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## Journal of Financial Economics

journal homepage: [www.elsevier.com/locate/jfec](http://www.elsevier.com/locate/jfec)

# The JOBS Act and IPO volume: Evidence that disclosure costs affect the IPO decision<sup>☆</sup>



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## ARTICLE INFO

### Article history:

Received 26 June 2014

Received in revised form

22 August 2014

Accepted 25 August 2014

Available online 4 December 2014

### JEL classification:

G38

G24

K22

### Keywords:

JOBS Act

IPO

Disclosure

Biotech

## ABSTRACT

In April 2012, the Jumpstart Our Business Startups Act (JOBS Act) was enacted to help revitalize the initial public offering (IPO) market, especially for small firms. During the year ending March 2014, IPO volume and the proportion of small firm issuers was the largest since 2000. Controlling for market conditions, we estimate that the JOBS Act has led to 21 additional IPOs annually, a 25% increase over pre-JOBS levels. Firms with high proprietary disclosure costs, such as biotechnology and pharmaceutical firms, increase IPO activity the most. These firms are also more likely to take advantage of the act's de-risking provisions, allowing firms to file the IPO confidentially while testing-the-waters.

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## 1. Introduction

Since 2000, initial public offering (IPO) volume has been well below historical levels. In response to concerns that regulatory overreach is to blame, Title I of the JOBS Act (Jumpstart Our Business Startups Act) was signed into law on April 5, 2012 to streamline the IPO process for emerging growth companies (EGCs; firms with less than \$1 billion in annual revenues). The cornerstone of the act is the creation of an “IPO on-ramp,” which is designed to increase IPO activity by “de-burdening” and “de-risking” the IPO process (Forbes, 2013a).

The act de-burdens the IPO process by exempting EGCs from certain accounting and disclosure requirements, such as the auditor attestations of internal controls mandated by the Sarbanes-Oxley Act of 2002 (SOX). Although evidence suggests that these requirements are costly, both Gao, Ritter, and Zhu (2013) and Doidge, Karolyi, and Stulz (2013) show that the recent decline in IPO activity pre-dates SOX.<sup>1</sup> Moreover, Ritter (2013) finds that a 2007 regulatory change reducing SOX burdens for small firms had no discernable effect on IPO volume, casting doubt on whether the de-burdening provisions would meaningfully affect IPO volume.

A second category of JOBS Act provisions de-risks the IPO process by allowing EGCs to file IPO draft registration statements confidentially and to communicate with qualified

<sup>☆</sup> We thank Jay Ritter (the referee), Peter Iliev, Ivan Ivanov, Louis Lange, Michelle Lowry, Kevin Pisciotta, and Alison Wolff for helpful comments.

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<sup>1</sup> On the costs of accounting and disclosure requirements, see Zhang (2007), Gao, Wu, and Zimmerman (2009), Engel, Hayes, and Wang (2007), and Iliev (2010).

institutional investors before publicly filing. This process, known as testing-the-waters (TTW), reduces the cost of IPO withdrawal because it allows issuers to disclose information exclusively to investors, but not competitors, until the IPO becomes likely to succeed. This would especially benefit issuers with high proprietary disclosure costs.

We provide the first evidence on whether the JOBS Act has achieved Congress's goal of increasing IPO activity. In the two years following the JOBS Act, US IPO volume was 50% higher than in the two previous years. In comparison, IPO volume in the five other developed countries with the largest stock exchanges (Australia, Canada, Hong Kong, Japan and the United Kingdom) increased by only 14% over the same interval. Difference-in-differences estimates demonstrate that this abnormal increase in US IPO activity is statistically significant and robust to controlling for nation-level economic conditions, multiple definitions of IPO volume, and various international control samples.

