NBER WORKING PAPER SERIES

IS THE U.S. PUBLIC CORPORATION IN TROUBLE?

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

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

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NBER Working Paper No. 22857
November 2016, Revised May 2017
JEL No. D22,G24,G30

ABSTRACT

We examine the current state of the U.S. public corporation and how it has evolved over the last 40 years. After falling by 50 percent since its peak in 1997, the number of public corporations is now smaller than 40 years ago. These corporations are now much larger and over the last twenty years have become much older; they invest differently, as the average firm invests more in R&D than it spends on capital expenditures; and compared to the 1990s, the ratio of investment to assets is lower, especially for large firms. Public firms have record high cash holdings and, in most recent years, the average firm has more cash than long-term debt. Measuring profitability by the ratio of earnings to assets, the average firm is less profitable, but that is driven by smaller firms. Earnings of public firms have become more concentrated – the top 200 firms in profits earn as much as all public firms combined. Firms' total payouts to shareholders as a percent of earnings are at record levels. Possible explanations for the current state of the public corporation include a decrease in the net benefits of being a public company, changes in financial intermediation, technological change, globalization, and consolidation through mergers.

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In his famous 1989 *Harvard Business Review* article titled "Eclipse of the public corporation," Jensen (1989) predicted the demise of the public corporation. He argued 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 initially appeared to be invalid. The number of public firms increased sharply in the first half of the 1990s. However, the number of listed firms peaked in 1997 and has since fallen by half, such that there are fewer public corporations today than 40 years ago (Doidge, Karolyi, and Stulz, 2017). Does this fall vindicate Jensen's (1989) argument? Is the public corporation in trouble?

In this paper, we examine the evolution of U.S. public corporations over the last 40 years. Over this time period, U.S. public corporations experience massive changes. Not only are there fewer public corporations today than 40 years ago, but these corporations are very different. They are older and larger. They are in different industries. Their asset structure has changed, as they invest less in physical assets, but more in R&D. They finance themselves differently. They are less profitable on average, but profitability increases with size, so total profits of U.S. public corporations are higher. Total payouts to shareholders are higher, but these payouts now are often in the form of repurchases rather than dividends. Their shareholders are very different, as institutions now typically hold more than half the shares of large corporations.

To illustrate how U.S. public corporations have changed, we compare snapshots in 1975, 1995, and 2015. The variables we discuss are reported in Table 1 for these three years. These three snapshots correspond to the beginning and the end of our sample period, as well as a year in the middle that is close to the peak in the number of public corporations. In the following sections, we discuss each of the panels of Table 1: patterns in the number and age of listed firms, valuation, investment profitability, financing, ownership, and payout policy. We conclude with some thoughts about the meaning of these patterns for public firms in the United States.

The Number and Age of Public Firms

Figure 1 shows the evolution of the number of listings of U.S. firms from 1975 to 2015, including firms listed on the NYSE, Amex, and Nasdaq. In 1975, the U.S. economy had 4,819 listed firms, as shown in Table 1.[1] This number increased rather steadily until 1997, when it reached 7,507 listed firms. After that, the number fell rapidly until 2003 and then continued to fall at a slower pace, before leveling out around 2013. There are 3,766 listed firms in 2015, a number that is over 20 percent (1,053 firms) lower than 40 years ago. In 1975, the U.S. economy had 22.4 publicly listed firms per million inhabitants. In 2015, it has just 11.7 listed firms per million inhabitants.

Doidge, Karolyi, and Stulz (2017) document that, as a result of the decrease in the number of listed firms, the U.S. has developed a "listing gap" in that it has fewer listed firms than expected. Specifically, if the variables that explain the number of listings per capita worldwide - like dimensions of economic development and institutions - are used to predict the number of listed firms in the United States, the predicted number of listed firms is roughly equal to the actual number prior to 1999. However, the predicted number is more than double the actual number by 2012. In short, there was no listing gap in 1998, but the gap has grown steadily since then.

The steady decrease in the number of listed firms since 1997 has resulted from both low numbers of newly listed firms and high numbers of delists. The majority of new lists are due to initial public offerings (IPOs). However, the number of IPOs decreases dramatically after 2000, such that the average yearly number of IPOs after 2000 is roughly one-third of the average from 1980 to 2000 (Gao, Ritter, and Zhu, 2013; Doidge, Karolyi, and Stulz, 2013).

[1] We use two main data sources for our analysis: CRSP and Compustat. From CRSP we obtain all U.S. firms (share codes 10 and 11) listed on the NYSE, AMEX, and Nasdaq, excluding investment funds and trusts (Standard Industrial Classification (SIC) codes 6722, 6726, 6798, and 6799). When examining Compustat data, we use the intersection of CRSP and Compustat firms. We examine firms listed on CRSP that are not covered by Compustat, and find that these firms account for 1-3 percent of the aggregate market capitalization of all listed firms.

The three main reasons for a public firm to delist are: 1) it no longer meets the listing requirements, which is typically due to financial distress, 2) it has been acquired, or 3) it voluntarily delists. Doidge, Karolyi, and Stulz (2017) find that mergers are the dominant reason for delisting since the listing peak. Firms that voluntarily delist can either keep trading over-the-counter or become private firms. The typical procedure for going private involves a small group of investors acquiring the outstanding shares, often in a leveraged buyout in which the investors finance the purchase largely with debt backed by the assets of the firm. Thus ownership concentration increases substantially compared to the public firm. Although leveraged buyouts of public companies are economically important (Kaplan and Stromberg, 2008), their contribution to the number of delists is small compared to the contribution of acquisitions. 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.

We also examine the evolution of firm age. There are two ways to measure the age of a firm: from the date of incorporation, or from when the firm went public. Hathaway and Litan (2014) study the age since incorporation for all U.S. firms, both private and public. They conclude that the increase in the older firms' share of economic activity is "a trend that has occurred in every state and metropolitan area, in every firm size category, and in each broad industrial sector." This aging trend is more dramatic among public firms than private firms. Unfortunately, it is difficult to assess the age since incorporation of public firms because public databases lack systematic information on the age of incorporation. Data for the age since listing is available, but this data has an important limitation too. Nasdaq firms were added to existing databases at the beginning of the 1970s and were given a listed age of 0 when they were added, even though these firms were already public. As a result, the average age since listing of 10.9 years in 1975 reported in Table 1 is biased downward. Despite this bias, the average age changes little over the next 20 years. In 1995, average age is 12.2 years. The reason for the relative stability of age from 1975 to 1995 is that the number of public firms increased, so the increase in age of the older firms was offset by the influx of young firms. However, from 1995 to 2015, the age of public firms increases to 18.4 years. Median age also increases in the last twenty years. The median age is 8 years in 1995, 6.3 years in 1997, and since then the median age has

increased by a factor of 2.5. The aging of U.S. public firms has implications for how these firms behave: for instance, Loderer, Stulz, and Walchli (2016) find that older firms innovate less and are more rigid.

