

Taxes and IPO Pricing: Evidence from U.S. Tax Reform

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Taxes and IPO Pricing: Evidence from U.S. Tax Reform

Abstract: This study uses the recent U.S. tax reform, commonly known as the Tax Cuts and Jobs Act of 2017 (TCJA), to examine the extent to which changes in the corporate income tax influence the pricing of initial public offerings (IPOs). Specifically, we examine IPO pricing during the period of anticipated tax reform and the post-tax reform period. We also examine whether price revisions during the IPO book-building process reflect the anticipated benefits of tax reform. During the tax reform period, anticipated changes in corporate tax rates and taxation of foreign income added an additional layer of complexity to IPO valuations. We provide evidence that firms completing an IPO following the passage of the TCJA experience an increase in offer prices. The post-TCJA increase in IPO offer prices was significantly lower for firms with net deferred tax assets and U.S. multinational firms. However, firms completing their IPO during the period of anticipated tax reform did not experience an increase in IPO offer prices, nor did they experience an increased probability of an upward pricing revision during the book-building process, suggesting that the IPO market was, on average, unwilling to impound anticipated tax reform into offer prices until enactment. This result contrasts with research on pricing of tax reform on existing publicly traded stock, where prices impounded the anticipated benefits from tax reform, far in advance of enactment.

1. Introduction

This study uses the recent U.S. tax reform, commonly known as the Tax Cuts and Jobs Act of 2017 (TCJA), to examine the extent to which corporate income taxes influence the pricing of initial public offerings (IPOs). The typical process of an initial public offering includes several steps. First, the firm and its underwriter(s) file the initial Form S-1, Registration Statement with the Securities and Exchange Commission (SEC), which is preliminary and subject to change. Second, the firm and underwriter(s) may file amendment(s) to the registration statement, Form S-1/A, indicating an anticipated range for the offer price. Third, the filing parties conduct a ‘road show’ to assess interest in the stock and finalize the offer price. Revisions in the offer price during this process reveal information acquired from informed investors. However, there are numerous frictions in the price revelation process, suggesting that the final offer price may only partially incorporate the private information of informed investors (e.g., Benveniste and Spindt 1989; Haley 1993). In contrast to prior research, in this study we examine the extent to which changes in *public* information are captured in IPO prices and price revisions. Specifically, we examine the adjustments to firm value given higher expected future cash flows (cause by lower expected future taxes) as a result of anticipated (enacted) corporate tax reform and compare the timing of this pricing with that in the existing publicly traded markets.

We begin our analyses with a comparison of the pricing of IPOs following the enactment of TCJA, relative to IPO pricing prior to tax reform. We begin with this analysis to establish a change in pricing as a result of tax reform before moving to our tests of the pricing effects during the period of anticipated tax reform following the election of President Trump. The TCJA reduced the corporate statutory tax rate from 35 percent to 21 percent, likely leading to higher expected after-tax cash flows and higher IPO valuations. However, establishing the increase in IPO pricing

following passage of the TCJA is an important first step given the complexities of applying the tax law changes to the specific facts of individual firms and the importance of IPO pricing inputs that are unrelated to firm accounting fundamentals, including market demand.

To examine the extent to which taxes influence the pricing of initial public offerings, we use a sample of U.S. firms that underwent an initial public offering on a U.S. exchange between January 1, 2003 and December 31, 2018. Our sample includes three groups. First, we have IPOs executed post-tax reform, which includes any IPO executed after December 22, 2017, the date the TCJA was signed into law by U.S. President Trump. Second, we have IPOs executed during the period of anticipated tax reform and tax reform deliberation, which begins on November 8, 2016, the date of President Trump's election, and concludes with the passage of the TCJA in late 2017. We begin the tax reform period with President Trump's election given evidence of a price response in existing publicly traded stock following the election win, consistent with market expectations of tax reform (Wagner, Zeckhauser, and Ziegler 2018b).¹ Lastly, our control group includes IPOs executed prior to November 8, 2016. A timeline of the TCJA legislative process is included in Appendix B.

We provide evidence of an increased valuation and pricing of IPOs following the passage of the TCJA. To provide confirmatory evidence that the increase in IPO offer prices post-TCJA is driven, at least in part, by tax reform we conduct two cross-sectional analyses. First, firms with net deferred tax assets benefit from the reduction in the corporate tax rate, but they are also required to revalue deferred tax assets downward. Consistent with our expectations, we provide evidence

¹ In additional analyses, we alternatively define the tax reform period to include only the period of deliberation on the TCJA, from October 26, 2017, the date that a budget resolution allowing for \$1.5 trillion in deficit tax cuts passed both the U.S. Senate and House of Representatives through December 22, 2017 when the TCJA was signed by the President.

that the increased valuation and pricing in the post TCJA period is concentrated in those firms without net deferred tax assets.

Second, we evaluate the differential increase in offer prices for U.S. based multinational firms, relative to U.S. domestic-only firms. While both U.S. multinational firms and U.S. domestic firms reap the benefits of the reduction in the corporate tax rate, the TCJA included numerous changes to the taxation of U.S. multinational firms, including provisions requiring a transition tax on untaxed foreign earnings. Additionally, Wagner, Zeckhauser, and Ziegler (2018a) provide evidence that during the TCJA deliberation period, U.S. domestic-only firms experienced greater stock returns, on average, than those with large foreign exposure. Consistent with our expectations, we provide evidence that the post-tax reform increase in offer prices is concentrated in U.S. domestic-only firms.

To provide further corroborating evidence that the change in IPO pricing in the post-tax reform period is attributable, at least in part, to U.S. tax reform we evaluate the post-tax reform IPO pricing change for U.S. firms relative to firms domiciled in the U.K. and the Eurozone. We provide evidence consistent with the post-tax reform increase in IPO offer prices being concentrated among U.S. firms, providing confirmatory evidence that the increase is, in part, attributable to tax reform.² Having established this baseline result, we turn to evaluation of IPO pricing during period of anticipated tax reform.

For IPOs finalized during the period of anticipated tax reform and tax reform deliberation, it is unclear *ex ante* whether the firms and their underwriters are able to set the final offer price to incorporate the anticipated benefits of tax reform into their estimate of firm value, such that the

² While this analyses offers evidence that the post-tax reform increase in IPO offer prices is attributable to U.S. tax reform, we note that Gaertner, Hoopes, and Williams (2019) provide evidence of a price response, to U.S. tax reform, in existing publicly traded stock traded on non-U.S. markets.

pre-IPO firm and shareholders reap the benefits of tax reform via a higher offer price. Our expectation is that the offer prices reflect a partial adjustment to firm value, taking into account the key elements anticipated in the tax law change and the probability of successful tax reform. However, the offer price may not reflect the anticipated change in firm value resulting from tax reform. This would be consistent with anecdotal evidence that IPO pricing is based on pre-tax earnings multiples, criticism that IPO pricing does not value tax attributes, and prior research that documents a relatively weak association between firm accounting fundamentals and value in the IPO process.

In motivating these tests, we argue that tax reform deliberations provide a unique setting to evaluate how IPO pricing responds to new public information. Additionally, by examining the pricing of public offerings during deliberations on U.S. corporate tax reform, we are able to contribute to the debate on the extent to which tax attributes, such as deferred tax assets, are valued in the IPO market. Prior research has examined the effect of shareholder level taxes (e.g., Li, Lin, and Robinson, 2016), or tax attributes in specialized settings such a “supercharged IPO” (Edwards, Hutchens, and Rego, 2019). To our knowledge, this is the first study to directly examine the effect of corporate taxes on IPO prices.

Throughout our tests, we consistently find evidence of an increase in offer price in the post-reform period. However, we are unable to provide evidence of an increase in offer prices during the period of anticipated tax reform. Additionally, IPOs executed during the tax reform period did not experience an increased probability of an upward pricing revision during the book-building process. Collectively, the evidence suggests that in contrast to the existing publicly traded equity market, the IPO market was, on average, unwilling to impound the *anticipated* benefits of tax reform into offer prices.

Given the pricing of IPOs during the period following the election of President Trump did not appear to incorporate the anticipated benefits of tax reform, we evaluate (1) when these benefits are impounded into price, and (2) why issuers are willing execute an IPO during the pre-tax reform period, leaving the anticipated benefits of tax reform “on the table.” First, we evaluate post-IPO pricing changes for the subset of IPOs executed during tax reform. We do not find evidence that IPOs executed during the tax reform period have higher returns in the first day or first week of trading. We find weak evidence of higher returns over the 180-day period post-IPO, although these higher returns are not significant at traditional levels. We also evaluate the stock market returns in the days leading up to and immediately following passage of the TCJA. We provide evidence of higher returns for the firms that undertook an IPO during the period of anticipated tax reform, relative to the control firms, in the ten trading days preceding passage of the TCJA.

Next, we explore why issuers are willing execute an IPO during the period of anticipated tax reform, leaving the expected benefits of tax reform “on the table.” Wagner, Zeckhauser, and Ziegler (2018b) provide evidence of stock market gains, following the election of U.S. President Donald Trump, which they attribute, in part, to market expectations regarding tax reform. They find that firms with net deferred tax assets, internationally oriented firms, and firms with high leverage experienced stock market losses following the election. Consistent with the evidence from Wagner, Zeckhauser, and Ziegler (2018b), we conjecture that private firms with these characteristics have less to gain from the passage of tax reform and may even experience negative valuation adjustments upon the passage of reform. As such, it may be these firms, with less to gain from eventual tax reform, that are willing to execute an IPO during the tax reform period. Consistent with our expectations, we provide evidence that U.S. multinational firms and firms with a net deferred tax asset are more likely to complete an IPO during the period of anticipated tax

reform. Collectively, the evidence suggests that the issuers undertaking an IPO the period of anticipated tax reform are likely leaving the benefits of tax reform “on the table;” however, some of these issuers, with global operations and deferred tax assets, are less likely to experience the same level of benefits from tax reform.

Our findings are of potential interest for several reasons. First, we contribute to the literature on IPO pricing and initial returns following an IPO, i.e., IPO underpricing (see Ritter and Welch 2002). The IPO process includes numerous sources of information asymmetry. For example, prior research has discussed how management likely has an information advantage regarding internal information, and investors have an information advantage regarding the market demand for a stock and external factors that influence firm value, such as industry competition (Rock 1986). Other research examines the numerous frictions in the price revelation process, suggesting that the final offer price may only partially incorporate the private information of informed investors (e.g., Benveniste and Spindt 1989; Hanley 1993). We add to this literature by examining how changes in *public* information are captured in IPO prices and price revisions, specifically using the setting of tax reform.

