NBER WORKING PAPER SERIES

IS THE AMERICAN PUBLIC CORPORATION IN TROUBLE?

Kathleen Kahle
René M. Stulz

Working Paper 22857
http://www.nber.org/papers/w22857

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
November 2016

René Stulz serves on the board of a bank and consults and provides expert testimony for financial institutions. Kathleen Kahle is the Thomas C. Moses Professor in Finance, Eller College of Management, University of Arizona. René Stulz is the Everett D. Reese Chair of Banking and Monetary Economics, Fisher College of Business, Ohio State University, and is a Research Associate at the NBER. Their email addresses are kkahle@eller.arizona.edu and stulz@fisher.osu.edu. We are grateful for comments from and discussions with Harry DeAngelo. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

Is the American Public Corporation in Trouble?
Kathleen Kahle and René M. Stulz
NBER Working Paper No. 22857
November 2016
JEL No. D22,G24,G30

ABSTRACT

We examine the current state of the American public corporation and how it has evolved over the last forty years. There are fewer public corporations now than forty years ago, but they are much older and larger. They invest differently, as the importance of R&D investments has grown relative to capital expenditures. On average, public firms have record high cash holdings and in most recent years they have more cash than long-term debt. They are less profitable than they used to be and profits are more concentrated, as the top 100 firms now account for most of the net income of American public firms. Accounting statements are less informative about the performance and the value of firms because firms increasingly invest in intangible assets that do not appear on their balance sheets. Firms' total payouts to shareholders as a percent of net income are at record levels, suggesting that firms either lack opportunities to invest or have poor incentives to invest. The credit crisis appears to leave few traces on the course of American public corporations.

Kathleen Kahle
University of Arizona
McClelland Hall
P.O. Box 210108
Tucson , AZ 85721-0108
kkahle@eller.arizona.edu

René M. Stulz
The Ohio State University
Fisher College of Business
806A Fisher Hall
Columbus, OH 43210-1144
and NBER
stulz@cob.osu.edu

Section 1. Introduction

In a famous article published in the Harvard Business Review in 1989 titled "Eclipse of the public corporation," Jensen (1989) predicts the demise of the public corporation. He argues that public corporations are inefficient organizational forms because private firms financed by debt and private equity can resolve agency conflicts between investors and managers better than public firms. His prediction appeared to be invalid at first. The number of public firms increased sharply in the years immediately after the publication of the article. However, as Doidge, Karolyi, and Stulz (2017) show, the number of listed firms peaks in 1997 and falls by half since then, such that there are fewer public corporations today than forty years ago. Does this fall vindicate Jensen (1989)? Is the public corporation in trouble?

In this paper, we examine how American public corporations evolve over the last forty years. Over that period of time, public corporations experience massive changes. Not only are there fewer public corporations today than forty years ago, but these corporations are very different. They are much older and bigger. They are in different industries. Their assets are composed differently. They invest less in physical assets but more in R&D. They finance themselves differently. They are less profitable, especially if they are small. Their payouts to shareholders are higher, but in contrast to forty years ago, more payouts take the form of repurchases than of dividends. Their shareholders are very different, as institutions now typically hold more than half the shares of corporations large enough to be suitable investments for such investors.

To show how American public corporations have changed, we compare snapshots for 1975, 1995, and 2015. The variables we discuss are reported in Table 1 for these three years. These three snapshots correspond to the start and the end of our sample period, as well as a year that is in the middle of our sample period and close to when the number of public corporations peaks. In 1975, there are 4,819 publicly listed corporations. By 1995, that number increases to 7,002. The number of public corporations increases for the next two years to reach a peak of 7,507 in 1997. However, by 2015, the number of public corporations falls to 3,766, which is roughly half the number of public corporations at the peak and over 20% lower than in 1975.

Since the listing peak in 1997, there is only one year in which the number of listed firms increases. Specifically, the number of listed firms is 129 firms higher in 2014 than in the previous year. In contrast, the total value of American listed firms fluctuates sharply throughout the last forty years. Focusing on values expressed in terms of the purchasing power of 2015 dollars, we find that the aggregate market capitalization of public corporations in 2015 is about seven times larger than forty years ago. However, the aggregate value of public corporations is slightly higher in 1999, the peak of the dot-com bubble, than in 2015. From 1999 through 2015, the equity value of American public corporations is on a rollercoaster, falling from $22 trillion in 1999 to $11 trillion at the end of 2008, before increasing to close to $22 trillion at the end of 2015.

Since the total equity value of listed corporations is higher in 2015 than in 1995 but the number of corporations falls by half, the average market value of equity of public corporations must be significantly larger at the end of our sample period. In fact, we find that the average market value of the equity of a public corporation (in constant 2015 dollars) in 2015 is almost ten times the market value in 1975. The median market value increases by a factor of ten as well. Hence, we have fewer public corporations, but they are much larger. This increase in size is accompanied by a striking increase in the concentration of performance and assets. In 2015, 35 corporations account for half the assets of public corporations and 30 account for half the net income. In contrast, in 1975, these numbers were, respectively, 94 and 109.

Public corporations are in different industries as well. In 1975, the industries with the most listed firms are utilities, banks, and machinery. In 2015, these industries are banks, business services, and drugs. The industries that have grown are mostly industries that spend less on capital expenditures and more on R&D. This shift in how firms invest is fairly dramatic when we examine averages, but not when we look at medians. The reason for this difference is that the median firm does not report any R&D expense. When we consider averages, capital expenditures as a percentage of assets falls in half from 1975 to 2015. In contrast, R&D increases by a factor of five. In 1975, the average public corporation spends almost seven times more on capital expenditures than it spends on R&D. By 2015, average spending on R&D surpasses that on capital expenditures. Perhaps not surprisingly, since firms spend less on capital expenditures, property, plant, and equipment (PPE) is a smaller fraction of the assets of public corporations in 2015. While corporations' assets comprise less PPE, the fraction of assets represented by holdings of cash and liquid assets more than doubles.

One difficulty with the change in corporate investment is that the accounting treatment of R&D investment differs from the treatment of capital expenditures. Capital expenditures are capitalized over time, but R&D investment is expensed in the year incurred. Hence, if a firm increases its R&D investment at the expense of capital expenditures, its accounting performance suffers. For example, a well-accepted measure of profitability is a firm's operating cash flow to assets. This measure excludes depreciation and other non-cash charges or charges unrelated to operations. From 1996 through 2015, the yearly equally weighted average of operating cash flow to assets for public corporations averages only 0.2% of assets. From 1975 to 1995, it averages 4.3%. However, if we add R&D to cash flow, the deterioration in profitability is dramatically smaller, although it still exists: cash flow as a percentage of assets falls from 6.9% in the first twenty years of our sample to 5.3% in the last twenty. Another measure of profitability is return on assets (ROA). This measure includes the effect of depreciation and other non-cash charges. Average and median ROA for American corporations also decreases over our sample period, although much less so for large firms.

We also examine how corporations finance themselves. Compared to 1975, public firms have less debt on average, even though their leverage has increased over the last few years. Perhaps the best measure of their financial health is the ratio of debt minus cash over total assets, or the net leverage ratio. In the first twenty years of our sample, the average of the yearly equally weighted net leverage is 12.1%; since 1995, it is 0.7%. However, the equally weighted average of net leverage across firms is negative in every year from 2003 to 2014 except for 2008. Thus, in those years U.S. public firms on average have more cash than debt. In this paper, we report equally weighted averages as well as asset-weighted averages. Asset-weighted averages are more informative about large firms and thus can lead to different conclusions than equally weighted averages. Asset-weighted averages of leverage and net leverage in 2015 are at about the same level as in 1975. In other words, for large firms, leverage is not lower than in 1975.

Lastly, we focus on the owners of the equity, including how their composition has changed and how payouts to shareholders have evolved. We find that ownership of American public firms has changed substantially. The first year in which we can obtain institutional ownership from Thomson Financial's 13F data is 1980. In 1980, institutional ownership averages 17.7%. In 2015, average institutional ownership is 50.4%. Shareholders' payouts from corporations also differ now compared to 1975. Average dividends per dollar of assets are lower today than in 1975, in spite of the fact that average dividends per dollar of assets have increased by a factor of almost three since 2000. Repurchases of shares are much higher now than either twenty or forty years ago. Since the late 1990s, public corporations as a whole spend more on repurchases than on dividends, and repurchases per dollar of assets are more than six times what they were forty years ago. Because of the increase in repurchases, the highest share of net income paid out during our sample period is in 2015. Another important implication of repurchases is that, when we use an asset-weighted average, American public firms have negative net issuance of equity, meaning that large firms repurchase more shares than they issue for most years since the late 1990s.

The remainder of the paper is organized as follows. In the next section, we show that in 2015 there are fewer public firms, they are larger, and they are older than earlier in our sample period. In Section 3, we focus on what public firms do and how what they do has changed over time. In Section 4, we show how the capital structure and equity ownership of firms has changed. We conclude in Section 5.

Section 2. Fewer public firms, but bigger and older.