If the JOBS Act is responsible for the increase in US IPOs, then the increase should be concentrated in EGCs, which are those eligible for the JOBS Act provisions. Consistent with the JOBS Act facilitating the recent increase in IPO activity, there have been 48% more EGC filings (of eventual IPOs) and 7% fewer non-EGC filings in the two years since JOBS compared with the two prior years. Even amongst EGCs, small issuers are more prevalent in the post-JOBS regime. Notably, this growth in small firm IPOs has resulted in the post-JOBS period having the highest percentage of low-revenue IPO issuers since the high-tech bubble in 2000. Approximately 45% of issuers conducting IPOs between April 2013 and March 2014 have below \$50 million in revenue, compared with an average of 28% between 2001 and 2012 (Gao, Ritter, and Zhu, 2013). Descriptively, this increase in IPO volume amongst small issuers raises the possibility that the act's de-burdening provisions, which reduce the fixed costs of being public, are encouraging more firms to go public. However, multiple regressions provide no support for this claim.

In a multiple regression framework, we find evidence that the de-risking provisions, not the de-burdening provisions, drive a portion of the post-JOBS increase in IPO activity. The mix of IPO issuers shifts toward those with high proprietary costs of disclosure, which we empirically measure using research intensity (Ellis, Fee, and Thomas, 2012) and industry concentration (Darrough and Stoughton, 1990). Both measures of proprietary disclosure costs are significantly higher for post-JOBS issuers than for pre-JOBS issuers, even after controlling for other firm, industry, and market characteristics.

One group of issuers with high proprietary disclosure costs that appears to particularly benefit from the JOBS Act is the biotechnology/pharmaceutical (biotech/pharma) industry. Descriptive evidence suggests that the biotech/pharma industry is responsible for approximately 85% of the post-JOBS increase in IPO activity. However, in multiple regressions we find that our measures of proprietary disclosure costs and market conditions, and not a biotech/pharma indicator, are the significant drivers of post-JOBS IPO activity. Moreover, these results persist in regressions excluding the biotech/pharma industry. In sum, our evidence suggests that the post-JOBS increase in IPO volume

is driven by a combination of reduced proprietary disclosure costs and favorable market conditions.

To determine the portion of the post-JOBS increase in IPO activity that is explained by market conditions, we use multiple regressions in which we control for industry returns and valuations. We measure IPO activity in two ways: the number of industry-quarter IPOs as a percentage of public firms in the industry and, because acquisition is an alternative to IPO, an indicator equaling one for IPOs and zero for acquisitions. As controls, we use industry-level returns and market-to-book ratios, gross domestic product (GDP) growth, and a post-JOBS indicator. Finally, to precisely control for the recent outperformance of the biotech/pharma industry, we conduct these tests separately for biotech/pharma and all other industries.

Our tests suggest that there is a significant post-JOBS increase in IPO activity in both the biotech/pharma industry and other industries that cannot be explained by our controls for market conditions. The evidence suggests that at least one-third of the post-JOBS increase in biotech/pharma IPO activity is explained by favorable market conditions, whereas market conditions explain only about 10% of the small recent increase in IPO activity in other industries. Combining these findings with descriptive evidence on the magnitude of the post-JOBS IPO increase, we estimate that the JOBS Act has increased IPO activity per quarter by just over one non-biotech/pharma and approximately four biotech/pharma IPOs. Thus, results suggest that the JOBS Act has increased IPO volume by 21 IPOs per year since its passage, which represents a 25% increase over US IPO volume between 2001 and the passage of the act. Nonetheless, IPO market volume remains well below its pre-2001 levels, and most of the increase is concentrated amongst biotech/pharma firms.

As further evidence on the role of the JOBS Act's de-risking provisions in facilitating the recent increase in IPO activity, we show that the confidential filing and testing-the-waters provisions are the most frequently adopted of all provisions. Approximately 90% of issuers select the confidential filings provision and over two-thirds select the testing-the-waters provision. In fact, in cross-sectional sorts, we find that smaller firms, biotech/pharma firms, and research-intensive firms are more likely to elect the testing-the-waters provision, which is consistent with the JOBS Act lowering the cost of proprietary disclosure. On average, the de-burdening provisions are less popular, with between 13.5% and 53.2% of firms selecting them.

