Authorized shares: To limit, or not to limit, that is the question

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and

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ABSTRACT

In the legal literature there is some debate regarding the efficacy and relevance of the concept of limited authorized shares. Proponents to limitations on authorized shares argue that it resolves a power struggle between managers and shareholders. Opponents suggest that there are sufficient protections in place, and limitations are an expensive anachronism. We use the announcement of a stock split to examine this question. Stock splits cause an "inadvertent" shock to the amount of authorized, but unissued shares (hereafter, *excess-shares*). We find that the market reacts differentially to this shock, relative to the pre-split level of *excess-shares*. This result holds even after controlling for other factors from the literature known to be related to abnormal split announcement returns. Our evidence is consistent with the premise that nontrivial economic benefits accrue to shareholders from a reduction in management's power to issue stock and shareholders of firms that have a very high pre-split level of excess-shares benefit the most.

JEL **Classification Numbers**: G12, G32

Key Words: stock splits, authorized shares, agency costs

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ABSTRACT

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I. Introduction

Ever since the dawn of the corporate form of organization, a firm's Certificate of Incorporation (a.k.a. Corporate Charter) has contained two provisions, par value (and the associated 'stated capital') and authorized shares. As the typical par value has shrunk to fractions of a penny, the importance of par value and stated capital as a means of protecting shareholders against dilution, has faded with time. However, the number of authorized shares continues to place real limits on the number of shares a firm may issue, at least without first obtaining shareholder approval (Hanks, 1995). In the short-run, the number of authorized shares in the corporate charter places an upper bound on the total shares of stock that may be issued. There has been some question in the legal literature regarding the efficacy and continued relevance of authorized shares (see Ganor [2011] and Hanks [1995]). Our paper contributes to this debate. To the best of our knowledge, we are the first authors in the finance/legal literature to examine this particular issue.[1]

On the one hand, skeptics suggest that limitations on the level of authorized shares no longer serves a purpose that isn't already more effectively served through other means (Hanks, 1995). They argue that the board of directors retains and controls the authority to issue new shares, and thus is a sufficient check on the power of management. Further, when it becomes necessary to increase the level of authorized shares, the firm incurs significant costs. Changes to the charter requires that a proxy be drafted, revised, reviewed by the SEC, possibly revised again, not to mention that it usually requires a two-thirds majority for approval (since this fraction is of total shares outstanding, it usually is a much larger fraction of votes actually cast). This process can

[1] Bhagat, Brickley, and Lease (1986) study the announcement return effects of proposals by management to increase the amount of authorized shares in general as well as the frequency of activities that require excess authorized shares.

take several months and culminates with a shareholder meeting (sometimes this may be a special meeting expressly for the purpose of increasing the level of authorized shares).

On the other hand, Ganor (2011) suggests that limitations on authorized shares helps to balance the power struggle between management and shareholders.[2] This may especially be true around the time of a merger/tender offer, either friendly or hostile. During a hostile takeover, target firm management could engage in defensive strategies such as a poison pill. Conversely, in a tender offer by a friendly acquirer, management of the target firm could offer the acquirer a top-up option. Briefly, top-up options allow the acquirer to speed up completion of the deal, and potentially block or reduce the threat of competing bids. Both of these strategies require that the target firm have substantial amounts of excess authorized shares (i.e. authorized but not yet issued).[3] With sufficient excess authorized shares (for brevity, hereafter: *excess-shares*) available, management (and/or the BOD) need not seek shareholder approval in either a poison pill strategy or a top-up option.

Our study takes advantage of a unique corporate announcement as a platform to study whether there is any apparent value to limitations on the level of authorized shares. That event is the announcement of a stock split. Stock split announcements have been studied extensively in the finance literature, beginning with the seminal paper by Fama, Fisher, Jensen, and Roll in 1969. Simply stated, stock splits result in an increase in the shares outstanding (e.g. a 2-for-1 stock split doubles the number of shares outstanding).[4] Since the total number of authorized shares is stated in the charter, the stock split cannot change that number. However, as a result of

[2] Ganor (2011) describes in detail the legal aspects of authorized common stock as it relates to a firm's management and shareholders.

[3] We do not differentiate between never issued excess-shares and treasury stock (shares that had previously been issued but have subsequently been repurchased).

[4] While it is common for large stock distributions to be accounted for as either a large stock dividend or as a stock split, the effect of the shares outstanding and the *excess shares* is identical.

the stock split, there will be fewer *excess-shares*. Even more importantly, because activities such as poison pills and top-up options may require multiples of the total shares outstanding to dilute certain shareholder positions, the ratio of *excess-shares* to shares outstanding (hereafter, the *excess-ratio*) decreases at an even faster rate.

For the purposes of our study, we assume that the effect of the stock split announcement on the level of *excess-shares* is largely an "inadvertent" shock. Obviously for a firm to engage in a stock split, management must first determine whether there are sufficient *excess-shares.* As such they will have paid some attention to the level of *excess-shares*. However it is unlikely that a reduction in the level of *excess-shares* is the raison d'être for the stock split or even of secondary importance. More likely, determining the sufficiency of *excess-shares* is a necessary and perfunctory activity performed prior to announcing the split. Our confidence that the reduction in *excess-shares* is unintended or inadvertent lies largely in the prior study of stock splits. The finance literature is replete with a number of theories related to the motivation for stock splits and their concomitant positive stock price reaction. Previous studies suggest that the market reaction may be a signal, a means to reduce information asymmetry, a deviation from the efficient markets hypothesis, or possibly may even affect the tax-option value of the stock.[5] However, none of the prior studies suggest that the primary reason for a split is to cause a reduction in the *excess-shares*.

Our sample is comprised of NYSE/AMEX/Nasdaq listed firms that are incorporated in Delaware and announced at least a 2-for-1 and not more than a 6-for-1 stock split between 1998 and 2011. We hand collect the number of authorized shares from 10Ks and proxy statements filed on the Securities and Exchange Commission's (SEC) EDGAR database.

[5] Grinblatt, Masulis, and Titman (1984); Asquith, Healy, and Palepu (1989); McNichols and Dravid (1990); Nayak and Prabhala (2001); Brennan and Copeland (1988); Ikenberry, Ranine, and Stice (1996); Desai and Jain (1997); Ikenberry and Ramnath (2002); and Lamoureux and Poon (1987).

To examine the effect of the quantity of *excess-shares* on stock split announcement returns, we first sort the sample, from high-to-low, by the *excess-ratio* and divide the sample into quartiles. Managers of firms in the upper quartile (those with the highest *excess-ratio* prior to the split) have greater latitude to issue additional shares without first seeking shareholder approval, relative to managers of firms in the lower quartile. The five-day average cumulative abnormal return (hereafter, CAR) surrounding the split announcement of firms in the upper quartile is 4.96%, while the five-day average CAR of firms in the lower quartile is 2.43% (the 2.53% difference is statistically significant at the five percent level). If the split announcement is truly an inadvertent shock to the level of *excess-shares*, one interpretation of this result is that the market places a substantial value on the reduction of authorized shares for those firms that previously had the highest levels of *excess-shares*.

We also examine the variation in split announcement CARs using a multivariate regression framework. After controlling for a host of variables that the existing literature suggests are related to or help to explain split announcement returns, we find that the pre-split *excess-ratio* remains positively correlated to the abnormal returns and is not only statistically significant but economically significant as well. This evidence is consistent with the premise that the market interprets the reduction in the *excess-ratio* as a more positive signal for firms that had a higher pre-split *excess-ratio*. As a result of the split, managers are less able to engage in corporate activities that require a large amount of new stock (e.g. poison pill defense or top-up option), without first seeking shareholder approval.

Given the above findings, we explore whether the splitting firms with the highest levels of *excess-shares* may also suffer from higher levels of agency problems. In other words, is it possible that the firms with the highest levels of *excess-shares* also have other agency problems,

in addition to higher levels of *excess-shares*, between managers and shareholders. In summary, we find evidence consistent with the premise that firms that face higher agency costs tend to have a higher post-split *excess-ratio*.

Our paper adds to two separate strands of literature. First, it adds empirical evidence to the debate regarding the necessity of limitations on authorized shares. Our evidence is most consistent with the conjecture that limitations on authorized shares are valuable, and likely this value is the result of balancing the power struggle between shareholders and managers. Secondly, we provide evidence consistent with the hypothesis that there is some optimal level of authorized shares. For firms with too few excess-shares, the ability of management to engage in normal corporate activities is likely constrained. Conversely, firms with too many excess-shares allow management an opportunity to engage in transactions that may be detrimental to shareholders.

The remainder of this paper is organized as follows. In Section II we discuss the previous literature, motivation for the paper, and develop our hypotheses. Section III presents the method and sample construction. Sections IV and V present the empirical results and Section VI summarizes the results.

II. Motivation and Hypothesis Development

A. *Delaware General Corporation Law and exchange rules*

Delaware General Corporation Law (DGCL) states that the number of authorized shares must be specified in a firm's certificate of incorporation.[6] The certificate of incorporation may only be

[6] *8 Del. C. 1953, § 102, http://delcode.delaware.gov/title8/c001/sc01/index.shtml*

changed by a vote of the shareholders. As a result, the maximum number of shares outstanding, at least in the short-run, is constrained by the number of shares authorized in the certificate of incorporation. The announcement of a stock split results in the transfer of a portion of the excess authorized shares to shares outstanding. While there is no reason to believe that this is the *raison d'être* for the stock split announcement, a split clearly affects the amount of excess authorized shares, and in turn, may limit the manager's power to issue new stock in the future.