Valuation and Concentration of Public Firms

The aggregate market capitalization of listed firms in 2015 – the sum of the market value of all listed firms – is about seven times higher than in 1975 (expressed in 2015 dollars). However, the aggregate market capitalization does not evolve smoothly. In particular, between 1999 and 2015, the aggregate market capitalization of listed firms experiences two sharp drops. As illustrated by the bars in Figure 1, the aggregate market capitalization changes from about $22 trillion at the peak of the dot-com bubble in 1999 to $11 trillion in 2008 and then back to about $22 trillion by 2015.

Many academic studies compare the aggregate market capitalization of stocks to GDP as a measure of financial development (as discussed in Levine, 1997). Table 1 shows that this ratio is higher in 2015 than either in 1995 or in 1975, but like market capitalization, this ratio is volatile. It is 38.4 percent in 1975, climbs to 78.0 percent in 1995, peaks at 153.5 percent in 1999, drops to 69.2 percent in 2008, and rises back to 116.2 percent in 2015. The ratio is 24 percent lower in 2015 than at its peak in 1999.

An often-used valuation ratio for firms is Tobin's q, the ratio of the market value of the firm's assets to 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,[2] 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.

Whether we examine average or median firm market capitalization, firms have become larger since 1975. We first measure the average size of listed firms using market capitalization, again expressed in 2015 dollars. In 1975, the mean market capitalization 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

[2] To obtain the market value of assets, the practice in corporate finance is essentially to replace the book value of equity with its market value.

median market capitalization (untabulated), which increases from $60 million to $570 million. Mean market capitalization increases by 299 percent in the 22 years before the 1997 peak in new listings, and then increases by 290 percent in the 18 years since 1997.

The distribution of market capitalization is extremely skewed, although the level of skewness is similar in 1975 and 2015, with a large increase in skewness in the late 1990s. The ratio of mean to median is 11.0 in 1975 and 10.1 in 2015, but peaks at 21.4 in 2000. Another way to analyze the distribution of market capitalization is to look at the smallest and the largest number of firms it takes to reach 25 percent of the market's total capitalization. In 1975, the 14 largest firms have an aggregate market capitalization equal to 25 percent of the market as a whole, as do the 4,484 smallest firms, or 93.0 percent of all listed firms. In 2015, the 21 largest firms have a total market capitalization equal to 25 percent of the market as a whole, as do the 3,487 smallest firms (92.6 percent of listed firms).

In short, while listed firms are larger today than 40 years ago in terms of market capitalization, the distribution of firm size in 2015 is similar to 1975—with both being more concentrated than the distribution in 1995. These patterns given rise to concerns about whether markets have become less receptive to small firms.[3] A simple but rough benchmark is to compute the percentage of listed firms that are small, defined as having a market capitalization of less than $100 million in 2015 dollars. In 1975, 61.5 percent of listed firms are small, as shown in Table 1. This percentage peaks at 63.2 percent in 1990, and then falls. The share of small, listed firms all the way to 19.1 percent of listed firms in 2013, before rebounding slightly to 22.6 percent in 2015. In other words, small firms are much scarcer today than 20 or 40 years ago.

One obvious concern with fewer but larger firms is that concentration within industries can increase, which could possibly adversely affect competition. To examine this, we construct a Herfindahl index of revenue at the 3-digit NAIC level for public firms.[4] We find that the average Herfindahl index at the industry

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

[4] A Herfindahl index is constructed by taking the market share of each firm in an industry, squaring it, and then summing to a total. Thus, an industry ruled by a monopoly with 100 percent of the market will have a Herfindahl of

level increases by 45 percent from 1995 to 2015, from 811.7 to 1179.5, as shown in Table 1. However, the average index is significantly lower in 2015 compared to 1975, when it is 1391.5. In other words, three-digit NAIC industries are on average much more concentrated now than 20 years ago, but less than 40 years ago. An obvious limitation of this analysis is that it ignores foreign firms, whose importance has increased substantially over the past 40 years, and also private firms. Hence, the increase in Herfindahl ratios since 1995 may overstate the potential increase in concentration. However, Grullon, Larkin, and Michaely (2016) study the increase of industry-level concentration in the U.S. and conclude that taking into account private firms does not change conclusions about the increase in concentration. Though an increase in concentration could lead to a decrease in competition, it is not necessarily the case.

Investment

From 1975 to 2015, intangible assets became increasingly important for the production of goods in the U.S. economy, which has implications for how firms invest, perform, and finance themselves. Figure 2 and Table 1 show the evolution of capital expenditures over time. The economy was relatively weak in 1975, so it is not surprising that the average ratio of capital expenditures to assets increases at first, peaking in 1981 at 14.1 percent. By 1988, the ratio of capital expenditures to assets falls below 10 percent, and after rebounding to 10.5 percent in 1996, the ratio averages 4.5 percent from 2009 to 2015. It is noteworthy that average capital expenditures as a fraction of assets in 2015 are less than in 2008, the year of the financial crisis.[5]

The increase in the importance of intangible assets can also be seen by examining the largest firms over time. In 1975, the largest firm by market capitalization is IBM. Besides IBM, the top five firms are AT&T,

10,000 (that is, 100^2), while an industry with many 100 firms that each have 1 percent of the market will have a Herfindahl of 100 (that is, 100×1^2).

[5] In untabulated results, the same evolution takes place if we use an asset-weighted average instead of an equally weighted average. In this case, capital expenditures are 9.8 percent of assets in 1975, 5.1 percent in 1995, and 2.6 percent in 2015. Strikingly, the asset-weighted average of capital expenditures drops below 3 percent in 2002 and has not exceeded 3 percent since then.

Exxon, Eastman Kodak, and General Motors. Exxon is the only firm that remains in the top five in all three of our snapshot years. In 2015, the top five firms by market capitalization are, starting from the largest, Apple, Google, Microsoft, Exxon, and Amazon. In 1975, the average ratio of capital expenditures to assets for the top five firms was 13 percent while the average ratio of R&D expenditures to assets was 4 percent. By 2015, the capital expenditures ratio has dropped to 6 percent while the R&D ratio has increased to 9 percent.

This change in the relative importance of R&D versus capital expenditures for the five largest firms has taken place across listed firms as a whole. Listed firms have much lower capital expenditures and much higher R&D expenditures in 2015 than they did in 1975. Figure 2 shows the evolution of average R&D to assets over time. As reported in Table 1, the equally weighted average of R&D to assets is 1.3 percent in 1975, 5.7 percent in 1995, and 7.5 percent in 2015. Around 2001, R&D expenditures start slightly exceeding capital expenditures, and the gap has grown in recent years. In 2015 R&D expenditures by listed firms are 78 percent higher than capital expenditures.[6] Overall, the rise in R&D expenditures does not offset the decrease in capital investment. If we sum R&D and capital expenditures as a measure of total investment, its lowest value during our sample period is 8.5 percent in 2009. Total investment peaks at 17.5 percent in 2000. In 2015, it is only 11.6 percent, but it has not exceeded 12 percent since 2000.

