \varepsilon_i, \qquad (2)$$

[10] The differences in mean (median) norm violation premium in each of the sub periods are statistically significant using *t*-tests (z-tests) for the equality of the means (medians) across sub periods.

where *Institutional Ownership*$_i$ is the firm's average annual percentage of shares held by institutions, and other variables are defined as in equation (1). We use the error term from the above regression to rank the firms in ten groups based on their institutional ownership deviation from the norm. The firms in the 10th decile (those with the highest percentage of institutional ownership relative to their peers) are those with the highest institutional ownership, and the firms in the 5th and 6th deciles adhere to normal levels of institutional ownership relative to their size and industry peers.

Table 4 presents summary statistics of the institutional ownership premium for the whole sample and subperiods. Given that ownership data is available only from 1980, there are no observations in the first period and only nine observations in the second. Our analysis reveals that high institutional ownership is actually a discount on average.[11] The market puts a lower market-to-book ratio on the firms with the highest levels of institutional ownership than on those with a modest level of institutional ownership. Importantly, we observe that the institutional ownership discount is reduced from −0.32 in the second period to −0.05 in the third. *t*-test results further show that the average institutional ownership premium of −0.32 in the second period is significantly different from zero, while the −0.05 in the final period is indifferent from zero. This suggests that in the most recent period the market started to place a higher value on firms with the highest institutional ownership. The same trend is observed in the median of the institutional ownership premium.[12]

[11] Although a positive relationship between institutional ownership and return is documented in the literature, a recurrent claim is that institutional investors have an excessive focus on short-term firm performance that leads corporate managers to make operational and accounting decisions that boost short-term earnings at the expense of long-run value (Laverty 1996, Bushee 2001). Empirically, we observe an institutional ownership discount on average. When this discount is lower, the managerial catering incentive for institutional ownership is higher.

[12] The differences in mean (median) institutional ownership premium in each of the sub periods are statistically significant using *t*-tests (*z*-tests) for the equality of the means (medians) across sub periods.

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Table 4

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4.3 Regression Analysis

In this subsection we perform a time series regression analysis on the determinants of price norm in the nominal price level. Building on the literature, the following time series models are estimated with three different dependent variables using yearly data:

$$\begin{aligned} &Dependent_t = \\ &\beta_0 + \beta_1\, Norm\, Violation\, Premium_{t-1} + \\ &\beta_2\, Institutional\, Ownership\, Premium_{t-1} + \beta_3\, Low\, Price\, Premium_{t-1} + \\ &\beta 4\, Illiquidityt{-}1{+}\beta 5\, Market\, Returnt{-}1{+}\varepsilon t, \end{aligned} \quad (3)$$

where in Model 1 the dependent variable is the natural logarithm of the average annual price; in Model 2 the dependent variable is the natural logarithm of the average annual IPO price; and in Model 3 the dependent variable is the split percentage, measured as the number of splits in each year expressed as a percentage of the total number of firms. The main explanatory variables are *Norm Violation Premium*$_{t-1}$, which is the lagged norm violation premium and *Institutional Ownership Premium*$_{t-1}$, which is the lagged institutional ownership premium. The norm violation premium captures the managerial catering incentive for higher share prices compared to those of the firm's peers. The intuitional ownership premium captures the managerial incentive to cater their share price to institutional investors.

To control for the existing explanation we include three further variables. First, the *Low Price Premium* $_{t-1}$, which is the lagged low price premium. We follow Baker et al. (2009) in defining this as the log difference between the value-weighted average market-to-book ratio of low nominal price firms and that of high nominal price firms. While this original catering variable focuses on investor preference for low-priced stock, our norm violator variable focuses on investor preference for stock

prices higher than the norm. They complement each other in illuminating the different catering incentives.

Second, there are also significant changes in the security market microstructure over the sample period, such as the evolution of the electronic order book, the introduction of public limit order, and decimalization (Bessembinder 2003, Harris and Panchapagesan 2005). These changes have an impact on the liquidity of the market. Given the importance of liquidity as a consideration, we include the explanatory variable $Illiquidity_{t-1}$, which is the lagged Amihud (2002) illiquidity measure, constructed as the absolute value of daily returns divided by daily dollar volume (in millions of dollars).