In sum, this paper provides preliminary evidence that the JOBS Act has affected IPO volume and demonstrates the importance of the de-risking provisions, particularly for firms with high proprietary disclosure costs. In addition, the paper contributes to the disclosure literature, which argues that the primary deterrent of disclosure is the proprietary nature of the information to be disclosed (Beyer, Cohen, Lys, and Walther, 2010). However, to date most empirical studies investigating the effect of proprietary costs of disclosure rely on one-off footnotes or earnings forecasts and find ambiguous results (Heitzman, Wasley, and Zimmerman, 2010). In this paper, we investigate how a shock to disclosure costs affects arguably the biggest disclosure and economic decision a firm ever

makes: the IPO. We show that by offering issuers an ability to selectively disclose information to investors and defer disclosure to competitors, IPOs become more frequent after the JOBS Act.

Although we provide evidence that, after controlling for market conditions, the JOBS Act has increased IPO volume by 21 IPOs per year, three-quarters of the increase is in the biotech/pharma industry. We posit that high proprietary costs of disclosure explain a portion of this concentration in biotech/pharma IPOs, but some caveats should be noted. The lack of an effect in other industries with presumably high proprietary costs of disclosure, such as technology, is puzzling. For example, it raises the possibility that, even after controlling for industry-specific valuations and past returns (as well as their interactions with industry fixed effects), we might not have fully accounted for the recent increase in biotech/pharma valuations. To the extent that we have not completely controlled for market conditions, our point estimates could increase or decrease. Moreover, the recent sustained bull market makes it impossible to investigate the interaction between the JOBS Act provisions and market conditions. Thus, the effects of the JOBS Act we find could differ in a bear market. Finally, our estimate that the JOBS Act has increased annual volume for non-biotech/pharma firms by only five IPOs per year is small relative to the intertemporal volatility of IPO volume. For these reasons, our results should be viewed as preliminary, warranting future research on the topic.

## 2. JOBS Act provisions

The Jumpstart Our Business Startups Act, HR 3606, was passed by the US House of Representatives on March 8, 2012 and by the US Senate, in amended form, on March 22. On March 27, the House accepted the Senate changes, and on April 5, 2012 President Obama signed the JOBS Act into law (PL 112-106). Title I of the act, also known as the “IPO on-ramp,” was designed to make going public more attractive to smaller companies, known as emerging growth companies. An EGC is an issuer that had total gross revenues of less than \$1 billion during its most recently completed fiscal year, has not issued more than \$1 billion in nonconvertible debt over the past three years, and is a non-accelerated filer under Securities and Exchange Commission (SEC) reporting regulations. As long as the issuer continues to meet these requirements, the firm maintains its EGC status for five years after the IPO. Issuers cannot regain EGC status once it is lost.

When an issuer qualifies as an EGC, it can choose to take advantage of any, all, or none of Title I's provisions for as long as it remains an EGC. We classify the provisions into two broad categories: de-risking provisions and de-burdening provisions, which are discussed below and summarized in [Table A1](#).

### 2.1. De-risking provisions

The de-risking provisions include testing-the-waters and confidential filing of the IPO draft registration statement.

#### 2.1.1. Testing-the-waters

Before the JOBS Act, gun-jumping rules imposed by the SEC prohibited firms and underwriters from communicating with potential investors prior to a publicly disclosed registration statement. These rules were put in place to prohibit communications that improperly stimulate interest in the IPO. The JOBS Act allows issuers, for the first time, to engage in oral or written communications with qualified institutional buyers and individual accredited investors prior to the public disclosure of the registration statement. This allows issuers to gauge investors' interest in a proposed offering. This process is known as testing-the-waters.

#### 2.1.2. Confidential filing

Before the JOBS Act, firms were required to publicly file their registration statement for an IPO. Under the JOBS Act, EGCs can submit a draft of their IPO registration statement to the SEC for confidential review. If the firm decides to go forward with the IPO, the registration statement and any amendments must be publicly filed no later than 21 days before the road show begins.

### 2.2. De-burdening provisions

The de-burdening provisions allow EGCs to ease into certain public reporting, accounting, auditing, and corporate governance requirements.

#### 2.2.1. Reduced financial statement disclosure

Prior to the JOBS Act, firms were required to present three years of audited financial statements and five years of selected financial data in their IPO registration statement. Under JOBS, EGCs need to report only two years of audited financial statements and selected financial data. Moreover, the reduced disclosure requirements extend to future SEC filings.