Second, we contribute to the literature on IPO price formation and the relative importance of firm specific versus market information. In prior work, Kim and Ritter (1999) examine the relative effectiveness of various standard valuation methods in pricing IPOs (e.g., discounted cash flows, comparable firm multiples such as price-to-earnings, price-to-sales, and price-to-EBITDA) and find that accounting information and price-to-earnings multiples from comparable firms are somewhat useful in explaining preliminary offer prices but, information on market demand is also a critical input. In a more recent study, Aggarwal, Bhagat, and Rangan (2009) examine the valuation of IPOs over time and find significant time series differences in the value relevance of

earnings and proxies for growth opportunities. Our study contributes to this literature by examining of how tax reform impacts IPO pricing.

Finally, we contribute to the literature on taxes and IPOs. Many prior studies have used changes in dividend tax rates and capital gains tax rates to provide evidence that investor level taxes impact IPO prices. Guenther and Willenborg (1999) document lower underpricing for firms that issue Qualified Small Business Stock, which is subject to lower capital gains taxation on disposition. Li, Lin, and Robinson (2016) provide further evidence that individual capital gains taxes affect IPO offer pricing. Edwards, Hutchens, and Rego (2019) study the use of a tax motivated “supercharged” IPO transaction that takes advantage of the tax arbitrage between individual and corporate taxes. However, prior research has not evaluated the impact of corporate tax changes on IPO value, possibly because the last major reform in the U.S. corporate tax system occurred in 1986. We contribute to this literature on taxes and IPOs by providing the first evidence, to our knowledge, of the extent to which changes in the corporate income tax rate affect IPO pricing.

The remainder of this paper is organized as follows. The next section develops our hypotheses related to tax reform and the pricing of IPOs. Section 3 details the sample selection and describes the research design for our primary analyses. In Section 4 we present our primary empirical findings. Section 5 presents supplemental analyses. Section 6 provides additional robustness testing and Section 7 concludes.

2. Background and Hypothesis Development

2.1 *Tax Cuts and Jobs Act of 2017*

H.R.1, commonly known as the Tax Cuts and Jobs Act of 2017 (TCJA) reduced the U.S. federal statutory corporate tax rate from 35 percent to 21 percent, effective beginning on January 1, 2018. In addition to the reduction in the corporate tax rate, the TCJA made significant changes to the tax system for U.S. multinational corporations, adopting a quasi-territorial tax system. Of less direct impact to this study, the TCJA also included changes to the tax rates and deductions for individual taxpayers, as well as changes to some business deductions.³ In addition to the evidence of stock market gains leading up to tax reform (Wagner, Zeckhauser, and Ziegler 2018a and 2018b; Gaertner, Hoopes, and Williams 2019), concurrent research examines the impact of the TCJA on numerous business decisions, including share repurchases and dividends (Hanlon, Hoopes, and Slemrod 2018), CEO compensation (Luna, Schuchard, and Stanley 2019), and capital structure (Carrizosa, Gaertner, and Lynch 2019).

By all accounts, the TCJA moved through the legislative process very quickly.⁴ Although a topic of discussion in the popular press for some time, the first substantial indication that the U.S. may experience significant tax reform came on October 26, 2017. On that day the 2018 Budget Reconciliation, which allowed for \$1.5 trillion in deficit financed tax cuts, passed the U.S. House of Representatives, having previously passed the Senate. Less than two months later, on December 22, 2017, President Trump signed the final tax reform bill. Prior to the TCJA, the most recent notable U.S. tax reform was the Tax Reform Act of 1986 (TRA), a tax reform bill that was

³ Note, the TCJA did not make significant changes to the tax rates on dividends and capital gains, which would likely have impacted the pricing of corporate equities, potentially confounding the effect examined in this study.

⁴ In early October 2017, Goldman Sachs estimated that there was a 65 percent chance of tax reform legislation in 2018 (<https://www.cnbc.com/2017/10/09/goldman-65-percent-chance-that-tax-reform-gets-through.html>), and three months later the, just before the start of 2018, President Trump signed the TCJA into law.

drafted, re-drafted and vetted over the course of two years before being signed by President Reagan in October of 1986. Not only was the deliberation time for the TCJA notably short, throughout the deliberation period there were numerous uncertainties surrounding the eventual bill, including, but not limited to, the corporate tax rate, the approach to taxation of foreign income for U.S. multinationals, and when the tax reform would become effective.

Examining existing publicly traded firms, Wagner, Zeckhauser, and Ziegler (2018a) provide evidence of stock market gains among high-tax firms during the tax reform deliberation period; however, they find that these stock market gains were not enjoyed by U.S. multinational firms. Additionally, following the passage of the TCJA, many uncertainties persisted. The Acting IRS Commissioner at that time indicated that it could take years to offer additional interpretive guidance to taxpayers.⁵ Howard Gleckman, with the Tax Policy Center, noted in May of 2018 that many businesses still do not understand the new tax law, especially as it relates to taxation of U.S. multinational corporations.⁶ Further, the TCJA was signed into law approximately a week before the calendar year end (i.e., on December 22, 2017), leaving little time for calendar year firms to fully digest how the law would influence their income tax provisions prior to issuance of financial statements. As such, the U.S. Securities and Exchange Commission issued SAB 118 allowing firms to report in their financial statements provisional amounts for the income tax effects of the TCJA.⁷

2.2 IPO Pricing

⁵ Tax Strategy: Uncertainties continue in tax planning for 2018. Luscombe, Mark. *Accounting Today*, June 25, 2018.

⁶ Has Uncertainty Undercut the TCJA's Promised Investment Benefits? Gleckman, Howard. Tax Policy Center, May 23, 2018.

⁷ U.S. Securities and Exchange Commission. <https://www.sec.gov/interps/account/staff-accounting-bulletin-118.htm>

There is a substantial body of research on IPO pricing and initial returns following an IPO, i.e., IPO underpricing (see Ritter and Welch 2002). The typical pre-issue process for a firm going public includes: (1) filing the initial Form S-1, Registration Statement with the Securities and Exchange Commission (SEC), (2) filing amendments to the registration statement (Form S-1/A), indicating an anticipated range for the offer price, (3) conducting a ‘road show’ to assess interest in the stock, and (4) finalizing the offer price. During this process, the firm and its underwriter(s) gather information regarding investor demand, which is then used in the pricing and allocation of shares. This process includes numerous sources of information asymmetry; management likely has an information advantage regarding internal information, and investors have an information advantage regarding the market demand for a stock and external factors that influence firm value, such as industry competition (Rock 1986).

Establishing an IPO offer price can be difficult, especially in the case of younger, less profitable firms. Kim and Ritter (1999) evaluate the effectiveness of standard valuation methods used in IPO valuation case studies, including discounted cash flows and comparable firm multiples such as price-to-earnings, price-to-sales, and price-to-EBITDA. They conclude that accounting information and price-to-earnings multiples from comparable firms are somewhat useful in explaining preliminary offer prices; however, information on market demand is a critical input in setting IPO offer prices. Aggarwal, Bhagat, and Rangan (2009) examine shifts in the valuation of IPOs over different time periods and note significant difference in the value relevance of earnings and proxies for growth opportunities in IPO pricing over time. In this paper, we add to this literature through an examination of how the uncertainty around tax reform impacts pricing. Specifically, we examine the pricing of IPOs in the post-tax reform period and during the period of anticipated tax reform.

2.2.1 IPO Pricing Post-TJCA

As noted above, the TCJA substantially reduced the U.S. corporate statutory tax rate from 35 percent to 21 percent. Given the rate reduction, we expect firms, on average, to experience an increase in after-tax cash flows beginning in 2018 due to the tax savings. For all IPOs executed in 2018, following the passage of the TCJA, the specific provisions of the TCJA (including the reduction in the statutory rate) can be included in the valuation models of IPO investors. Following passage of the TCJA, firms and IPO investors likely grappled with application of specific provisions of the new tax law to firm specific situations, as there are substantial complexities in the new laws, especially those regarding international operations. Ernst and Young estimated a 3 percent decrease in the marginal effective tax rate for the U.S. business sector in 2018 (Pizzola, Carroll, and Mackie 2018 - Ernst and Young).

Prior research has examined the effect of the TCJA on existing publicly traded stock. Wagner, Zeckhauser, and Ziegler (2018a) provide evidence of stock market gains among high-tax firms during the tax reform deliberation period and Wagner, Zeckhauser, and Ziegler (2018b) document positive returns to tax reform as early as President Trump's election. Further, Gaertner, Hoopes, and Williams (2019) examine both the domestic and foreign stock market reaction to this tax reform. Gaertner, Hoopes, and Williams (2019) document on average positive returns in the U.S. stock market and most foreign stock markets they examine. The notable exception to these positive returns during the tax reform period were observed negative returns for Chinese firms.

While substantial evidence exists that, as a result of expected future tax savings, the valuations of existing publicly traded firms increased prior to the passage of the TCJA, it is unclear *when* this valuation increase may be impounded in IPO prices and if pre-IPO owners are able to reap any of the benefits of the TCJA. First, a change in the corporate income tax rate does not

directly impact a number of the inputs commonly used in IPO valuation including comparable firm multiples based on accounting data such as sales and/or EBITDA. Second, complex tax law changes may be impounded with delay. Wagner, Zeckhauser, and Ziegler (2018b) provide evidence that the market was slower to incorporate expectations regarding the value of tax reform into prices and that the market processed elements of anticipated tax reform at varying speeds. Plumlee (2003) documents that analysts are slow to incorporate complex tax law changes into their earnings forecasts. And, anecdotal evidence suggests that deferred tax assets may be discounted or undervalued by IPO investors (Edwards, Hutchens, and Rego 2019; Fleischer and Staudt 2014). Additionally, it has become much more common for firms with historic losses to engage in an IPO. Aggarwal, Bhagat, and Rangan (2009) note that while only 20 percent of IPOs from 1986-1990 had negative earnings; in 1999 and 2000 more than 80 percent of IPOs had negative earnings. In his sample of venture capital backed IPOs from 1996-2008, Allen (2012) notes that over 78 percent of the firms had a net operating loss carryforward at the time of IPO.