Finally, the increased price level could be a direct consequence of stock value appreciation. We include the lagged S&P 500 index return as the control variable $Market\ Return_{t-1}$. Table 5 summarizes the explanatory variables with reference to the literature. It is important to note that, in order to capture causality, we use one-period-lagged explanatory variables in the analysis.

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Table 5

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Table 6 reports the results of the time series regression analysis.[13] It was expected that when the norm violation premium is higher, the average price level and average IPO price level would be higher over the next period, and the split percentage would be lower. The results of Models 1 to 3 in Table 6 show the correct expected sign. However, only the coefficient in Model 2 (IPO price level) is statistically significant. It confirms that managers actively choose a higher IPO price level when they observe a higher norm violation premium. These results provide general support for a catering incentive to be driving the price norm.

[13] Diagnostic tests suggest that none of the models suffer from autocorrelation problems.

For our main hypothesis, the institutional ownership premium is expected to positively affect the average price level and average IPO price level, and negatively affect the split percentage. This is strongly confirmed by our empirical evidence[14]. All coefficients in the three models are significant with the correct expected sign. In other words, when there is a higher premium (or lower discount) for having higher than normal levels of institutional ownership, firms like to attract more institutional investors, and higher price levels are therefore observed in the market in the next period. This provides strong support for our Hypothesis, suggesting that managers make their pricing decisions conditional on the benefit of having higher levels of institutional ownership.

Regarding the control variables, the low price premium provides consistent and significant explanatory power to the three pricing variables. This is consistent with the catering theory proposed by Baker et al. (2009), suggesting that when lower priced firms are in favour, a higher number of splits is evident in the following year. Our empirical evidence further shows that lower average price level and IPO price level are seen in the following year. This evidence, in combination with the norm violation premium, demonstrates the two types of catering incentive for high *vs* low prices.[15]

We also find that illiquidity reduces price level and increases splits. This suggests that when liquidity is more of a concern, the price level is lower to attract a wider investor base (Dyl and Elliott 2006). There is also evidence showing that after a large price run-up (higher average market return), the number of stock splits increases. This reinforces the notion that firms are indeed managing the

[14] For the analysis of the average price level, we also run regression with average price level excluding Berkshire Heathway. The result regarding the institutional ownership premium is robust to this alternative measure of the price level.

[15] While there is some potential overlapping of the two definitions, the correlation of the two variables is low. Our results remain when the low price premium variable is dropped from the model. The results are available from the authors on request. The low variance inflation factor (VIF) measure suggests that multicollinearity is not a serious concern.

price level actively and will generally respond to a run-up in price by undertaking a split to reduce the price level.[16],.

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Table 6

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5. Robustness

So far our results do not distinguish between long term and short term institutional investors. However, the impact of institutional investors might not be symmetric between long term and short-term investors. Hence, we classify them into long-term and short-term investors.. We investigate the robustness of our results by repeating the same methodology as discussed in section 4.2 to calculate the institutional ownership premium for the two groups The results are reported in Table 7,Panel A reports the results for the long term investors, while Panel B shows the results for the short term institutional investors. The results in Panel A are consistent with the results reported in Table 6 suggesting that a higher premium (or lower discount) for long term institutional investors is associated with higher price level. However, the results in Panel B of Table 7 are contrary to the results reported in Table 6. It is evident from the results that managers tend to cater for the needs of long term institutional investors who prefer high prices. However, the association between premium for short-term institutional investors and the price level is negative and significant at 10% conventional level. Presumably, the negative association between the premium for short term institutional investors and the price is consistent with the fact that short term institutional investors behave similar to the individual/retail investors. Finally, we examine the robustness of our results by investigating the structural break of the average nominal price in 1990. We use a dummy variable

[16] We have checked the robustness of the results by considering the industry and size effect. For this purpose, we have classified the stock prices into four groups based on size and industry and then conduct the analysis for each of the groups separately similar to Table 6. We find that the results ofTable 6 are robust for all the different groups.ing

that takes a value of one post 1990 and zero otherwise. However, if our results are driven by the structure break post 1990, we expect our variable of interest (i.e. institutional ownership premium) to be insignificant. Table 8 reports the results, which includes the dummy variable for post 1990. It is evident from the table that our main variable of interest remains positive and statistically significant.