However, some of the flexibility granted by DGCL is limited by exchange listing rules. Both the NYSE and the Nasdaq require that, for non-cash transactions, any issuance of new shares that is greater than or equal to 20% of current shares outstanding must be approved by shareholders.[7] These rules do not, however, apply to stock issuances for cash, either public or private. Nor do they apply in the case of some takeover strategies. While the exchange rules are designed to protect shareholder interests, Becht, Polo and Rossi (2014) find that firms generally avoid a shareholder vote by issuing less than 20% of their shares as consideration and paying the rest in other securities or in cash. Another situation in which the exchange rules are not limiting is when the firm becomes a private corporation. For example, the implementation of a top-up option in a leveraged buyout (see Ganor [2011] and Devos, Elliott, and Songur [2015]), by virtue of the fact that the firm becomes private and is no longer listed, would not face the constraints imposed by the exchanges. Further, the 20% limitation is for a single transaction. As such, a firm could engage in multiple stock-based mergers, each of which require less than the 20% share limit, without triggering the requirement for shareholder approval.

[7]See the NYSE Listed Company Manual:
http://nysemanual.nyse.com/LCMTools/PlatformViewer.asp?selectednode=chp%5F1%5F4%5F10&manual=%2Flcm%2Fsections%2Flcm%2Dsections%

B. *Authorized shares*

Consider the following example of how a firm may be affected by a stock split and the associated reduction in *excess-shares*. If a firm has 125 million shares authorized and 25 million outstanding, there are 100 million shares available for issue in the future. With 100 million *excess-shares*, the management of the firm could grant a top-up option to a friendly acquirer in a tender offer[8]. Under Delaware law, a bidder that attains 90% ownership of a target firm, may use a short-form merger to complete the buyout. Short-form mergers do not require a shareholder meeting or vote, and as such effectively "freeze-out" any remaining shareholders from preventing the merger. A poison pill strategy may also be used when there are sufficient excess-shares to protect target management against a hostile bidder. Both strategies require large amounts of excess-shares, much larger amounts then are necessary for the normal operation of the firm.

However, if our example firm had previously done a two-for-one stock split, the number of *excess-shares* would drop to 75 million and management would no longer be able to engage in a top-up option, at least not with a 50% stock holding (this is but one example of how a split may constrain managements power over shareholders).[9] So, regardless of the primary rationale for

[8] Typically, the friendly bidder obtains a minimum of 50% ownership through the tender offer (in the example that would be 12.5 million shares). After the bidder successfully attains the minimum percentage of shares, the target firm issues enough additional shares to the bidder, at the tender offer price, such that the bidders' ownership reaches 90% (in our example this would require that an additional 100 million shares be issued to the bidder). Thus, after exercise of the top-up option, the bidder owns 112.5 million shares, or a 90% stake in the firm. As a result of the top-up option, the old shareholders position has been diluted to a 10% stake in the firm. While the minimum position gained by the bidder in the tender offer is 50%, it is not infrequent to find that the top-up option requires a higher percentage ownership before being triggered. However, it is not clear whether this is designed ex ante with the total amount of available *excess-shares* in mind. For a more detailed discussion and analysis of the top-up options see Devos, Elliott and Songur (2015).

[9] Of course, the number of shares authorized may be changed, but not without shareholder consent. Further, it would also be possible for the target firm's management to issue a top-up option with a higher minimum percentage ownership required of the bidder firm.

the stock split, as a result of the reduction in *excess-shares*, the balance of power to issue new shares has shifted toward shareholders.

C. *Changes to the level of authorized shares*

A split clearly affects the amount of excess authorized shares and, in turn, limits the manager's power to issue new stock in the future (whether or not it is binding depends upon the particular corporate activity). Consider the following statement made by Hewlett Packard Company (HP) in their DEF 14A filing (proxy statement), dated January 25, 2001:

> "The Board of Directors believes that the availability of additional authorized but unissued shares will provide the Company with the *flexibility to issue common stock* for a variety of corporate purposes, such as to effect *future stock splits in the form of stock dividends, to make acquisitions through the use of stock, to raise equity capital, to adopt additional employee benefit plans or to reserve additional shares for issuance under such plans and under plans of acquired companies.*" [italics added for emphasis; for the entire proposal see Appendix A]

The above paragraph is but an example of numerous similar statements made by firms that wish to increase the level of their authorized shares. Of particular note, HP cites an increase in "*flexibility to issue common stock*" as the primary rationale for its proposed increase in authorized shares. Note that at the time of HP's proposal, the firm had 4.8 billion shares authorized and a total of 2.48 billion shares outstanding or reserved, leaving 2.32 billion shares of authorized but unissued shares. Granted, 2.32 billion of *excess-shares* is not quite enough to affect a two-for-one stock split (which the firm had previously done seven times, most recently only 4 months prior to this proposal). However, management was not asking to bring the authorized shares up to 5 billion, they were requesting an increase to 9.6 billion, a doubling of the current number of authorized shares. As a result, HP's management would have ample

opportunity to engage in many activities in addition to a stock split; such as stock-based mergers or a variety of pro/anti-takeover measures (interestingly, there is no mention in HP's statement regarding potential use of the additional shares in a top-up option nor for use in a poison pill strategy).

If management is able to gain shareholder approval for an increase in the level of authorized shares with 100% certainty, then does the reduction caused by a stock split matter? This is a fair question, especially in light of evidence that any type of proposals, when supported by management, are rarely turned down by shareholders (Maug and Rydqvist [2001]; Gillan and Starks [2007]; Yermack [2010]). However, there are some cases where proposals to increase the level of authorized shares have been voted down. In 2009, American International Group (AIG) attempted to increase its level of authorized shares from 5 billion to 9.225 billion. At the time of the vote, AIG had approximately 2.7 billion shares outstanding. It appears that after having lost more than 95% of its value in 2008, shareholders were in no frame of mind to give management any additional *excess-shares*. Another recent example was a proposed increase of authorized shares from 25 million to 75 million (shares outstanding as of the date of the proxy stood at just under 18.1 million) by the management of The Andersons Inc. Both firms appear to have been surprised by the failure of the proposed increase.[10] Further, simply because we only observe a small percentage of failed proposals to increase the level of authorized shares, does not imply that most firms are able to increase their authorized shares. It seems likely that management may only recommend proposals that they believe are highly likely to obtain shareholder approval. As

[10] "Mike Anderson (president and chief executive) said the proposal for added shares would have given the company flexibility to raise money to make an acquisition, although there were no immediate plans to issue more shares or use them for business ventures. Gary Smith, company treasurer, said most publicly traded firms are authorized to issue three times the amount of stock that they have outstanding. With 18 million outstanding and only 25 million authorized, we're getting kind of tight, he said. Authorization to issue more shares must be given at annual meetings, which made yesterday's vote critical." Excerpted from the Toledo Blade: http://www.toledoblade.com/local/2009/05/09/Andersons-stock-bid-rejected.html

such, the distribution of observed proposals to increase authorized shares may be censored. At a minimum, in the short term, management loses some flexibility when a stock split causes a decrease in the *excess-shares* and it introduces a potential cost, required to increase the amount of authorized shares.

D. *Previous research related to authorized shares*

The finance literature has paid scant attention to the impact that the number of authorized shares has on corporate decisions. Part of this neglect may be due to the paucity of the variable in the primary databases that are used by researchers. For instance, Carter, Lycnh, and Tuna (2007) cite lack of availability of data in electronic format as the reason they don't include authorized shares in their study. To our knowledge, Bhagat, Brickley, and Lease (1986) are the only other researchers in the finance literature to have focused their study on authorized shares. Specifically, they hypothesize that if the number of authorized shares is binding, any abnormal announcement returns associated with an increase in the number of authorized shares will capture the likelihood of a subsequent event involving the issuance of stock. As Bhagat et al. point out, a sufficient amount of *excess-shares* is an essential precursor to many widely studied activities in corporate finance (e.g. SEOs, stock-based mergers, stock splits, changes in ownership and control [e.g. such as poison pills and the top-up option]) and as such, should be included in any analysis of the subsequent corporate events to fully capture the market reaction. When they attempt to find the market reaction to the announcement of an increase in authorized shares for industrial firms, their results are statistically insignificant. However, for utilities, they find a positive 2.83% 11-day CAR, statistically significant at the one-percent level.

The lack of additional study by finance researchers notwithstanding, legal scholars have paid more attention to the role of authorized shares. According to Hanks (1995) the concept of a

limited number of shares available has been in existence for as long as there have been publicly-traded corporations, at least in the United States. Hanks argues against a limit on authorized shares, in part because:

> "…limits on the number of authorized shares of stock impose excessive burdens and costs. With the typical publicly traded corporation, the process of amending its charter is long and costly and, therefore, is not undertaken lightly. The board of directors must approve the charter amendment and submit the matter to a meeting of the stockholders. If the annual stockholders' meeting is not due to be held in the succeeding few months, a special meeting must be called. A proxy statement must typically be drafted, reviewed, submitted to the SEC, reviewed by the SEC staff, revised, resubmitted, and mailed to stockholders. This part of the process alone can easily consume several weeks. … Typically, the vote requirement for a charter amendment will be two-thirds of the votes entitled to be cast, which will generally amount to a much larger percentage of the votes actually cast."