#### 2.2.2. Reduced compensation disclosure

Prior to the JOBS Act, firms were required to provide a Compensation Discussion and Analysis (CD&A) section and compensation disclosure for five named executive officers in the IPO registration statement and annual reports. Under JOBS, EGCs are not required to provide the CD&A section. Also, EGCs are not required to disclose the relation between executive compensation and firm performance, payments upon termination or change of control, or the CEO's pay relative to other employees. EGCs need to provide only a Summary Compensation Table (for three, instead of five, named executive officers), an Outstanding Equity Awards Table, and a Director Compensation Table, with narrative disclosures to augment the tables in the IPO registration statement and subsequent annual reports.

#### 2.2.3. Auditor attestation opt-Out

Under JOBS, EGCs are not required to provide auditor attestation of internal controls as required by Section 404(b) of Sarbanes-Oxley.

#### 2.2.4. Future accounting standards opt-Out

Under JOBS, EGCs are not required to comply with any new or revised Financial Accounting Standards Board accounting standards until they affect private companies. However, under Section 107(b)(1) of the JOBS Act, an EGC “must make such choice at the time the company is first required to file a registration statement, periodic report, or other report with the Commission.” EGCs can choose to comply with non-EGC standards, but they cannot selectively comply.

#### 2.2.5. PCAOB rulings

EGCs can opt out of future rules implemented by the Public Company Accounting Standards Board (PCAOB), unless otherwise determined by the SEC.

#### 2.2.6. Executive compensation vote opt-Outs

EGCs are not subject to Say-on-Pay, Say-on-Frequency, or Say-on-Golden Parachute nonbinding shareholder advisory votes required by the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act and SEC rules.

### 2.3. Other titles of the JOBS Act

Although Title I of the JOBS Act potentially lowers the cost of private firms going public, other parts of the JOBS Act facilitate financing for private firms. For example, prior to JOBS, a company with \$10 million in assets was required to register with the SEC if it had at least five hundred shareholders. The JOBS Act increases this threshold to two thousand shareholders, provided there are no more than 499 shareholders who are not “accredited investors.” Under this new rule, EGCs with five hundred or more shareholders could be able to stay private longer. Thus, some JOBS provisions could result in EGCs postponing the IPO.

## 3. Benefits of the JOBS Act provisions

In this section, we discuss several channels through which the JOBS Act provisions can achieve Congress's goal of stimulating US IPO activity. In particular, we discuss the types of firms most likely to benefit from the act's de-risking and de-burdening provisions.

#### 3.1. De-risking provisions: confidential filing and testing-the-waters

The testing-the-waters provision allows EGCs, for the first time, to engage in oral or written communications with qualified institutional investors prior to the public disclosure of the registration statement. TTW prior to public filings provides investors with more time to evaluate, understand, and ask questions about potential investments before the road show (Latham & Watkins LLP, 2014; and Forbes, 2013b). TTW also provides issuers with more certainty regarding the prospects of the IPO before publicly filing with the SEC. In practice, issuers usually combine TTW with a second de-risking provision, allowing EGCs to file their IPO draft registration statement confidentially.

The combination of confidential filings and TTW reduces the cost of IPO withdrawal, which is relevant given that one in five IPO registrations was withdrawn between 1985 and 2000 (Dunbar and Foerster, 2008). These de-risking provisions reduce the cost of IPO withdrawal by allowing firms to provide information to potential investors but withhold information from competitors. Although confidential filing reduces the expected reputational costs of IPO withdrawal (Dunbar, 1998; Lian and Wang, 2009), the literature suggests that its primary benefit is to reduce the chances that the issuer unnecessarily discloses proprietary information, which Bhattacharya and Ritter (1983) and Verrecchia (1983) argue are costly. Dye (2001) and Leone, Rock, and Willenborg (2007) argue that proprietary considerations are the primary deterrent to full prospectus disclosure, in large part because proprietary disclosure jeopardizes existing profits (Harris, 1998; Hayes and Lundholm, 1996).

