

The Effect of Capital Gains Taxes on Private Equity Activity

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2021 Senior Thesis

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## Section I

### Introduction

President Biden's recent arrival to the White House in January has led to a plethora of federal policy changes for the United States, including executive orders pertaining to issues within the United States' healthcare, immigration, and social systems. One piece of legislation that has yet to be enacted, however, is President Biden's proposed tax plan. Biden's plan, which includes increases to both corporate and individual taxes, has received a lot of attention due to one specific proposed change: increasing the top marginal income tax rate on long-term capital gains to 39.6% for taxpayers earning more than \$1 million annually<sup>1</sup>. Capital gains are the profits from the sale of a capital asset such as a stock or a property from the time it was bought until the time it is sold. These investments are taxed on the difference between the original price, which is known as an asset's "basis", and the price at which the security is sold. The current long-term capital gains tax for high earners sits at 20%, which means Biden's proposal implicates an increase of almost 20 percentage points. This proposal is in line with the President's overarching objective to raise more money through taxation to cover his spending initiatives, including the American Families Plan, which provides support for American families in child care, education, and family leave, among others<sup>2</sup>. However, given the magnitude of this change to the tax code, Biden's proposal has been met with controversy from multiple parties, including investors in both the public and private markets. Particularly, institutional investors, such as private equity firms, could experience massive tax implications as a result of this increase. Since these funds

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<sup>1</sup> Tax Foundation, "Unpacking Biden's Tax Plan for Capital Gains" [https://taxfoundation.org/joe-biden-tax-proposals/#\\_ftnref1](https://taxfoundation.org/joe-biden-tax-proposals/#_ftnref1)

<sup>2</sup> The White House, "Fact Sheet: The American Families Plan" <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/28/fact-sheet-the-american-families-plan/>

are set up as investment vehicles, they are not taxed at the corporate level, but rather solely through capital gains. Therefore, an increase to the capital gains tax could potentially lead to greater consequences for these firms than those in the real sector.

This paper sets out to analyze the effects of capital gains taxes on private equity activity. Changes in capital gains taxes are likely correlated with changes in private equity deal volume and value; the goal of this research is to investigate the extent of this correlation. The paper is organized as follows: Section II presents my hypothesis about the effects of capital gains taxes on private equity funds; Section III summarizes the methodologies used; Section IV details the results found in the analysis of capital gains taxes and offers conclusions based on the findings of the study. Through these various methods of analysis, I intend to quantify the effects of capital gains tax changes on private equity activity.

## **Literature Review**

The effects of capital gains taxation have been investigated thoroughly over the last century. Many researchers find that high capital gains taxes lead investors to hold their high performing assets and sell their underperforming assets in order to decrease their tax payments (Somers 1960, Holt and Shelton 1962, Sprinkel and West 1962). This has become an established viewpoint among many economists, especially regarding public equities. For example, Dyl (1977) estimates the year-end stock movement for both underperforming and high-performing stocks, finding an abnormally high trading volume for stocks that underperformed while there was unusually low volume for high-performing stocks. Dyl attributes this anomaly to the high capital gains tax associated with this time frame<sup>3</sup>. Dyl explains that the high trading volume of

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<sup>3</sup> Maximum capital gains tax rate for 1977 was 39.875% (Tax Policy Center)

underperforming stocks is due to year-end tax loss selling, which is a strategy for offsetting capital gains by selling underperforming assets. Similarly, Dyl associates the low trading volume for high-performing stocks with the “lock-in effect,” which is a term that describes the situation in which a securities holder defers selling in order to avoid paying taxes on capital gains. The existence of the lock-in effect is supported by similar research (Eilbott and Hersh 1976). A similar phenomena to the lock-up effect, known as the capitalization effect, has been researched by Dai, Maydew, Shackelford, and Zhang (2008). This group of researchers demonstrated that capital gains taxation causes decreased demand in stocks. This is due to the idea that higher taxation causes diminished realized returns, so investors may at some point discontinue buying stocks, or at least trim their invested capital because of their decreased interest in stocks. Overall, it has been generally acknowledged among economists that capital gains taxes noticeably influence investor behavior in the manners discussed above. Additional research supports this claim (Lang and Shackelford 2000; Blouin, Raedy, and Shackelford 2003).