Given the decline in capital investment, it is not surprising that listed firms have experienced a decrease in the fraction of assets that are "fixed assets"—that is, plant and equipment. Figure 3 shows the evolution of the equally weighted ratio of fixed assets to total assets. In 1975, the equally weighted average is 34.7 percent (as shown also in Table 1). By 2015, it is 19.7 percent. While publicly available databases do not make it possible to assess the extent to which firms substitute outsourcing for in-house production, these results are consistent with an increase in outsourcing, which increases substantially over our sample period (da Silveira, 2014).

[6] This shift in how firms invest is fairly dramatic when we examine averages, but not as large when we look at medians. A primary reason for this difference is that the median firm does not report *any* R&D expense.

Inventory holdings also fall dramatically over our time period, as shown in Figure 3, partly due to the introduction of just-in-time production processes in which firms receive goods only when needed. As reported in Table 1, the equally weighted ratio of inventories to assets was 23.6 percent of assets in 1975. By 2015, that ratio is just 8.2 percent.

Though public firms today have lower levels of fixed assets and inventories, they hold more cash. As shown in Figure 3 and Table 1, the equally weighted ratio of cash to assets is 9.2 percent in 1975, and more than doubles to 21.6 percent in 2015. The increase in cash holdings is not as noticeable for large firms, but the average ratio of cash to assets for the five largest firms by market capitalization is 23 percent in 2015; these firms hold $243 billion in cash. In contrast to the equally weighted average, the asset-weighted average of cash to assets (untabulated) falls in the 1980s, reaching a low of 7.9 percent in 1990. The ratio then increases and peaks at 13.3 percent in 2013; it is 12.6 percent in 2015. 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 (Bates, Kahle, and Stulz, 2009).

One concern over measures of capital and R&D is that intangible assets—like organizational capital or benefits from accumulated past R&D investments—are not recorded on firms' balance sheets. Accounting rules dictate that investments in intangible assets are expensed, even though the importance of these assets seems to be rising over time. 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 financial position. Eisfeldt and Papanikolaou (2014) define organizational capital as the intangible capital that relies on human inputs, including the 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 averaged 10 percent of net assets (assets minus cash holdings) in 1970, slightly higher in 1975, and then increased steadily to exceed 50 percent in 2010. They also find that capitalized R&D represents about one-third of intangible capital and organizational capital roughly two-thirds. Corrado, Hulten, and Sichel (2009) argue that organizational capital is the largest component of intangible capital, and accounts for about 30 percent of all intangible assets. Eisfeldt and Papanikolaou (2014) show

that organizational capital is more important than investment in 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 organizational capital to property, plant, and equipment increased steadily since 1995 and was at or close to a peak in 2012 (the end of their sample period).

Profitability

One well-accepted measure of profitability is the ratio of a firm's operating cash flow to assets. We define operating cash flow as operating income before depreciation minus interest and taxes; assets are measured at the beginning of each time period. As shown in Table 1, the equally weighted average of this ratio across listed firms falls sharply during our sample period. It averages 4.3 percent from 1975 until 1995, and 0.2 percent since 1995. Surprisingly, this measure of cash flow is never negative before 1998; since then, it is negative in seven years, including the last three years of our sample.

If we asset-weight rather than equal-weight the operating cash flow measures, average cash flow and average adjusted cash flow are higher, which indicates that larger firms generate more cash flow. Another way to see this is by separating the firms in the top decile of assets and the firms in all the other deciles. The equally weighted average of cash flow to assets is marginally higher after 1995 compared to before (8.3 percent versus 8.2 percent) for the largest firms. Average cash flow for the largest firms is never negative and its minimum value is 6.7 percent in 1982. In contrast, the equally weighted cash flow for the other firms is negative only once before 1995. After 1995, it is negative 11 times. Therefore, firms have been performing poorly on average, except for the largest firms. Further evidence of poor performance can be found in the fact that the fraction of firms with negative net income increases over time. Specifically, the proportion of firms with negative net income (loss firms) is below 20 percent through 1981, does not exceed 30 percent until 1985, and exceeds 40 percent for the first time in 2001. Since 2001, the proportion of loss firms exceeds 40 percent in four years and is 37.2 percent in 2015. Denis and McKeon (2016) investigate the increase in the fraction of firms with losses and document that losses are persistent, typically

lasting four consecutive years. They argue that the increase in cash holdings noted in the previous section is partly due to firms raising cash to fund losses.[7]

A substantial proportion of the decline in average operating cash flow is related to the rise of R&D spending. Recall that R&D is expensed while capital expenditures are not. Consequently, if a firm switches from spending a fixed amount on capital expenditures to the same amount on R&D, its accounting performance worsens. To assess the importance of this effect on trends in profitability as measured by cash flow, we examine what happens when we treat R&D investment like capital expenditures: that is, we add back R&D expense to operating cash flow, so that it is also treated as capitalized. We call this measure adjusted operating cash flow. The decline in adjusted operating cash flow over our time period is lower: from 1975 to 1995, adjusted operating cash flow averages 7.6 percent; from 1995 through 2015, it averages 6.3 percent. The equally weighted average of adjusted cash flow is never negative. However, 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 2007-2009 Great Recession. Perhaps 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 (seven) years since 2000 when adjusted (unadjusted) cash flow is lower than in 2008 or 2009. Median operating cash flow to assets is higher than mean operating cash flow to assets, and is never negative; adjusted medians are the same since median R&D is zero. Overall, 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.

Though performance has worsened for the average firm, the winners have done very well. One way to see this is that four new firms entered the list of the top five firms by market capitalization in 2015, relative

[7] Other measures of profitability like return on assets (ROA), which includes the effect of depreciation and other non-cash charges, show a similar pattern. For example, return on assets in our sample falls from 4.3 percent in 1975 to -3.3 percent in 1995 and -8.3 percent in 2015. Average and median return on assets for U.S. corporations also decrease over our sample period, although much less so for large firms and/or in asset-weighted samples.

to 1995. Specifically, Apple, Google, Microsoft, and Amazon replace AT&T, Coca Cola, General Electric, and Merck. In 2015, these four firms combined had earnings of $82.3 billion, representing 10 percent of the earnings of all public firms combined.[8] Perhaps not surprisingly, over the last 40 years, there has been a dramatic increase in the concentration of the profits and assets of U.S. firms. Table 2 shows that in 1975, 50 percent of the total earnings of public firms is earned by the 109 top earning firms; by 2015, the top 30 firms earn 50 percent of the total earnings of the U.S. public firms. Even more striking, in untabulated results we find that the earnings of the top 200 firms by earnings exceed the earnings of all listed firms combined in 2015, which means that the combined earnings of the firms not in the top 200 are negative. In 1975, the 94 largest firms own half of the assets of U.S. public firms, but 35 do so in 2015. Finally, 24 firms account for half of the cash holdings of public firms in 1975, but 11 firms do in 2015. Table 2 also shows that the percentage of earnings accounted for by the top 100 firms almost doubles, from 48.5 percent in 1975 to 84.2 percent in 2015. For assets, cash, operating cash flow, and earnings, the share of the total accounted for by the top 100 firms is now at least 10 percent higher than it was in 1975.