We expect the benefits of the de-risking provisions to be increasing in an issuer's proprietary costs of disclosure. Thus, to the extent that these provisions lead to increased IPO volume, we expect more firms with high proprietary disclosure costs to go public post-JOBS and a higher percentage of these firms to avail themselves of the de-risking provisions. Following prior literature, we use research intensity and industry concentration as empirical proxies for proprietary disclosure costs (Ellis, Fee, and Thomas, 2012; Wagenhofer, 1990; Hayes and Lundholm, 1996).

#### 3.2. De-burdening provisions

The de-burdening provisions reduce the burdens of being public by lessening disclosure, accounting, and compliance costs, many of which were introduced by the Sarbanes-Oxley Act of 2002. For instance, post-JOBS, EGCs do not need to present an auditor attestation of internal controls.

The literature provides conflicting evidence on whether the de-burdening provisions would represent an economically meaningful benefit. On the one hand, Zhang (2007) and Iliev (2010) show that SOX has been costly, and Gao, Wu, and Zimmerman (2009) and Engel, Hayes, and Wang (2007) show that firms have delisted or engaged in financial engineering to avoid its provisions. On the other hand, both Gao, Ritter, and Zhu (2013) and Doidge, Karolyi, and Stulz (2013) provide evidence that the recent dearth of IPO activity was not caused by SOX and argue that reducing the burdens imposed by SOX is unlikely to spur IPO activity. Moreover, many of the de-burdening provisions, including reduced financial statement disclosure and auditor attestation opt-outs, have been available to firms with public float less than \$75 million since 2008, yet Ritter (2013) shows that there was no change in IPO activity following this regulatory change.

Although the economic impact of the de-burdening provisions on IPO volume is clearly an empirical question, we expect small firms to be most likely to benefit from the de-burdening provisions because many of these provisions reduce the fixed costs of being public. For instance, reduced disclosure or opting out of internal control audits are likely to be relatively more valuable to firms with

fewer accounting employees. However, it should be noted that opting out of internal control audits can be costly. As is the case for prestigious underwriters, auditors with higher reputations have been found to provide certification benefits to the IPO (Beatty, 1989; Willenborg, 1999; Weber and Willenborg, 2003). To the extent that issuers willingly choose to opt out of services provided by the auditor, the expected certification and signaling benefits from auditors decline in value.<sup>2</sup>

#### 4. Data

We are interested in determining the extent to which the JOBS Act has affected IPO activity. To address this, we employ three samples: an international sample of IPOs from January 2001 to March 2014, a hand-collected sample of US IPOs in the two years pre- and post-JOBS, and a domestic sample of IPOs from January 2001 to March 2014.

The international sample begins with all US IPOs in the Thomson Reuters Securities Data Company (SDC) Platinum New Issues database between 2001 and the first quarter of 2014, as well as an international control sample consisting of the five other developed nations with the largest stock exchanges (Australia, Canada, Hong Kong, Japan, and the United Kingdom). From this sample, we use SDC filters to exclude financial industries (including real estate investment trusts), shell companies, limited partnerships, unit offerings, and IPOs raising less than \$5 million. We also exclude foreign and non-original IPOs, which are issuers listing on an exchange outside their home country and those already listed in public markets [either overseas or on US over-the-counter (OTC) exchanges] at the time of the IPO, respectively. This process results in 1,242 US IPOs and 2,271 IPOs in the five other developed nations between January 2001 and March 2014. We then aggregate IPO activity to the nation-quarter level in two ways: IPO count divided by the number of publicly listed firms and IPO proceeds divided by the total domestic market capitalization of public firms. We obtain GDP and public firm data from the World Bank's World Development Indicators database.<sup>3</sup> We also include nation-quarter level controls: market-to-book computed as in Doidge, Karolyi, and Stulz (2013) and national stock returns over the previous year, which we obtain from Ken French's website.<sup>4</sup> The final sample consists of IPOs from six nations over 53 quarters. Table B1 provides descriptive statistics on this sample by country.