Doidge, Karolyi, and Stulz (2017) show that in recent years the U.S. has a listing gap in that it has fewer listed firms than one would expect given its economic development and institutions. They show that this listing gap is large. Specifically, if the variables that explain the number of listings per capita worldwide are used to predict the number of listed firms in the U.S., the predicted number of listed firms exceeds the actual number by more than 5,000 firms. There is no listing gap until 1999, but it grows steadily since.

Figure 1 shows the evolution of the number of listings from 1975 to 2015.[1] Listed firms consist of the firms listed on NYSE, Amex, and Nasdaq. In 1975, the U.S. has 4,819 listed firms, as shown in Table 1. The figure shows that this number increases rather steadily until 1997, when it reaches 7,507 listed firms. After that, the number falls rapidly until 2003 and then at a slower pace. However, the number of listed firms keeps falling until 2013, when it reaches 3,657. It increases slightly in 2014 before falling again to 3,766 in 2015. The number of listed firms in 2015 is lower than forty years earlier by 1,053 firms, or over 20% lower. It is especially striking that the number of firms falls so much given that during this time the population of the U.S. increases from 215 million in 1975 to 322 million in 2015. In 1975, the U.S. has 22.4 listed firms per million inhabitants. By 2015, it has just 11.7.

Figure 1 also shows the evolution of the aggregate market capitalization of listed firms – i.e., the sum of the market value of all listed firms. In 2015 dollars, the aggregate market capitalization of listed firms is about 7 times higher in 2015 compared to 1975. However, in contrast to the evolution of the number of listed firms, the aggregate market capitalization does not evolve smoothly. This is especially true after 1999. The aggregate market capitalization of listed firms is higher in 1999 than in 2015. The high market capitalization in 1999 is likely explained by the extremely large valuation of firms at that time, a period often referred to as the dot-com bubble. Another often-used measure of valuation is Tobin's q, the ratio of the market value of the assets of a firm and the replacement cost of the assets. Using the market value of assets divided by the book value of assets as a proxy for Tobin's Q, as is commonly done in corporate finance, we find that Tobin's Q is 2.14 at the peak of the dot-com bubble in 1999. In contrast, it is 0.77 in 1975, 1.73 in 1995, and 1.64 in 2015. Between 1999 and 2015, the aggregate market capitalization of listed firms experiences two sharp drops.

[1] We use two main data sources for our analysis: CRSP and Compustat. CRSP contains all firms listed on the NYSE, AMEX, and Nasdaq. When examining Compustat data, we use the intersection of CRSP and Compustat firms. We examine the firms listed on CRSP that are not covered by Compustat, and find that these firms account for 1-3% of the aggregate market capitalization of all listed firms.

It is common to examine the aggregate market capitalization of stocks compared to GDP. Many academic studies use this ratio as a measure of financial development.[2] This ratio is higher in 2015 than in either 1995 or in 1975. However, since the aggregate market capitalization is volatile, this ratio is volatile as well. It is 38.4% in 1975, climbs to 78.0% in 1995, peaks at 153.5% in 1999, drops to 69.2% in 2008, and increases back to 116.2% in 2015. The ratio in 2015 is 24% lower than at its peak.

The change in the number of listed firms from one year to the next is equal to the number of new lists minus the number of delists. Consequently, for the number of listed firms to fall, the number of delists must exceed the number of new lists. The steady decrease in the number of listed firms since 1997 means that delists are high relative to new lists. This evolution is the result of both high delists and low new lists. The majority of new lists are due to IPOs. The number of IPOs experiences a dramatic drop after 2000, such that the average yearly number of IPOs after 2000 is roughly a third of the average from 1980 to 2000 (see Gao, Ritter, and Zhu (2013), and Doidge, Karolyi, and Stulz (2013)). The three main reasons for why a firm delists are: (1) it no longer meets the listing requirements, which is typically because it is in extremely serious financial trouble if it is not already bankrupt, (2) it has been acquired, or (3) it has chosen to voluntarily delist. Doidge, Karolyi, and Stulz (2017) show that the dominant reason for delists since the listing peak is mergers and that the typical merger in which a public firm delists is a merger of two public firms. Although leveraged buyouts of public companies are economically important (see Kaplan and Stromberg (2008)), their contribution to delists is small compared to the contribution of acquisitions by public firms. Leveraged buyouts of public firms are also a small fraction of the transactions undertaken by private equity funds, as most of these transactions involve private firms or divisions of public firms.

The fact that mergers are the predominant reason for delisting and that there are more delists than new lists since 1997 has two important implications: public firms are bigger and older than they were twenty or forty years ago. We first measure firm size using market capitalization. To assess size, however, it is important to adjust for changes in the price level. Consequently, we quote market capitalization in 2015

[2] See Levine (1997).

dollars. In 1975, the mean market capitalization in 2015 dollars of all listed firms is a bit more than one tenth the mean market capitalization in 2015: $663 million versus $5,753 million as shown in Table 1. A similar evolution takes place for the median market capitalization (untabulated), as it increases from $60 million to $570 million. The increase in size is faster after the peak in listings. Mean market capitalization increases by 299% in the 22 years before the peak and then increases again by 290% in the 18 years since the peak.

The mean market capitalization is much higher than the median market capitalization. This difference is symptomatic of the extreme skewness in the distribution of market capitalization. This skewness has not gotten worse over time. The ratio of mean to median is 10.96 in 1975 and is 10.09 in 2015. This ratio peaks in 2000 at 21.36. Another way to look at the distribution of market capitalization is to look at the smallest and the largest number of firms it takes to reach 25% of the market's total capitalization. In 1975, the 14 largest firms have an aggregate market capitalization equal to 25% of the market as a whole. The 4,484 smallest firms, or 93.0% of all listed firms, together have a market capitalization equal to the market capitalization of the 14 largest firms. In 2015, the 21 largest firms have a total market capitalization equal to 25% of the market as a whole. The 3,487 smallest firms, or 92.6% of listed firms, have a market capitalization equal to the market capitalization of the 21 largest firms.

A final way to look at this distribution is to compute a Herfindahl index of market capitalization. With this index, if one firm has almost all the capitalization of the market, the index has a value close to 10,000; if all firms are of approximately equal size, the index has a value close to zero. The index is at 79.62 in 1975, as shown in Table 1. It then follows a hockey stick pattern: its lowest value is 32.2 in 1993, from which it increases to 51.2 in 2015, such that it is higher in 2015 than at the bottom but lower than at the beginning. The bottom line from the evolution of this index is that its value in 2015 is closer to its lowest value than to its value in 1975. Another way to look at the distribution of firm sizes of listed firms is to count the number of firms necessary to reach half of the market capitalization of U.S. equities. As shown in Table 2, in 1975, 80 firms accounted for half of the market capitalization of U.S. equity and in 2015 77 firms did so. However, in 1995, it takes 131 firms to reach half of the market's capitalization. It follows from this discussion that, while firms are larger today than 40 years ago in terms of market capitalization, the distribution of firm sizes is more similar today to what it is in 1975 than to what it is in 1995 in that this distribution is more concentrated now than in 1995.

There is much concern about the extent to which it is worthwhile for small firms to be listed and whether markets have become less receptive to small firms.[3] A simple way to gauge the receptivity of markets to small firms is to compute the percentage of listed firms that have a market capitalization of less than $100 million in 2015 dollars. This measure is imperfect since there are more small firms measured this way when the level of the stock market is low. Nevertheless, it offers a useful benchmark. In 1975, 61.5% of the firms are below $100 million in 2015 dollars, as shown in Table 1. This percentage stays above 50% through 1991, peaking at 63.2% in 1990. After 1991, the percentage falls. In 1995, it is only 43.9%. The last year that it exceeds 40% is in 2002, when it is 40.2%. It then drops and is below 30% in every year after 2002 with the exception of 2008. This percentage has its lowest value in 2013 at 19.1% and is 22.6% in 2015.

One obvious concern with mergers is that they could lead to more concentration and hence less competition. Grullon, Larkin, and Michaely (2016) argue that the decrease in the number of listings is associated with a decrease in competition. The Herfindahl index is often used as a measure of concentration. Consequently. we construct a Herfindahl index of revenue at the 3-digit NAIC level for public firms. Using this measure, we find that the average Herfindahl index increases by more than 50% from 1995 to 2015, from 811.7 to 1179.5, as shown in Table 1. This increase is statistically significant at the 1% level. However, the average index is significantly lower in 2015 compared to 1975, when it is 1391.5. In other words, across 3-digit NAIC industries, industries are on average much more concentrated now than 20 years ago but less than 40 years ago. The obvious limitation of this analysis is that it ignores foreign competition, which is more important now than forty years ago, and competition from private firms. Hence, the increase in Herfindahl ratios since 1995 may actually overstate the potential decrease in the level of competition.

[3] See, for instance, Weild and Kim (2010) who argue that market structure has decreased the benefits of listing for small firms, and Gao, Ritter, and Zhu (2013), who propose that growing economies of scope make it more advantageous for firms to be acquired by larger firms before the IPO.