Yet, twenty years after publication of Hanks' critique on limited authorized shares, the limits remain. On average, firms appear to select levels of authorized shares that are only four to six times their shares outstanding at the time of their IPO (Ganor [2011]). The par value of a share has a similarly long history, however, the typical par value has decreased to a tiny fraction of a dollar and many times it is set at a fraction of a penny. Thus, making par value, and the related concept of stated capital virtually meaningless. The Delaware Secretary of State collects an annual franchise fee based upon the firm's authorized capital, however, that fee is capped at $180,000. For many firms in our sample, it is likely that their franchise tax has already reached the cap.[11] Therefore, any additional authorized shares would pose no further financial impact on

[11] The average (median) level of authorized shares for our sample firms is about 54,000,000 (5,400,000). Using the 'Authorized Shares Method,' the average firm certainly faces the maximum Delaware franchise tax of $180,000 (firms with 24 million or more authorized shares would pay the maximum). The approximate franchise tax for the median firm would be $41,000.

the firm. Also, if limitations on authorized shares serve little or no purpose, that isn't otherwise controlled through other mechanisms (e.g. limitations placed on firms by the NYSE or Nasdaq), why then hasn't every firm chosen an initial level of authorized shares that would yield at least 10 or 20 times their initial shares outstanding?

Ganor's (2011) recent work on the subject helps to answer this question. She conjectures that high levels of *excess-shares* empowers managers to engage in activities that may not be in the best interest of shareholders. In particular, she examines the use of poison pills, top-up options, and white squires as means by which managers may use *excess-shares* to achieve a desired outcome during the battle for control of a firm. Ganor also provides limited empirical evidence on the *excess-ratios* of non-financial companies incorporated in Delaware shortly after their initial public offering. She finds average *excess-ratios* of 4.55, 4.74, and 5.79 for IPO firms in the years 2003, 2008, and 2009, respectively. She does not find any significant correlations between the *excess-ratio* and firm size, nor whether the pre-IPO firm was backed by a venture capital firm.

E. *Stock splits and agency costs*

Stock splits have confounded researchers for more than forty years. Numerous theories have been promulgated in an effort to explain the surprisingly large abnormal announcement return for what otherwise appears to be an inconsequential change to the firm. Easley, O'Hara, and Saar (2001) categorize these theories into three broad groups; the trading range, reduction of information asymmetries, and the optimal tick size theories. Many of these papers contend that splits are primarily cosmetic (e.g. Barker, 1956; Brennan and Copeland, 1988; Easley, O'Hara, Saar 2001). From the standpoint of immediate cashflows, the previous literature is indeed correct, splits result in no immediate cashflows of any consequence. The direct costs of

announcing and engaging in a stock distribution are admittedly small, especially relative to firm size. However, the reduction in the availability of *excess-shares*, at least in the short term, is a real change to the firm as a result of the split. Because of this reduction, managers have less flexibility to issue new shares in the future. Depending upon the firm, this may be a positive or negative occurrence. If there is already a significant conflict of interest (i.e. agency problem) between shareholders and managers, a reduction in the amount of *excess-shares* by way of the stock split may be a viewed by shareholders as a positive outcome.[12] However, on the other hand, if the firm is otherwise financially constrained (and has little agency problem between managers and shareholders), then such a reduction may have a negative effect on firm value. For example, if there are too few *excess-shares*, managers may not be able to engage in positive NPV projects (at least not in a timely manner). In short, this issue is important because, without sufficient *excess-shares*, management must engage in the costly and time-consuming process of amending their Certificate of Incorporation.[13]

F. *Hypotheses*

For the reasons discussed above, if limitations to authorized shares has some intrinsic value, then we expect those firms that had the least limitations will experience a more positive split announcement abnormal return. However, if a firm has low levels of *excess-shares*, then that firm may need to raise the total amount of authorized shares after the stock split in order to have sufficient flexibility. As a result of this additional cost related to having too few *excess-shares*,

[12] Hsieh and Wang (2008) find that acquisitions designed to circumvent shareholder approval are value-reducing deals.

[13] Delaware General Corporation law states that any changes to the Certificate of Incorporation must be approved by the majority of shareholders (*8 Del. C. 1953, § 242; http://delcode.delaware.gov/title8/c001/sc08/index.shtml*). Not all states have similar laws. The development of our construct and hypotheses relies upon the laws as they hold for the state of Delaware and the other states that have similar laws. Luckily for our analysis, the majority of firms are incorporated in Delaware or states that have laws similar to those in Delaware.

those firms may indeed face lower than average returns. Our two primary hypotheses, in alternative form are:

Hypothesis 1A: We expect that firms with the highest levels of excess-ratio will have higher than average returns.

Hypothesis 1B: We expect that firms with the lowest levels of excess-ratio will have lower than average returns.

To measure this empirically, we sort the sample from high to low, by the pre-split excess-ratio, and group the sample into quartiles.

We also expect that those firms with the highest levels of *excess-shares* may also have high levels of other types of agency costs between shareholders and management. In previous work (e.g. Ang, Cole, and Lin, 2000; Anderson and Reeb, 2003; Singh and Davidson, 2003), Selling, General, and Administrative expense (as a percent of sales; hereafter *SGA*) and asset turnover (hereafter AT) have been used as proxies for agency costs. We expect a more positive announcement return for splitting firms with a high degree of *excess-ratio* and agency costs, as proxied by *SGA* and AT.

It seems reasonable to expect that firms with lower levels of cash holdings and less ability to issue debt (i.e. financially constrained firms), would also place greater importance on higher levels of *excess-shares*. In essence, higher levels of *excess-shares* (as measured by the *excess-ratio*) acts as a substitute for cash holdings and debt capacity. Therefore, we investigate whether there is a relation between the excess-ratio, the financial constraint measures, and the split announcement returns. Ceteris paribus, for more (less) financially constrained firms, we expect a reduction in the excess-ratio to be negatively (positively) related to abnormal announcement returns.

III. Sample construction and method

Laws regarding incorporation and whether or not authorized shares are limited, vary from state to state. To avoid these differences in state law we focus our attention on the sub-sample of firms that are incorporated in the state of Delaware. Delaware law requires that the number of authorized shares be stated in the corporate charter, and this figure may not be altered without a shareholder vote[14]. Accordingly, to test our hypotheses, we use a sample of firms incorporated in the state of Delaware, which engaged in a stock split between 1998 and 2011, inclusive.

We identify this sample by filtering the Center for Research in Security Prices (CRSP) Distributions array for distribution codes equal to 5523 or 5533. This yields an initial sample of 4,861 stock distributions. We exclude distributions with split factors (CRSP variable FACSHR) less than one (i.e. only two-for-one or greater splits are included) or greater than five, as well as splits of any firms that are utilities (SIC 4900-4999) or financials (SIC 6000-6999). Following Lin et al. (2009) we filter out dual class firms, ADRs, and exclude splits with a pre-split price less than $10. These filters decrease our sample to 1,288 firm-splits. Next, we hand collect the number of authorized shares for each firm from their 10-K filings as well as proxy and shareholder vote dates from DEF 14A and/or DEFS 14A filings found on the SEC's EDGAR database. Returns and accounting variables to calculate the control variables are from CRSP and COMPUSTAT, respectively. We also collect the number of analysts following a stock from the Institutional Brokers' Estimate System (I/B/E/S) database. Missing values in the return series and IBES data cause a loss of 177, yielding a sample of 1,011 firm-splits. Of these 1,011 firm-

[14] In untabulated results, when firms incorporated in all states are included, all results remain qualitatively similar to the Delaware only sample. These results are available upon request.

splits, 594 are incorporated in Delaware and become the final sample. To minimize the influence of outliers, we winsorize all firm fundamental variables at the 1% and 99% percent levels.

We use two measures of excess authorized shares. Our first measure is the *excess-ratio*, which we calculate following Ganor (2011) as:

$$Excess\ ratio \quad = \frac{Total\ Authorized\ Shares - Shares\ Outstanding}{Shares\ Outstanding} \qquad (1)$$

where, *Total Authorized Shares* is from the firm's 10K immediately before the split announcement and *Shares Outstanding* is Compustat item CSHO on day -5 relative to the split announcement date.

We also calculate the change in the excess-ratio measure as:

$$\Delta\ Excess\ ratio\ = \frac{Post\ Excess\ ratio - Excess\ ratio}{Excess\ ratio} \qquad (2)$$

where, $Post\ excess - ratio$ is calculated in a manner similar to the *excess-ratio*, however Shares Outstanding is first multiplied by one plus the CRSP split factor.

Table 1 reports the distribution of splits, the *excess-ratio*, and *Δexcess-ratio* for the 594 firm-splits over time as well as the distribution of splits across two-digit industry classifications. In Panel A, we observe that the number of splits during a given year ranges from 4 (in 2009) to 127 (in 2000). The 2008-2011 period seems to have a lower number of splits than the rest of the sample, which is in line with the general trend of a declining number of stock splits in the aftermath of the 2007/2008 financial crisis. This is consistent with Minnick and Raman (2014), who report that, on an annual basis, the percentage of firms undertaking stock splits has fallen to less than 1% of all firms in CRSP database in 2009.