The second portion of our analysis uses a sample of IPO issuers from the Thomson Reuters SDC Platinum New Issues database in the two years before and after introduction of the JOBS Act in April 2012. To be included in the

sample, an issuer must either both file and issue an IPO in the two years prior to the JOBS Act (between April 2010 and March 2012) or both file and issue an IPO in the two years following the act (between April 2012 and March 2014). This restriction ensures that the pre- and post-JOBS periods are equal in calendar length, and it circumvents the need to categorize issuers that file pre-JOBS and issue post-JOBS into either the pre- or post-JOBS period. A limitation of this sample design is that, even though the pre- and post-JOBS periods are equal in calendar time, they could differ in potential IPO volume if the necessary time between initial IPO filing (whether confidential or not) and issuance changes as a result of the JOBS Act. Concurrent with the passage of the JOBS Act, the SEC began expediting the IPO review process. We find that the average (median) length of the registration period pre-JOBS was 154 (115) days, compared with 134 (110) days post-JOBS (untabulated). To ensure that such concerns do not drive our results, we replicate our primary test of the effect of the JOBS Act on IPO volume using a sample of IPO filings during the above pre- and post-JOBS periods that ultimately result in IPO issuance any time before July 9, 2014.<sup>5</sup>

Within this sample, we impose filters to exclude unit offerings, IPOs in the financial industries (including real estate investment trusts), IPOs with proceeds below \$5 million, best efforts offerings, rights offerings, shell companies, limited partnerships, foreign offerings, and non-original IPOs (issuers already listed in public markets, either overseas or on US OTC exchanges, at the time of the IPO), and we check for mistakes in the SDC data reported on Jay Ritter's website.<sup>6</sup> This yields a sample of 301 IPOs: 122 in the pre-JOBS period and 179 post-JOBS. We then hand-collect financial and governance data from S-1 and 424B filings in the SEC Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database. We focus the majority of our hand-collection on EGC issuers (with less than \$1 billion in pre-IPO revenue) because larger issuers do not benefit from the JOBS Act. There are 102 issuers below this threshold in the pre-JOBS period and 157 post-JOBS. In all but one case, post-JOBS issuers under \$1 billion in revenue identify themselves as EGCs while those above the threshold do not. We drop the one exception with revenue below \$1 billion because this firm is EGC ineligible due to prior outstanding public debt.<sup>7</sup> For the remaining 156 post-JOBS EGC issuers, we hand-collect information on which JOBS Act provisions have been selected by firms as reported in their IPO registration statements filed on EDGAR. See Table C1 for detailed variable definitions and Appendix D for the steps involved in our hand-collection process as well as an illustrative example of how we code the JOBS Act provision elections.

<sup>2</sup> Barger, Lehn, and Zutter (2010) also provide evidence that SOX provisions reduce risk taking. Thus, the de-burdening provisions could also disproportionately benefit risky firms.

<sup>3</sup> These variables are measured annually and applied to nation-quarters in the following year. Notably, because the 2013 data remain incomplete, we apply year-end 2012 data to the first quarter of 2014 as well.

<sup>4</sup> See [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

<sup>5</sup> This sample understates post-JOBS IPO volume because it does not include IPOs filed before April 1, 2014 that result in issuance after July 9, 2014. We cannot incorporate filings of uncompleted offerings because the confidential filing prevents us from observing the full sample of post-JOBS IPO filings.

<sup>6</sup> See [http://bear.warrington.ufl.edu/ritter/SDC\\_corrections.pdf](http://bear.warrington.ufl.edu/ritter/SDC_corrections.pdf).

<sup>7</sup> Firms with outstanding public debt are already fulfilling SEC reporting requirements and are thus ineligible for EGC treatment.

Our third sample examines domestic IPO activity from January 2001 through March 2014. We use the same firm-level filters as in the international sample (from the Thomson Reuters SDC Platinum New Issues database) and continue to require the offering to raise over \$5 million. We employ two specifications within this sample. First, we examine the number of industry IPOs scaled by the number of firms in the industry (per Compustat). This yields 2,332 industry-quarter observations and allows us to control for industry-level market conditions. Second, we benchmark US IPO activity to US acquisitions. Because private firms can sell themselves through either an IPO or a trade sale, it is important to track not only IPO activity since JOBS, but also acquisitions of private firms. Thus, this specification allows us to model the choice of IPO versus acquisition. For the acquisitions sample, we begin with all acquisitions from Thomson Reuters SDC Platinum Mergers and Acquisitions (M&A) database of nonfinancial private US targets of at least \$5 million. We further require the acquirer, which can be public or private, to own more than 50% of the company post-transaction and to acquire more than 20% of the company in the transaction itself. The IPO and acquisition specification contains 7,511 firms that are acquired and 1,247 firms that go public.