However, Grullon, Larkin, and Michaely (2016) conclude that taking into account private firms does not change conclusions about the decrease in competition.

We turn next to the aging of the American firm. There are two ways to measure the age of a firm: it can be measured from the date of incorporation or from when the firm went public. Hathaway and Litan (2014) study the age since incorporation for all firms in the U.S., both private and public. They conclude that the increase in the share of the economic activity occurring in older firms is “a trend that has occurred in every state and metropolitan area, in every firm size category, and in each broad industrial sector.” All else equal, the population of firms becomes older when there are not enough births of new firms relative to deaths of old firms. This aging trend is more dramatic among public firms than private firms. Unfortunately, it is difficult to assess the age of public firms since incorporation because public databases do not have systematic information on the age of incorporation. We have data for the age of public firms since listing, which is their age as listed firms. However, this data has an important limitation. Nasdaq firms are added to existing databases at the beginning of the 1970s and are all given a listed age of 0 when they are added, even though these firms are already public when added. As a result, the average firm age of 10.9 years since listing in 1975 reported in Table 1 is biased downward. Despite this bias, the average age changes little over the next twenty years. In 1995, average age is 12.2 years. The average does not change much because the number of public firms increases sharply in the 1990s, so the increase in age of the older firms is offset by the influx of young firms. However, from 1995 to 2015, the age of public firms increases to 18.5 years. The aging of the American firm is even more striking when we look at the median age rather than the average. In 1995, the median age is 8 years. The median falls after 1995, reaching a low of 6.3 years in 1997. Since then, the median age increases by a factor of 2.5. There is no question that American public firms are now much older than twenty years ago. The aging of American public firms has implications for what these firms do. For instance, Loderer, Stulz, and Walchli (2016) find that older firms innovate less and are more rigid.

Section 3. What do public firms do and are they profitable doing it?

From 1975 to 2015, the U.S. evolves into a country dominated by service industries. This has implications for how firms invest, perform, and finance themselves. In this section, we consider how firms invest and perform. To investigate what public firms do, we use an industry classification that is used widely in academic finance research, namely the 48 industries of Fama and French (1997). In this classification, the authors group two-digit SIC code industries to create 48 groups that are in related activities and roughly similar in size. Using this classification, the three industries with the most public firms in 1975 were utilities, banks, and machinery. Together, these industries represent 17.1% of public firms. By 1995, eight industries have more firms than machinery and eleven industries have more firms than utilities. Banks have the most firms, followed by business services and chips, which together represent almost 50% of public firms. Finally, in 2015, the top three industries are banks, business services, and drugs, which represent 36.5% of public firms.

Figure 2 and Table 1 show the evolution of capital expenditures to assets over time. By 2015, average capital expenditures as a fraction of assets are about half what they are in 1975, 4.2% versus 8%. The economy is relatively weak in 1975, so it is not surprising that average capital expenditures increase first during our sample period, peaking in 1980 at 12.0%. By 1995, capital expenditures fall below 10% to 9.6%; they increase to 10.5% in 1996, which is the last time in our sample period that they exceed 10%. Since then, they drop substantially, with a rather sharp drop in 2000 from 9.4% to 6%. The low point is in 2009 at 3.5%. It is noteworthy that in 2015 capital expenditures as a fraction of assets are less than in 2008, the year of the financial crisis. The same evolution takes place if we use an asset-weighted average instead of an equally weighted average (untabulated). In this case, capital expenditures are 9.8% in 1975, 5.1% in 1995, and 2.6% in 2015. Strikingly, the asset-weighted average of capital expenditures drops below 3% in 2002 and never exceeds 3% since.

In 1975, the largest firm by capitalization is IBM, but the top ten firms include Eastman Kodak, General Motors, Dow Chemical, and Procter & Gamble. None of these firms are in the top ten in 2015. In 2015, the largest firm by market capitalization is Apple, followed by Microsoft. We would expect that such a change means that firms invest more in R&D and less in traditional capital expenditures. This turns out to be true. Figure 2 also shows the evolution of average R&D to assets. As reported in Table 1, the equally weighted average of R&D to assets is 1.3% in 1975, 5.7% in 1995, and 7.5% in 2015. Each increase is statistically significant at the 1% level. Equally weighted capital expenditures to assets exceed R&D through 2001. After 2001, R&D and capital expenditures track each other closely until recently, when R&D starts exceeding capital expenditures noticeably – in 2015 R&D expenditures are 78% higher than capital expenditures. If we sum R&D and capital expenditures, equally weighted total investment peaks at 17.5% in 2000. Since 2000, this sum never exceeds 12%. It is 11.6% in 2015. Its lowest value throughout our sample period is 8.5% in 2009.

U.S. firms experience a decrease in the fraction of assets that are fixed assets, i.e., plant and equipment. The evolution of the equally weighted ratio of fixed assets to total assets is shown in Figure 3. In 1975, the equally weighted average of fixed assets to total assets is 34.7%, as shown in Table 1. By 2015, it is 19.7%. The databases we use do not make it possible to assess the extent to which firms substitute outsourcing for in-house production. However, if a firm produces in-house everything it sells rather than outsourcing much of the production, it has substantially more fixed assets, so our results are consistent with an increase in outsourcing. Likewise, da Silveira (2014) shows that outsourcing has increased substantially over our sample period.

Inventory holdings fall dramatically after 1975, as shown in Figure 3, partly because of the introduction of just-in-time production processes where firms receive goods only when they need them. To examine this evolution, we compute inventory holdings for firms that disclose inventory holdings in detail, so that finished goods can be separated from raw materials and work in progress. Using these data, in 1975, total inventory holdings are 24.9% of assets for these firms, as reported in Table 1. This percentage falls steadily, so that by 1995 it is only 13.5%. After 1995, the percentage falls some more, but not steadily. By 2015, it is 8.4%. Finished goods is the largest component of inventories. In 1975, finished goods inventories are 9.5%. This percentage drops to 4.5% in 2015. Together, work in progress inventories and raw material inventories are 15% of assets in 1975. They are only 3.7% in 2015.

Though public firms today have fewer fixed assets and inventories, they have much more cash. Figure 3 also shows the equally weighted ratio of cash to assets. It is 9.2% in 1975 as reported in Table 1, but it more than doubles over our sample period until it is 21.6% in 2015. The increase in cash holdings is not as noticeable for large firms. The asset-weighted average of cash to assets actually falls in the 1980s, reaching a low of 7.9% in 1990. It is 9.1% in 1995. Since 1995, the ratio increases and it peaks at 13.3% in 2013; it is 12.6% at the end of our sample period. It is well-documented that firms with more intangible assets and more R&D expenditures hold more cash and that the increase in R&D expenditures helps explain the increase in cash holdings (see Bates, Kahle, and Stulz (2009)).

The importance of intangible assets for public corporations grows over the last forty years, but these assets are not recorded on firms' balance sheets because investments in intangible assets are expensed. Intangible assets have multiple components. One component is the benefit from accumulated R&D investments. Another is organization capital. Eisfeldt and Papanikolaou (2014) define organization capital as the intangible capital that relies on human inputs. It includes firm-specific human capital of employees that enables firms to work more efficiently. Estimates of the importance of intangible assets for U.S. firms vary. Falato, Kadyrzhanova, and Sim (2013) find that intangible capital is on average 10% of net assets (assets minus cash holdings) in 1970, slightly higher in 1975, and then increases steadily to exceed 50% in 2010. In their study, intangible capital increases fairly dramatically at the beginning of the 2000s when it evolves from about 40% to almost 60% before falling back. The authors also find that capitalized R&D represents about 1/3rd of intangible capital and organizational capital roughly 2/3rd. Corrado, Hulten, and Sichel (2009) find that organization capital is the largest component of intangible capital, accounting for about 30% of all intangible assets. Eisfeldt and Papanikolaou (2014) show that organization capital is more important than property, plant, and equipment in the health, high tech, and finance industries, but less important in manufacturing and consumer industries. For finance, high tech, and health industries, the ratio of organization capital to property, plant, and equipment increases mostly steadily since 1995 and is at or close to a peak at the end of their sample period in 2012. An unfortunate implication of this evolution is that firm activities and value depend increasingly on factors that are not reflected on balance sheets because investments in intangible assets are generally not capitalized. To the extent that intangible assets become more important over the period we consider, a firm's balance sheet becomes a less informative measure of the firm's overall financial position.

We now turn to measures of performance. A well-accepted measure of performance is operating cash flow to assets. We define operating cash flow as operating income before depreciation minus interest and taxes divided by assets at the beginning of the period. Equally weighted operating cash flow to assets falls sharply over our sample period. Its average across firms is 4.3% from 1975 until 1995 and 0.2% afterwards. Surprisingly, our measure of cash flow is negative in the last three years of our sample period. Though the equally weighted average of operating cash flow to assets is negative seven times after 1998, it is never negative before 1999. The negative average cash flow is caused by large negative values of firms in financial distress. If we examine the extent to which firms have negative net income, we find that the proportion of firms with negative net income (loss firms) is below 20% through 1981, does not exceed 30% until 1985, and exceeds 40% for the first time in 2001. Since 2001, this proportion exceeds 40% four times and is 37.2% in 2015. Strikingly, only five years in our sample period have a higher percentage of firms with negative net income than 2015. Denis and McKeon (2016) investigate the increase in the fraction of firms with losses and document that losses are persistent in that a firm typically experiences losses for four consecutive years. They argue that the increase in cash holdings is partly due to firms raising cash to fund losses.