The average *excess-ratio* during any given year ranges from 2.30 (in 2009) to 3.69 (in 2010) and does not seem to show any temporal pattern. The median *excess-ratio* ranges between 2.18 (in 2005) and 3.00 (in 2008). The *Δexcess-ratio* varies from a high of 23.54% in 2001 to a low of -68.00% in 2002. In Panel B, we report two-digit industry distribution of our sample. Manufacturing (SIC code 2000-3999) and Services (SIC code 7000-8999) are the two sectors with the most splits during the sample period. Firms that operate in the Manufacturing industry constitute 52.86% of the sample firms, while firms in the Services industry comprise another 24.75% of the sample.

[TABLE 1 ABOUT HERE]

Table 2 reports the sample firm characteristics. The mean (median) *excess-ratio* is 2.91 (2.41). This suggests that the management of an average (median) firm in our sample could, under certain conditions, issue nearly three (two and half) times more shares than are currently outstanding without shareholder approval, prior to the split. The mean (median) change in the *excess-ratio* is a -23.73% (-64.20%) and indicates that, on average, splitting firms decrease their *excess-ratios* as a result of split. However, because the seventy-fifth percentile for Δ*excess-ratio* is zero, it's obvious some firms actually increase the level of authorized shares after the split announcement. In particular, between the announcement date and the pay date, some sample firms amend their charters to increase the level of authorized shares. We explore this effect in more detail in Section IV. The mean (median) pre-split share price is $81.40 ($73.00), and the mean (median) split factor is 1.1 (1.00) (i.e., shareholders receive 2.20 [2.00] shares in exchange for one pre-split share). The mean and median market capitalization prior to the split announcement is $7.74 and $2.04 billion, respectively. The average (median) book-to-market

ratio is 0.27 (0.22), suggesting that the sample firms tend to have relatively high growth opportunities.

[TABLE 2 ABOUT HERE]

IV. Excess-ratio and stock split announcement returns

In this section, we present the univariate statistics of the abnormal returns around a stock split announcement, firm characteristics, and other variables in the model. We also discuss the results of the cross-sectional variation in abnormal announcement returns for the splitting firms.

A. *Announcement return*

Table 3 reports the variation in the abnormal return around a stock split announcement. We group the sample into four quartiles based on the *excess-ratio* prior to the split announcement. We only tabulate the announcement return for the entire sample and the upper (Q1) and lower (Q4) quartiles of the pre-split *excess-ratio*. We calculate market-adjusted (using the CRSP value-weighted index) cumulative abnormal returns (CARs), over four different event windows (0, 0 to +1, -1 to +1, and -2 to +2) around the split announcement date, where Day 0 is the declaration date of the stock split as reported in the CRSP database. The mean and median five-day (day -2 to day +2) CAR for our full sample of 594 firm-splits is a statistically significant 3.92% and 2.85%, respectively. These values are qualitatively similar to those found in previous studies (e.g., Grinblatt, Masulis, and Titman, 1984; Ikenberry et al., 1996; and Lin, Singh, and Yu, 2009). The mean (median) five-day CAR for the upper *excess-ratio* quartile (Q1) is 4.96% (3.79%) and is significantly different at the five percent level from that for the lower *excess-ratio*

quartile (Q4), 2.43% (2.45%).[15] This finding suggests that the market reacts more (less) positively to the split announcement of firms with higher (lower) pre-split levels of *excess-shares.* We interpret this as evidence that is generally consistent with our primary hypotheses

[TABLE 3 ABOUT HERE]

B. *Univariate Analysis*

In Table 4 we sort the sample by *excess-ratio* and compare the firm characteristics for those firms that fall into the upper *excess-ratio* quartile (Q1) and the lower *excess-ratio* quartile (Q4). We report test results for differences in means and medians employing a *t*-test and Wilcoxon test, respectively.

We calculate the variables as follows: *excess-ratio*, is the ratio of *excess-shares* (i.e. non-outstanding authorized shares) to shares outstanding of the splitting firm before the announcement; *Post excess-ratio* is calculated as (*excess-shares* minus common shares outstanding times Factor to Adjust Price) / (common shares outstanding multiplied by Factor to Adjust Price); Δ*Excess-ratio,* is the change in ratio as a result of the split.[16] *Price per share*, is the closing stock price on day -5 relative to the announcement date; *Market cap,* is the product of the *Price per share* on day -5 relative to the announcement times the number of shares outstanding; *ROA*, is calculated as net income divided by total assets; *ROE*, is calculated as net income divided by common equity; *BM*, is the book-to-market equity ratio on day -5 relative to the announcement date and calculated as common equity divided by common shares outstanding

[15] A qualitatively similar result holds for the 3-day market-adjusted CAR as well.
[16] Immediately following the split announcement, some firms will request that shareholders approve an increase in the level of authorized shares. If this occurs prior to the split announcement but before the pay date of the split, we include the additional shares as part of the *post excess-ratio*. In some cases, this can cause the *post excess-ratio* to exceed the pre-split *excess-ratio*.

multiplied by share price; *Runup* is the price run-up from day -120 to day -2 relative to the declaration date; *# of Shareholders*, is the number of common shareholders; *# of Analysts*, is the number of analysts following the stock (from IBES); *Age*, is the difference between the split announcement year and the first year the firm is recorded in CRSP/Compustat Merged Database.

[TABLE 4 ABOUT HERE]

From Table 4, the pre-split mean and median *Price per share*, *ROA*, *ROE*, *Runup*, *BM*, and *Age* are similar between the Q1 and Q4 quartiles. The firms in the Q1 quartile are generally smaller on multiple measures of firm size measures (*Total assets*, *Market Capitalization, and Sales*) and larger in terms of *Split factor*. We use number of shareholders (*# of Shareholders*) and number of analysts (*# of Analysts*) as proxies for any potential differences in information asymmetry across sample firms. We find that firms with the highest level of *excess-ratio* have fewer shareholders (although this difference is not statistically significant) and are followed by fewer analysts (both the mean and median are significant at the 5% level). These results seem to suggest that there may be more information asymmetry or possibly higher agency costs for the firms in the Q1 quartile.

C. *Multivariate Analysis*

In this section, we empirically test our hypothesis that the *excess-ratio* is positively related to the abnormal stock returns around the split announcement day in a multivariate setting. We use the following pooled cross-sectional time-series regression model:

$$CAR_{i,t} = \alpha_0 + \beta_1 excess\ ratio_{i,t} + \beta_2 Splitfactor_{i,t} + \beta_3 lnPrice_{i,t} + \beta_4 lnSize_{i,t} + \beta_5 lnBM_{i,t} + \beta_6 Runup_{i,t} + \beta_7 Analyst_{i,t} + \beta_8 lnInst_{i,t} + \varepsilon_{i,t} \quad (3)$$

The dependent variable is the 5-day market-adjusted CAR for the splitting firm (*CAR* [-2, 2]), following Ikenberry et al. (1996).[17] We include control variables that have been used in previous studies to explain abnormal stock split announcement returns. Grinblatt, Masulis, and Titman (1984), among others (Brennan and Copeland [1988], and Lin et al. [2009]), used the split factor ($Splitfactor$) as a proxy for the strength of the signal. We also control for the pre-split stock price (logged) with $lnPrice$. The book-to-market ratio *(*$lnBM$*)* and firm size (*lnSize*) is included by Ikenberry et al. (1996), while the pre-split price run-up ($Runup$) is used by Grinblatt, Masulis, and Titman (1984) as a cross-sectional determinant of abnormal split announcement returns. We also control for any cross-sectional variation in asymmetric information with the number of analysts following the firm ($Analyst_i$). Finally, we include institutional ownership ($lnInst$), which is the fraction of a firm's shares that are held by institutional investors (13f) in the calendar quarter before the split declaration from the Thomson Reuters Ownership Database, as an additional proxy for asymmetric information. We estimate the standard errors using White's (1980) heteroscedasticity consistent covariance matrix.

Table 5 presents the results of estimating Equation 3. Models 1 and 2 only include the excess-ratio and only differ in that Model 2 incorporates year fixed effects. In Model 3 and Model 4 we add all the control variables described above. And again, Model 4 has year fixed effects while Model 3 does not. The coefficient on the *excess-ratio* is positive and statistically significant in all four models.[18] The *excess-ratio* is statistically significant at the one-percent level in Models 1 and 2 and at the five-percent level in Models 3 and 4. Consistent with prior literature (Grinblatt et al., 1984; and Lin et al., 2009), *LnPrice,* and $lnBM_i$ are significant and

[17] Our results are robust if we use CAR (-1, +1) in lieu of CAR (-2, +2) as the dependent variable.
[18] The results are qualitatively similar when we use the natural log of the excess-ratio variable.

negatively related to the split announcement return in all models and *lnSize* is negative and significant in Model 3 only.

[TABLE 5 ABOUT HERE]

Overall, these findings suggest that firms with higher pre-split levels of *excess-ratios*, have more positive abnormal returns than those with lower levels of *excess-ratios*. This result is consistent with our univariate findings and suggests that the market reacts more positively to the split announcement of firms with greater power to issue stock.