## 5. Main results

### 5.1. IPO activity surrounding the JOBS Act

As a first step toward understanding the extent to which the JOBS Act has affected IPO volume, we compare US and international IPO volume over the past 13 years. Fig. 1 shows that between March 2002 and March 2013, US IPO volume seemed to move in the same direction as our international control sample (the five other developed countries with the largest stock exchanges: Australia, Canada, Hong Kong, Japan and the United Kingdom). However, between April 2013 and March 2014, US IPO volume was more than 22% larger than any year since 2000, while international IPO volume was less than half the average over the same period. Although this recent increase in US IPO volume is economically significant, US IPO volume remains far below its peak of over 450 IPOs per year between 1995 and 2000 (Gao, Ritter, and Zhu, 2013).

Notably, the recent abnormal increase in US IPO activity does not begin immediately following the introduction of the JOBS Act. This is consistent with the IPO process taking time. According to *EY's Guide to Going Public* (Ernst & Young, 2013a), some of the biggest hurdles to going public are recruiting qualified independent directors, handling regulatory and compliance risks, and developing timely financial reporting procedures. These adjustments can take anywhere from just a few months to a year or two, depending on the firm's status (e.g., whether the firm's financial statements have been audited). Thus, the timing of the recent increase in US IPO volume is consistent with the JOBS Act having achieved Congress's goal of increasing IPO activity. However, without further analyses, we cannot rule out alternative causes such as favorable market conditions.

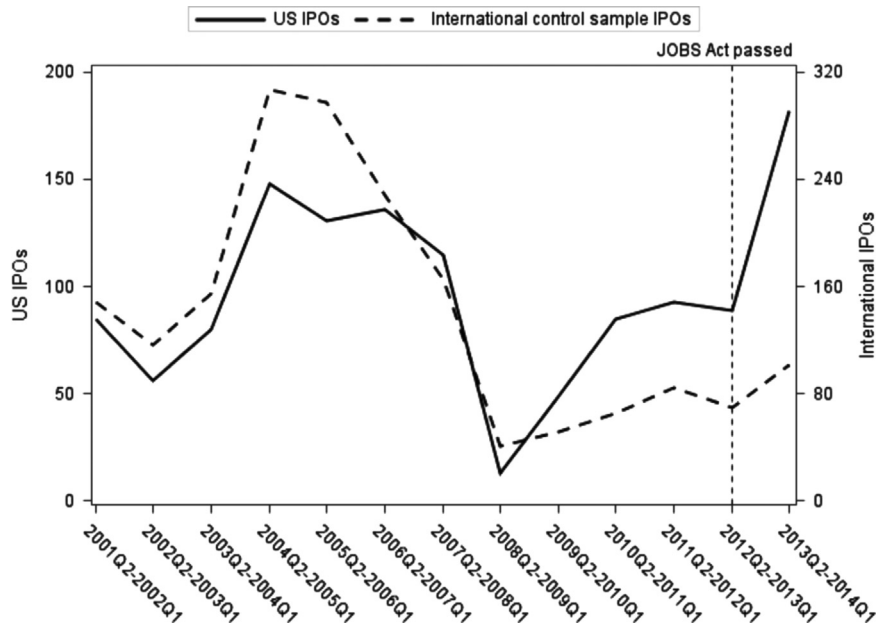
Table 1 formalizes the analysis into a difference-in-differences framework in which the dependent variable measures IPO activity at the nation-quarter level. The coefficient of interest is  $US \times Post-JOBS$ , which equals one for the US in quarters after June 2012. To account for international economic conditions, we control for recent domestic stock returns as reported on Ken French's website, follow Doidge, Karolyi, and Stulz (2013) by controlling for country-level market-to-book, and control for GDP growth. Moreover, in some specifications we interact nation fixed effects with stock return and market-to-book controls to account for heterogeneous sensitivities to economic conditions across nations. We use the same five-country international control sample as in Fig. 1. The time period is from the first quarter of 2001 through the first quarter of 2014. This yields 318 nation-quarters. See Table B1 for detailed variable definitions and descriptive statistics.