The evolution of public firms away from manufacturing and towards higher R&D expenditures has an impact on accounting measures of performance because R&D is expensed while capital expenditures are not. Consequently, everything else equal, if a firm switches from spending a given amount in capital expenditures to a given amount in R&D, its accounting performance worsens. To treat R&D investment like capex, we can add back R&D expense in operating cash flow, so that all investment is treated as capitalized. If we compute cash flow this way, the drop in cash flow is much lower. This adjusted operating cash flow averages 7.6% through 1995. After, it is only 6.3%. There are no years in which adjusted cash flow is negative. Using asset-weighted operating cash flow, average cash flow and average adjusted cash flow are higher, which indicates that larger firms generate more cash flow. This is especially the case for unadjusted cash flow, as the average is 8.1% in the first sub-period and 6.1% in the second sub-period; the average of adjusted cash flow is 9.0% in the first sub-period and 7.0% in the second sub-period. The cash flow adjustment for R&D expenditures has less of an impact for the asset-weighted average because large firms have less R&D expenditures relative to assets than small firms.

The period from 1996 to 2015 includes the great recession. Surprisingly, the low equally weighted averages of cash flow in the second part of our sample period are not due to the crisis years. Specifically, there are five years since 2000 when adjusted cash flow is lower than in 2008 or 2009. Turning to unadjusted cash flow, there are seven years when unadjusted cash flow is lower than in 2008 or 2009. Median operating cash flow to assets (it is the same adjusted for R&D since median R&D is zero) is higher than mean operating cash flow to assets in the recent period but not in the first sub-period. In the first sub-period, median cash flow to assets is 7.6% while in the second sub-period it is 7.1%. Median cash flow to assets is never negative. It follows from this that the decrease in average cash flow is partly explained by firms with large losses, as the drop in profitability for the typical firm is much smaller than the drop in the average.

Even adjusting for the differential treatment of R&D investment and capex, we find that the cash flow performance of U.S. firms worsens over time. This seems especially problematic for smaller firms and hence may explain why there are fewer small firms listed on exchanges. In particular, average operating cash flow for the top decile of firms ranked by assets does not fall much if at all, but average cash flow for the other firms falls sharply. Similar conclusions hold if instead of focusing on cash flow we examine return on assets. Early in the sample period, the return on assets of the largest firms is lower than the return on assets of the other firms. However, in recent years, whether we look at means or medians, the large firms – i.e., those in the top decile of firms ranked by assets – perform significantly better.

Over the last 40 years, the contribution of firms to the aggregate performance and the aggregate balance sheet of the public firm sector has become more concentrated. This evolution is shown in Table 2. In 1975, the top 109 firms account for 50% of net income of public firms, but in 2015, 30 firms account for 50%. The increased concentration is weaker for operating cash flows, where the respective numbers are 86 firms and 57 firms. In 1975, 94 firms hold together half of the assets of public firms, but in 2015 that number is only 35. Finally, 24 firms account for half of the cash of public firms in 1975, but 11 firms do in 2015. This same table shows that the percentage of net income accounted for by the top 100 firms almost doubles, from 48.5% to 84.2%, from 1975 to 2015. For assets, cash, operating cash flow, and net income, the share of the total accounted for by the top 100 firms is now at least 10% higher than it is in 1975.

Section 4. How is capital provided and rewarded?

In this section, we examine how corporations are financed and how they reward their shareholders. The primary sources of financing are debt and equity. A corporation's leverage measures the importance of debt as a source of financing. The more highly a firm is levered, the more at risk of financial distress and bankruptcy it is, everything else equal. Consequently, leverage is followed carefully by observers as a measure of the financial health of corporations. There are multiple measures of leverage. We discuss several of them, but all of them show that American public firms are not more levered today than forty years ago and some show that they are substantially less levered.

The ratio of book debt to book assets is a widely-used measure of a firm's leverage. As shown in Figure 4, the equally weighted average book leverage of public corporations is higher in 2015 than in 1995, but lower than in 1975. In 1975, the average book leverage is 26.6% as shown in Table 1. This ratio is at 21% in 1995, and it reaches its lowest value in 2010, when it is 17.9%. It increases in recent years and is 22.7% in 2015. The asset-weighted leverage ratio, which gives more weight to large firms, tells a slightly different story. This ratio is at 23.7% in 1975. It is at 30.9% in 1995. Its highest values are 34.6% in 1999 and in 2002. It is only 23.8% in 2015. Asset-weighted leverage falls sharply after the crisis. Equally weighted leverage is significantly lower in 2015 than in 1975 and asset-weighted is about the same.

An alternative approach is to estimate leverage using the market value of equity instead of the book value. One way to calculate the market value of equity is to approximate the market value of assets as being equal to the book value of assets minus the book value of equity plus the market value of equity. The market value of equity approximates economic values better than the book equity. It is common to talk about both measures. As shown in Table 1, equally weighted market leverage is 15.8% in 2015, which is about the same as in 1995 (15.5%). Both are significantly lower than in 1975, when it is 28.5%. Market leverage falls to its lowest value of 12.7% in 2006. Moving to the asset-weighted average, market leverage is lower in 2015 than in either 1995 or 1975. In 2015, asset-weighted market leverage is 19.1%. It is 23.9% at the beginning of the sample period and 25.8% in 1995. Irrespective of whether we use the equally weighted average or the asset-weighted average, the market leverage of public firms is lower now than in 1975 and equal to or lower than in 1995.

A third measure of leverage subtracts cash holdings from debt. The rationale is that the firm could use its cash holdings to repay its debt, so that debt that is covered by cash holdings has much less risk than other debt. Because of the large increase in cash holdings over our sample period, it is not surprising that net leverage, defined as debt minus cash over lagged assets, falls. The equally weighted net leverage ratio is 0.174 in 1975. It falls fairly steadily and turns negative for the first time in 2003. After 2003, the equally weighted net leverage ratio is positive in only two years, 2008 and 2015. In other words, in almost all years since 2003, on average, public firms have more cash than debt. The percentage of firms with negative net leverage is 23.7% in 1975 and 43.1% in 2015. This percentage increases throughout the sample period, reaching a peak of 49% in 2010. Asset-weighted net leverage follows a different path from the equally weighted average. It is 12.2% in 1975, increases to reach 24.7% in 2001, and then falls back to a minimum for the sample period of 9.4% in 2013, to end at 11.2% in 2015.

None of our leverage measures are elevated at the end of the sample period, suggesting that concerns about corporate leverage on average are less relevant for public firms now than at other times during the sample period. Leverage is even less of an issue now because interest rates are extremely low since the credit crisis. Hence, interest paid as a percentage of assets has never been as low during the sample period as in recent years. The equally weighted average of interest payments as a percentage of assets is at the lowest in in 2011 at 1.64%. In 2015, it is at 1.83%. The equally weighted average for 1995 is at 2.73%. The values for this average are especially high in the 1980s because of high interest rates and high leverage. It peaks in 1981 at 4.06%. It is below 2% every year since 2008.

Another way to look at leverage is to examine the percent of firms that have no debt. Not all firms have debt and fewer firms have no debt now than at the beginning of the sample period. Table 1 shows that in 2015, 17.3% of listed firms have no debt. The percentage of listed firms without debt increases fairly steadily from 1975, when it is 6.1%, to 2011, when it peaks at 18.9%. Firms with debt can have either publicly traded debt such as bonds, or private debt such as bank debt. Publicly available accounting data do not separately identify bank loans vs. bonds on firms' balance sheets. However, bank loans have become less important according to data from the Financial Accounts of the United States published by the Federal Reserve. The Financial Accounts provide the totals of loans from depository institutions and of corporate bonds for the nonfinancial corporate sector, which includes both private and public firms. In 1975, bank loans amount to 56% of corporate bonds. By 1995, this percentage drops to 42%. It is barely 20% in 2015.[4]

Debt can also be classified by its rating. Public debt is almost always rated. The year with the highest percentage of firms with rated debt is 2014, when 29.9% of firms have rated debt. Data on the percent of firms with ratings are only available since 1985. In that year, only 15% of firms have rated debt. Within rated firms, corporate debt can be either investment grade or below investment grade. In 2015, 49.5% of the rated corporations have investment-grade debt, as shown in Table 1. This is close to the lowest percentage, which occurs in 2009 when 48.7% of rated firms have investment grade debt. These percentages are low compared to 1995, when 61.4% of rated companies have investment-grade debt. In 1985, which is the first year for which we have data, the percentage is even higher at 67.8%. This evolution suggests that the increase in the fraction of firms with ratings occurs through an increase in firms with below investment grade ratings.