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Table 7&8

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6. Conclusion

It has long been a puzzle as to why firms maintain their share price at a stable level over time. Numerous papers have been written attempting to solve this puzzle (see e.g., Angel 1997, Dyl and Elliott 2006, Baker et al. 2009, Weld et al 2009, Fernando et al. 2012). However, we demonstrate that the observed stable historical share price is a sample period-specific phenomenon. There is clear evidence of an increasing trend in the average share price level. Such a change in average price level is in line with our extended version of the catering hypothesis and with the increasing dominance of institutional ownership in recent years.

Baker et al. (2009) propose that nominal share prices are influenced by catering incentives: a supply response to demand shifts. We offer an extension to this analysis by considering the heterogeneity of investor demand for stocks at a given price level. Importantly, we extend Minnick and Raman's (2014) analysis by considering the benefit of having intuitional ownership. We hypothesize that if firms manage their share price level in order to control their investor mix, the

price level will be higher when the benefit of institutional ownership is greater. Our results show that the premium for excess institutional ownership relative to industry and size peers positively and significantly explains share price level changes; importantly, this effect is not subsumed by the low price premium. This evidence supports our hypothesis that firms cater share price levels to their own preferences regarding investor mix.

Our study bridges the norm (Weld et al. 2009), the catering (Baker et al. 2009) and the investor base (Dyl and Elliott 2006) hypotheses. Extending the norm hypothesis of Weld et al. (2009), we show that the price norm evolves over time and that the main driver of this is the change in investor mix. Building on the catering hypothesis of Baker et al. (2009), we show that the managerial catering incentive provides a mechanism to connect investor preference to the evolution of the price norm. Complementing the investor base hypothesis of Dyl and Elliott (2006) and Minnick and Raman's (2014), we show that managerial preference regarding investor base is time varying and conditional on the valuation premium. Connecting these key elements of the literature in this way offers a more unified supply- and demand-side analysis of the evolution of the price norm. Our findings thereby provide a robust framework for managerial decision-making on share price level. Overall, our results show that managers are likely to change the price level to cater for the behavior of long term and short term institutional investors. For instance, to attract long-term investors, they manage the price upward and manage downward to attract short-term investors.

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Table 1. Summary statistics of monthly price level for whole sample and subperiods

This table presents basic statistics on the monthly nominal price and IPO price for the whole sample and three subperiods identified by the structural break analysis of the nominal price level.

Panel A. Nominal Price

	N	Mean($)	Median($)	Std	Max($)	Min($)
Whole sample	3,546,610	25.40	13.26	750.02	177,900	0.01
1925–1967	528,780	31.83	23.63	40.84	2,010	0.06
1968–1989	1,180,791	16.50	11.63	35.58	8,675	0.03
1990–2013	1,837,039	29.28	12.18	1,041.48	177,900	0.01

Panel B. IPO Price

	N	Mean($)	Median($)	Std	Max($)	Min($)
Whole sample	26,055	16.10	11.04	41.84	4,700	0.05
1925–1967	2,925	32.83	20.13	60.24	1,248	0.16
1968–1989	10,551	11.73	8.25	47.17	4,700	0.05
1990–2013	12,579	15.87	12.19	28.89	1,675	0.05

Table 2. Summary statistics of split percentage for whole sample and subperiods

This table presents the average number of firms in the US markets (NYSE, AMEX and Nasdaq), the average number of splits, the percentage of splits (measured as the number of splits expressed as a percentage of the total number of firms), and the average pre- and post-split prices for the whole sample and three subperiods identified in the structural break analysis. Following Baker et al. (2009), split events are identified as those with split ratio greater than 1.25-for-1.