How Capital is Provided and Rewarded

As discussed earlier, U.S. firms spend more on R&D and have fewer fixed assets today than they did 40 years ago. Fixed assets provide collateral against which firms can borrow, but R&D is difficult to finance with debt, as R&D in process cannot be seized by creditors if a firm gets in trouble and its value is hard to ascertain. Consequently, an increase in R&D should lead to a decrease in firm leverage. Leverage measures the importance of debt as a source of financing. The more highly levered a firm, the greater the risk of financial distress and bankruptcy, all else equal. An examination of multiple measures of leverage in Table 1 shows that leverage is not higher in 2015 than in 1975. However, we saw earlier that R&D investment is more important for the equally weighted than the asset-weighted average. Therefore, the impact of

[8] We define earnings as net income before extraordinary items, which corresponds to variable ib in Compustat.

increased R&D investment on leverage is expected to be more important for equally weighted measures of leverage. Our evidence supports this, in that leverage falls dramatically for an equally weighted measure of leverage that takes into account the cash holdings of firms.

Figure 4 illustrates several widely-used measures of a firm's leverage. The solid line shows the equally weighted average book leverage of public corporations is slightly higher in 2015 than in 1995, but both are lower than in 1975. The asset-weighted book leverage ratio, shown by the dot-dash line gives greater weight to large firms and tells a different story. This ratio rises substantially from about 1985 to 1995, then remains high through about 2007, before dropping sharply after the financial crisis.[9]

Another measure of leverage examines the ratio of debt minus cash over total assets. This measure is called the net leverage ratio, because the firm could use its cash holdings to repay its debt, and debt that is covered by cash holdings is less risky than other debt. In some ways, this "net leverage ratio" may be the best measure of financial health. The equally weighted net leverage ratio is 0.174 in 1975. It falls steadily and after 2003, is positive in only two years, 2008 and 2015. In other words, in almost all years since 2003, the average public firm has more cash than debt. In fact, the percentage of firms with negative net leverage is 23.7 percent in 1975 and 43.1 percent in 2015. This percentage peaks at 49 percent in 2010.

Asset-weighted net leverage (untabulated) follows a different path. It is 12.2 percent in 1975, increases to 24.7 percent in 2001, and then falls to its lowest level of 9.4 percent in 2013, ending at 11.2 percent in 2015. The asset-weighted averages of leverage and net leverage in 2015 are approximately equal to those in 1975. In other words, for large firms, leverage is not lower than in 1975, but it is lower than in all years from 1980 to 2012.

[9] Alternative measures of leverage use the market value instead of the book value of equity. For example, the market value of assets can be calculated as total assets minus the book value of equity, plus the market value of equity. Market leverage is then the ratio of debt to the market value of assets. The decrease in leverage from 1975 to 2015 is more pronounced for the equally weighted average of market leverage than for the equally weighted average of book leverage. Regardless of whether we use the equally weighted average or the asset-weighted average, the market leverage of public firms is lower in 2015 than in 1975, and equal to or lower than in 1995.

None of our leverage measures are elevated at the end of the sample period in 2015, suggesting that concerns about corporate leverage 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, as shown in Table 1.

Another way to look at leverage is to examine the percent of firms that have no debt, again summarized in Table 1. The percentage of listed firms without debt increases fairly steadily from 1975, when it is 6.1 percent, to 2011, when it peaks at 18.9 percent. In 2015, it is 17.3 percent. Debt can be in the form of either publicly traded debt such as bonds, or private debt such as bank debt, but publicly available accounting data do not identify these separately. 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 are 56 percent of the value of corporate bonds, drop to 42 percent by 1995, and to 20 percent in 2015.[10]

In addition to debt, firms issue equity to finance themselves. Equity issuance increases the total number of shares outstanding, while repurchases decrease the total number of shares, and "net equity issuance" looks at the difference between repurchases and 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 lagged assets follows an inverted u-shape during the last 40 years. Net equity issuance is less than 10 percent each year in the 1970s. It increases to peak at 36.3 percent in 1996. After 1996, net equity issuance divided by assets falls. In the 2000s, it never rises above 20 percent and is lower than 10 percent in seven years. In 2015, it is 15.4 percent. An asset-weighted average gives more weight to larger firms that tend to repurchase more heavily. Asset-weighted net equity issuance is typically small but positive in the years before 2000, peaking at 2.9 percent in 2000. Since 2000, it is negative in all years but three. In 2015,

[10] 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.

it is -0.8 percent. In the 2000s, large firms are more likely to return equity to shareholders rather than raise equity from investors.

Ownership

Over the last 40 years, ownership of U.S. publicly listed firms 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 in which we have 13F data. Table 1 shows that in 1980, 17.7 percent of outstanding shares are held by institutions, based on an equally weighted average. This percentage increases steadily and peaks at 55 percent in 2007. In 2015, this percentage is 50.4 percent. Institutions tend to prefer large firms, so institutional ownership is higher for the asset-weighted average than for the equally weighted average.

Another way that institutional ownership changes over the last 40 years is that it is now much more common for a firm to have an institutional investor who controls 10 percent or more of the shares. The percentage of U.S. firms with a 10 percent institutional shareholder is 11.9 percent in 1980. This percentage increases through time, and by 1995 it is 19.5 percent. Since 2008, this percentage is typically higher than 30 percent; in 2015, 32.0 percent of firms have at least one institutional blockholder who owns 10 percent or more of the shares.

Payout Policies for Shareholders of Public Firms

Shareholders invest in equity to earn a return, which consists of current payouts and/or price appreciation. Profitable firms can use their cash flows to pay dividends, buy back shares, increase their cash holdings, or invest. Jensen's (1989) forecast of the demise of the public corporation was partly motivated by the belief that managers of public firms often retain earnings even when they cannot reinvest them profitably, which destroys shareholder wealth. Jensen (1986) called this issue the agency problem of free

cash flow. He argued that public firms would tend to have payout rates that would be too low—that is, limited distributions of cash to shareholders either in the form of dividends or repurchases. In contrast, he argued that private firms can control this problem more efficiently. Yet the payout rate, defined as dividends plus repurchases as a fraction of net income, is at an all-time high in 2015. Such a high payout rate is inconsistent with worsening of agency problems, but it is consistent with a perceived lack of investment opportunities or with a drop in incentives of firms to invest.

Figure 5 shows the evolution of payout rates. The percentage of dividend-paying firms follows a u-shape over the last 40 years (for discussion, see Floyd, Li, and Skinner, 2015). In 1975, 63.5 percent of public firms pay dividends (see Table 1). By 1995, this share falls to 34.0 percent, and it sinks to a minimum of 29.8 percent in 2000. The proportion of public firms paying dividends then rebounds to 42.2 percent of listed firms in 2012, and is 41.9 percent in 2015. In 2015, the fraction of firms paying dividends is roughly one-third lower than in 1975 and one-third higher than in 2000.