Finally, it is unclear how corporate tax reform would affect investor demand for share allocations of IPOs. Pastor and Veronesi (2012) develop a theoretical model, which suggests that uncertainty in government policies negatively affects stock prices. They also provide evidence that changes in government policy increase return volatility and the market risk premium. While there are arguments to suggest that the offer prices may not increase following the TCJA, given the magnitude of the reduction in the corporate income tax rate, and the resulting increase in a firm's after-tax cash flows following the passage of the TCJA, we make our first hypothesis (stated in the alternative):

H1: The IPO market experienced an increase in offer prices, on average, following the TCJA.

2.2.2 IPO Pricing During the period of Anticipated Tax Reform

In addition to examining how enacted corporate tax reform affects IPO pricing, we also examine the extent to which *anticipated* corporate tax reform affects IPO pricing. Anecdotal evidence suggests that the stock market was skeptical regarding corporate tax reform and slow to impound tax reform into market prices.⁸ Additionally, as noted above, the TCJA moved through the legislative process rather quickly, which is quite different from the tax reform of 1986, which spent over two years in the legislative process. In general, evidence suggests that firms delay investments during times of uncertainty (e.g. Bernanke 1983, Dixit and Pindyck 1994; Julio and Yook 2012). Pfizer executive Ian Read provided anecdotal evidence supporting this approach, when he suggested that Pfizer is pausing larger deals until there is increased clarity on potential tax reform (Crow 2017). Concerns regarding uncertainty may have also limited IPO investors' willingness to price the value of anticipated tax reform.

In the case of an IPO finalized during tax reform deliberations, it is unclear whether the firm and its underwriter(s) were able to fully or partially incorporate tax reform into initial pricing estimates, and/or to more fully impound the value of tax reform into the final offer price through a price revision during the book-building process. Price revisions reflect new information typically acquired by informed investors during the book-building process. Generally, informed investors have an incentive to keep positive information to themselves, so that they benefit from a lower initial price and a higher post-offering price following the revelation of positive information to the market (Benveniste and Spindt 1989). However, in the case of corporate tax reform, the positive information obtained during the book-building process—increased clarity on the provisions of the

⁸ JPMORGAN: There's still a fortune to be made in the stock market by betting on tax reform, Ciolli, Joe, *Business Insider*, November 29, 2017.

tax reform bill and increased probability of passage of a tax reform bill—is publicly available information.

The pre-IPO owners' ability to impound the increase in firm value, from anticipated tax reform, into IPO offer prices could be dampened by uncertainty regarding corporate tax provisions in the final legislation and the probability of successful tax reform. Tax reform moved quickly through the legislative process, and the deliberation period was rife with uncertainty. In Appendix C, we provide several examples of the discussion around tax reform that firms provided in their S-1s. Reading a number of these disclosures, firms often highlighted the uncertainty around what would be the final tax rules as a result of the reform, and how these rules would impact the firm. Despite this uncertainty, pre-IPO owners have an incentive to maximize the IPO offer price. Given evidence that the market priced some of the benefits of tax reform in advance of the legislation being finalized (Wagner, Zeckhauser, and Ziegler, 2018a; Wagner, Zeckhauser, and Ziegler 2018b), we expect at least a portion of the anticipated increase in firm value from tax reform to be incorporated into IPO offer prices for those firms that undertook an IPO during the period of anticipated tax reform. As a result, we make our second hypothesis (stated in the alternative):

H2: The IPO market experienced an increase in offer prices, on average, during period of anticipated tax reform.

3. Sample Selection and Research Design

3.1 Sample Selection

Our sample selection procedures start with all U.S. firms that completed an initial public offering on a U.S. stock exchange between January 1, 2003 and December 31, 2018. We begin our

sample in 2003, to exclude the dot.com bubble period of 1999-2000 and the subsequent down turn in the IPO market (Loughran and Ritter 2004). We obtain our initial sample of IPO firms from the SDC Platinum database. We require annual financial statement data from the Compustat North America database; as such, all observations must report a ticker in SDC and Compustat to match firms in both databases. Our sample can be separated into three groups: (1) IPOs executed post-tax reform (after December 22, 2017); (2) IPOs executed during the period of anticipated tax reform, from the election of U.S. President Trump through the deliberation of the TCJA (November 8, 2016 through December 22, 2017); and (3) the control group of IPOs executed prior to November 8, 2016. We begin the tax reform period with the election of President Trump, consistent with evidence of stock market reactions suggesting an increased probability of tax reform immediately following the election (Wagner, Zeckhauser, and Ziegler 2018b). In supplemental analyses, we also evaluate a short-window tax reform period, which includes only the period of deliberation on the TCJA, from October 26, 2017, the date a budget resolution allowing for \$1.5 trillion in deficit tax cuts passed both the U.S. Senate and House of Representatives, through December 22, 2017, when the TCJA was signed by the President. A timeline of the TCJA legislative process is included in Appendix B.

We impose the following sample selection criteria. To calculate our primary dependent variable we require non-zero sales in the period prior to IPO. We require non-missing data for all control variables. Additionally, we remove observations that are REITS and blank check acquisition companies, and entities taxed as “flow-through” employing a transaction structure commonly referred to as a supercharged IPO (Edwards, Hutchens, and Rego 2019). These requirements generate a full sample of 1,401 IPO firms, of which 83 executed their IPO post-tax reform and 77 executed their IPO during the period of anticipated tax reform (20 of which were

executed during tax reform deliberations). Figure 1 plots the number of IPOs per year for the sample period.

3.2 Tax Reform and IPO Valuations

To test our first hypothesis, which evaluates the valuation of initial public offerings following tax reform, we estimate the following OLS regression model:

$$\begin{aligned}
 \text{Log}(OP/SALES) = & \beta_0 + \beta_1 POST + \beta_2 NEGEBITDA + \beta_3 ASSETS_PSpre \\
 & + \beta_4 SPREAD + \beta_5 \%SHARES + \beta_6 PROCEEDS + \beta_7 MKTRET \\
 & + \beta_8 IPORET + \beta_9 IPOTOT + \beta_{10} RANK + \beta_{11} PE_BACKED \\
 & + \beta_{12} VC_BACKED + \beta_{13} REVISION + \sum \text{industry effects} + \varepsilon \quad (1)
 \end{aligned}$$

Our dependent variable is the valuation at the time of IPO, measured as the natural log of the IPO offer price to pre-IPO sales per share $\text{Log}(OP/SALES)$. We use a price-to-sales measure, as opposed to a multiple based on earnings (e.g., accounting net income, EBIT, EBITDA, etc.) given the difficulty of interpreting a price-to-earnings measure for firms with negative earnings (Aggarwal, Bhagat, and Rangan 2009). This issue is especially acute in our sample as the median firm has negative earnings at the time of IPO. Further, given the skewness in our data caused by extreme outliers in the ratio of offer price to sales per share, due to a small denominator, we employ a log transformation.⁹ *POST* is an indicator variable set to one if the IPO occurred following the passage of the TCJA. To investigate hypothesis 1, the main coefficient of interest in the model is β_1 , which captures the differential prices of IPOs in the period following the passage of tax reform.

⁹ In supplemental analysis, we use the un-logged offer price-to-sales ratio, winsorized at the 5% and 95% percentiles.

Our control variables are included to capture other aspects of IPO pricing unrelated to tax reform. These variables generally follow models of pricing and underpricing in the extant IPO literature (e.g., Edwards, Hutchens, and Rego, 2019, Loughran and Ritter, 2004). First, we include a number of firm specific accounting measures. Firms that IPO early in their life cycle have an expectation of growth and profitability but may not yet be profitable. As we do not limit our sample to firms with historic profitability, we include an indicator set to one for firms reporting negative EBITDA for the fiscal year immediately prior to IPO (*NEGEBITDA*). We also include a control variable to capture firm size, measured as pre-IPO assets per share (*ASSETS_PSpere*).

Next, we include a number of IPO characteristics in the model. Specifically, we add control variables for the size of the IPO, including: (1) the total IPO fees or gross spread (*SPREAD*), (2) the percentage of shares sold at IPO (*%SHARES*), and (3) the total IPO proceeds (*PROCEEDS*), e.g. Lowry and Murphy (2007), Li, Lin, and Robinson (2016). We include controls for the strength of the IPO market, including: (1) the first day stock return on IPOs in the two proceeding calendar months (*IPORET*), (2) the number of IPOs in the two proceeding calendar months (*IPOTOT*), and (3) value-weighted market returns for the two months prior to the IPO (*MKTRET*), e.g., Lowry (2003), Li, Lin, and Robinson (2016). Given the importance of the underwriter in IPO pricing, we include a control for the quality of the lead underwriter (*RANK*), e.g., Loughran and Ritter (2004). We also include controls for pre-IPO firm ownership characteristics including indicator variables for whether the firm is backed by venture capital (*VC_BACKED*) or private equity (*PE_BACKED*), e.g., Loughran and Ritter (2004), Li, Lin, and Robinson (2016). To control for the partial adjustment of pricing revisions, we include a control for pricing revisions during the book building process (*REVISION*), e.g., Hanley (1993). The model also includes industry fixed effects designed to capture other industry dynamics that could impact IPO valuation.

To test our second hypothesis, which evaluates the valuation of initial public offerings during the period of anticipated tax reform and tax reform deliberation, we modify equation (1) to include an indicator variable set to one if the IPO occurred during the period of anticipated tax reform, from the election of U.S. President Trump through the deliberation of the TCJA (*ANTICIPATE*). The coefficient on this variable, *ANTICIPATE*, captures the differential pricing during the period of anticipated tax reform. Detailed definitions for all variables are included in Appendix A.

4. Results and Analysis

4.1 Descriptive Information

Table 1 presents descriptive statistics for our sample of initial public offerings, separated into IPOs that occurred prior to the election of President Trump and anticipated tax reform (control group), IPOs that occurred during the period of anticipated tax reform (*ANTICIPATE*), and IPOs that occurred following the passage of tax reform in late 2017 (*POST*). Providing univariate support for hypothesis 1, the mean offer price-to-sales in the post period is 7.4, while the mean offer price-to-sales in the control period is 4.1 (mean $\text{Log}(OP/SALES)$ 2.002 in the post period versus 1.417 in the control period, p-value <0.01). The univariate analysis does not offer support for hypothesis 2, as the offer price-to-sales is not statistically different between the anticipated tax reform period (*ANTICIPATE*) and the control period. Univariate analysis also highlights key differences in the IPO market in the post-tax reform period, including higher overall market returns (*MKTRET*) and higher initial returns on IPOs (*IPORET*). The analysis also indicated that the firms engaging in an IPO in the post period are different, including more multinational firms (*MNC*) and a higher percentage of loss firms (*NEGEBITDA*). Further, in the period of anticipated tax reform,

we note that there is less momentum in the IPO market (*IPO TOT*) and firms engaging an IPO during the tax reform period are more likely to have net deferred tax assets (*NETDTA*), to be multinational firms (*MNC*), and to be loss firms (*NEGEBITDA*).