Capital gains research goes well beyond the previously mentioned research that was conducted on public equities. Just as capital gains taxes likely impact stock price, many researchers have also investigated how it might affect mergers and acquisitions. The reason for this potential impact relates to the seller of a company, who will have to pay capital gains taxes as a result of the company’s sale. As a result, some sellers could theoretically decide to forego the sale of the company in the hope that the capital gains tax will decrease in the future. Todtenhaupt et. al (2020) investigate the correlation between this tax and M&A activity by analyzing the volume of M&A activity in multiple regions with varying capital gains taxes. These researchers find that a one percentage point increase in the capital gains tax rate reduces

acquisition activity by 1% annually, which implies unrealized gains of \$9.3 billion each year for the United States. These findings are consistent with similar studies (Ayers and Robinson 2007).

These economists' ideas are well-established for public equities and mergers and acquisitions, but little has been done to analyze the impact of capital gains taxes on private equity activity. There are many similarities between public equities and private equities from an investment pricing standpoint, which enables me to utilize previous public equity focused research to inform my own research on private equities.

## **Section II**

### **Data and Summary Statistics**

This analysis uses data from the PitchBook platform, which hosts data regarding activities in the private markets. This platform is used for quantifying yearly private equity activity, including aggregate deal size, volume, and number of private equity groups active in the market. This data set is pulled for the time period 2002-2020, with a specific focus on U.S. based private equity firms. Moreover, only private equity firms that participate in leveraged buyouts (LBOs) are considered<sup>4</sup>. This is because, generally speaking, private equity firms active in buyouts are well established, larger funds, that publish their deals publicly. Alternative forms of private equity include growth equity and venture capital. These deals are not included because data is less reliable for these deals, and therefore inclusion of these categories would likely skew the results of this study.

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<sup>4</sup> Leveraged buyouts: the act of purchasing a majority share in a company using mostly outside capital (leverage)

In addition to data pulled from PitchBook, data is pulled from the U.S. Tax Policy Center and the U.S. Treasury regarding maximum long-term capital gains tax rates, spanning from 2002-2020. The U.S. Treasury provides tax data spanning from 2002-2014, while the U.S. Tax Policy Center provides supplementary data, covering tax rates from 2015-2020. These sources provide true maximum capital gains tax rates, which not only include the statutory rates, but also, when applicable, the 3.8% tax on net investment income, implemented in 2013, as well as the phaseout of itemized deductions, which occurred from 1991-2009, and from 2013-2017.

These data sets are then aggregated to provide insight into the historical relationship between capital gains taxes and private equity. Some adjustments are made in order to minimize the effects of external factors. Specifically, the growth of the private equity sector is accounted for by dividing yearly deal volume by the number of private equity firms in a given year; an equal adjustment was made for yearly deal size. These calculations result in ratios that provide consistency to combat the effects of a growing market. Additionally, the capital-based metrics are adjusted to account for inflation. Each of these data points therefore becomes consistent with 2020 prices. From here, the average metrics are calculated for the entire time frame (2002-2020), which can be found in Table 1.

This datum represents the summary statistics for the entire analyzed time horizon. As seen here, the mean for the Deal Count/# of PE Firms ratio is 5.21, meaning, on average, ~5 deals per year were completed for each private equity firm<sup>5</sup>. Additionally, the average private equity firm in the data set invested \$468.25M per year over the full time horizon. For this time frame, the maximum long-term capital gains tax rate fluctuates between 15-25.1%, for

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<sup>5</sup> Deal volume varies from firm to firm – larger PE firms generally complete more deals in a given year

comparison. Next, I turn my attention to private equity activity given more specific buckets of tax rates, as seen in Tables 2 and 3.