Figure 5 illustrates several measures of shareholder payouts relative to the assets of firms. In 1975, dividend payments are 1.3 percent of assets on average. This percentage falls to a minimum of 0.4 percent in 2000, but then rises back to roughly 1 percent in recent years. An 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 40 years, share repurchases increase considerably (DeAngelo, DeAngelo, and Skinner, 2008). In 1975, repurchases are only 0.3 percent of assets. In 1984, the Securities and Exchange Commission relaxed rules limiting repurchases by firms and although repurchases fluctuate from year to year, they increase over time, first slowly and then more decisively. As Figure 5 shows, the equally-weighted average of dividends to assets exceeds repurchases until the mid-1990s, but the relation then reverses. In asset-weighted terms, the ratio of dividends to assets was higher than the ratio of repurchases to assets until 1996. Since 1997, repurchases are higher than dividends, except in 2002 and 2003. Thus, stock repurchases are at record levels in the 2000s and extremely high in recent years. Adding together payouts from dividends and stock repurchases, the total payouts relative to assets have been at historical highs in recent years, too.

Payouts can also be examined relative to the net income of the firm, rather than to the assets of the firm. The equally weighted average of total payouts in the form of both dividends and repurchases as a percentage of net income is 27.1 percent in 1975; although it sags to 20.5 percent in 1995, it is typically between 20-30 percent of net income from 1975 until the early 2000s. However, the payout rate then spikes to 49.9 percent of net income in 2007, decreases during the Great Recession, and then rebounds to 47.0 percent in 2015; in recent years it is higher than at any time since 1975. This evolution also occurs in the asset-weighted average. With this average, firms pay out 76.2 percent of net income in 2015, which is the fourth-highest percentage since 1975, with the three higher percentages in 2006, 2007, and 2012. By either measure, public corporations have been paying out a higher share of net income to shareholders in recent years.

Big firms account for a larger percentage of dividend payouts and a larger percentage of total payouts in 2015 than in 1975. For example, as shown in Table 2, the top 100 dividend-paying firms account for 55.1 percent of total dividends in 1975 (for additional data on the evolution of these flows, see DeAngelo, DeAngelo, and Skinner, 2004). By 2015, the top 100 firms account for 68.7 percent of total dividends. The same increase in concentration has taken place for total payouts, but the increase is more muted as the top 100 firms accounted for 54 percent in 1975 and 62.3 percent in 2015.

How to make sense of our results

The changes we document will be topics of research for years to come, but, in the absence of consensus on the explanation for these changes, it is useful to consider possible explanations that have either been advanced already or are worth considering.

Let’s begin with a benign potential explanation. In a market economy, resources are constantly reallocated from less efficient firms to more efficient firms. Hence, at times, this reallocation will naturally lead to consolidation, with less efficient firms being acquired by more efficient firms. This process is reinforced if larger firms have an efficiency advantage because of their size. In this case, it will not be

surprising to see the number of firms fall and the larger firms survive. With this view, we entered a period of consolidation in the mid-1990s and, hence, we have larger but fewer public firms.

One reason to be skeptical of this benign explanation is that the consolidation is concentrated within the universe of public firms. If consolidation has nothing to do with being a public firm, we should see the number of firms decreasing, whether firms are public or private. We don't. A good way to demonstrate this is to look at the service industries. The U.S. has become an economy dominated by service industries. Even though the number of firms in the service industry increases by 30 percent from 1995 to 2014 and employment increases by 240 percent, the number of public firms falls by 38 percent. A similar evolution occurs in the finance industry, namely more firms but fewer public firms since 1995. In that industry, the number of firms increases by 18.7 percent from 1995 to 2014, but over the same time the number of listed firms falls by 42.3 percent. Further, Doidge, Karolyi, and Stulz (2017) show that the propensity of firms to be listed, which they define as the percentage of public firms in the population of all firms, falls across all firm-size categories when size is measured by employment. The efficient consolidation view is also challenged by evidence suggesting that mergers in recent years do not have efficiency gains, but instead the gains have come from larger markups (Blonigen and Pierce, 2016). Grullon, Larkin, and Michaely (2016) argue that this consolidation seems to be partly the result of a relaxation of anti-trust enforcement, so it is occurring because of mergers that might not have taken place earlier on anti-trust grounds.

The drop in the propensity to be listed suggests that there is a problem with being a public firm. Many have argued that the regulatory burden associated with being public increased as a result of the Sarbanes-Oxley Act of 2002 and that, as a result, fewer firms want to be public and many of them have exited public markets. The problem with this explanation is two-fold. First, the drop in the number of public firms predates the regulatory changes of the early 2000s, so these changes can only be a partial explanation. Second, as discussed earlier, the fraction of firms going private is small compared to the fraction of firms that are no longer listed because of mergers. However, Sarbanes-Oxley highlights a problem with public firms. In the U.S., corporate law is governed by state of incorporation, but public firms are subject to federal securities laws. As a result, Congress can regulate public firms in ways that it cannot regulate private firms.

For instance, concerns about conflict minerals led to Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which mandates disclosure by public firms of whether their supply chain uses such minerals. Such a requirement has an asymmetric effect as private firms do not face the same requirement.

Our data show that the fraction of small public firms has dropped dramatically. Gao, Ritter, and Zhu (2013) document that the drop in IPOs is particularly acute among small firms. Why are public markets no longer welcoming for small firms? We already saw that R&D investments have become more important. Generally, R&D is financed with some form of equity rather than debt, at least in early stages before a firm has accumulated lucrative patents. Raising equity in public markets to fund R&D can be difficult. Investors want to know what they invest in, but the more a firm discloses, the more it becomes at risk of providing munition to its competitors. As a result, R&D intensive firms may be better off raising equity privately from investors who then have large stakes. These firms can explain their R&D program in greater detail to such investors without worrying about competition.

There are additional potential explanations for why small firms are staying out of public markets. These explanations have to do with changes in financial markets and intermediation, with increased economies of scope, with increased concentration, and with changes in how firm activities are organized. The financial markets and intermediation explanation has two parts. First, public markets have become dominated by institutional investors. As a result, financial institutions and exchanges cater more to the demands of these investors. Investing in really small firms is unattractive for institutional investors. They cannot invest in a small firm on a scale that works for them. As a result, small firms receive less attention and less support from financial institutions. This makes being public less valuable for these firms. The second part is that developments in financial intermediation and regulatory changes have made it easier to raise funds as a private firm. Private equity and venture capital firms have grown to provide funding and other services to private firms. The internet has reduced search costs for firms searching for investors. As a result, firms have easier access to funding when staying private.

Gao, Ritter, and Zhu (2013) advance the economies of scope hypothesis. According to this hypothesis, small firms have become less profitable and less able to grow on a stand-alone basis, but are more profitable as part of a larger organization that enables them to scale up quickly and efficiently. Thus, small firms are better off selling themselves to a large organization that can bring a product to market faster and realize economies of scope. This is partly because it has become important to get big fast as technological innovation has accelerated. Globalization also means that firms must be able to access global markets quickly. It may also be because of network and platform effects that make it more advantageous for small firms to take advantage of these effects by being acquired. This hypothesis is consistent with the evidence we show that the fraction of exchange-listed firms with losses has increased and that average cash flows for smaller firms have dropped. Gao, Ritter, and Zhu (2013) and others also show that there are many mergers involving small firms, so small firms do indeed choose to be acquired rather than grow as public firms.