4.2 Multivariate Analyses of Pricing of IPOs

Table 2 presents the results from our estimation of equation (1), which examines the extent of differential offer prices following the passage of the TCJA. Given that the TCJA lowered the corporate tax rate from 35 percent to 21 percent, our expectation is a positive and significant coefficient on *POST*. However, a significant increase in IPO pricing following tax reform is not a forgone conclusion. Many corporations experience an effective tax rate lower than the statutory tax rate and it is increasingly common for firms with historic losses to undertake an initial public offering. Additionally, prior research provides evidence that firm fundamentals are only one input into IPO pricing (Kim and Ritter 1999). Consistent with H1, we observe a positive and significant coefficient on *POST* (p-value <0.01).¹⁰ Overall, the results are consistent with an increase in valuation and pricing of initial public offerings following the passage of the TCJA.

The extent to which the TCJA was value enhancing likely varies based on a number of firm specific characteristics. To provide confirmatory evidence that the increased IPO offer prices post-TCJA are driven, at least in part, by tax reform we conduct two cross-sectional analyses. First, we expect firms with net deferred tax assets to experience less of a valuation increase following the TCJA. While these firms will benefit from the reduction in the corporate tax rate, they will also be required to re-value their deferred tax assets, as the future tax deductions that these asset can now generate are diminished following the TCJA. For example, a \$100 federal net operating loss

¹⁰ In untabulated analysis, we confirm that the results are robust to using an unlogged value of the dependent variable, winzorized at the 5th and 95th percentiles.

carryforward previously recorded as a \$35 deferred tax asset (based on the 35 percent federal corporate tax rate) will be reduced to a \$21 deferred tax asset (based on the new 21 percent federal corporate tax rate) as the value of taxes offset by the same \$100 of loss carryforward is worth \$14 less following the reform. We expect firms with a net deferred tax asset pre-IPO to experience a more modest increase in IPO offer prices in the post-tax reform period.

Our results, reported in Table 3, Column (1), are consistent with our expectations. First, we continue to provide evidence of an increase in IPO offer prices in the post-tax reform period, as evidenced by a positive and significant coefficient on *POST* (coefficient=0.423, p-value <0.01). Additionally, we observe a negative and significant coefficient on the interaction of *POST* and *NETDTA* (coefficient=-0.560, p-value <0.01). Testing the sum of the coefficients on *POST* and the interaction term *POST*NETDTA*, provides evidence that firms with a net deferred tax asset actually experienced a significant decrease in pricing in the post-TCJA period.

Next, we evaluate the differential increase in offer prices for U.S. multinational firms, relative to U.S. domestic-only firms. While both U.S. multinational firms and U.S. domestic firms will reap the benefits of the reduction in the corporate tax rate, the TCJA included numerous changes to the taxation of U.S. multinational firms, including provisions requiring a transition tax on untaxed foreign earnings. Additionally, Wagner, Zeckhauser, and Ziegler (2018a) provide evidence that on average U.S. domestic only firms experienced greater stock returns, during the TCJA deliberation period, than those with large foreign exposure. Thus, we expect U.S. multinational firms to experience a more modest increase in IPO offer prices in the post-tax reform period.

Results of this analysis are reported in Table 3, Column (2). First, we continue to provide evidence of an increase in IPO offer prices in the post-tax reform period. Additionally, we observe

a negative and significant coefficient on the interaction of *POST* and *MNC* (coefficient=-0.347, p-value<0.1). Testing the sum of the coefficients on *POST* and the interaction term *POST*MNC*, provides evidence that U.S. multinationals did not experience a statistically significant change in the offer price-to-sales in the post-TCJA period, but rather the main results of a pricing increase are concentrated in U.S. domestic firms. Collectively, these analyses provide confirmatory evidence that the increased IPO offer prices post-TCJA are driven, at least in part, by tax reform.

We next turn to an examination of our second hypothesis, which relates to the extent of differential offer prices during the tax reform period. Table 4, presents the results from our estimation of equation (1), modified to include an indicator variable for the period of anticipated tax reform following the election of President Trump in the fall of 2016 (*ANTICIPATE*).

During the period of anticipated tax reform, the expectation was that any tax reform package would include a reduction in the corporate tax rate. The House Republicans issued a policy paper with a 20 percent corporate tax rate in June of 2016, which is consistent with the 20 percent rate included in the earliest version of the tax reform bill to pass the U.S. House of Representatives. If pre-IPO owners are able to increase offer prices in anticipation of favorable corporate tax reform, we expect a positive and significant coefficient on *ANTICIPATE*. However, the priorities of the U.S. President and Congress shifted during 2017 and anecdotal evidence suggests that the stock market was underpricing the potential for tax reform even after an initial tax reform bill passed the U.S. House of Representatives.¹¹

As seen in Table 4, we continue to find evidence of an increase in offer prices following the passage of the TCJA. However, we do not find evidence consistent with an increase in offer

¹¹ “JPMORGAN: There’s still a fortune to be made in the stock market by betting on tax reform,” Ciolli, Joe, *Business Insider*, November 29, 2017.

prices during the tax reform period. While we are hesitant to accept the null, this evidence suggests that the IPO market was unwilling to price in the *anticipated* increase to firm value associated with tax reform into initial offer prices.

5. Supplemental Analyses

5.1 IPO Price Revisions for IPOs Executed During Tax Reform

To further evaluate the extent to which the pricing of IPOs completed during the period of anticipated tax reform incorporate the estimated benefits of tax reform, we consider the extent to which firms that undertook an IPO during the tax reform period were more likely to experience pricing revisions. As an additional test of our second hypothesis, we estimate the following probit model:

$$\begin{aligned}
 P(REVISE) = & \beta_0 + \beta_1 ANTICIPATE + \beta_2 NEGEBITDA + \beta_3 ASSETS_PSpre \\
 & + \beta_4 SALES_PSpre + \beta_5 SPREAD + \beta_6 \%SHARES + \beta_7 PROCEEDS \\
 & + \beta_8 MKTRET + \beta_9 IPORET + \beta_{10} IPOTOT + \beta_{11} RANK \\
 & + \beta_{12} PE_BACKED + \beta_{13} VC_BACKED + \sum industry\ effects + \varepsilon \quad (2)
 \end{aligned}$$

We employ two measures of our dependent variable: (1) *REVISEUP* is an indicator variable set to one if the final offer price is higher than the high point of the initial price range disclosed in Form S-1 filings and (2) *REVISEDOWN* is an indicator variable set to one if the final offer price is lower than the low point of the initial price range disclosed in Form S-1 filings.¹² As previously noted,

¹² If the initial pricing included only a point estimate for the offer price, this is used as both the high and low point of the range.

during the tax reform period, the expectation was that any tax reform package would include a reduction in the corporate tax rate, which should be associated with an increase in after-tax cash flows and therefore firm value, leading to favorable IPO price revisions as the probability of tax reform increased. As such, consistent with our second hypothesis, we expect a positive and significant coefficient on *ANTICIPATE*. Control variables are consistent with equation (1), with two modifications. First, we remove the control price revisions (*REVISION*) and we add a control for the sales per share in the period prior to IPO (*SALES_PSPRE*), as an additional control for pre-IPO performance/value.

Given the expectation that tax reform will increase after-tax cash flows and increase firm value, as the probability of tax reform increases and the details of the reform bill become known, pre-IPO shareholders and underwriters may attempt to extract additional value from the IPO via upward revisions to the offer price. Table 5 presents the results from our estimation of equation (2), which evaluates the probability of an upward pricing revision (columns 1) and a downward pricing revision (columns 2). First, contrary to our expectations in column (1) we observe a decreased likelihood of an upward revision in offer price during the period of anticipated tax reform (*ANTICIPATE*). Next, in column (2), we provide evidence of a decrease in the probability of a downward pricing revision during the period of anticipated tax reform (*ANTICIPATE*), suggesting that while firms were not experiencing a pricing increase they were also less likely to experience a pricing decrease. Overall, the evidence suggests that firms that completed their IPO during the tax reform period did not experience an increased valuation, nor did they experience an increased probability of a upward pricing revision during the book-building process, suggesting that the IPO market was, on average, unwilling to impound the anticipated tax reform into offer prices.

5.2 Post-IPO Returns of IPOs Executed During Tax Reform

Given that the pricing of IPOs executed during the tax reform period does not appear to incorporate the anticipated benefits of tax reform, we evaluate when these benefits are subsequently impounded into price. The stock market began impounding the anticipated benefits of tax reform immediately following the election of U.S. President Donald Trump (Wagner, Zeckhauser, and Ziegler 2018b), with additional market movements occurring during the tax reform deliberation period (Wagner, Zeckhauser, and Ziegler 2018a). Additionally, Wagner, Zeckhauser, and Ziegler (2018a) provides evidence that the anticipated benefits of tax reform were incorporated into price at varying speeds. To provide additional evidence on when the market price of new issue firms incorporated the anticipated benefits of tax reform, we evaluate the initial day returns, one-week returns, and the 180 day returns for the during tax reform sample relative to IPOs in the post period and control period. Table 6 presents the results of this analysis. We fail to find evidence of differential returns for the tax reform sample (*ANTICIPATE*) in initial day returns [Column (1)] or one-week returns [Column (2)]. Column (3) provides weak evidence of a higher return over the 180 days post-IPO, although it is only marginally statistically significant. This suggests that an increase in firm value, stemming from anticipated tax reform, is not impounded into the initial day (week) returns of the firms that completed an IPO during the tax reform period.