The composition of leverage is relevant in understanding the potential risks resulting from debt on firm balance sheets. Firms with more short-term debt face the problem of having to access financial markets more often and hence might be in greater trouble if funding markets are not working normally. Funding markets tend to freeze, at least partially, during crisis periods such as the fall of 2008. In 2015, Table 1

[4] These percentages are obtained by dividing item 29 (Depository institution loans n.e.c.) by item 27 (Corporate bonds) of the accounts for Nonfinancial Corporate Business of the National Accounts.

shows that firms on average have 23.8% of their debt due within one year, 39.0% due within three years, and 68.3% due within five years. All these averages are below the comparable averages in 1995. The one-year average is less than in 1975, but the three-year and five-year averages are higher than in 1975. All averages are lower than just before the credit crisis.

In addition to debt, firms issue equity to finance themselves. They also repurchase equity for a variety of reasons. Equity issuance increases the total number of shares outstanding, while repurchases decrease the total number of shares. Consequently, to assess the extent to which firms fund themselves through equity issuance, it is necessary to look at net equity issuance, which nets repurchases out from equity issuance. In general, smaller firms issue equity and larger firms repurchase more shares than they issue. The equally weighted average of net equity issuance divided by assets follows an inverted u-shape during the last forty years. It is less than 10% each year in the 1970s. It then increases to reach a peak of 36.3% in 1996. Since 1996, the net equity issuance divided by assets falls so that it is never above 20% in the 2000s. It is lower than 10% seven years in the 2000s. In 2015, it is 15.4%. The asset-weighted average gives more weight to firms that repurchase heavily. Asset-weighted net equity issuance divided by assets peaks at 2.9% in 2000. Since 2000, it is negative in all years but three. In 2015, it is -0.8%. Before 2000, it is negative in only three years. It follows that in the 2000s, large firms return equity to shareholders rather than raise equity from investors.

Listed firms can issue equity publicly through a public equity issuance, but they can also raise equity through private placements. Over the last 20 years, firms increasingly use a device called private investment in public equity (PIPE). PIPEs are purchases of equity by an institutional investor or by a group of investors. The amount of capital raised through PIPEs is only $4 billion in 1996, but in 2007 it is $56 billion. In comparison, public companies raise $75 billion that year through seasoned equity offerings (Chen, Dai and Schatzberg (2010)). The evolution of the market for PIPEs is part of a more general evolution of an active role by alternative institutional investors in the funding and management of public companies.

Finally, we turn to the composition of ownership and returns to equity holders. Over the last forty years, ownership has changed dramatically. Corporate debt is mostly held by institutions throughout our sample period (Biais and Green (2007)). However, institutional ownership of common stock is much higher now than in 1980, which is the first year for which we have data. Using an equally weighted average, Table 1 shows that in 1980, 17.7% of shares issued by public corporations are held by institutions on average. This percentage increases steadily and peaks at 55% in 2007. In 2015, this percentage is 50.4%. Institutions tend to have a preference for large firms, so institutional ownership is higher for the asset-weighted average than for the equally weighted average. On an asset-weighted basis, 34.1% of shares issued by a corporation are held by institutions in 1980. This percentage increases steadily to reach 53.2% in 1995 and peaks at 66.3% in 2006. Since the peak, the percentage falls to 57.3% in 2014, but rebounds to 61% in 2015.

Another way that institutional ownership changes over the last forty years is that it is now much more common for a firm to have an institutional investor who controls 10% or more of the shares. In 1980, only 11.9% of U.S. firms have a 10% institutional blockholder. This percentage increases through time, so that by 1995 it is 19.5%. It peaks in 2008 at 35.6%. Since 2008, this percentage is higher than 30% each year but one. In 2015, 32.0% of firms have at least one institutional blockholder who owns 10% of the shares or more.

Shareholders' invest in equity to earn a return, which consists of current payouts and/or share appreciation. Profitable firms can use their earnings to pay dividends, buy back shares, increase their cash holdings, or invest. The article by Jensen that is mentioned in the introduction was in part motivated by the belief that public firms keep their earnings even when they cannot reinvest them profitably, which destroys shareholder wealth. Jensen calls this issue the agency problem of free cash flow (Jensen, 1986). This problem manifests itself through a low payout rate, i.e. firms have limited distributions of cash to shareholders either in the form of dividends or repurchases. He argues that private firms can control this problem more efficiently. Yet, in 2015, the payout rate, defined as dividends plus repurchases as a fraction of net income, is at an all-time high for public companies. Such a high payout rate is hard to explain by a worsening of agency problems, but it is consistent with a lack of investment opportunities.

Figure 5 shows the evolution of payout rates. Panel A shows that the percentage of firms that pay dividends follows a u-shape over the last forty years (see, for instance, Floyd, Li, and Skinner, 2015). Table

1 shows that in 1975, 63.5% of the firms pay dividends. This percentage falls steadily to reach a minimum of 29.8% in 2000. After 2000, the percentage increases, reaching a new peak of 42.2% in 2012. In 2015, the fraction of firms paying dividends is roughly a third lower than in 1975 and a third higher than in 2000.

Dividend payments as a fraction of assets have a u-shape as well, as shown in Panel B of Figure 5. In 1975, dividend payments are 1.3% of assets on average. This percentage falls from 1980 onwards to reach a minimum of 0.4% in 2000. Starting in 2002, this percentage increases and reaches 1% in 2012. The asset-weighted average follows the same u-shape pattern, but is slightly higher as large firms tend to pay more dividends than small firms.

Total payouts to shareholders also include share repurchases. Over the past forty years, share repurchases increase considerably (DeAngelo, DeAngelo, Skinner, 2008). At the beginning of the sample period, repurchases are only 0.3% of assets, on average. However, in 1984, the SEC relaxed rules limiting repurchases by firms and repurchases increased as a result. From 1975 to 1997, the equally weighted average of repurchases to assets exceeds 1% only in 1987. The high repurchase rate in 1987 is likely due to the crash, which led firms to repurchase shares to support their stock. Figure 5 shows that with the exception of 1987, dividends exceed repurchases until the mid-1990s. After the mid-1990s, the equally weighted average of repurchases to assets always exceeds the equally weighted average of dividends to assets. From 1997 onward, repurchases exceed 1% of assets every year but two. Repurchases peak in 2007 at 2.2%. Table 1 shows that in 2015, repurchases are 2% of assets, which is the second highest percentage since 1975. The asset-weighted average of dividends to assets is higher than the asset-weighted average of repurchases to assets until 1996. From 1997 onward, repurchases are higher than dividends except in 2002 and 2003. The average for repurchases in 2015 is 1.7%. This is the third highest asset-weighted repurchase rate. The highest is 2% in 2007 and the second highest is 1.8% in 2006. It follows from this that repurchases are at record levels in the 2000s and extremely high in recent years.

Table 2 shows that the top 100 firms account for a larger percentage of dividend payouts and a larger percentage of total payouts in 2015 than in 1975. In 1975, ranking firms per dollar dividends paid, the top 100 firms account for 55.1% of total dividends (see DeAngelo, DeAngelo, and Skinner (2004) for additional data on this evolution). By 2015, the top 100 firms account for 68.7% of total dividends. The same increase in concentration takes place for total payouts, but the increase is more muted as the top 100 firms account for 54% in 1975 and for 62.3% in 2015.

Panel A of Figure 5 shows that the equally weighted average of total payouts in the form of both dividends and repurchases as a percentage of net income is 27.1% in 1975. The payout rate falls over time so that it is only 20.5% in 1995. After that, it increases to reach a peak of 49.9% in 2007 and is at 47.0% in 2015. It follows that public corporations pay out more of their income than at almost any time since 1975 and substantially so. This evolution occurs as well if we consider the asset-weighted average. With this average, firms pay out 76.2% of net income in 2015, which is the fourth highest percentage since 1975, with the three higher percentages in 2006, 2007, and 2012.

Section 5. Conclusion

American public firms are very different now compared to 1975 or 1995. There are fewer of them, but they are larger and older. They are not more levered, but they are somewhat less profitable. They have much more intangible capital. They invest less. Manufacturing and small public firms are scarcer. Service firms are more important and so are firms for which R&D investments exceed capital expenditures. This evolution appears to have been little affected by the credit crisis in that trends that are in place before this crisis eventually resume after the crisis.

The key argument of Jensen (1989) in his forecast of the demise of the public firm is that the public firm is beset by agency problems. The fact that American firms pay out more to shareholders now than at any time since 1975 seems inconsistent with the view that the agency problem of managers retaining resources internally instead of paying them out to shareholders is an important problem on average for American public firms. However, Jensen’s prediction of the rise of private equity is on the mark. It has become very important, but mostly for private firms, and may be one of the contributing factors for why so few firms choose to participate in the public markets.

American firms that remain public are survivors. Few firms want to join their club. A small number of firms account for most of the market capitalization, most of the net income, most of the cash, and most of the payouts of public firms. At the industry level, revenues are more concentrated, so there are fewer public firms competing for customers. There is a large fraction of firms that do not earn profits every year and that fraction is especially large at the end of the sample period. The importance of firms that make losses shows that many public firms are fragile and helps explain the high level of delists. Accounting standards do not reflect the importance of intangible assets for these firms and appear to be biased against investments in intangible assets. Such a bias may make it harder for executives to invest for the long run.