		Splits			
	Average number of firms	Average number of splits	Average split percentage	Average pre-split price ($)	Average post-split price($)
Whole sample	3664.51	195.23	0.05	50.09	26.56
1925–1967	1068.12	47.02	0.04	80.66	36.34
1968–1989	5068.72	351.81	0.07	40.01	22.24
1990–2013	6812.79	304.87	0.04	52.70	28.56

Table 3. Summary statistics of norm violation premium for whole sample and subperiods

This table presents basic statistics on the norm violation premium for the whole sample and three subperiods identified by the structural break analysis. The norm violation premium is defined as the difference between the value-weighted average market-to-book ratio of price norm violator stocks and that of price norm-adherent stocks relative to their size and industry peers. *, ** and *** indicate significant difference from zero at the 10%, 5% and 1% levels, respectively.

	Norm violation premium				
	Mean	Median	Std	Max	Min
Whole sample	0.98***	0.70***	1.39	5.62	−1.63
1925–1967	1.05***	0.81***	0.81	2.98	−0.01
1968–1989	0.68*	0.27	1.64	3.72	−1.63
1990–2013	1.22***	0.90***	1.46	5.62	−0.60

Table 4. Summary statistics of institutional ownership premium for whole sample and subperiods

This table presents basic statistics on the institutional ownership premium for the whole sample and two subperiods (rather than three, since institutional ownership data is available only from 1980). The institutional ownership premium is defined as the difference between the value-weighted average market-to-book ratio of stocks with high levels of institutional ownership and that of stocks with normal levels of institutional ownership, relative to their size and industry peers. *, ** and *** indicate significant difference from zero at the 10%, 5% and 1% levels, respectively.

		Institutional ownership premium				
	Years of data	Mean	Median	Std	Max	Min
Whole sample	34	−0.12	−0.06	0.99	1.64	−4.54
1980–1989	10	−0.32**	−0.26**	0.34	0.13	−0.92
1990–2013	24	−0.05	−0.02	1.14	1.64	−4.54

Table 5. Explanatory variables for norm change in nominal price level

This table describes the variables that might explain the change of norm in the nominal price level.

Variables	Descriptions
Norm Violation Premium	Difference between the value-weighted average market-to-book ratio of norm violator stocks and that of norm-adherent stocks, as defined by Weld et al. (2009).
Institutional Ownership Premium	Difference between the value-weighted average market-to-book ratio of stocks with high levels of institutional ownership (firms with the highest institutional ownership relative to their size and industry peers) and that of stocks with normal levels of institutional ownership (relative to their size and industry peers). Firms are ranked in ten groups based on their institutional ownership deviation from the norm, following Weld et al. (2009).
Low Price Premium	Log difference between the value-weighted average market-to-book ratio of low nominal price firms (stocks with share prices below the 30th percentile) and that of high nominal price firms (stocks with share prices above the 70th percentile), following Baker et al. (2009).
Illiquidity	Absolute value of daily return divided by daily dollar volume (in millions of dollars), following Amihud (2002). Yearly average illiquidity is calculated for each stock, the illiquidity measure for each year being the average illiquidity of all the stocks trading in a given year.
Market Return	Average yearly S&P 500 index return.

Table 6: Regression results (1980–2013)

This table presents regressions results for the three dependent variables: natural logarithm of average nominal price, natural logarithm of average IPO price, and split percentage. Split percentage is the number of splits expressed as a percentage of the total number of firms. The explanatory variables are discussed in detail in Table 5. Ownership data is available only since 1980, so the regressions cover the period 1980 to 2013. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	Model 1			**Model 2**			**Model 3**		
	Average annual price			**Average annual IPO price**			**Split percentage**		
Variable	Coefficient	*t*-value		Coefficient	*t*-value		Coefficient	*t*-value	
Intercept	4.012	32.01	***	1.286	15.85	***	0.043	4.11	***
Norm Violation Premium$_{t-1}$	0.217	1.51		0.217	5.78	***	0.003	0.06	
Institutional Ownership Premium$_{t-1}$	0.513	3.04	***	0.093	2.12	**	−0.011	−1.83	*
Low Price Premium$_{t-1}$	−0.613	−1.71	*	−0.149	−1.92	*	0.033	2.68	**
Illiquidity$_{t-1}$	−0.591	−6.31	***	−0.048	−1.98	*	0.005	1.84	*
Adj-R^2	0.651			0.777			0.358		
Number of observations used	33			33			33		
Max *VIF*	2.81			2.81			2.81		