To offer additional evidence regarding when the market price of new issue firms incorporated the anticipated benefits of tax reform, we evaluate the average unadjusted returns for the sample of firms that undertook an IPO during the period of anticipated tax reform relative to the value-weighted market return in the days leading up to final passage of the TCJA. In Figure 2, we graph the daily returns for the *ANTICIPATE* sample and the value-weighted market return. The average daily return for the *ANTICIPATE* firms was significantly higher than the value-weighted

market return on three days toward the end of tax reform deliberations, December 18, 20, and 21. December 18, 2017, preceded passage of the final tax reform bill in the U.S. House of Representatives. On December 20, the final bill passed both the U.S. Senate and House of Representatives. We also evaluate the average unadjusted returns for the sample of firms that undertook an IPO during the period of anticipated tax reform relative to the unadjusted return for the other IPO firms in our sample in the days leading up to final passage of the TCJA. This analysis presented in Table 7, Panel B, provides evidence that the sample of firms that undertook an IPO during the tax reform period experience higher returns in the weeks leading up to passage of the TCJA (December 11-22, 2017) relative to the control sample of IPOs. Collectively, this evidence suggests for firms completing an IPO during tax reform deliberation, the market did impound some additional value related to tax reform around the passage of the final bill.

5.3 Determinants of Executing an IPO During Tax Reform

Next, we examine which issuers were willing to execute an IPO during the tax reform period, given the evidence that anticipated benefits of tax reform do not appear to be impounded into IPO prices prior to passage of the TCJA. We model the probability of issuing an IPO during the tax reform period as a function of characteristics of the issuer (*NETDTA*, *MNC*, *LEV*, *NEGEBITDA*, *ASSETS_PSpred*, *SALES_PSpred*) and the offering (*SPREAD*, *%SHARES*, *PROCEEDS*, *RANK*, *PE_BACKED*, *VC_BACKED*). Wagner, Zeckhauser, and Ziegler (2018b) provide evidence that following the election of U.S. President Donald Trump market losses were greater for firms with net deferred tax assets, internationally oriented firms, and firms with high leverage. Consistent with this evidence, we expect internationally oriented firms, firms with net DTAs, and highly levered firms to be more likely to engage in an IPO during the tax reform deliberations (more precisely, we expect these firms to be less likely to see a need to delay an IPO

until after the finalization of tax reform). These firms have less to gain from the passage of tax reform and may even experience negative valuation adjustments upon the passage of reform.

In Table 7, we report the results from this analysis. We estimate the probability of executing an IPO in the tax reform period (*ANTICIPATE*), relative to the full control sample. The evidence is consistent with U.S. multinational firms and firms with a net deferred tax asset being more likely to complete an IPO during tax reform deliberations. Which is consistent with our expectations that firms with less to gain from the passage of tax reform are more likely to engage in an IPO during the tax reform period. Additionally, IPOs backed by private equity and venture capital backing were less likely to complete an IPO during the tax reform period.

6. Robustness Testing

6.1 Difference-in-Differences with a Sample of U.K. and Eurozone Firms

Our primary analysis focused on changes in the IPO pricing of U.S. firms over three periods, pre-, during, and post-tax reform. However, to provide corroborating evidence that the change in IPO pricing in the post-tax reform period is attributable, at least in part to U.S. tax reform we evaluate the post-tax reform IPO pricing change for U.S. firms relative to firms domiciled in the U.K. and the Eurozone. We obtain a sample of IPOs domiciled in the U.K. and Eurozone, which completed an initial public offering on a U.K. or European stock exchange during our sample period, from the SDC Platinum database. We compile financials statement data for these firms from Compustat Global. We then modify equation (1) to include an interaction of $POST*US$ to capture the difference in the post-tax reform IPO pricing of U.S. firms relative to the international sample. We also modify equation (1) to include country fixed effects and due to a

lack of data for the international sample, we remove the control variables for the gross spread (*SPREAD*), the underwriter rank (*RANK*), and pricing revisions (*REVISION*).

In Table 8, we report the results of this analysis. The *POST* variable is not statistically significant, indicated that there was not a significant increase in the offer price for full sample. Consistent with our expectations and our primary analysis, the coefficient on *POST*US* is positive and significant. Additionally, an f-test provides evidence that the sum of the coefficients on *POST* and *POST*US* is positive and significant. This analysis provides additional confirmatory evidence that the increased IPO offer prices post-TCJA are driven, at least in part, by U.S. tax reform.¹³ Univariate differences in the pricing of U.S. IPOs relative to the U.K./Eurozone IPOs are presented graphically in Figure 3.

6.2 Simulations using a Randomly Generated Indicator for *POST*

In additional robustness testing, we replace *POST* in equation (1) with a randomly generated indicator variable (*RANDOM_POST*) with consistent distributional characteristics. We then perform one thousand iterations of generating *RANDOM_POST* and running equation (1). In one thousand iterations, *RANDOM_POST* is significantly associated with the offer price-to-sales [$\text{Log}(OP/SALES)$] in 14 or 1.4 percent (95 or 9.5 percent) of the regressions, based on a one percent (ten percent) significance level, untabulated.

6.3 Alternative “During” Period

¹³ In untabulated analysis, we also employed entropy balancing to achieve co-variate balance between the sample of U.S. IPOs and the sample of U.K./Eurozone IPOs and then re-estimated the regression with the entropy weighting. On the balance sample, we continue to observe a positive and significant coefficient on the interaction of *POST*U.S.* However, in this model specification the main effect of *POST* is negative and significant at the 10 percent level.

Given shifting priorities of the U.S. President and Congress in 2017, we also evaluate pricing during a shorter tax reform deliberation window, which begins with the passage of a budget authorizing \$1.5 trillion in deficit tax cuts and concludes with the passage of the TCJA. Specifically, we modify equation (1) to include an indicator variable set to one for IPOs executed during the period of active deliberation on the TCJA, from the date a budget resolution allowing for \$1.5 trillion in deficit tax cuts passed both the U.S. Senate and House of Representatives through when the TCJA was signed by the President (October 26, 2017 through December 22, 2017). We fail to find evidence consistent with an increase in offer prices during the tax reform deliberation period. Even as tax reform negotiations were underway and the probability of a meaningful reduction in the corporate tax rate was increasing, the evidence suggests that IPO offer prices were not incorporating the anticipated increase in firm value.

7. Conclusion

In this study, we use the TCJA of 2017 as a setting to examine the extent to which changes in the corporate income tax influence the pricing of initial public offerings. We first evaluate changes in IPO pricing post-tax reform. Our study provides evidence of an increase in valuation and pricing of IPOs following the passage of the TCJA, which is concentrated in firms without a net deferred tax asset and in U.S. domestic firms.

Having established this baseline result, we examine whether offer prices and price revisions during the IPO book-building process, for IPOs executed during the period of anticipated tax reform following the election of U.S. President Trump, reflect the expected benefits of tax reform. Anticipated changes in corporate tax rates and taxation of foreign income added an additional layer of complexity to IPO valuations. While we consistently find evidence of an increase in offer price

in the post-reform period, we fail to provide evidence of an increase in offer prices during the period of anticipated tax reform. Finally, in additional analyses, we fail to document an increase in the probability of an upward pricing revision during the book-building process. Collectively, the evidence suggests that the IPO market was, on average, unwilling to impound the anticipated benefits of tax reform into offer prices.

Our study contributes to several streams of research. First, we contribute to the literature on IPO pricing and initial returns following an IPO (i.e., IPO underpricing). We also contribute to the literature on the relative importance of firm specific versus market information in the pricing of IPOs. Finally, we contribute to the relatively scant literature on taxes and IPOs. We provide evidence on the extent to which changes in the corporate income tax rate affect IPO pricing during a period of anticipated tax reform and following tax reform.

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Appendix A

Variable Definitions

<i>ANTICIPATE</i>	= An indicator variable set to one if the IPO occurred during the period of anticipated tax reform, November 8, 2016 through December 22, 2017.
<i>ASSETS_PSpr</i>	= Total assets prior to the IPO, scaled by total shares outstanding.
<i>%CHANGE_1Day</i>	= The percentage change in the share price during the first trading day of the IPO.
<i>%CHANGE_1Week</i>	= The percentage change in the share price during the first week following the IPO.
<i>%CHANGE_180Days</i>	= The percentage change in the share price during 180 trading days following the IPO.
<i>IPORET</i>	= The average first day return on IPOs for the two calendar months prior to the firm's IPO month.
<i>IPOTOT</i>	= The total number of IPOs for the two calendar months prior to the firm's IPO month.
<i>MKTRET</i>	= Value weighted market return for the two calendar months prior to the firm's IPO month.
<i>MNC</i>	= An indicator variable set to one if the firm had foreign pre-tax income in the period prior to IPO, zero otherwise.
<i>NEGBITDA</i>	= An indicator variable set to one if the firm had negative EBITDA in the fiscal year prior to the IPO.
<i>NETDTA</i>	= An indicator variable set to one if the firm had a net deferred tax asset in the period prior to IPO, zero otherwise.
<i>Log(OP/SALES)</i>	= The natural log of the final offer price scaled by total sales per share prior to the offering.
<i>PE_BACKED</i>	= Indicator variable set to 1 if a pre-IPO owner was a private equity firm.
<i>POST</i>	= An indicator variable set to one if the IPO occurred after the U.S. President signed the TCJA into law.
<i>PROCEEDS</i>	= The total proceeds from the IPO, scaled by total assets as of the fiscal year end prior to the IPO.
<i>RANK</i>	= Underwriter rank following Loughran and Ritter (2004).
<i>REVISION</i>	= Final offer price less the initial offer price (midpoint of the initial offer price).

<i>REVISEUP</i>	= An indicator set to one if the firm has an upward revision from the high point of the initial price range disclosed to the final offer price.
<i>REVISEDOWN</i>	= An indicator set to one if the firm has a downward revision from the low point of the initial price range disclosed to the final offer price.
<i>SALES_PSPRE</i>	= Total sales prior to the IPO, scaled by total shares outstanding.
<i>%SHARES</i>	= The percentage of total shares that are included in the initial public offering.
<i>SPREAD</i>	= The gross spread on the IPO, total fees (underwriting fee, management fee, and selling concession) divided by total shares offered.
<i>VC_BACKED</i>	= Indicator variable set to 1 if the IPO was backed by venture capital.