As seen in the tables, there exists a difference between deal size and deal volume when comparing against different capital gains tax rates. Notably, in the years in which the tax rate is between 15-20%, capital invested/# of PE firms is calculated to be \$561.93M, which is an increase of almost \$200M per firm when compared to the years in which tax rates sit between 20-25.1%. Additionally, there is a much greater standard deviation for the capital invested ratio when given a tax rate between 15-20%, which can likely be attributed to the large volatility in the market during the 2008 Financial Crisis, in which the maximum long-term capital gains tax rate was quoted at 15.35%.

### **Historical Analysis**

In addition to the data tables, the complete data is also compiled into a time-series graph, which compares the yearly tax rates to private equity activity during this time. Figure 1 represents the flow of private equity activity from 2002-2020 and compares this against the yearly maximum long-term capital gains tax rate. Key time frames are highlighted in the appendix and analyzed for significance. These are periods in which the capital gains tax rate experienced a significant change, which could signal changes in private equity activity. See Figures 2, 3, and 4 for these points of interest.

The first tax rate change came in 2003 when the maximum long-term capital gains tax decreased from 21.16% to 16.05%. The change came in the middle of the year, so, for simplicity, these tax rates were averaged out for 2003, giving a value of 18.55%. Regardless, there is a noticeable increase in both deal size and volume, with an increase of 64% in the deal count ratio,

from 3.49 to 5.71. Additionally, the capital invested ratio rose from \$213M/fund to \$538.91M/fund, an increase of 153%.

Next, in 2013, the capital gains tax rate had its biggest change over the analyzed time frame, increasing from 15% to 25.1%. In this case, the capital invested ratio increased slightly, from \$396.46M invested to \$419.09M, an increase of 5.7%, but the deal count ratio decreased from 5.97/fund in 2012 compared to 4.39/fund in 2013, which is a decrease of 26.5%.

Finally, in 2018, the capital gains tax rate decreased slightly from 25.1% to 23.8%. During this time frame, private equity deal volume and capital invested both increased. Deal volume/firm increased by 21.8%, from 4.63/firm to 5.63/firm, while the capital invested ratio increased by 10.96%, from \$336.40M to \$373.26M.

From these specific points of interest, one can gather a sense of the potential impact that capital gains taxes have on private market deal flow. In most of these scenarios, private equity funds behave as hypothesized; when capital gains taxes increase, private equity funds decrease the volume and value of their investments, and vice versa. A notable exception to this trend came in 2013, when the capital gains tax rate increased, as well as the capital invested ratio.

While there is limited established research surrounding these metrics, there are a few relevant factors that may have led to this 2013 increase in invested capital. One prominent factor is an increased interest in software companies from private equity funds. From 2012 to 2013, total private equity capital invested in software companies surged 83%, from \$15.94B to \$29.2B, even though deal count only increased by 20, from 285 to 305 (PitchBook). This is representative of a massive increase in valuation for these investments, which could have potentially spurred the total increase in capital invested. Alternatively, it may be the case that a hot market overpowered the effects of the tax in this scenario, as both public and private equities



continued to rebound following the 2008 Financial Crisis. 2013 was highlighted by low interest rates and the best overall returns for private equity investors since 2006 (Cambridge Associates, 2014). Therefore, in this scenario, it is possible to see why private equity funds maintained their bullish sentiment over this time-frame.

While the above factors could very reasonably have caused this increase in capital invested for private equity funds in 2013, there is no definite causal influence at this time. Overall, this historical section concludes that private equity firms generally reacted negatively to increases in capital gains taxes, but 2013 cannot be considered an outlier without the existence of further research. I will now turn to theoretical framework of this research to test the validity of these historical observations.