Table 7: Robustness results (Long term vs short term institutional investors)

This table presents regressions results for the three dependent variables: natural logarithm of average nominal price, natural logarithm of average IPO price, and split percentage distinguishing between long term and short term institutional investors. Split percentage is the number of splits expressed as a percentage of the total number of firms. The explanatory variables are discussed in detail in Table 5. Ownership data is available only since 1980, so the regressions cover the period 1980 to 2013. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Panel A: Long term institutional investors

	Model 1		**Model 2**		**Model 3**	
	Average annual price		**Average annual IPO price**		**Split percentage**	
Variable	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
Intercept	4.238	8.96 ***	1.311	12.32 ***	0.041	3.35 ***
Norm Violation Premium$_{t-1}$	-0.011	-0.07	0.180	5.04 ***	0.005	1.37
Long-term Institutional Ownership Premium$_{t-1}$	0.315	1.83 *	0.033	0.86 **	0.011	2.44 **
Low Price Premium$_{t-1}$	−0.754	−1.36	−0.154	−1.24	0.042	2.95 ***
Illiquidity$_{t-1}$	−0.631	−4.52 ***	−0.032	−1.05	0.007	2.14 **
Adj-R^2	0.502		0.763		0.377	
Number of observations used	33		33		33	
Max *VIF*	2.81		1.99		1.99	

Table 7 continued

Panel B: Short term institutional investors

	Model 1		**Model 2**		**Model 3**	
	Average annual price		**Average annual IPO price**		**Split percentage**	
Variable	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
Intercept	4.201	8.64 ***	1.295	15.85 ***	0.038	3.16 ***
Norm Violation Premium$_{t-1}$	0.081	0.51	0.187	4.66 ***	0.003	0.85
Short-term Institutional Ownership Premium$_{t-1}$	-0.217	-1.83 *	-0.014	-0.45	-0.010	-3.44 ***
Low Price Premium$_{t-1}$	−0.599	−1.01	−0.070	−0.47	0.052	3.52 ***
Illiquidity$_{t-1}$	−0.576	−4.16 ***	−0.032	−0.91	0.007	2.13 **
Adj-R^2	0.457		0.718		0.498	
Number of observations used	33		33		33	
Max *VIF*	1.98		1.98		1.98	

Table 8: Effect of structural break

This table presents regressions results for the three dependent variables: natural logarithm of average nominal price, natural logarithm of average IPO price, and split percentage distinguishing between long term and short term institutional investors. Split percentage is the number of splits expressed as a percentage of the total number of firms. The explanatory variables are discussed in detail in Table 5. *Dummy-1990* takes a value of one post 1990 and zero otherwise *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

	Model 1		**Model 2**		**Model 3**	
	Average annual price		**Average annual IPO price**		**Split percentage**	
Variable	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
Intercept	3.357	9.67 ***	1.108	12.42 ***	0.048	3.57 ***
Norm Violation Premium$_{t-1}$	0.061	0.45	0.174	4.99 ***	0.001	0.29
Institutional Ownership Premium$_{t-1}$	0.302	1.99 **	0.035	1.97**	-0.008	-1.38
Low Price Premium$_{t-1}$	−0.118	−0.33	−0.015	−0.16	0.029	2.10 **
Illiquidity$_{t-1}$	−0.577	−7.02 ***	−0.044	−2.12 **	0.005	1.79 *
Dummy-1990	1.206	3.05 ***	0.327	3.22 ***	-0.009	-0.61
Adj-R^2	0.731		0.833		0.343	
Number of observations used	33		33		33	
Max *VIF*	3.26		3.26		3.26	

Figure 1. Average prices of securities on NYSE, AMEX and Nasdaq (1925–2013)

This figure shows the equal-weighted average of security prices between 1925 and 2013. Data includes all ordinary common shares listed on the NYSE, AMEX and Nasdaq. The nominal average price is calculated without adjustment.