Appendix B

TCJA 2017 – Timeline

September	
September 19, 2017	WSJ Reports: Senate Budget deal reached allowing \$1.5 trillion in tax cuts. S. Hughes and R. Rubin (9/10/2017) <i>Senate Republicans Reach a Deal on Budget</i> . https://www.wsj.com/articles/senate-republicans-reach-tentative-deal-on-budget-1505842102 .
September 29, 2017	Senate Budget Committee releases outline of budget that would allow \$1.5 billion in deficit tax cuts
October	
October 5, 2017	House passes budget allowing revenue-neutral tax reform only. Senate Budget Committee votes out of committee 1.5 trillion proposal.
October 19, 2017	Senate Budget passes Senate
October 26, 2017	House Passes Senate Budget authorizing 1.5 trillion in deficit spending
November	
November 2, 2017	Text of House tax plan introduced in House Ways and Means Committee (20% corporate tax rate)
November 9, 2017	Text of Senate tax plan introduced in Senate Finance Committee (20% corporate rate but not until 2019)
November 13, 2017	House version voted out of House Ways and Means
November 16, 2017	House version passed house (20%)
November 16, 2017	Senate Version voted out of Senate Finance Committee
November 28, 2017	Senate Version voted out of Senate Budget Committee
December	
December 2, 2017	Senate Version passed Senate (20% in 2019)
December 14, 2017	Compromise Conference Text Introduced (compromised 21%)
December 19, 2017	Passed House
December 20, 2017	Passed Senate (with changes) Passed House
December 22, 2017	Signed by President

Appendix C

Excerpts from Forms S-1, S-1/A Regarding Tax Reform

MongoDB, Inc.

Issue Date: 10/18/2017

The enactment of legislation implementing changes in U.S. taxation of international business activities or the adoption of other tax reform policies could materially impact our financial position and results of operations.

Changes to U.S. tax laws, including limitations on the ability of taxpayers to claim and utilize foreign tax credits and the deferral of certain tax deductions until earnings outside of the United States are repatriated to the United States, as well as changes to U.S. tax laws that may be enacted in the future, could impact the tax treatment of our foreign earnings. Due to expansion of our international business activities, any changes in the U.S. taxation of such activities may increase our worldwide effective tax rate and adversely affect our financial position and results of operations.

Potential tax reform in the United States may result in significant changes to United States federal income taxation law, including changes to the U.S. federal income taxation of corporations (including the Company) and/or changes to the U.S. federal income taxation of stockholders in U.S. corporations, including investors in our Class A common stock. We are currently unable to predict whether such changes will occur and, if so, the impact of such changes, including on the U.S. federal income tax considerations relating to the purchase, ownership and disposition of our Class A common stock, as discussed below in "Material U.S. Federal Income Tax Considerations for Non-U.S. Holders."

Altair Engineering

Issue Date: 10/31/2017

Adverse global conditions, including economic uncertainty, may negatively impact our financial results.

Global conditions, including the effects of the outcome of the United Kingdom's referendum on membership in the European Union or any negative financial impacts affecting United States corporations operating on a global basis as a result of tax reform or changes to existing trade agreements or tax conventions, could adversely impact our business in a number of ways, including longer sales cycles, lower prices for our software license fees, reduced licensing renewals or foreign currency fluctuations.

During challenging economic times our customers may be unable or unwilling to make timely payments to us, which could cause us to incur increased bad debt expenses. Our customers may unilaterally extend the payment terms of our invoices, adversely affecting our short-term or long-term cash flows.

SendGrid, Inc.

Issue Date: 11/14/2017

The enactment of legislation implementing changes in U.S. taxation of international business activities or the adoption of other tax reform policies could materially impact our financial condition and results of operations.

U.S. tax laws, including limitations on the ability of taxpayers to claim and utilize foreign tax credits and the deferral of certain tax deductions until earnings outside of the United States are repatriated to the United States, as well as changes to U.S. tax laws that may be enacted in the future, could impact the tax treatment of our foreign earnings. Due to the anticipated expansion of our international business activities, any changes in the U.S. taxation of such activities may increase our worldwide effective tax rate and adversely affect our financial condition and results of operations.

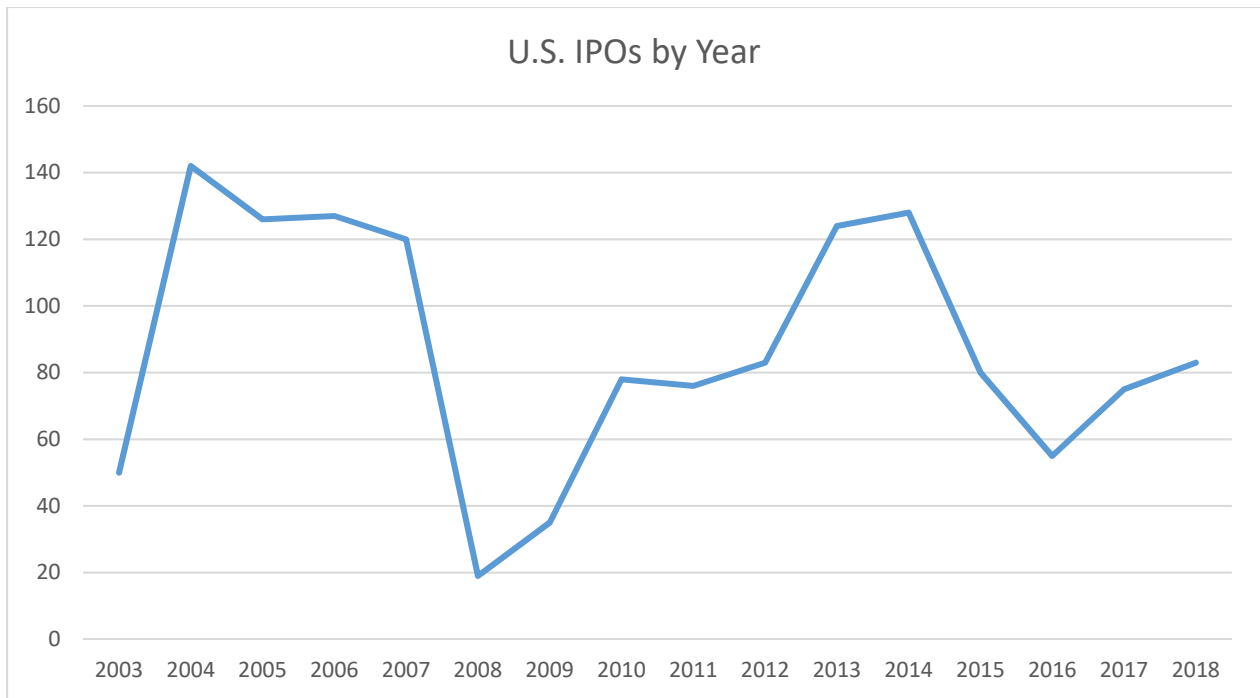
ADT, Inc.

Issue Date: 1/18/2018

U.S. federal income tax reform could adversely affect us.

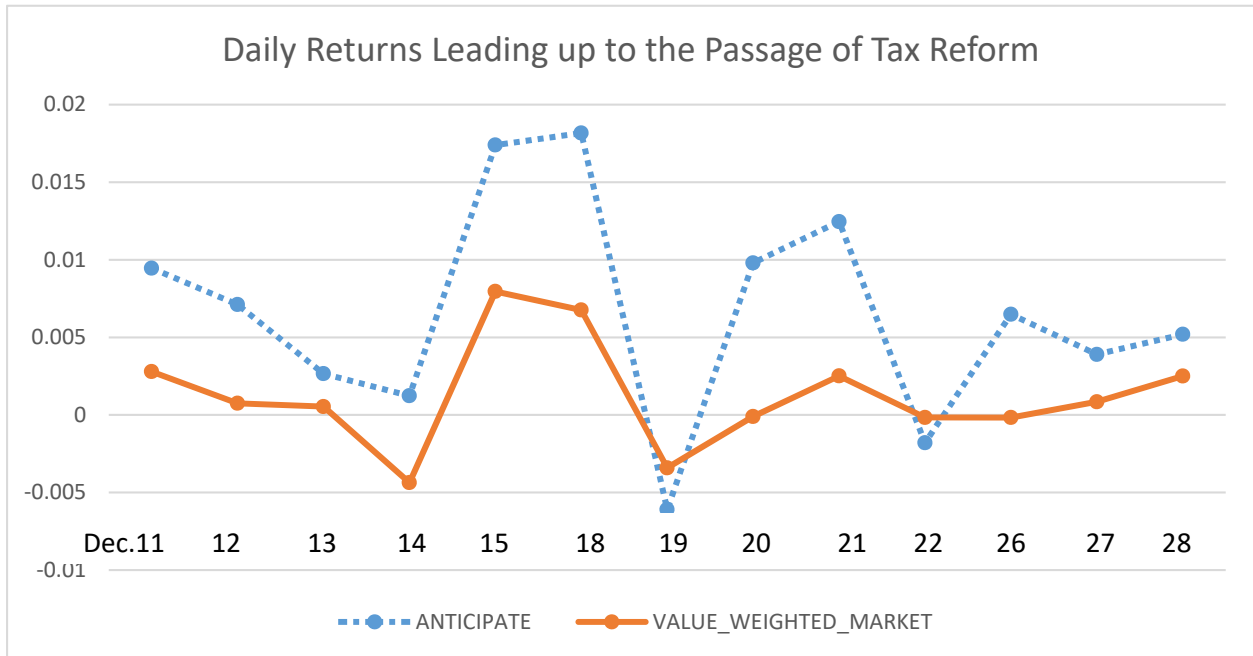
The U.S. Congress has enacted legislation that significantly reforms the Internal Revenue Code of 1986, as amended. President Trump is expected to sign the Congressional bill into law as it reflects one of the top legislative priorities of his administration. The new legislation, among other things, includes changes to U.S. federal tax rates, imposes significant additional limitations on the deductibility of interest, allows for the expensing of capital expenditures, and puts into effect the migration from a “worldwide” system of taxation to a territorial system. We do not expect tax reform to have a material impact to our projection of minimal cash taxes or to our NOLs. Our net deferred tax assets and liabilities will be revalued at the newly enacted U.S. corporate rate, and the impact will be recognized in our tax expense in the year of enactment. We continue to examine the impact this tax reform legislation may have on our business. The impact of this tax reform on holders of our common shares is uncertain and could be adverse. This prospectus does not discuss any such tax legislation or the manner in which it might affect purchasers of our common stock. We urge our stockholders to consult with their legal and tax advisors with respect to any such legislation and the potential tax consequences of investing in our common stock.