### Section III

#### Methodology and Empirical Framework

To further analyze how capital gains taxes may impact the activity in the private equity sector, a theoretical model must be tested to measure how changes in a given tax rate could affect the value of a given investment. Evaluating this relationship gives insight into how taxes may cause investors to price their deals differently, given the expectation that capital gains taxes could affect the exit value of a given investment. To test this measure, the following model is used:

$$P_0 = \frac{(1-t)D_1}{(1+R)^1} + \frac{(1-t)D_2}{(1+R)^2} + \dots + \frac{(1-t)D_n}{(1+R)^n} + \frac{P_n - c(P_n - P_0)}{(1+R)^n}$$

*Where:*

*P = price, D = dividends (annually), t = dividend tax rate, c = capital gains tax rate, and*

*R = required after-tax return*

This pricing model takes into account the major factors that affect valuation from an investor's perspective, including dividends, the dividend tax rate, the capital gains tax rate, and the required after-tax return. While other methods of valuation may be used by private equity funds, this model specifically allows for the isolation of capital gains taxes to determine their correlation with entry price. By accounting for these factors, the results should express the specific influence that capital gains tax rates have on pricing.

Next, it is important to discuss the framework of this model to verify its validity for this analysis. As a private equity investor, when making an investment, cash initially leaves the fund at time  $T = 0$ , then, from this point on, or until the fund exits the investment at time  $T = n$ , the investors are paid out in quarterly, biannual, or annual dividends. Finally, once the investors exit the investment, they are paid the proceeds from the sale. From this, one can see the sources of income and the importance of taxes in these situations. Specifically, investors must pay two forms of taxes along the course of their investments. First, for each dividend paid out to investors, investors are taxed by the dividend tax rate, which, for private equity investors, means a tax rate equal to that of ordinary income (currently 39.6% for high earners). Additionally, private equity investors must pay capital gains taxes on the profits of their investment, which is the focus of this analysis. This model recognizes these factors and is tested using hypothetical private equity transactions to determine the effect that capital gains taxes have on private equity valuations.

## Section IV

### Results

This analysis tests varying capital gains taxes for a given hypothetical private equity investment opportunity. These tests provide insight into the effects of capital gains taxes on deal valuation; varying capital gains tax rates will be utilized and the effects on price will be considered.

Consider the following hypothetical example of a private equity transaction with the following metrics:

$$P_0 = ?, P_n = \$500M, T = 5 \text{ years}, D(\text{annually}) = \$25M, t = 39.6\%, R = 20\%, c = ?$$

This example, while purely hypothetical, reflects commonly used metrics for private equity transactions, such as the required return at 20%, the dividend tax rate at 39.6%, a time horizon of 5 years, and very palpable figures for price at exit and annual dividend payments. To effectively utilize this example, I will measure the effects of varying capital gains tax rates on the entry price of the investment. This will allow for full conceptualization of how capital gains taxes impact the decisions of private equity investors. See Table 4 for the results of this test.

The findings shown in Table 4 provide substantial support for the hypothesis that increasing capital gains taxes results in a decrease in value for private equity firms. These results show that as the capital gains tax rate increases, the entry price for a private equity investor decreases, holding all else constant. More generally, a 5% increase in capital gains taxes within this range leads to an decrease of 2-3.5% in entry price, varying depending on the rate, as seen in Table 4. Based on these results, as capital gains taxes change,  $\Delta P_0$  accelerates. Intuitively speaking, in this example, private equity investors further price capital gains taxes into their entry price as they increase, which leads to substantial changes to the amount that they are

willing to invest. At this point, however, we cannot confirm the trend seen in  $\Delta P_0$ . I will soon turn to another example to allow for comparison. Overall, though, Table 4 supports the hypothesis that there is indeed a decrease in valuation caused by increasing taxes. It also reinforces the validity of the previously discussed historical results, which show that as capital gains taxes increase, private equity invested capital decreases for the time frame 2002-2020.

To further investigate the effects of these taxes on the model, I will turn to a second example of a hypothetical private equity transaction. In doing so, I will adjust the model's inputs to produce results which will then be compared with the first example. Two changes are made to the second example: the required return and the duration of the investment are adjusted to 12% and 3 days, respectively. Now that the inputs are adjusted, consider the following:

$$P_0 = ?, P_n = \$500M, T = 3 \text{ years}, D(\text{annually}) = \$25M, t = 39.6\%, R = 12\%, c = ?$$

The two changes are made specifically to get a better sense of the impact on entry price to a given investment, as well as to investigate the rate of change of entry price. Although this is a hypothetical example, these are in the range of commonly used metrics in the industry. Average durations for leveraged buyouts tend to be between 3 and 5 years, while required rate of return can vary anywhere between 10-30%. Importantly, these changes will test the previous example's results and allow for better understanding of the impact that capital gains taxes have on valuation. See Table 4 for the results of this test.