The increased concentration we document could also make it harder for small firms to succeed on their own, as large established firms are more entrenched and more dominant. It could well be that private firms can grow more easily before they attempt to reach a national market, but face more daunting obstacles if they try to become public and compete with the larger, more established firms. Further, it may be harder for smaller firms to compete and stay independent in a world where intellectual property has become so important, as these firms may find it difficult to acquire the rights to patents that allow them to grow and exploit their own intellectual property. Hence, the growing importance of R&D may itself lead to a world where competition is more limited.

Davis (2016) argues that it has become easier to put a new product on the market without hard assets. Entrepreneurs can rent and can outsource. For instance, Vizio rapidly overtook Sony in terms of TV sales with less than 200 employees and not producing anything in house. Netflix rents server farms from Amazon. When all the pieces necessary to produce a product can be outsourced and rented, a firm can bring a product to market without having large capital requirements. Hence, it does not need to go public to raise vast amounts of equity to acquire the fixed assets necessary for production. The top five firms in 2015 have

relatively few employees. The largest production facility of Ford, the River Rouge complex, employed more than 100,000 workers in the 1940s. Only Amazon has substantially more employees than that complex at its peak. With this evolution, there is no point in going public except to enable owners to cash out.

These explanations imply that there are fewer public firms because it has become harder to succeed as a public firm and because the benefits of being public have fallen. As a result, firms are acquired rather than growing organically. This results in fewer thriving small public firms that challenge larger firms and eventually succeed in becoming large. A possible downside of this evolution is that larger firms may have to worry less about competition, can become more set in their ways, and do not have to innovate and invest as much as they would with more youthful competition. Further, small firms are not as ambitious and often choose the path of being acquired rather than succeeding in public markets. With these possible explanations, the developments we document are costly as they can lead to less investment, less growth, and less dynamism.

Conclusion

U.S. public firms are very different now compared to 1975 or 1995: fewer, larger, older, less profitable, more intangible capital, less investment, and other changes. The U.S. firms that remain public are mostly survivors. Few firms want to join their club. A small number of firms account for most of the market capitalization, most of the earnings, most of the cash, and most of the payouts of public firms. At the industry level, revenues are more concentrated, so fewer public firms are competing for customers. A large fraction of firms do not earn profits every year and that fraction is especially large in recent years, which helps to explain the high level of delists. Accounting standards do not reflect the importance of intangible assets for listed firms, which may make it harder for executives to invest for the long run.

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 U.S. firms pay out more to shareholders now than at any time since 1975 seems inconsistent with the view that the central agency problem involves managers

retaining resources internally instead of paying them out to shareholders. However, Jensen's prediction of the rise of private equity has proven to be on the mark. The rise of private equity may be one of the contributing factors for why so few firms choose to participate in the public markets.

Since the 1997 peak in the number of listed public firms, the number of firms has dropped sharply while revenues have become more concentrated. Even though Tobin's q is high, firms invest less and have record payouts. Public firms as a whole are repurchasing more equity than they issue most years since 2000. It appears that firms are less dependent on public markets to raise capital to finance investments. It may be in the best interests of shareholders for firms to behave that way, but the end result is likely to leave us with fewer public firms, who gradually become older, slower, and lacking in ambition. Consequently, fewer new private firms are born as the rewards for entrepreneurship are not as large. And those firms that are born are more likely to lack ambition, as they aim to be acquired rather than conquer the world.

References

Bates, Thomas W., Kathleen M. Kahle, and René M. Stulz, 2009, Why do U.S. 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.

Blonigen, Bruce A., and Justin R. Pierce, 2016, Evidence for the effects of mergers on market power and efficiency, NBER 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.

Davis, Gerald F., 2016, The vanishing American corporation, Berrett Koehler Publishers.

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 U.S., Journal of Financial Economics 110, 546–573.

Doidge, Craig, G. Andrew Karolyi, and René M. Stulz, 2017, The U.S. listing gap, Journal of Financial Economics 123, 464-487.

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 U.S. 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, Xiaohui, 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 U.S. 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
Age	Number of years since CRSP listing (Source: CRSP)
Valuation	
Market Cap/GDP	Market Cap divided by GDP (series GDPA from the U.S. Bureau of Economic Analysis)
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 (000s)	Price times shares outstanding (prc*shrout) from CRSP, in 2015 dollars
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
Investment	
Capital Expenditures/assets	Capital expenditures (capx) / lagged assets
R&D/assets	R&D (xrd) / 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 (invt) 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/assets plus RD/assets
ROA	Earnings before extraordinary items 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 dummy	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)
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 percent 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
Total payout/ NI	dvc + prstkc divided by net income (ni)

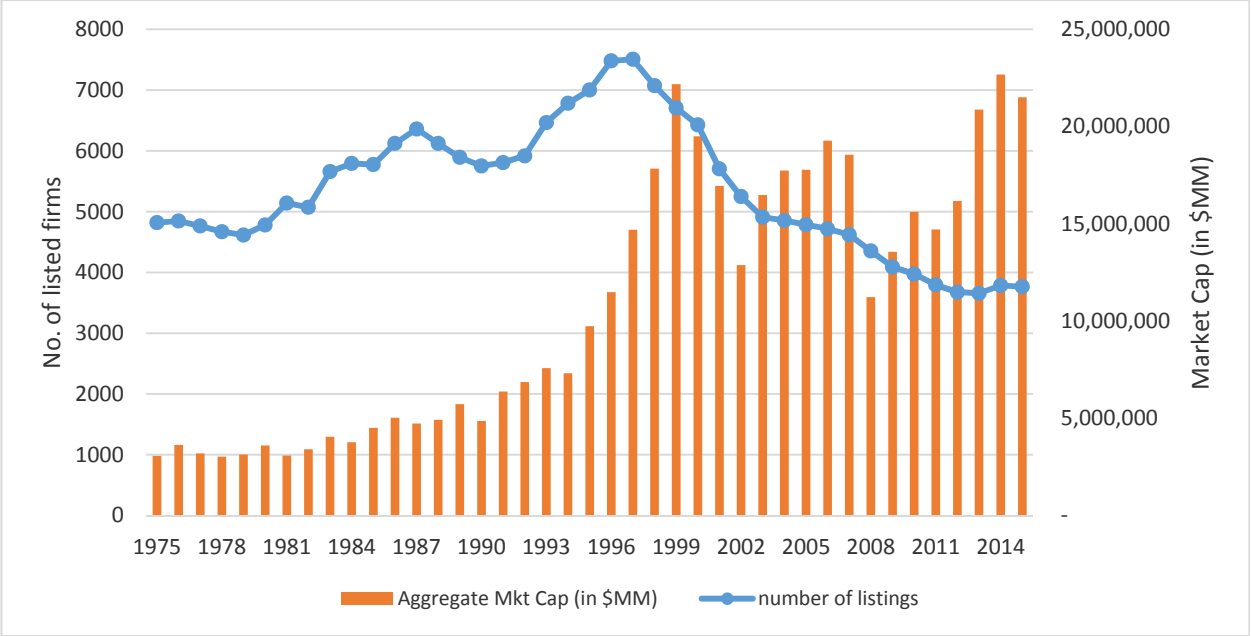

Figure 1. Number of firms listed by year on the NYSE, Nasdaq, and Amex and market capitalization from 1975 to 2015.
The market capitalization is shown in 2015 dollars. The source for number of listings and market capitalization is CRSP data.