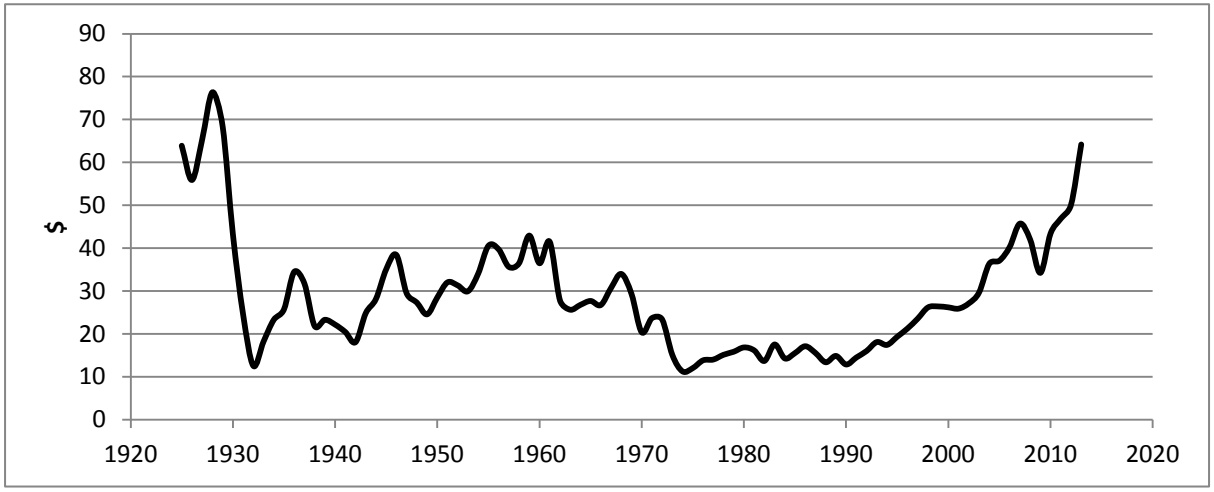

Figure 2 . Median, 90th and 99th percentile prices of securities on NYSE, AMEX and Nasdaq (1990–2013)

This figure shows the movement of the nominal price at the 50th (median), 90th and 99th percentiles during the final period identified by the structural break analysis, 1990 to 2013. Data includes all ordinary common shares listed on the NYSE, AMEX and Nasdaq.