As seen from the table, as capital gains taxes increase, entry price decreases for this investment. This supports the results from the previous example and the hypothesis that capital gains taxes lead to lower valuation. Notably different, however, is the rate of change of this decrease. While the first example showed  $\Delta P_0$  accelerating as taxes increased, these results showed the biggest decrease when rates increase from 10-15%, painting a different picture.

Therefore, the accelerated decrease in the first example does not hold true in the second. The second example does support the overall claim of this paper, though, and is evidence that further validates the prior historical analysis.

## **Discussion**

This research looked into two specific aspects of capital gains tax rates on private equity activity in the United States market. First, historical data was analyzed to investigate the effects of varying tax rates on historical deal volume and invested capital. This then transitioned to theoretical analysis to determine the impact of a given tax rate on the valuation of a hypothetical private equity investment. Findings show that, historically, a change in the capital gains tax rate has resulted in changes in both volume and invested capital for these firms, as seen in Figure 1. Moreover, regarding the theoretical model, changes in capital gains tax rates negatively impact investment valuation by 2-3.5% for a 5% change in the tax rate, with this negative impact on price accelerating as taxes grow higher. These effects are demonstrative of the important role that the capital gains tax rate plays on private equity activity. Given the fact that private equity firms are limited partnerships, meaning they are only taxed on capital gains, rather than via corporate taxes, it is sensible that these changes were seen in this analysis. The results of this study support the idea that private equity firm activity will decrease if the Biden Tax Plan goes into effect, which raises capital gains taxes to 39.6% for these firms. This decrease is an inefficiency for the private markets, as seen in the historical analysis as well as the empirical model. Capital gains tax increases were shown to lead to less deal volume and lower valuation, meaning less companies are getting the funding they need from these firms, and at lower valuations, meaning less money is entering the private markets from these funds. This is an inefficiency that will be heightened with a 39.6% tax.

## Appendix

**Table 1**  
**Summary Statistics for Full Time Horizon (2002-2020)**

Variable	Mean	Std. Dev.	Min	Max
Deal Count / # of PE Firms	5.21	1.24	3.49	9.05
Capital Invested / # of PE Firms	\$468.25M	\$233.04M	\$206.08M	\$1.29B

**Table 2**  
**Summary Statistics for Capital Gains Tax Rate Range (15%-20%)**

Variable	Mean	Std. Dev.	Min	Max
Deal Count / # of PE Firms	5.28	0.85	3.84	6.60
Capital Invested / # of PE Firms	\$561.93M	\$287.48M	\$206.08M	\$1.29B