D. *Robustness tests*

1. Agency costs and *excess shares*

The significantly higher abnormal announcement returns for firms with high levels of excess-shares, which are subsequently reduced by the stock split, suggest that these firms may also suffer from high agency costs in general. To access whether this is true, we attempt to relate the pre-split levels of the *excess-ratio* to proxies for agency costs. We use two proxies for agency costs, SGA as a percent of sales and asset turnover, two variables used in previous literature (e.g. Ang, Cole, and Lin, 2000; Anderson and Reeb, 2003; Singh and Davidson, 2003).

A firm`s selling, general, and administrative (SG&A) expense (as a percent of sales), which represents the costs related to the management function and to the sale of products and includes managerial salaries, rents, insurance, utilities, supplies, and advertising costs. Higher levels of SG&A expenses are a close approximation of managerial pay and perquisite consumption in terms of higher salaries, large office complexes, and other organizational support facilities. These costs reflect managerial discretionary expenses and may be a good proxy for agency costs. Second, we measure agency cost as the ratio of annual sales to total assets (i.e. asset utilization). This ratio measures management's ability to utilize assets efficiently. A high asset turnover ratio

shows a large amount of sales and ultimately cash flow that are generated for a given level of assets. On the contrary, a low ratio would indicate that management is under-utilizing, or possibly mismanaging assets. While a higher asset turnover may be identified with efficient asset management practices and hence creating value for shareholders, a lower sales to asset ratio reflects asset deployment for unproductive purposes. Therefore, firms with considerable agency conflict will likely have lower asset turnover.

In Table 6, we report the average excess-ratio for the upper and lower quartiles based on the of *SG&A expense ratio* and *Asset turnover*. Firms with the highest percentage of *SG&A* have an average excess-ratio of 3.15 while those with the lowest levels of *SG&A* have an average *excess-ratio* of 2.94. These differences are statistically insignificant but in the hypothesized direction. The *excess-ratio* means across the two quartiles for the *asset turnover* are also in the expected direction, however the difference is still statistically insignificant. However, the difference in the means of the *post excess-ratio* across the two quartiles for both the *SG&A* measure as well as *asset turnover* are in the expected direction and both are significant at the one-percent level. We know that some firms, immediately following the split announcement, ask shareholders to amend the corporate charter to increase the level authorized shares. It appears that this is more likely the case for the firms with higher levels of agency problems.

[TABLE 6 ABOUT HERE]

In Table 7 we estimate Equation 3, with two additional variables. First, we include one of the proxies for agency costs (AT is included in Models 1 & 2, SG&A is included in Models 3&4). We also include an interacted variable. We create a binary variable based upon AT, where the variable equals one when a firm's asset turnover is in the lowest quartile, and zero otherwise. This variable is interacted with the *excess-ratio.* A similar interacted variable is

created for the SG&A proxy, except the binary variable takes on a value of one when the SG&A of the firm is in the highest quartile, and zero otherwise. If a reduction in the amount of *excess-shares* helps to mitigate the firm's conflicts of interest, we expect to find a positive and significant coefficient on the interacted variable.

[TABLE 7 ABOUT HERE]

In Model 2, the coefficient on the interaction term between the SG&A dummy variable and the excess-ratio is positive and statistically significant at the 5 percent level. This is consistent with our expectation that for firms with the highest levels of agency problems, a decrease in the management's ability to issue new stock, is viewed favorably by shareholders.

2. Amending the Charter Prior to the Split Pay Date

Our earlier analysis (see Table 2) shows that approximately one-fourth of the firms in our sample reverse some or all of the reduction in their *excess-ratio* during the period between the announcement and the pay date of the stock split. At first glance, this charter amending behavior may appear to call into question our prior analysis. However, consider that there may be an optimal level of *excess-shares* (see Appendix B for a brief description of one possible model). Prior to the split, if a firm were above its optimal level of *excess-shares*, the effect of the split would be to move it closer to this optimum. However, for a firm that was either at its optimum or slightly below, the split would move the firm further from the optimal level of *excess-shares*. For these firms, it may make sense for them to bear the expense of amending their corporate charter to increase the level of *excess-shares*.

If firms behave as though there were some optimal level of excess-shares, then we would expect to observe more firms with low, pre-split levels of excess-shares amending their charters

after the split announcement, and vice versa. Table 8 presents the number of firms for the highest and lowest quartiles, based upon the pre-split excess-ratio, that request that their shareholders vote on a charter amendment to increase the level of authorized shares. Approximately, one-in-ten (10.8%) firms with the highest levels of pre-split excess-ratio request a charter amendment, while nearly two-thirds (62.4%) of firms with the lowest levels of pre-split excess-ratio amend their charters. It appears that firms behave as though there were some optimal level of authorized shares.

[TABLE 8 ABOUT HERE]

We also add a bivariate variable, *Amend*, to our regression model in an effort to more closely examine this difference. *Amend* has a value of 1 if the sample firm increased its authorized shares after the split announcement but before the pay date and is zero for those that do not increase their authorized shares after to the split announcement. Table 9 presents the results of this analysis. Relative to the results from Table 5, the coefficient on the pre-split *excess-ratio* remains positive, but is now significant at the one-percent level rather than five-percent. *Amend* is also positive and significant at the five-percent level. The control variables maintain their signs and statistical significance. This result suggests that at the time of the announcement, the market anticipates, and reacts positively to the charter amendment request. In part, it may also reflect the market reaction to firms who simultaneously announce an increase to their authorized shares and the stock split. A subset of our sample firms have insufficient excess-shares for a stock split, and as a result, they announce a stock split, conditioned upon shareholder approval of an increase in the firm's level of authorized shares. The increase requested typically increases the excess-ratio, net of the split, relative to the pre-split excess-ratio. However, it is important to note that the positive and statistically significant result remains

for the *excess-ratio*. These two results together are consistent with the premise that firms have some optimal level of authorized shares and adds further evidence that limitations on the level of authorized shares may continue to play a valuable role in mitigating the agency relationship between managers and shareholders.

[TABLE 9 ABOUT HERE]

V. Conclusion

Hanks (1995) argues that the limitation on the number of authorized, but unissued shares (i.e. excess-shares) available to managers is a historical artifact from the early days of the corporation, and that it should be abolished. Ganor (2011) suggests that limiting the amount of unissued shares is an important means of reducing the conflict of interest between managers and shareholders. In this study, we provide some empirical evidence to help resolve this debate. In particular, we examine an event that causes a significant decrease in the amount of excess-shares, namely a stock split. When a firm splits its shares, the number of new shares needed is equal to the pre-split shares outstanding times the split factor. The amount of *excess-shares* (i.e. authorized but previously not issued) is reduced by the same amount. Since it is unlikely that the primary reason for the split is to reduce the amount of excess-shares, we treat this reduction as an "unintentional" result of the stock split.

We divide our sample of firm-splits into quartiles, based on the firm's *excess-ratio* (defined as the number of *excess-shares* divided by the number of shares outstanding). The average 5-day abnormal announcement return for firms with the highest levels of *excess-ratio* is 4.96% and this is statistically different from the average of 2.43% for firms with the lowest levels of *excess-ratio*. This appears to indicate that the market interprets the split announcement and concomitant

reduction in the *excess-ratio* for firms with very high levels of excess-shares as a positive signal. This result holds in a multivariate setting with control variables commonly included in previous studies of abnormal announcement returns around stock splits.

We also examine the relation between the *excess-ratio* and proxies for agency costs (asset turnover and SG&A expense ratio). While there appears to be no difference in the levels of the *excess-ratio* in the upper and lower quartiles, based on each of the agency cost proxies, we do find that the post excess-ratio is significantly higher for the firms with higher agency costs. Thus it seems possible that those firms with higher agency costs are either more likely to reverse the effect of the split with an amendment to the charter and/or began with a higher level of authorized shares prior to the split.

Finally, we examine the frequency with which firms choose to increase their *excess-shares* in conjunction with the stock split announcement. About one-fourth of splitting firms reverse all or some of the reduction caused by the split. Approximately 10% of those firms that had a pre-split excess-ratio that ranked among the highest quartile based on excess-ratio, requested that shareholders approve an increase in the firm's authorized shares. However, for those firms that had a pre-split excess-ratio among the lowest 25%, nearly two-thirds of the firms requested an increase in their authorized shares.

Overall, our findings are most consistent with the premise that managers' power to issue stock becomes more constrained as a result of the split, likely through reduced agency costs, and hence increases firm value. The evidence also suggests that a limit on the level of authorized shares is important in balancing the agency relationship between managers and shareholders.

Appendix A: Excerpt from Hewlett Packard Company's DEF 14A

The following is an excerpt from Hewlett Packard Company's DEF 14A filing dated January 25, 2001[19].

PROPOSAL NO. 2

AMENDMENT OF THE COMPANY'S CERTIFICATE OF INCORPORATION TO INCREASE THE NUMBER OF AUTHORIZED SHARES

The Company's Certificate of Incorporation currently authorizes the issuance of four billion eight hundred million (4,800,000,000) shares of common stock, with a par value of one cent ($.01) per share, and 300,000,000 shares of preferred stock, with a par value of one cent ($.01) per share. In November 2000, the Board of Directors adopted a resolution proposing that the Certificate of Incorporation be amended to increase the authorized number of shares of common stock to nine billion six hundred million (9,600,000,000), subject to stockholder approval of the amendment.