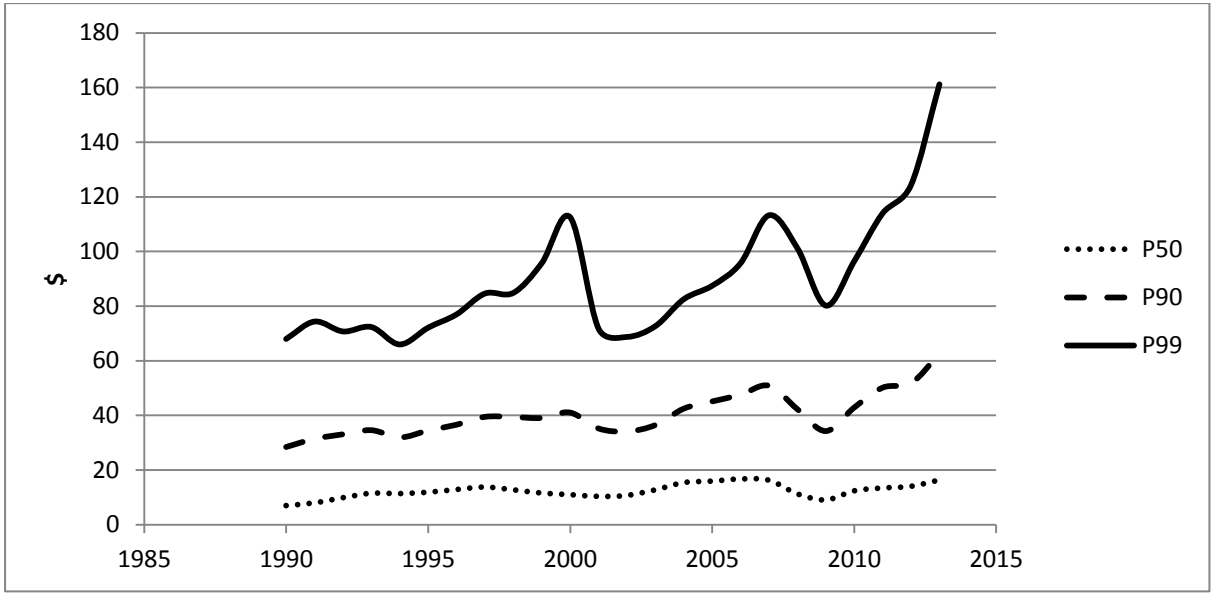

Figure 3. Average IPO price on NYSE, AMEX and Nasdaq (1925–2013)

This figure shows the equal-weighted average first day price after IPO between 1925 and 2013 on the NYSE, AMEX and Nasdaq between 1925 and 2013. Average IPO price is calculated without adjustment.

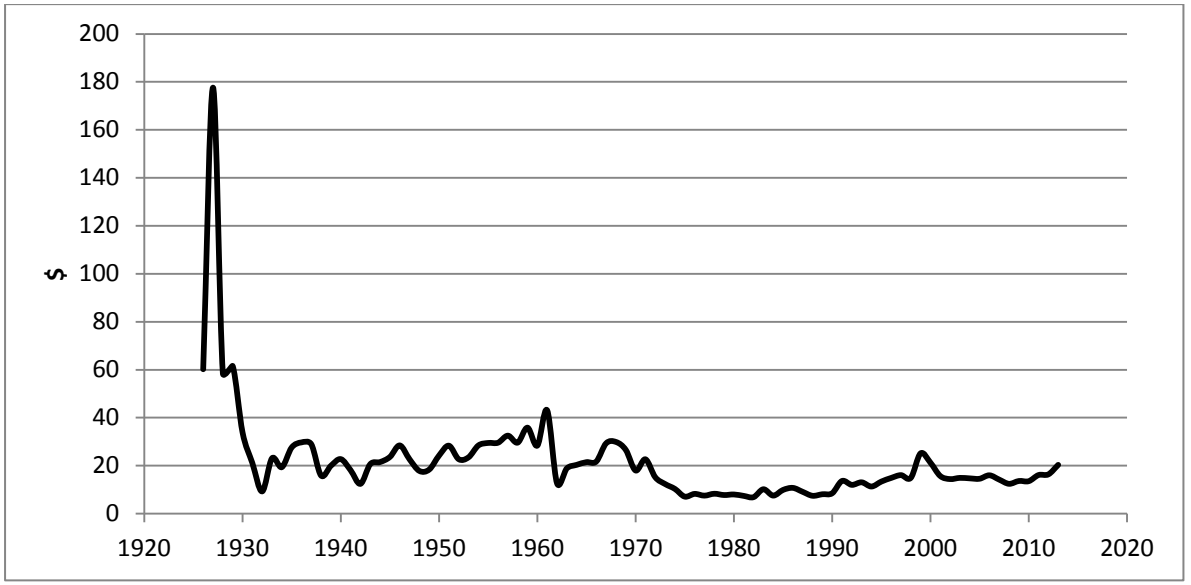

Figure 4 . Split percentage on NYSE, AMEX and Nasdaq (1925–2013)

This figure shows the split percentage on the US markets (NYSE, AMEX and Nasdaq) between 1925 and 2013. Split percentage in each year is the number of splits expressed as a percentage of the total number of firms.