As a whole, public firms appear to lack ambition, proper incentives, or opportunities. They are returning capital to investors and hoarding cash rather than raising funds to invest more.

References

Bates, Thomas W., Kathleen M. Kahle, and René M. Stulz, 2009, Why do US firms hold so much more cash than they used to?, The Journal of Finance 64(5), 1985-2021.

Biais, Bruno, and Richard C. Green, 2007, The microstructure of the bond market in the 20th century, working paper.

Chen, Hsuan-Chi, Na Dai, and John D. Schatzberg, 2010, The choice of selling mechanism: PIPEs versus SEOs, Journal of Corporate Finance 16, 104-119.

Corrado, Carol, Charles Hulten, and Daniel Sichel, 2009, Intangible capital and U.S. economic growth, Review of Income and Wealth 55(3), 661-685.

Da Silveira, Giovani J.C., 2014, An empirical analysis of manufacturing competitive factors and offshoring, International Journal of Production Economics 150, 163-173.

DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner, 2004, Are dividends disappearing? Dividend concentration and the consolidation of earnings, Journal of Financial Economics 72, 425-456.

DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner, 2008, Corporate payout policy, Foundations and Trends in Finance 3, 95-287.

Denis, David J., and Stephen B. McKeon, 2016, Operating losses and cash holdings, unpublished working paper.

Doidge, Craig, G. Andrew Karolyi, René M. Stulz, 2013. The U.S. left behind? Financial globalization and the rise of IPOs outside the US. Journal of Financial Economics 110, 546–573.

Doidge, Craig, G. Andrew Karolyi, and René M. Stulz, 2017, The US listing gap, Journal of Financial Economics, forthcoming.

Eisfeldt, Andrea A., and Dimitris Papanikolaou, 2014, The value and ownership of intangible capital, American Economic Review: Papers & Proceedings, 104(5), 1-8.

Falato, Antonio, Dalida Kadyrzhanova, and Jae W. Sim, 2013, Rising intangible capital, shrinking debt capacity, and the US corporate saving glut, working paper, Federal Reserve Board.

Fama, Eugene F., and Kenneth R. French, 1997, Industry cost of equity, Journal of Financial Economics, 153-193.

Floyd, Eric, Nan Li, and Douglas J. Skinner, 2015, Payout policy through the financial crisis: The growth of repurchases and the resilience of dividends, Journal of Finance Economics 118, 299-316.

Gao, Xianhui, Jay R. Ritter, and Zhongyan Zhu, 2013, Where have all the IPOs gone?, Journal of Financial and Quantitative Analysis, 48(6), 1663-1692.

Grullon, Gustavo, Yelena Larkin, and Roni Michaely, 2016, Are US Industries Becoming More Concentrated?, unpublished working paper.

Hathaway, Ian, and Robert Litan, 2014, The other aging of America: the Increasing dominance of older firms, Brookings Working Paper.

Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance, and takeovers, American Economic Review: Papers and Proceedings, 76(2), 323-329.

Jensen, Michael C., 1989, Eclipse of the public corporation, Harvard Business Review 67, 61-74.

Kaplan, Steven N., and Per Stromberg, 2009, Leveraged buyouts and private equity, Journal of Economic Perspectives 22, 121-146.

Levine, Ross, 1997, Financial development and economic growth: Views and agenda, Journal of Economic Literature, 35(2), 688-726.

Loderer, Claudio, René M. Stulz, and Urs Waelchi, 2016, Firm rigidities and the decline of growth opportunities, Management Science, forthcoming.

Weild, David, and Edward Kim, 2010, Market structure is causing the IPO crisis – and more, Grant Thornton Capital Markets Series, Grant Thornton International.

Appendix

Unless otherwise noted, data are from the Compustat's Fundamentals Annual data on wrds. Names in parentheses are wrds variable names.

Variable Name	Definition
Valuation	
Tobin's Q	Book value of assets (at) minus book value of common equity (ceq) plus the market value of common equity (csho*prcc_f)
Market Cap/GDP	Market Cap divided by GDP (series GDPA from the U.S. Bureau of Economic Analysis)
Market Cap (000s)	Price times shares outstanding (prc*shrout) from CRSP, in 2015 dollars, aggregated across all stocks
Market Cap Herfindahl	The square of the market capitalization of each firm divided by market capitalization of all firms, summed over all firms
Small firms	Percent of listed firms with market capitalization < $100M
Revenue Herfindahl	For each 3-digit NAICS in each year, the square of the revenues (revt) of each firm divided by the revenues of all firms in the same NAIC industry, summed over all firms in the same industry
Age	Number of years since CRSP listing (Source: CRSP)
Investment	
Capital Expenditures/assets	Capital expenditures (capx) divided by lagged assets
R&D/assets	R&D (xrd) divided by lagged assets. If R&D is missing, it is set equal to 0.
Fixed Assets/assets	Fixed assets (ppent) divided by assets
Inventory/assets	Inventory (invite) divided by assets
Finished Goods/assets	Finished Goods inventory (invfg) divided by assets
Cash/assets	Cash and marketable securities (che) divided by assets
Profitability	
Operating cash flow/assets	Operating income before depreciation (oibdp) minus interest (xint) minus taxes (txt), divided by lagged assets
Loss firms	Percent of firms with net income (ni) less than zero
RD-adjusted cash flow/assets	CF divided assets plus RD divided byassets
ROA	Net income divided by assets (ib/at)
Financing	
Book leverage	Long term debt (dltt) plus debt in current liabilities (dlc), divided by assets (at)
Market leverage	Long term debt (dltt) plus debt in current liabilities (dlc), divided by total assets (at) minus book equity (ceq) plus the market value of common equity (csho*prcc_f)
Net Leverage	Long-term debt (dltt) plus debt in current liabilities (dlc) minus cash (che), divided by assets (at)
Negative net leverage	Percent of firms with negative net leverage
Interest/assets	Interest expense (xint) divided by lagged assets
No debt firms	Percent of firms with no long term debt)dltt) or debt in current liabilities (dlc)
Rated firms	Percent of firms with an S&P long-term rating (splticrm) available on Compustat that is investment grade or speculative
Investment grade firms	Percent of rated firms with an S&P long-term rating of BBB- or higher
Debt due in one year	Debt in current liabilities (dlc) dividend by (debt in current liabilities plus long term debt (dltt))

Debt due in three years	The sum of long term debt due in years 1, 2, and 3 (dd1 + dd2 + dd3) divided by long term debt (dd1 + dltt);
Debt due in five years	The sum of long term debt due in years 1-5 (dd1 + dd2 + dd3 + dd4 + dd5) divided by long term debt (dd1 + dltt);
Net equity issuance	Sales of equity (sstk) minus purchases of equity (prstkc), divided by lagged assets
Ownership	
Institutional ownership	Percent of shares outstanding held by institutions (Source: Thomson Financial 13f data)
Blockholder	Percent of firms with an institutional owner who holds 10% or more of outstanding shares (Source: Thomson Financial 13f data)
Payout Policy	
Dividend paying firms	Percent of firms that pay dividends (dvc > 0)
Dividends/assets	Annual cash dividends on ordinary stock (dvc) , divided by lagged assets
Repurchases/assets	Purchase of stock (prstkc) minus any decrease in preferred stock (pstk), divided by lagged assets
Total payout/assets	dvc + prstkc divided by lagged assets (so basically dividends/assets + rep/assets)

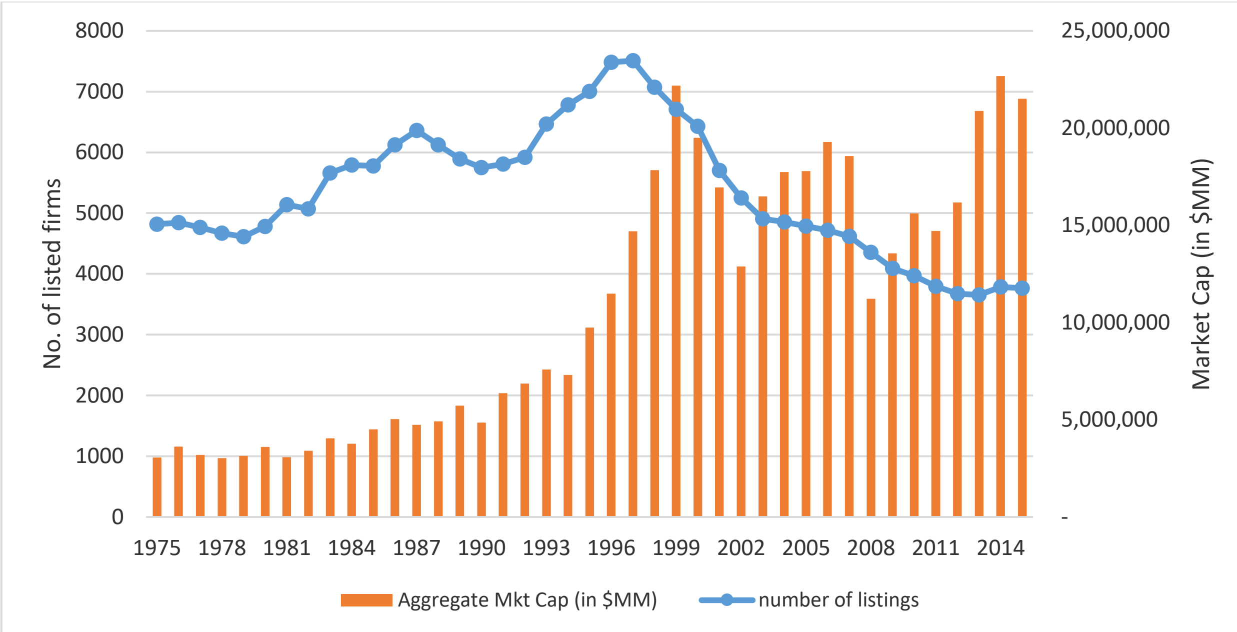

Figure 1. Number of firms listed by year on the NYSE, Nasdaq, and Amex and market capitalization from 1975 to 2015.
The market capitalization is shown in 2015 dollars. The source for number of listings and market capitalization is CRSP data.