FIGURE 1



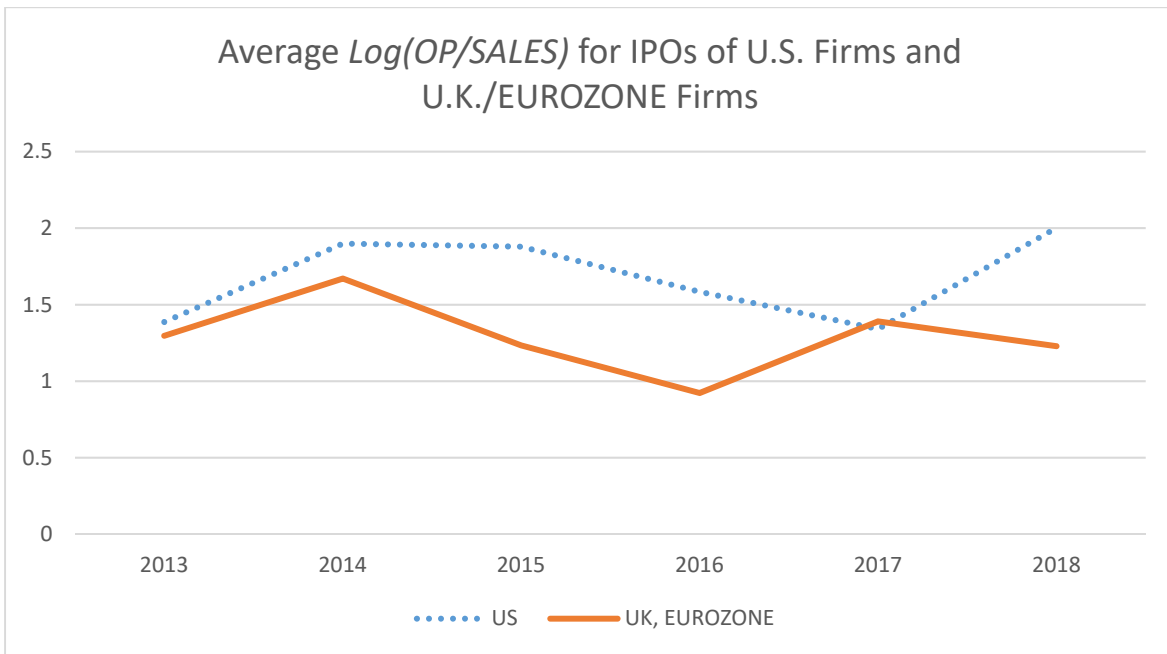
This figure plots the number of IPOs in the sample by year.

FIGURE 2



This figure plots the daily returns for the firms that underwent and IPO during the period of expected tax reform (i.e., *ANTICIPATE* = 1) compared to the value weighted market return. T-tests confirm that the daily returns for the *ANTICIPATE* sample are statistically significantly higher (p-value < 0.05) than the daily returns for the value-weighted market portfolio on December 18th, 20th, and 21st.

FIGURE 3



This figure plots the annual mean valuation [$\text{Log}(OP/Sales)$] for U.S. and foreign IPOs from 2013 through 2018.

TABLE 1
Descriptive Statistics, by Period

Panel A: *POST* Period (N=83)

	Mean	SD	5%	Median	95%
<i>Log(OP/SALES)</i>	2.002***	1.981	-0.808	1.527	6.113
<i>NETDTA</i>	0.494	0.503	0	0	1
<i>MNC</i>	0.434***	0.499	0	0	1
<i>NEGEBITDA</i>	0.542***	0.501	0	1	1
<i>ASSETS_PSPRE</i>	23.853	45.355	0.486	4.229	123.697
<i>SPREAD</i>	6.679	0.821	5.500	7.000	7.667
<i>%SHARES</i>	0.256*	0.188	0.070	0.188	0.642
<i>PROCEEDS</i>	1.529	2.645	0.027	0.693	5.883
<i>MKTRET</i>	0.015***	0.041	-0.058	0.031	0.063
<i>IPORET</i>	49.110*	66.727	9.498	16.706	179.791
<i>IPOTOT</i>	31.542	9.026	21	30	48
<i>RANK</i>	4.736	6.878	-9	8	9
<i>PE_BACKED</i>	0.120***	0.328	0	0	1
<i>VC_BACKED</i>	0.458	0.501	0	0	1
<i>REVISION</i>	-0.013	0.109	-0.250	0	0.154
<i>REVISEUP</i>	0.133*	0.341	0	0	1
<i>REVISEDOWN</i>	0.181	0.387	0	0	1
<i>%CHANGE_1Day</i>	17.765	25.314	-13.666	8.058	67.710
<i>%CHANGE_1Week</i>	19.096	29.984	-13.940	9.166	83.690
<i>%CHANGE_180Days</i>	3.295**	54.493	-62.000	0.587	144.380

Panel B: ANTICIPATE Period (N=77)

	Mean	SD	5%	Median	95%
<i>Log(OP/SALES)</i>	1.412	1.789	-0.820	1.346	5.821
<i>NETDTA</i>	0.636***	0.484	0	1	1
<i>MNC</i>	0.390**	0.491	0	0	1
<i>NEGEBITDA</i>	0.416**	0.496	0	0	1
<i>ASSETS_PSPRE</i>	23.147	40.535	0.126	9.101	147.680
<i>SPREAD</i>	6.695	1.120	4.75	7	8
<i>%SHARES</i>	0.282	0.200	0.086	0.217	0.737
<i>PROCEEDS</i>	1.589	3.123	0.037	0.646	8.734
<i>MKTRET</i>	0.032	0.015	0.012	0.035	0.059
<i>IPORET</i>	9.082	5.705	-1.266	9.865	14.910
<i>IPOTOT</i>	24.403***	9.243	6	27	41
<i>RANK</i>	6.170	5.497	-9	8.5	9
<i>PE_BACKED</i>	0.260	0.441	0	0	1
<i>VC_BACKED</i>	0.416	0.496	0	0	1
<i>REVISION</i>	-0.017	0.109	-0.222	0	0.185
<i>REVISEUP</i>	0.117*	0.323	0	0	1
<i>REVISEDOWN</i>	0.182	0.388	0	0	1
<i>%CHANGE_1Day</i>	14.184	19.381	-9.870	11.448	54.290
<i>%CHANGE_1Week</i>	16.976	21.824	-9.200	13.000	69.666
<i>%CHANGE_180days</i>	26.724	49.567	-45.333	20.320	135.714

Panel C: CONTROL Period (N=1,241)

	Mean	SD	5%	Median	95%
<i>Log(OP/SALES)</i>	1.417	1.690	-1.024	1.315	4.762
<i>NETDTA</i>	0.485	0.500	0	0	1
<i>MNC</i>	0.281	0.450	0	0	1
<i>NEGEBITDA</i>	0.300	0.458	0	0	1
<i>ASSETS_PS_{PRE}</i>	17.893	34.209	0.641	5.551	79.625
<i>SPREAD</i>	6.685	0.789	5	7	7
<i>%SHARES</i>	0.289	0.150	0.115	0.257	0.575
<i>PROCEEDS</i>	1.403	3.009	0.067	0.771	4.097
<i>MKTRET</i>	0.030	0.039	-0.042	0.036	0.084
<i>IPORET</i>	26.720	105.560	3.521	9.852	23.218
<i>IPOTOT</i>	32.768	12.107	13	32	52
<i>RANK</i>	5.532	6.188	-9	8.5	9
<i>PE_BACKED</i>	0.342	0.475	0	0	1
<i>VC_BACKED</i>	0.410	0.492	0	0	1
<i>REVISION</i>	-0.018	0.133	-0.273	0	0.182
<i>REVISEUP</i>	0.210	0.407	0	0	1
<i>REVISEDOWN</i>	0.239	0.426	0	0	1
<i>%CHANGE_1Day</i>	15.597	24.002	-9.780	9.820	64.090
<i>%CHANGE_1Week</i>	16.067	24.838	-13.290	10.730	65.380
<i>%CHANGE_180days</i>	19.668	47.793	-47.100	14.260	106.930

Notes: *, **, ***, indicate statistical significance at the 10, 5, and 1 percent levels, respectively, of a t-test for a difference in means between the *POST (ANTICIPATE)* sample and the control sample. Variables are defined in Appendix A.

TABLE 2
Results for OLS Regressions of IPO Offer Price [$\log(OP/SALES)$] on an Indicator for
IPOs Completed Post Tax Reform (*POST*) and Control Variables

	(1) DV = $\log(OP/SALES)$	
	Coeff.	t-stat
<i>POST</i>	0.124	2.56**
<i>NEGEBITDA</i>	1.458	13.57***
<i>ASSETS_PSPRE</i>	-0.010	-12.44***
<i>SPREAD</i>	0.051	1.24
<i>%SHARES</i>	-0.842	-3.27***
<i>PROCEEDS</i>	0.128	4.46***
<i>MKTRET</i>	-1.479	-2.14**
<i>IPORET</i>	0.000	-4.06***
<i>IPOTOT</i>	0.004	1.21
<i>RANK</i>	-0.007	-1.36
<i>PE_BACKED</i>	-0.172	-1.66
<i>VC_BACKED</i>	0.037	0.24
<i>REVISION</i>	0.313	1.01
<i>Intercept</i>	0.353	1.66
Fixed Effects		Industry
# of Obs		1,401
R ²		0.5191

Notes: All regressions include industry fixed effects (Fama and French 12 industry classification) and robust standard errors clustered by year. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively, based on two-sided t-tests. Variables are defined in Appendix A.

TABLE 3
Results for OLS Regressions of Cross Sectional Analysis of IPO Offer Price
[$\log(OP/SALES)$] on an Indicator for IPOs Completed Post Tax Reform (*POST*) and
Control Variables

	(1)		(2)	
	DV = $\log(OP/SALES)$		DV = $\log(OP/SALES)$	
	Coeff.	t-stat	Coeff.	t-stat
<i>POST</i>	0.423	6.11***	0.280	4.07***
<i>POST*NETDTA</i>	-0.560	-7.29***		
<i>NETDTA</i>	-0.361	-3.60***		
<i>POST*MNC</i>			-0.347	-4.14***
<i>MNC</i>			-0.545	-6.31***
<i>NEGEBITDA</i>	1.329	11.00***	1.356	12.82***
<i>ASSETS_PSPRE</i>	-0.009	-9.75***	-0.010	-10.48***
<i>SPREAD</i>	0.025	0.70	0.007	0.16
<i>%SHARES</i>	-1.007	-4.04***	-1.086	-4.30***
<i>PROCEEDS</i>	0.123	4.59***	0.121	4.49***
<i>MKTRET</i>	-1.657	-2.38**	-1.351	-1.73
<i>IPORET</i>	0.000	-3.75***	0.000	-3.67***
<i>IPOTOT</i>	0.002	0.64	0.003	0.99
<i>RANK</i>	-0.008	-1.65	-0.008	-1.53
<i>PE_BACKED</i>	-0.118	-1.19	-0.102	-0.96
<i>VC_BACKED</i>	0.046	0.31	0.093	0.64
<i>REVISION</i>	0.329	1.04	0.346	1.15
<i>Intercept</i>	0.874	4.78***	0.908	4.65***
f-test: <i>POST</i> + <i>POST*X=0</i>	-0.136	7.17**	-0.067	2.99
Fixed Effects	Industry		Industry	
# of Obs	1,401		1,401	
R ²	0.5300		0.5391	

Notes: All regressions include industry fixed effects (Fama and French 12 industry classification) and robust standard errors clustered by year. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively, based on two-sided t-tests. Variables are defined in Appendix A.