OUR BOARD OF DIRECTORS RECOMMENDS A VOTE FOR THE APPROVAL OF THE AMENDMENT OF THE COMPANY'S CERTIFICATE OF INCORPORATION TO INCREASE THE NUMBER OF AUTHORIZED SHARES.

VOTE REQUIRED

Approval of the proposal requires the affirmative vote of the majority of shares of common stock present or represented by proxy and entitled to vote at the meeting.

PROPOSED AMENDMENT

As of December 29, 2000, the Company had approximately 1,932,546,000 shares of common stock outstanding and approximately 508,417,000 shares reserved for future issuance under the Company's employee stock plans, of which approximately 171,858,000 shares are covered by outstanding options and approximately 336,559,000 shares are available for grant. In addition, the Company has approximately 13,586,000 shares reserved for issuance in connection with the acquisition of Bluestone Software, Inc. and approximately 21,817,000 shares reserved for issuance upon conversion of the Company's Liquid Yield Option Notes due 2017 and outstanding warrants. Based upon the foregoing number of outstanding and reserved shares of common stock, the Company currently has approximately 2,323,634,000 shares remaining available for other purposes.

[19] The document in its entirety can be found on the SEC's Electronic Data Gathering and Retrieval system at: http://www.sec.gov/Archives/edgar/data/47217/000091205701002700/0000912057-01-02700.txt

The following is the text of the first paragraph of Article IV of the Certificate of Incorporation of the Company, including the proposed amendment to the second sentence thereof:

The Corporation is authorized to issue two classes of stock to be designated, respectively, Preferred Stock, par value $0.01 per share ("Preferred"), and Common Stock, par value $0.01 per share ("Common"). The total number of shares of Common that the Corporation shall have authority to issue is 9,600,000,000. The total number of shares of Preferred that the Corporation shall have authority to issue is 300,000,000. The Preferred Stock may be issued from time to time in one or more series.

PURPOSE AND EFFECT OF THE PROPOSED AMENDMENT

The Board of Directors believes that the availability of additional authorized but unissued shares will provide the Company with the flexibility to issue common stock for a variety of corporate purposes, such as to effect future stock splits in the form of stock dividends, to make acquisitions through the use of stock, to raise equity capital, to adopt additional employee benefit plans or to reserve additional shares for issuance under such plans and under plans of acquired companies.

Increasing the number of shares of common stock that the Company is authorized to issue would give the Company additional flexibility with respect to future stock splits and stock dividends. On seven occasions the Company has effected either a stock split or a stock dividend in the form of a stock split. The last such action was a 2-for-1 stock split in the form of a stock dividend payable in October 2000. Also in 2000, the Company agreed to issue approximately 13,586,000 shares of common stock to acquire Bluestone Software, Inc.

The Board of Directors believes that the proposed increase in authorized common stock would facilitate the Company's ability to accomplish stock splits in the form of a stock dividend and other business and financial objectives in the future without the necessity of delaying such activities for further shareowner approval, except as may be required in particular cases by the Company's charter documents, applicable law or the rules of any stock exchange or national securities association trading system on which the Company's securities may then be listed. Other than as permitted or required under the Company's employee benefit plans and under outstanding options, warrants and other securities convertible into common stock, and the acquisition described above, the Board of Directors has no immediate plans, understandings, agreements or commitments to issue additional common stock for any purposes. Whether or not the Company's shareowners approve this proposal will not impact the Company's existing agreements to issue stock, including pursuant to the acquisition described above. No additional action or authorization by the Company's shareowners would be necessary prior to the issuance of such additional shares, unless required by applicable law or the rules of any stock exchange or national securities association trading system on which the common stock is then listed or quoted. The Company reserves the right to seek a further increase in authorized shares from time to time in the future as considered appropriate by the Board of Directors.

Under the Company's Certificate of Incorporation, the Company's shareowners do not have preemptive rights with respect to common stock. Thus, should the Board of Directors elect to issue additional shares of common stock, existing shareowners would not have any preferential rights to purchase such shares. If the Board of Directors elects to issue additional shares of common stock, such issuance could have a dilutive effect on the earnings per share, book value per share voting power and shareholdings of current shareowners.

The proposal could have an anti-takeover effect, although that is not its intention. For example, if the Company were the subject of a hostile takeover attempt, it could try to impede the takeover by issuing shares of common stock, thereby diluting the voting power of the other outstanding shares and increasing the potential cost of the takeover. The availability of this defensive strategy to the Company could discourage unsolicited takeover attempts, thereby limiting the opportunity for the Company's shareowners to realize a higher price for their shares than is generally available in the public markets. The Board of Directors is not aware of any attempt, or contemplated attempt, to acquire control of the Company, and this proposal is not being presented with the intent that it be utilized as a type of anti-takeover device. In addition to the Company's common stock, the Company's Certificate currently empowers the Board of Directors to authorize the issuance of one or more series of preferred stock without shareowner approval. No shares of preferred stock of the Company are issued or outstanding. No change to the Company's preferred stock authorization is requested by the Amendment.

If the proposed amendment is adopted, it will become effective upon filing of a Certificate of Amendment to the Company's Certificate of Incorporation with the Delaware Secretary of State. However, if the Company's shareowners approve the proposed amendment to the Company's Certificate of Incorporation, the Board retains discretion under Delaware law not to implement the proposed amendment. If the Board exercised such discretion, the number of authorized shares would remain at current levels.

Appendix B: A Stylized Model for the Determination of an Optimal Excess-Ratio

Since this variable is relatively unstudied in the literature, we propose a relatively straightforward framework with which to view the excess authorized share ratio (*excess-ratio)*. While we do not directly test the construct that we describe herein, it provides the reader with a brief background of how an optimal *excess-ratio* may arise. Clearly, this optimal *excess-ratio* may vary from firm to firm. The level of the *excess-ratio* selected by the firm is the result of minimizing the total costs related to excess authorized shares. These costs take two forms. First, as the *excess-ratio* increases, there will be an increase in the power that is held by the firm's management and a concomitant decrease in power held by the shareholders. This will lead to a greater need to monitor managers and result in an increase of agency costs. In our stylized model, we assume that the agency costs are increasing in *excess-shares* at an increasing rate. From a practical point of view, this function makes intuitive sense. Very low levels of *excess-ratio* (*excess-ratio* less than one) does not grant much power to managers. Such levels would only allow managers to implement small seasoned equity issues, engage in small stock mergers, or stock dividends. Even moderate levels of *excess-ratio* would prevent managers from engaging in some takeover strategies that require higher levels of *excess-shares*. It is only the very highest levels of *excess-ratio* that require shareholders to more closely monitor management.

The second cost related to the *excess-ratio* is what we term transaction costs. These costs can take several forms and are decreasing in *excess-ratio* at a decreasing rate. First, they include the direct costs related to the process of increasing the *excess-ratio*. That is, if a firm has a low level of *excess-shares* and wishes to engage in some corporate activity that requires additional

shares, the firm must first obtain permission from the shareholders (in practice, this is sometimes done at a special meeting of the shareholders called expressly for the purpose of increasing the level of authorized shares). A second cost that we group under the 'transaction cost' category is the potential that the firm will forgo a particular activity because it does not have sufficient excess authorized shares. An example of which would be a positive NPV project that may only be available for a limited time, or one in which a competitor may be able to begin more quickly because they have sufficient excess authorized shares or other slack resources (e.g. available debt capacity). For example, a stock-based merger could be one such project.

Between the agency costs (which are increasing in the *excess-ratio*) and the transaction costs (which are decreasing in the *excess-ratio*) an optimal level of excess authorized shares exists, which minimizes the sum of these two costs. Figure 1 presents this concept graphically.