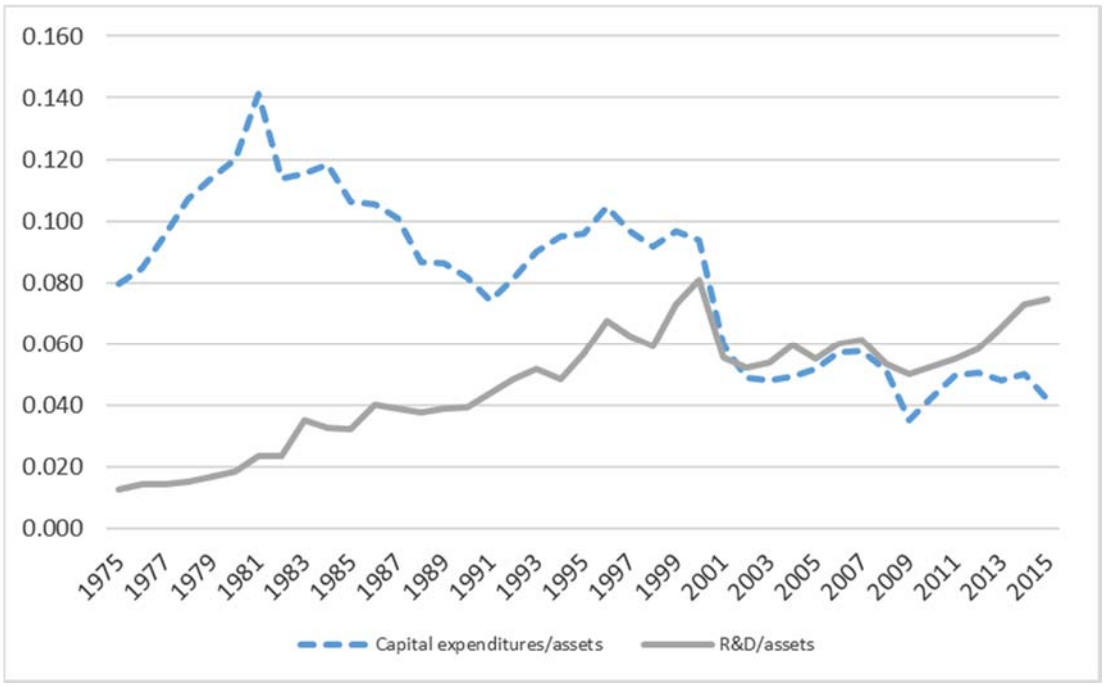

Figure 2. Evolution of capital expenditures and R&D from 1975 through 2015.
Source: The sample is composed of the intersection of listed firms on CRSP for which Compustat data are available. Accounting data are from Compustat. Detailed variable definitions are in the appendix.

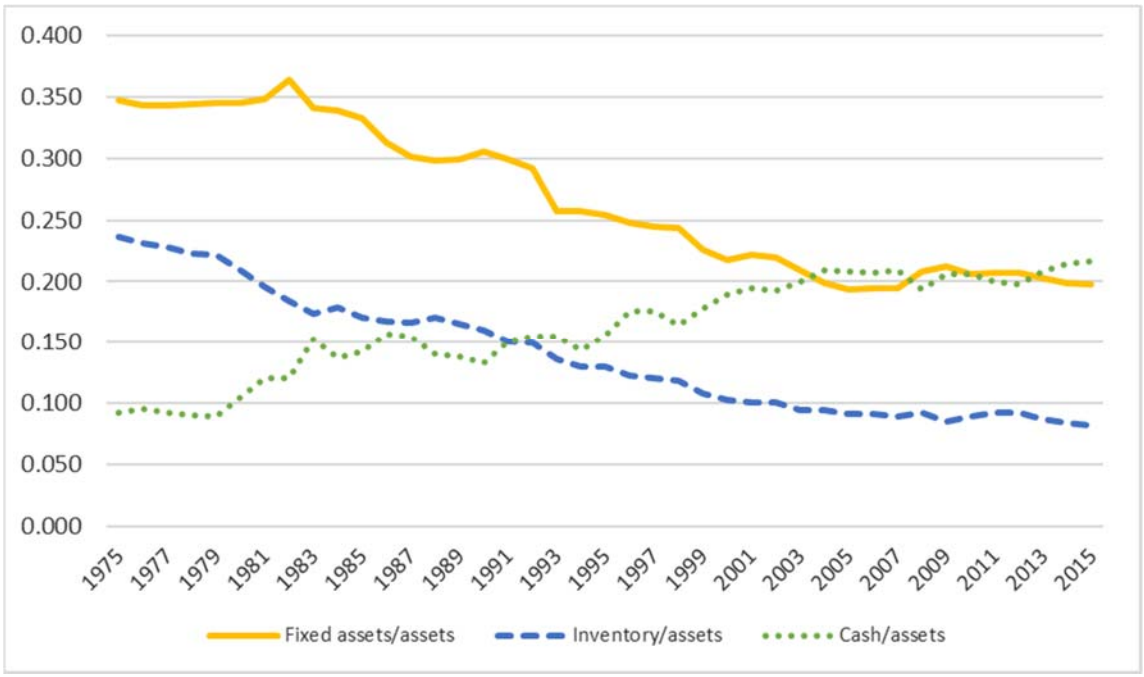

Figure 3. Evolution of fixed assets, inventory, and cash holdings.
The variables are expressed as fractions of total assets from 1975 to 2015. The sample is composed of the intersection of listed firms on CRSP for which Compustat data are available. Accounting data are from Compustat. Detailed variable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