TABLE 4
Results for OLS Regressions of IPO Offer Price [$\log(OP/SALES)$] on an Indicator for
IPOs Completed During the Period of Anticipated Tax Reform (*ANTICIPATE*), an
Indicator for IPOs Completed Post Tax Reform (*POST*) and Control Variables

	(1) DV = $\log(OP/SALES)$	
	Coeff.	t-stat
<i>POST</i>	0.114	2.18**
<i>ANTICIPATE</i>	-0.138	-1.66
<i>NEGEBITDA</i>	1.464	13.95***
<i>ASSETS_PSPRE</i>	-0.010	-12.34***
<i>SPREAD</i>	0.050	1.23
<i>%SHARES</i>	-0.845	-3.27***
<i>PROCEEDS</i>	0.128	4.45***
<i>MKTRET</i>	-1.462	-2.11*
<i>IPORET</i>	0.000	-4.09***
<i>IPOTOT</i>	0.003	1.11
<i>RANK</i>	-0.007	-1.35
<i>PE_BACKED</i>	-0.177	-1.66
<i>VC_BACKED</i>	0.033	0.21
<i>REVISION</i>	0.314	1.01
<i>Intercept</i>	0.371	1.68
Fixed Effects		Industry
# of Obs		1,401
R ²		0.5194

Notes: All regressions include industry fixed effects (Fama and French 12 industry classification) and robust standard errors clustered by year. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively, based on two-sided t-tests. Variables are defined in Appendix A.

TABLE 5

Results for Regression of the Probability of a Pricing Revision When the IPO is Completed During the Period of Anticipated Tax Reform (*ANTICIPATE*) and Control Variables

	(1)		(2)	
	DV = P[<i>REVISEUP</i>=1]		DV = P[<i>REVISEDOWN</i>=1]	
	Coeff.	z-stat	Coeff.	z-stat
<i>ANTICIPATE</i>	-0.348	-6.50***	-0.178	-2.71***
<i>NEGEBITDA</i>	-0.212	-2.42**	-0.006	-0.05
<i>ASSETS_PSPRE</i>	-0.001	-0.80	0.000	0.07
<i>SALES_PSPRE</i>	-0.001	-0.46	0.001	0.55
<i>SPREAD</i>	-0.007	-0.18	-0.020	-0.48
<i>%SHARES</i>	-1.149	-4.49***	0.688	2.89***
<i>PROCEEDS</i>	0.007	0.49	-0.039	-1.18
<i>MKTRET</i>	3.015	2.52**	-0.678	-0.58
<i>IPORET</i>	0.000	-3.94***	0.001	4.59***
<i>IPOTOT</i>	0.001	0.22	-0.004	-0.87
<i>RANK</i>	-0.002	-0.22	-0.001	-0.16
<i>PE_BACKED</i>	0.138	1.28	0.195	1.88*
<i>VC_BACKED</i>	0.445	3.6***	-0.161	-1.74*
<i>Intercept</i>	-0.029	-0.07	-0.877	-2.26**
Fixed Effects	Industry		Industry	
# of Obs	1,401		1,401	
Pseudo R ²	0.0538		0.0296	
Area Under ROC	0.6740		0.6203	

Notes: All regressions include industry effects (Fama and French 12 industry classification). *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively. Variables are defined in Appendix A.

TABLE 6
Results for Regression of Post-IPO Returns on the Indicator for IPOs Completed During the
Period of Anticipated Tax Reform (*ANTICIPATE*) and Control Variables

Panel A: Percentage Change in Price Following IPO

	(1) DV = % Change in Price, 1 Day Post IPO		(2) DV = % Change in Price, 1 Week Post IPO		(3) DV = % Change in Price, 180 Days Post IPO	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
<i>ANTICIPATE</i>	-1.091	-1.17	1.250	1.30	8.255	1.70*
<i>NEGEBITDA</i>	1.453	0.89	0.328	0.19	-4.737	-0.95
<i>ASSETS_PSPRE</i>	-0.022	-0.92	-0.026	-1.22	-0.038	-0.66
<i>SALES_PSPRE</i>	-0.037	-1.03	-0.022	-0.58	0.034	0.50
<i>SPREAD</i>	0.924	0.66	0.520	0.40	2.382	0.87
<i>%SHARES</i>	-22.119	-5.75***	-21.690	-6.05***	-15.967	-2.19**
<i>PROCEEDS</i>	-0.083	-0.27	-0.074	-0.29	-0.379	-0.88
<i>MKTRET</i>	3.831	0.24	-6.643	-0.51	-66.098	-0.97
<i>IPORET</i>	0.003	1.24	0.007	2.85**	0.009	1.30
<i>IPOTOT</i>	0.103	1.46	0.126	1.76*	-0.001	-0.01
<i>RANK</i>	-0.138	-1.50	-0.129	-1.07	0.025	0.07
<i>PE_BACKED</i>	0.037	0.02	-0.169	-0.10	2.990	0.82
<i>VC_BACKED</i>	7.329	3.65***	6.902	3.56***	10.463	3.74***
<i>REVISION</i>	62.662	14.81***	63.912	17.58***	26.715	1.70*
<i>Log(OFFERPRICE)</i>	7.198	1.99*	6.815	2.22**	14.801	2.19**
<i>Intercept</i>	1.182	0.07	4.815	0.32	-9.933	-0.26
Fixed Effects	Industry		Industry		Industry	
# of Obs	1,291		1,291		1,291	
Pseudo R ²	0.2759		0.2492		0.0570	

Notes: All regressions include industry fixed effects (Fama and French 12 industry classification) and robust standard errors clustered by year. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively, based on two-sided t-tests. Variables are defined in Appendix A.

TABLE 6
Results for Regression of Post-IPO Returns on the Indicator for IPOs Completed During the
Period of Anticipated Tax Reform (*ANTICIPATE*) and Control Variables

Panel B: Returns Leading up to the Passage of Tax Reform

	DV = Sum of Daily Returns from December 11, 2017 through December 22, 2017	
	Coeff.	t-stat
<i>ANTICIPATE</i>	0.042	3.62***
<i>NEGEBITDA</i>	-0.001	-0.12
<i>ASSETS_PSPRE</i>	0.000	-0.14
<i>SALES_PSPRE</i>	0.000	-0.62
<i>SPREAD</i>	-0.005	-0.86
<i>%SHARES</i>	0.014	0.83
<i>PROCEEDS</i>	0.001	0.41
<i>MKTRET</i>	-0.115	-0.59
<i>IPORET</i>	0.000	0.19
<i>IPOTOT</i>	0.000	-0.50
<i>RANK</i>	0.000	0.33
<i>PE_BACKED</i>	0.008	1.47
<i>VC_BACKED</i>	0.006	0.47
<i>REVISION</i>	-0.071	-0.99
<i>Log(OFFERPRICE)</i>	-0.008	-0.50
<i>Intercept</i>	0.093	1.29
Fixed Effects		Industry
# of Obs		710
R ²		0.0406

Notes: All regressions include industry fixed effects (Fama and French 12 industry classification) and robust standard errors clustered by year. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively, based on two-sided t-tests. Variables are defined in Appendix A.

TABLE 7
Results for Regression of the Probability of Completing an IPO During the Period of Anticipated Tax Reform (*ANTICIPATE*) and Control Variables

	(1)	
	$P(ANTICIPATE)=1$	
	Coeff.	z-stat
<i>INDICATE_DTA</i>	0.444	3.07***
<i>MNC</i>	0.214	2.67***
<i>LEV</i>	0.046	0.79
<i>NEGEBITDA</i>	0.492	4.18***
<i>ASSETS_PS_{PRE}</i>	0.000	0.05
<i>SALES_PS_{PRE}</i>	0.000	0.11
<i>SPREAD</i>	0.007	0.40
<i>%SHARES</i>	0.129	0.62
<i>PROCEEDS</i>	0.013	0.97
<i>RANK</i>	0.012	2.35**
<i>PE_BACKED</i>	-0.356	-4.80***
<i>VC_BACKED</i>	-0.253	-3.36***
<i>Intercept</i>	-2.118	-4.88***
Fixed Effects		Industry
# of Obs		1,339
Pseudo R ²		0.0562
Area under the ROC		0.681

Notes: All regressions include industry effects (Fama and French 12 industry classification). *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively. Variables are defined in Appendix A.

TABLE 8
Results for OLS Regressions of IPO Offer Price [$\log(OP/SALES)$] on an Indicator for IPOs Completed Post Tax Reform ($POST$) and Control Variables for a Sample of IPOs domiciled in the United States, United Kingdom, and Eurozone Countries

	(1) DV = $\log(OP/SALES)$	
	Coeff.	t-stat
<i>POST</i>	-0.016	-0.38
<i>POST*US</i>	0.128	2.14**
<i>NEGEBITDA</i>	1.754	22.49***
<i>ASSETS_PSPRE</i>	-0.011	-14.99***
<i>%SHARES</i>	-0.844	-5.13***
<i>PROCEEDS</i>	0.058	5.72***
<i>MKTRET</i>	-0.140	-0.31
<i>IPORET</i>	-0.001	-5.86***
<i>IPOTOT</i>	0.002	0.78
<i>PE_BACKED</i>	-0.125	-2.55**
<i>VC_BACKED</i>	0.069	0.80
<i>Intercept</i>	0.560	4.21***
f-test: $POST + POST*US=0$	0.112	5.25**
Fixed Effects	Industry	
# of Obs	2,494	
R ²	0.5117	

Notes: All regressions include industry fixed effects (Fama and French 12 industry classification) and robust standard errors clustered by year. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels, respectively, based on two-sided t-tests. Variables are defined in Appendix A.