**Table 3**  
**Summary Statistics for Capital Gains Tax Rate Range (20%-25.1%)**

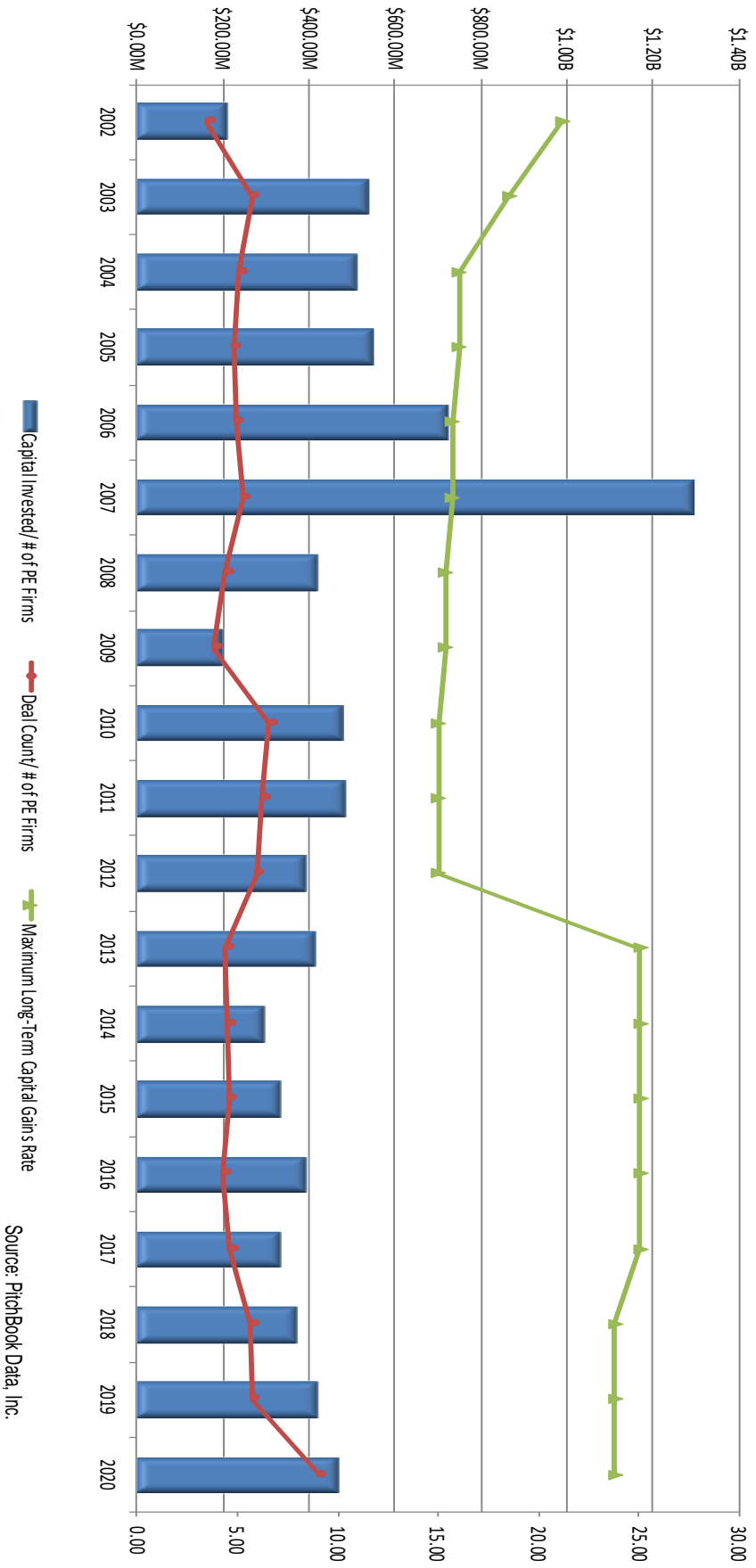
Variable	Mean	Std. Dev.	Min	Max
Deal Count / # of PE Firms	5.14	1.62	3.49	9.05
Capital Invested / # of PE Firms	\$364.18M	\$77.88M	\$213.04M	\$474.08M

**Table 4**  
**The Effect of Changes in Capital Gains Taxes on Price**

Tax Rate	Entry Price (20% R)	Entry Price (12% R)
10%	235.47	383.89
15%	229.81	368.07
20%	223.91	362.60
25%	217.74	356.65
30%	211.29	350.16
35%	204.54	343.06
40%	197.46	335.25