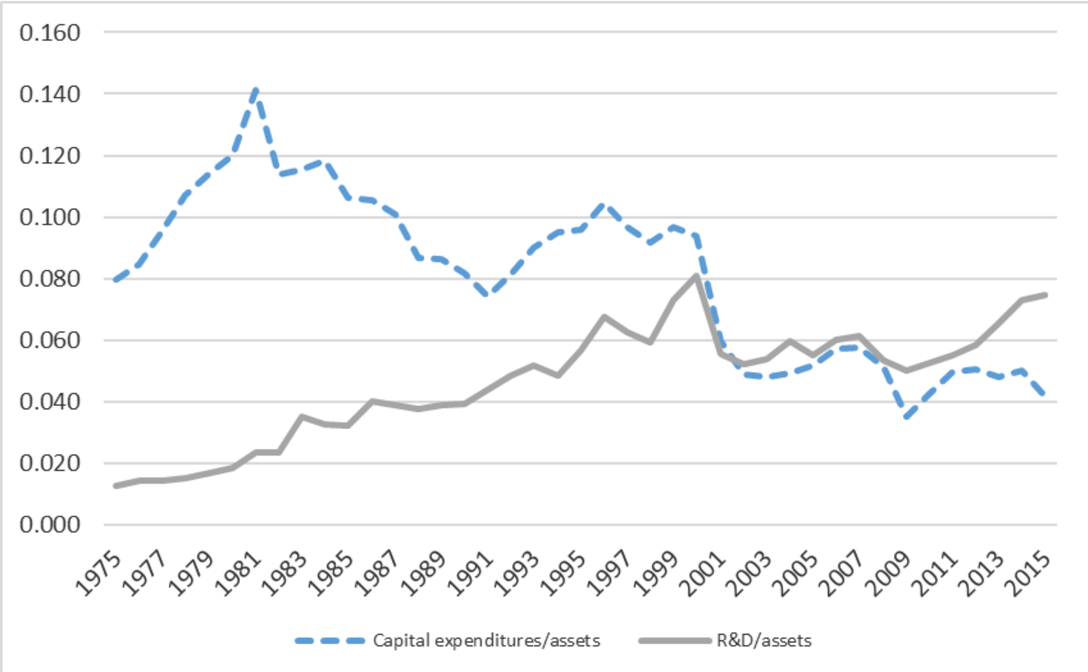

Figure 2. Evolution of capital expenditures and R&D form 1975 through 2015.
Source: The sample is comprised of the intersection of listed firms on CRSP for which Compustat data are available. Accounting data are from Compustat. Detailed variable definitions are in the appendix.

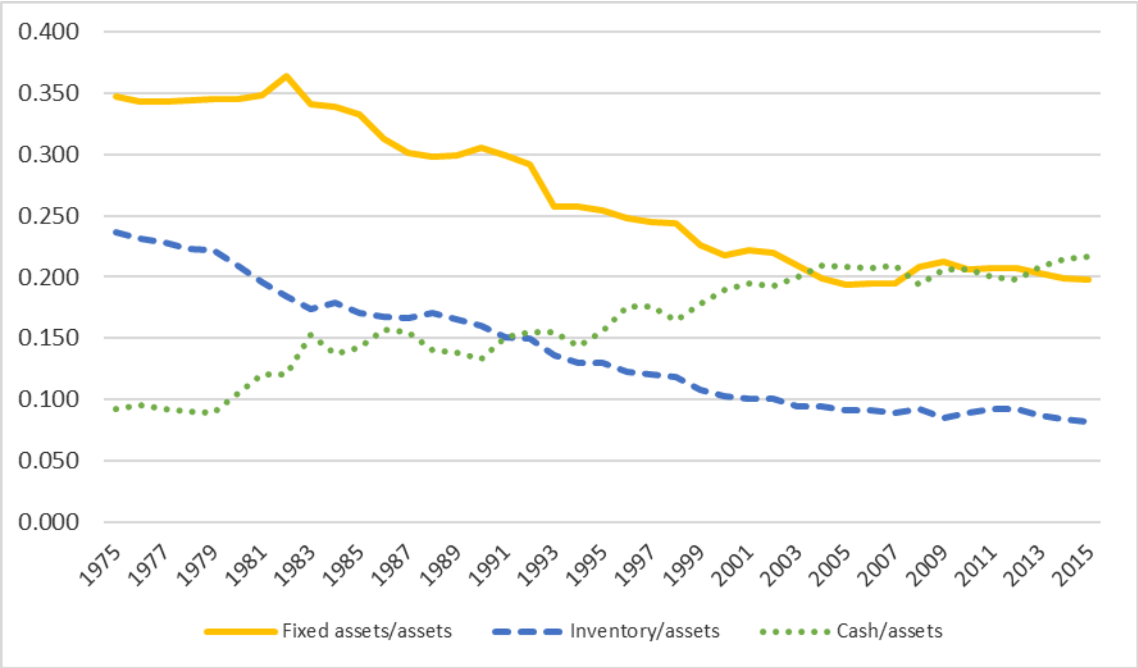

Figure 3. Evolution of fixed assets, inventory, and cash holdings.
The variables are expressed as fractions of total assets from 1975 to 2015. The sample is comprised of the intersection of listed firms on CRSP for which Compustat data are available. Accounting data are from Compustat. Detailed variable definitions are in the appendix.

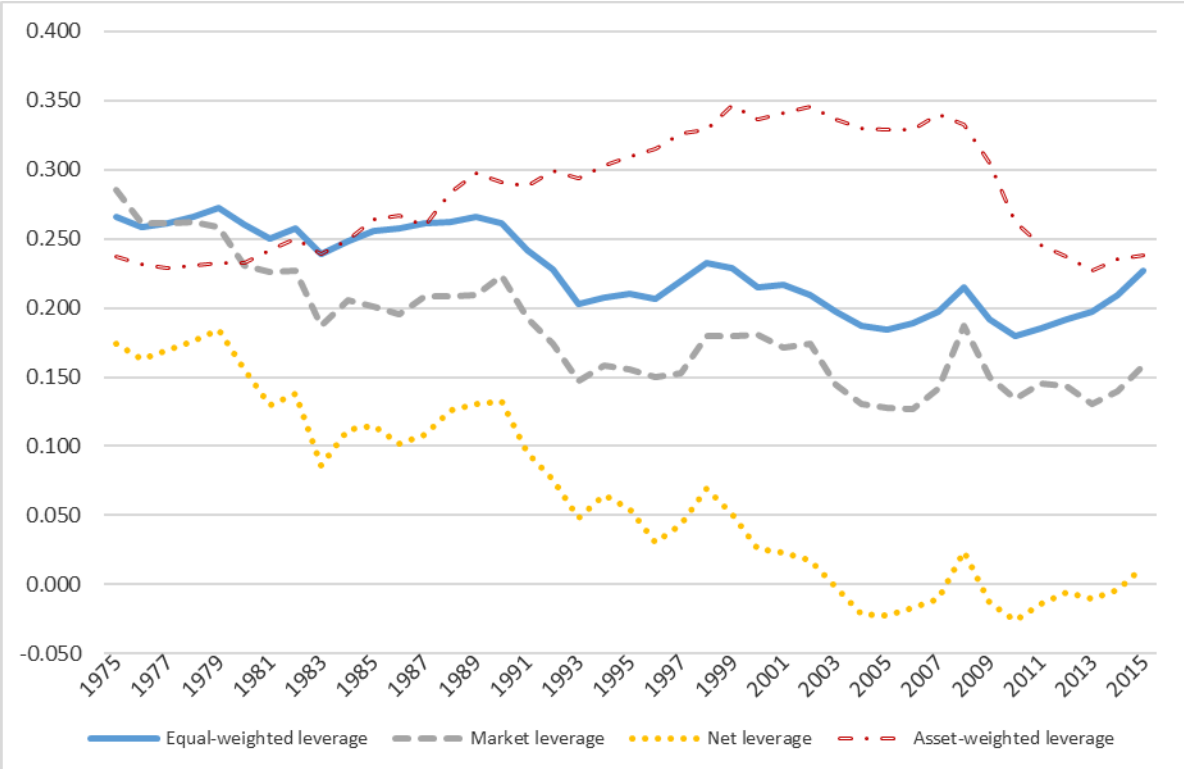

Figure 4. Equal- and asset-weighted book leverage, market leverage, and net leverage as a fraction of total assets from 1975 to 2015.