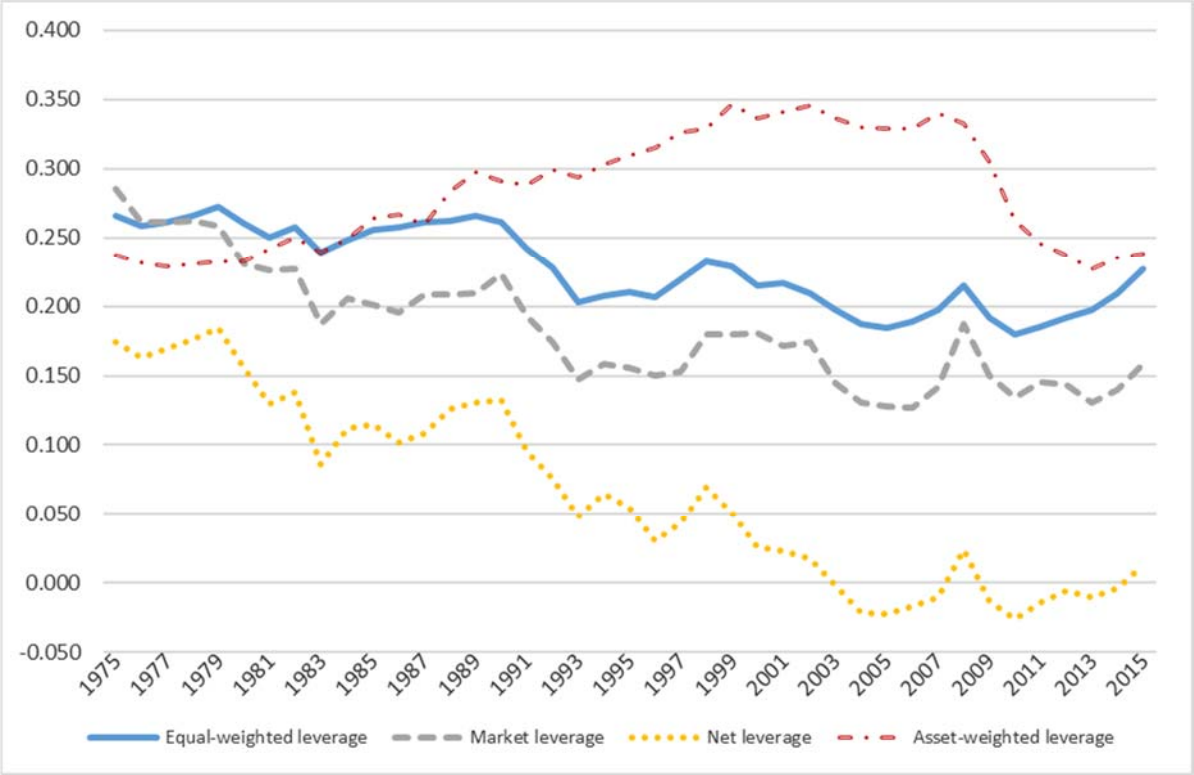

Figure 4. Equal- and asset-weighted book leverage, market leverage, and net leverage as a fraction of total assets from 1975 to 2015.

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 composed 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.

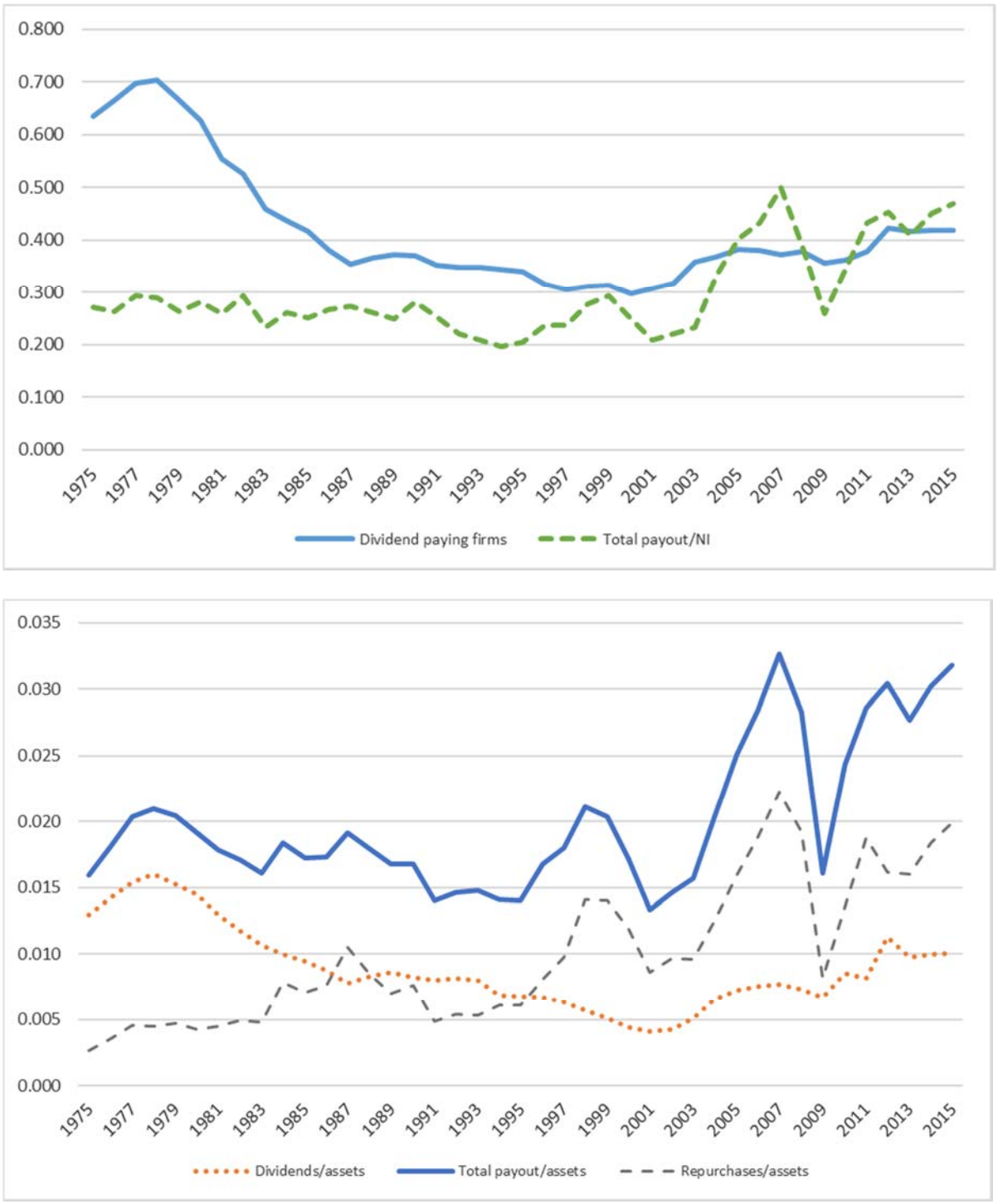

Figure 5. Dividends and repurchases.
The top panel shows the fraction of firms that pay dividends and the ratio of dividends to net income, while the bottom panel examines the evolution of dividends, repurchases and total payout (all as a fraction of total assets) from 1975 through 2015. Detailed variable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

	1975	1995	2015	t-test 75 vs 95	t-test 95 vs 15	t-test 75 vs 15
No. of listed firms	4,819	7,002	3,766			
Age	10.9	12.2	18.4	***	***	***
Valuation						
Market Cap/GDP	38.4%	78.0%	116.2%	***	***	***
Tobin's Q	0.769	1.731	1.639	***	**	***
Market Cap (000s)	662,807	1,400,079	5,752,858	***	***	***
Small firms	61.5%	43.9%	22.6%	***	***	***
Revenue Herfindahl	1391.5	811.7	1179.5	***	***	***
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	23.6%	12.9%	8.2%	***	***	***
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 dummy	23.7%	39.7%	43.1%	***	***	***
Interest/assets	2.6%	2.7%	1.8%	**	***	***
No debt firms	6.1%	12.7%	17.3%	***	***	***
Net equity issuance	0.5%	25.2%	17.8%	***	***	***
Ownership						
Institutional ownership*	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%	***	***	***

* 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
Earnings	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%