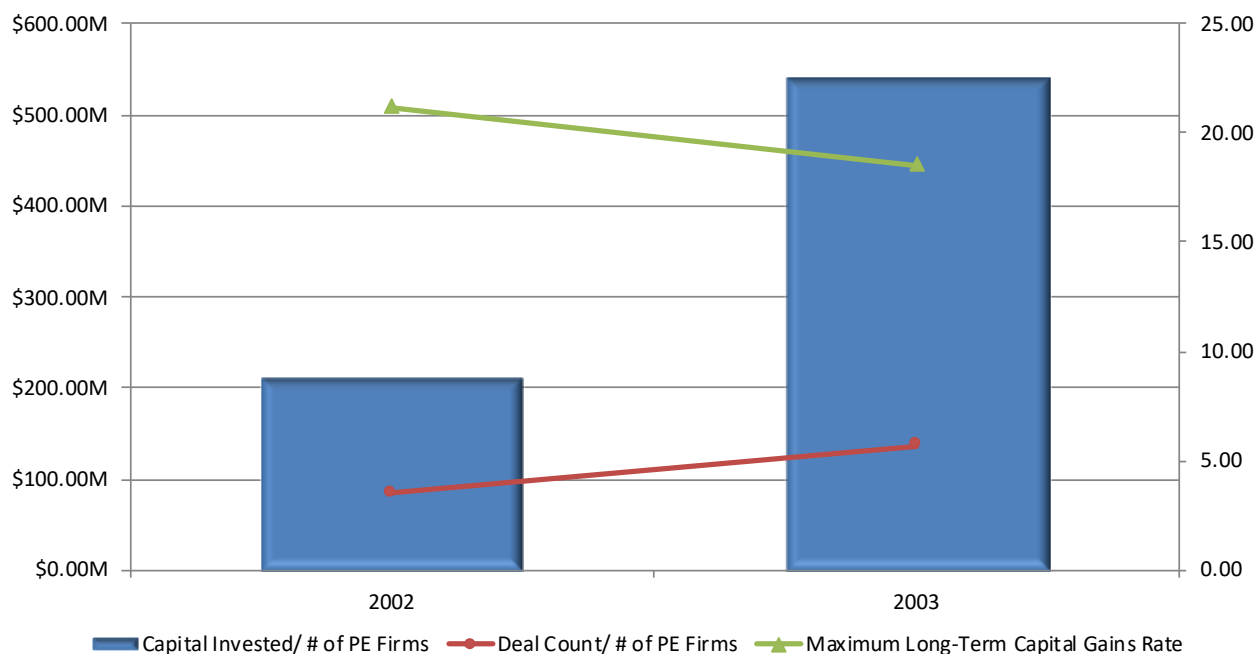
Figure 1

Capital Invested, Deal Count, and Capital Gains Taxes over Time

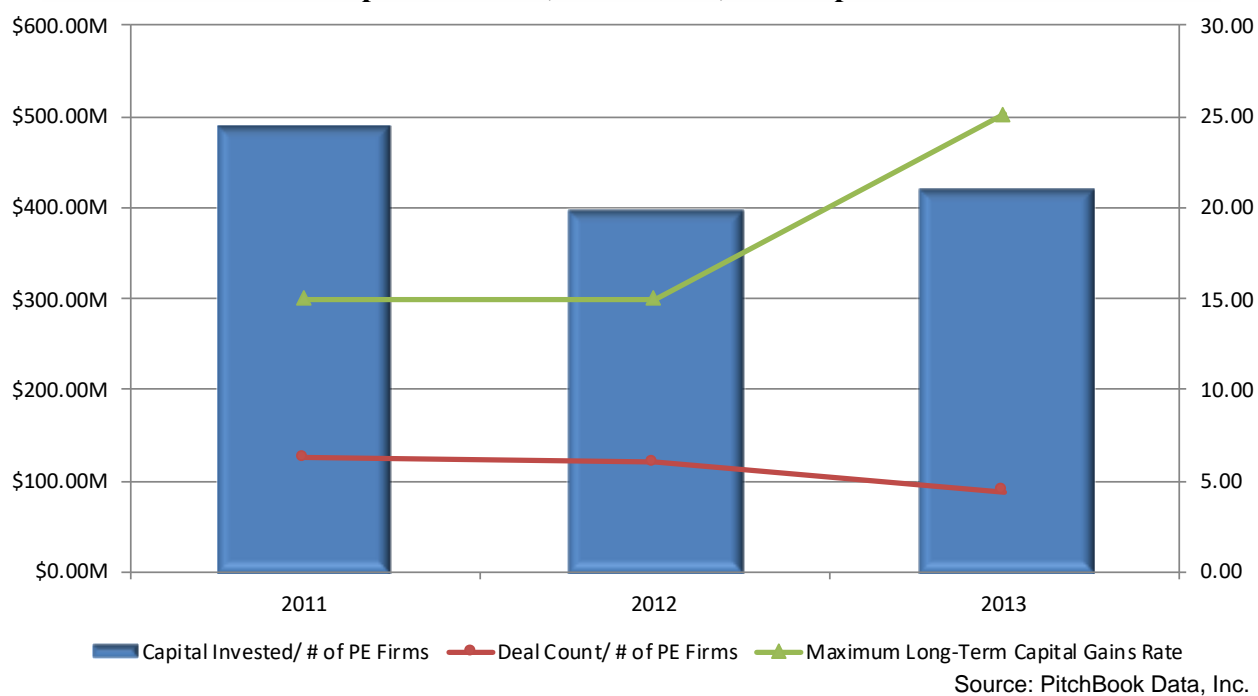




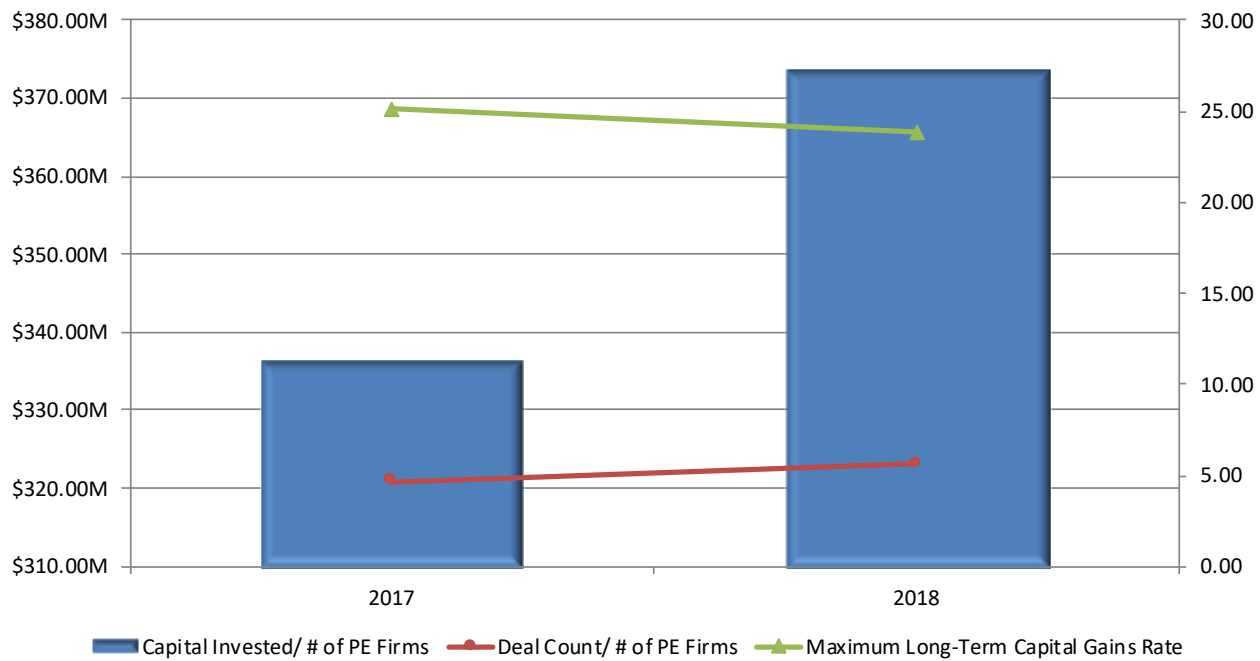
**Figure 2**  
**Point of Interest #1: Capital Invested, Deal Count, and Capital Gains Taxes over Time**



**Figure 3**  
**Point of Interest #2: Capital Invested, Deal Count, and Capital Gains Taxes over Time**



**Figure 4**  
**Point of Interest #3: Capital Invested, Deal Count, and Capital Gains Taxes over Time**



Source: PitchBook Data, Inc.

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