The numerator of the leverage measures is long-term debt plus debt in current liabilities for equal-weighted and asset-weighted book and market leverage. For net leverage, cash holdings are subtracted from the numerator. The denominator is book assets for book leverage and net leverage; for market leverage, it is book assets minus book equity plus market value of equity. The sample is comprised of the intersection of listed firms on CRSP for which Compustat data are available. Accounting data are from Compustat. Detailed variable definitions are in the appendix.

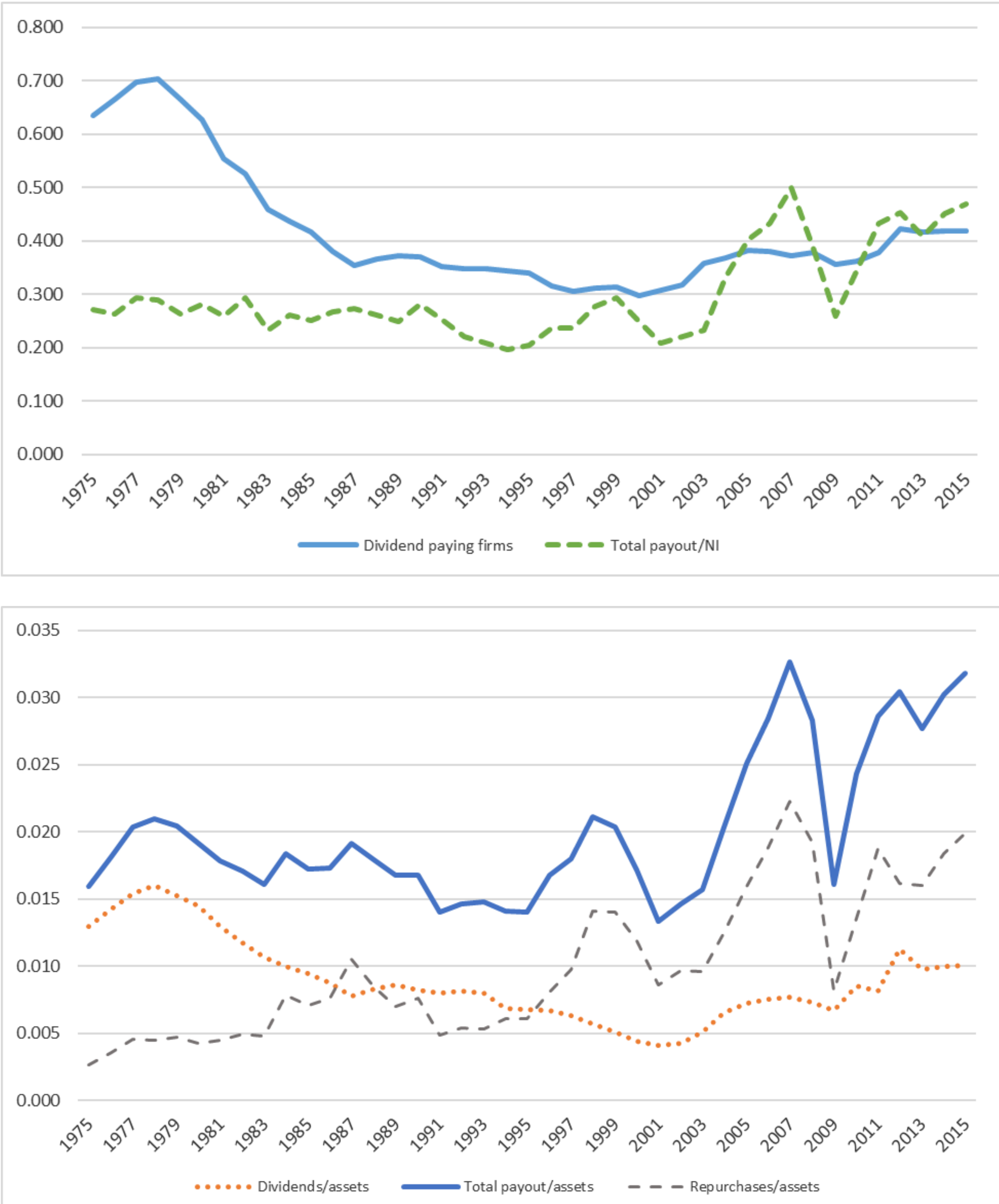

Figure 5. Dividends and repurchases.
The top panel shows the fraction of firms that pay dividends and the ratio of dividends to net income, while the bottom panel examines the evolution of dividends, repurchases and total payout (all as a fraction of total assets) from 1975 through 2015. Detailed variable definitions are in the appendix. Source: The sample is comprised of the intersection of listed firms on CRSP for which Compustat data are available. Accounting data are from Compustat.

Table 1: Mean Characteristics

Detailed descriptions of the variables are provided in the Appendix. *** indicates significance at the 1% level, ** at the 5% level, and * at then 10% level.

Year	1975	1995	2015	t-test 75 vs 95	t-test 95 vs 15	t-test 75 vs 15
No. of listed firms	4819	7002	3766			
Valuation						
Tobin's Q	0.77	1.73	1.64	***	**	***
Market Cap/GDP	38.4%	78.0%	116.2%	***	***	***
Market Cap (000s)	662,807	1,400,079	5,752,858	***	***	***
Market Cap Herfindahl	79.62	34.48	51.22	na	na	na
Small firms	61.5%	43.9%	22.6%	***	***	***
Revenue Herfindahl	1391.5	811.7	1179.5	***	***	***
Age	10.9	12.2	18.4	***	***	***
Investment						
Capital Expenditures/assets	8.0%	9.6%	4.2%	***	***	***
R&D/assets	1.3%	5.7%	7.5%	***	***	***
Fixed Assets/assets	34.7%	25.4%	19.7%	***	***	***
Inventory/assets	24.9%	13.5%	8.4%	***	***	***
Finished Goods/assets	9.5%	5.6%	4.5%	***	***	***
Cash/assets	9.2%	15.6%	21.6%	***	***	***
Profitability						
Operating cash flow/assets	8.5%	2.9%	-4.2%	***	***	***
Loss firms	13.6%	29.4%	37.2%	***	***	***
RD-adjusted cash flow/assets	9.8%	8.6%	3.3%	***	***	***
ROA	4.3%	-3.3%	-8.3%	***	***	***
Financing						
Book leverage	26.6%	21.0%	22.7%	***	***	***
Market leverage	28.5%	15.5%	15.8%	***		***
Net leverage	17.4%	5.4%	1.3%	***	***	***
Negative net leverage	23.7%	39.7%	43.1%	***	***	***
Interest/assets	2.6%	2.7%	1.8%	**	***	***
No debt firms	6.1%	12.7%	17.3%	***	***	***
Rated firms*	15.0%	16.9%	29.2%	***	***	***
Investment grade firms[a]	67.8%	61.4%	49.5%	***	***	***
Debt due in one year	28.2%	35.0%	23.8%	***	***	***
Debt due in three years	35.3%	53.4%	39.0%	***	***	***
Debt due in five years	52.6%	71.7%	68.3%	***	***	***
Net equity issuance	0.5%	25.2%	17.8%	***	***	***
Ownership						
Institutional ownership[a]	17.7%	29.8%	50.4%	***	***	***
Blockholder*	11.9%	19.5%	32.0%	***	***	***
Payout Policy						
Dividend paying firms	63.5%	34.0%	41.9%	***	***	***
Dividends/assets	1.3%	0.7%	1.0%	***	***	***
Repurchases/assets	0.3%	0.6%	2.0%	***	***	***
Total payout/assets	1.6%	1.4%	3.2%	***	***	***
Total payout/ NI	27.1%	20.5%	47.0%	***	***	***

[a] indicates that data is not available in 1975, in which case we insert values for the first year data is available

Table 2: Concentration Statistics

Detailed definitions of the variables are provided in the appendix.

	No. of firms accounting for 50% of:			Top 100 firms account for:		
Variable	1975	1995	2015	1975	1995	2015
Net income	109	89	30	48.5%	52.8%	84.2%
Assets	94	69	35	51.1%	56.5%	66.2%
Cash	24	20	11	71.8%	73.5%	78.6%
Cash Flow	86	89	57	52.6%	52.4%	63.1%
Dividends	74	61	44	55.1%	60.6%	68.7%
Total Payouts	79	57	60	54.0%	61.4%	62.3%