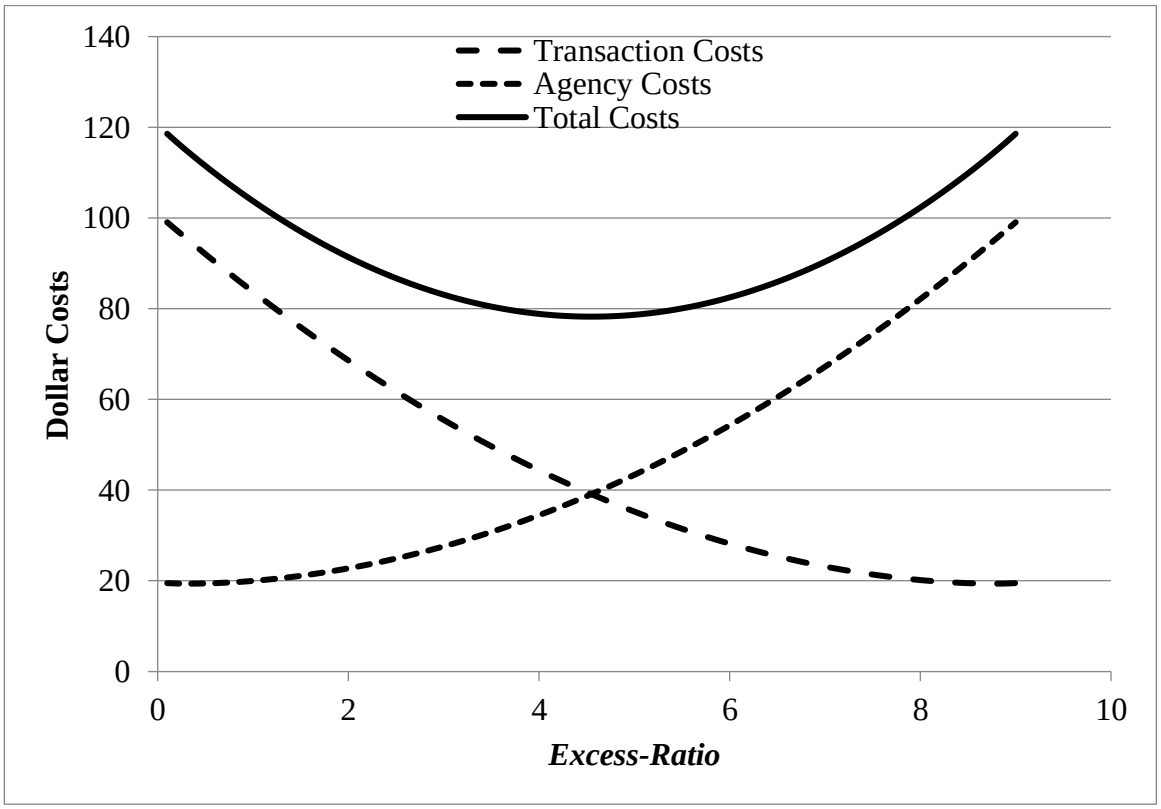

Figure 1. Optimal level of the *excess-ratio*.

This trade-off between agency costs and transaction costs clearly does not capture the entirety of the actions related to the decision to split a firm's shares. However, at the margin it may play an important role. Further, the firms in our sample, namely firms that have enjoyed a run-up in share price, may not face the same type of agency costs related to the *excess-ratio* that non-splitting firms might face. In fact, the shareholders of splitting firms may be much less concerned by agency costs (which may be an irrational response to the current success of the firm), when their managers have been successful in increasing the value of the firm. However, for our purposes this will bias against finding a result in our empirical analysis.

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Table 1. Distribution of *excess-ratio* and Δ*excess-ratio* by split year and industry

Panel A. Distribution by split year

Year	Number of splits	*Excess-ratio*		Δ*Excess-ratio* (%)	
		Mean	Median	Mean	Median
1998	6	2.87	2.46	-22.35	-62.10
1999	95	2.89	2.34	1.45	-61.60
2000	127	3.05	2.51	13.42	-59.52
2001	20	2.92	2.59	23.54	-59.67
2002	28	3.22	2.74	-68.00	-68.35
2003	30	3.04	2.78	-64.40	-66.73
2004	46	2.81	2.28	-40.99	-64.39
2005	63	2.56	2.18	-55.29	-68.37
2006	37	2.76	2.64	-46.95	-65.03
2007	40	2.69	2.26	-52.35	-69.01
2008	10	3.01	3.00	-42.41	-62.01
2009	4	2.30	2.48	-44.15	-67.55
2010	13	3.69	2.82	-60.66	-67.71
2011	20	3.11	2.96	-30.87	-63.81

Panel B. Distribution by industry	SIC codes	Frequency	%
Agriculture	< 1,000	2	0.34%
Mining	1,000-1499	33	5.56%
Construction	1,500-1999	11	1.85%
Manufacturing	2,000-3,999	314	52.86%
Transportation	4,000-4,899	26	4.38%
Wholesale trade	5,000-5,199	17	2.86%
Retail trade	5200-5999	43	7.24%
Services	7000-8999	147	24.75%
Public Administration	9100-9,999	1	0.17%
Total		594	

Table 2. Descriptive statistics of the sample firms and model variables

Excess-ratio, the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm before the announcement; *Post excess-ratio* is calculated as (authorized shares minus common shares outstanding times Factor to Adjust Price) / (common shares outstanding multiplied by Factor to Adjust Price); Δ*Excess-ratio*, is the change in exchange ratio as a result of the split. *Price per share*, stock price at day -5 relative to the announcement date; *Market cap*, is the market value of the outstanding shares at day -5 relative to the announcement; *Total Sales*, is the annual sales for the issuing firm; *ROA*, is calculated as Net Income divided by total assets; *ROE*, is calculated as Net Income divided by common equity; *BM*, is the book-to-market equity ratio at day -5 relative to the announcement date and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is price run-up from day -120 to day -2 relative to the declaration date; *# of Shareholders*, shareholders (Compustat item 100); *# of Analysts*, the number of analysts following the stock (from IBES); *Age*, the difference between the split announcement year and the first year firm recorded in Compustat database.

Characteristic	Mean	Median	Std. Dev.	75th Percentile	25th Percentile
Excess-ratio	2.91	2.41	1.62	3.60	1.82
Post excess-ratio	1.77	1.19	2.06	2.05	0.65
Δ*Excess-ratio (%)*	-23.73	-64.20	1.01	0.00	-72.30
Total assets (10^6)	3,247.1	785.8	6,999.4	2,532.2	199.9
Market Cap. (10^6)	7,742.1	2,039.8	17,761.7	5,829.4	832.4
Total Sales (10^6)	3,513.2	754.7	8,071.5	2,628.5	157.1
CASH/TA (%)	16.5	11.4	17.5	21.3	3.7
ROA (%)	5.3	7.6	13.3	11.72	3.4
ROE (%)	12.9	14.8	25.8	22.5	7.7
BM	0.27	0.22	0.19	0.37	0.11
Price per share	81.4	73.0	40.5	96.1	53.5
Split factor	1.1	1.0	0.2	1.0	1.0
Runup (%)	48.8	35.7	46.0	62.6	18.6
# of Shareholders(10^3)	14.5	1.6	43.1	7.9	0.4
#. of Analysts	10.7	9.0	8.2	15.0	4.0
Age (years)	15.1	11.0	12.9	19.0	5.0

Table 3. Abnormal returns around split announcement date by *excess-ratio* quartiles

Table presents market-adjusted mean (median) cumulative abnormal returns (CARs) for the event periods (0), (0, 1), (-1, 1), and (+2,-2). CARs are market adjusted return where market is CRSP value weighted index. Quartile rankings are based on the *excess-ratio*. We report differences in means (t-test) and medians (Wilcoxon test). ** and * represent significance at the 1% and 5% level, respectively.

Returns	Full Sample (n=594)	Q1 (High *Excess-ratio*) (n=148)	Q4 (Low *Excess-ratio*) (n=148)	Q1 – Q4 Difference
	Mean (Median)	Mean (Median)	Mean (Median)	T (Z)
CAR (0)	0.0145** (0.0103**)	0.0228** (0.0103**)	0.0145** (0.0072**)	1.55 (1.82)
CAR (0 +1)	0.0303** (0.0206**)	0.0364** (0.0224**)	0.0200** (0.0167**)	1.89 (1.31)
CAR (-1 +1)	0.0360** (0.0231**)	0.0424** (0.0271**)	0.0232** (0.0188**)	2.01* (1.55)
CAR (-2 +2)	0.0392** (0.0285**)	0.0496** (0.0379**)	0.0243** (0.0245**)	2.52* (1.90*)

Table 4. Univariate comparison of firms with high and low *excess-ratio*

Table presents the mean (median) univariate characteristics for splitting firms. Quartile rankings are based on the *excess-ratio*. *Excess-ratio* is the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm before the announcement; Post *excess-ratio* is calculated as (authorized shares minus common shares outstanding times Factor to Adjust Price) / (common shares outstanding multiplied by Factor to Adjust Price); Δ*Excess-ratio*, is the change in exchange ratio as a result of the split. *Price per share*, is the stock price at day -5 relative to the announcement date; *Market cap*, is the market value of the outstanding shares at day -5 relative to the announcement; *ROA*, is calculated as Net Income divided by total assets; *ROE*, is calculated as Net Income divided by common equity; *BM*, is the book-to-market equity ratio at day -5 relative to the announcement date and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the declaration date; *# of Shareholders*, is shareholders the number of common shareholders; *# of Analysts*, is the number of analysts following the stock (from IBES); *Age*, is the difference between the split announcement year and the first year the firm is recorded in CRSP/Compustat Merged Database. We report differences in means (t- test) and medians (Wilcoxon test). ** and * represent significance at the 1% and 5% level, respectively.

Variables	Upper Quartile (n=148) Mean (Median)	Lower Quartile (n=148) Mean (Median)	Difference t / (Z) score
Excess-ratio	5.2 (4.9)	1.3 (1.5)	35.56** (14.87**)
Post excess-ratio	2.7 (1.9)	1.5 (1.2)	5.01** (6.90**)
Δ*Excess-ratio (%)*	-44.2 (-60.4)	33.7 (0.0)	-6.12** (-3.18**)
Total Assets (10^6)	2,445.6 (537.7)	4,038.6 (1,073.5)	-2.02* (-1.77)
Market Cap. (10^6)	5,829.3 (1,621.7)	9,279.8 (2,551.8)	-1.71 (-1.95)
Total Sales (10^6)	2,382.7 (456.1)	4,097.4 (871.4)	-2.06* (-2.15*)
Price per share	83.3 (73.4)	82.3 (74.0)	0.20 (0.60)
ROA (%)	3.6 (6.1)	5.0 (8.2)	-0.84 (-1.92)
ROE (%)	10.3 (13.4)	14.3 (14.3)	-1.20 (-1.47)
Runup (%)	51.4 (35.3)	48.2 (36.7)	0.59 (0.13)
BM	0.26 (0.22)	0.25 (0.20)	0.21 (-0.33)
Split factor	1.1 (1.00)	1.0 (1.00)	2.40* (2.38*)
# of Shareholders (10^3)	13.1 (1.2)	17.3 (1.9)	-0.75 (1.67)
# of Analysts	9.7 (8.0)	12.1 (10.0)	-2.43* (-2.18*)
Age (years)	14.1 (9.0)	14.7 (11.0)	-0.41 (-1.35)

Table 5. Stock split announcement returns and the *Excess-ratio*

In all models, the dependent variable is the market adjusted cumulative abnormal return (CAR) centered on the split announcement day, from day -2 to day +2. *Excess-ratio* is the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm; *Splitfactor*, the number of additional shares per old share issued. *Lnprice*, the log pre-split stock price at day -5 relative to the announcement date; *Lnsize*, the log of the market value of the stocks outstanding shares at the end of the year prior to the announcement; *LnBM*, the log book-to-market equity ratio at the end of the year prior to the announcement and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the announcement date; *Analyst*, the number of analysts following the stock (from IBES); *Ln_inst*, the percentage of a firm's outstanding shares held by institutions in the quarter prior to the split announcement. P-values are reported in parentheses. ** and * represent significance at the 1% and 5% level, respectively.

Model	(1)	(2)	(3)	(4)
Excess-ratio	0.0066**	0.0063**	0.0048*	0.0048*
	(0.002)	(0.003)	(0.025)	(0.026)
Splitfactor	---	---	0.0297	0.0282
			(0.052)	(0.068)
Lnprice	---	---	-0.0307**	-0.0356**
			(0.006)	(0.002)
Lnsize	---	---	-0.0080*	-0.0073
			(0.044)	(0.071)
lnBM	---	---	-0.0189**	-0.0165**
			(<0.001)	(0.001)
Runup	---	---	0.0074	0.0039
			(0.450)	(0.705)
Analyst	---	---	0.0003	0.0002
			(0.621)	(0.729)
ln_Inst	---	---	-0.0012	-0.0011
			(0.736)	(0.769)
Constant	0.0200**	0.0151	0.1484**	0.1616**
	(0.005)	(0.224)	(<0.001)	(<0.001)
Year fixed effects?	No	Yes	No	Yes
Adj. R^2 (%)	1.42	1.80	7.19	7.16
N	594	594	594	594
F-value	9.58	1.78	6.74	3.18
Pr > F	0.002	0.039	0.000	0.000

Table 6. *Excess-ratio* and agency costs

Table presents the mean (median) univariate *excess-ratios* and *post* excess-ratios for splitting firms. Quartile rankings are based on *asset turnover* and *SG&A*. *Asset turnover* is measured as ratio of annual sales to total assets. *SG&A expense ratio* is measured as the ratio of SG&A expense to total sales revenue. We report differences in means (t-test) and medians (Wilcoxon test). ** and * represent significance at the 1% and 5% level, respectively.

	Mean (Median)	N	Mean (Median)	N	Q1- Q4 Difference T (Z)
Panel A.	Low Asset Turnover (Q1)		High Asset Turnover (Q4)		
Excess-ratio	2.97 (2.65)	148	2.81 (2.35)	148	0.87 (0.99)
Post excess-ratio	2.44 (1.48)	148	1.28 (0.97)	148	4.85** (4.17**)
Panel B	High SG&A Ratio (Q1)		Low SG&A Ratio (Q4)		
Excess-ratio	3.15 (2.74)	148	2.94 (2.45)	148	1.06 (0.86)
Post excess-ratio	2.64 (1.66)	148	1.25 (0.95)	148	5.47** (4.89**)

Table 7 Interaction between the *Excess-ratio* and Agency Costs

In all models, the dependent variable is the market adjusted cumulative abnormal return (CAR) centered on the split announcement day, from day -2 to day +2. *Excess-ratio* is the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm; *Splitfactor*, the number of additional shares per old share issued. *Lnprice*, the log pre-split stock price at day -5 relative to the announcement date; *Lnsize*, the log of the market value of the stocks outstanding shares at the end of the year prior to the announcement; *LnBM*, the log book-to-market equity ratio at the end of the year prior to the announcement and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the announcement date; *Analyst*, the number of analysts following the stock (from IBES); *Ln_inst*, the percentage of a firm's outstanding shares held by institutions in the quarter prior to the split announcement. P-values are reported in parentheses. ** and * represent significance at the 1% and 5% level, respectively.

Model	(1)	(2)	(3)	(4)
Excess-ratio	0.0062** (0.008)	0.0041 (0.102)	0.0055* (0.012)	0.0049* (0.036)
Splitfactor	0.0239 (0.141)	0.0244 (0.132)	0.0245 (0.110)	0. 0246 (0.108)
Lnprice	-0. 0333** (0.006)	-0.0329** (0.006)	-0. 0368** (0.002)	-0.0372** (0.002)
Lnsize	-0. 0090* (0.033)	-0.0087* (0.040)	-0. 0074 (0.071)	-0.0073 (0.078)
lnBM	-0. 0158** (0.003)	-0.0136** (0.001)	-0. 0159** (0.002)	-0.0160** (0.002)
Runup	0. 0104 (0.342)	0.0076 (0.488)	0. 0103 (0.330)	0.0099 (0.349)
Analyst	0. 0003 (0.656)	0.0002 (0.766)	0. 0001 (0.885)	0.0001 (0.908)
ln_Inst	-0.0005 (0.904)	-0.0009 (0.812)	-0.0011 (0.754)	-0.0011 (0.763)
SG&A expense ratio	0.0205 (0.105)	0.0090 (0.105)		
*Excess-ratio*SG&A Expense ratio dummy*		0.0062* (0.028)		
Asset turnover			-0. 0048 (0.300)	-0. 0039 (0.438)
Excess-ratio Asset turnover dummy*				0.0016 (0.539)
Constant	0.1569** (<0.001)	0.1627** (<0.001)	0. 1761** (<0.001)	0.1762** (<0.001)
Year fixed effects?	Yes	Yes	Yes	Yes
Adj. R^2 (%)	10.84	11.52	8.75	8.65
N	594	594	594	594
F-value	3.92	3.99	3.49	3.35
Pr > F	0.000	0.000	0.000	0.000

Table 8. Charter amendments prior to the stock split pay date

This table presents the number of firms that request a charter amendment to increase the level of their authorized shares between the stock split announcement and pay dates. The total number and percent of firms within each quartile is given.

Request Charter Amendment	Q1 (High Pre-split *Excess-ratio*)	Q4 (Low Pre-split *Excess-ratio*)
Yes	16 (10.8%)	93 (62.4%)
No	132 (89.2%)	56 (37.6%)

Table 9. Firms that request a charter amendment to increase their authorized shares

Table reports the coefficient estimates from ordinary least squares. In all models, the dependent variable is the market adjusted cumulative abnormal return (CAR) centered on the split announcement day, from day -2 to day +2. *Excess-ratio*, the ratio of non-outstanding authorized shares to outstanding shares of the splitting firm; *Amend*= 1 if the firm increases its excess-shares after a stock split is announced and zero otherwise; *Splitfactor*, the number of additional shares per old share issued. *Lnprice*, the log pre-split stock price at day -5 relative to the announcement date; *Lnsize*, the log of the market value of the stocks outstanding shares at the end of the year prior to the announcement; *lnBM*, the log book-to-market equity ratio at the end of the year prior to the announcement and calculated as common equity divided by common shares outstanding multiplied by annual share price; *Runup* is the price run-up from day -120 to day -2 relative to the announcement date; *Analyst*, the number of analysts following the stock (from IBES); *Ln_inst*, the percentage of a firm's outstanding shares held by institutions in the quarter prior to the split announcement . P-values are reported in parentheses. ** and * represent significance at the 1% and 5% level, respectively.

Model	(1)	(2)
Excess-ratio	0.0066**	0.0067**
	(0.004)	(0.004)
Amend	0.0175*	0.0182*
	(0.041)	(0.036)
Splitfactor	0.0281	0.0267
	(0.065)	(0.082)
Lnprice	-0.0301**	-0.0351*
	(0.007)	(0.002)
Lnsize	-0.0080*	-0.0073
	(0.046)	(0.072)
lnBM	-0.0172**	-0.0150**
	(<0.001)	(0.003)
Runup	0.0034	0.0003
	(0.732)	(0.979)
Analyst	0.0003	0.0002
	(0.641)	(0.744)
Ln_Inst	-0.0009	-0.0009
	(0.806)	(0.815)
Constant	0.1421**	0.1655**
	(<0.001)	(<0.001)
Year fixed effects?	No	Yes
Adj. R^2 (%)	7.69	8.81
N	594	594
F-value	6.49	6.03
Pr > F	0.000	0.000