The difference-in-differences results corroborate the descriptive evidence that the US experiences a significantly larger post-JOBS increase in IPO activity than other developed countries. Following the JOBS Act, both measures of IPO activity (IPO volume scaled by the number of public firms and IPO proceeds scaled by the market capitalization of domestic public firms) increase significantly more in the US than in other nations. The results in Models 1 and 3 also suggest that over 30% of the abnormal post-JOBS increase in US IPO volume can be explained by favorable market conditions, as the coefficient drops from 0.62 to 0.41 as controls for economic conditions are added.

These results are robust to defining the beginning of the post-JOBS period as beginning any time between April 2012 and April 2013, including offerings of less than \$5 million in proceeds, using the 20 developed nations in Fama and French (2012) as a control sample, adjusting the sample period, adding additional control variables for GDP per capita and the value of public firms divided by GDP (as in Doidge, Karolyi, and Stulz, 2013), or excluding firms with pre-IPO revenues of greater than \$1 billion as reported in SDC, which are (or would be) EGC ineligible.<sup>8</sup> Nevertheless, because industry composition varies by country, we cannot perfectly control for industry-specific bull markets.

To illustrate the uniqueness of the recent increase in US IPO activity relative to the rest of the world, we conduct placebo tests in which we reproduce Models 3 and 6 of Table 1 while interacting the US indicator with different time period indicators. We separately interact the US indicator with indicators for every April through March period between April 2001 and March 2014. None of the 22 pre-2012 interaction terms is positively significant at the 5% level. In contrast, the  $US \times April\ 2013\text{--}March\ 2014$  interaction has *t*-statistics of 3.65 and 3.81 in Models 3 and 6,

<sup>8</sup> Some specifications which include the high-tech IPO bubble of 1999–2000 yield insignificant results. Because less than 5% of SDC global IPOs between 2010 and 2014 have reported revenue of over \$1 billion and more than 50% have missing revenue, we do not present difference-in-differences results comparing USA and international IPO activity before and after JOBS separately for EGC-eligible and EGC-ineligible issuers as our main specification.



**Fig. 1.** Initial public offering (IPO) activity. On the left y-axis, the solid line plots annual US IPO activity, and on the right y-axis, the dashed line plots the combined IPO activity in the five other developed nations housing the largest stock exchanges: Australia, Canada, Hong Kong, Japan, and the United Kingdom. Each year is measured from the second quarter through the first quarter of the following year to coincide with the passage of the Jumpstart Our Business Startups Act (JOBS Act) in April 2012. The sample excludes financial industries (including real estate investment trusts), shell companies, limited partnerships, unit offerings, non-original IPOs, foreign IPOs, and IPOs raising less than \$5 million.

respectively. Thus, the recent increase in US IPO activity is unique compared with any time since the end of the high-tech IPO bubble in 2000.

## 5.2. Differences between pre- and post-JOBS IPO issuers

To provide evidence on the extent to which the JOBS Act is responsible for the recent increase in US IPO activity, we investigate whether the post-JOBS IPO volume increase is concentrated in the subset of firms that we expect would benefit most from the JOBS Act provisions. For example, because only EGC firms can benefit from the JOBS Act, if the JOBS Act is responsible for the recent increase in IPO activity, this increase should be concentrated in EGC-eligible firms. If not, then the increase is unlikely to be caused by the JOBS Act.

Table 2 separately presents EGC and non-EGC IPO activity in the two years before and two years after the JOBS Act. Panel A shows that the number of post-JOBS IPO filings resulting in successful issuance increases by 48% for EGCs but declines by 7% for non-EGC-eligible issuers. To classify issuers as pre- or post-JOBS more precisely, in Panel B we restrict the sample to issuers that both file and issue within these two-year windows.<sup>9</sup> This partition yields similar results. EGC-eligible issuers increase IPO activity by 53% compared with 10% for non-EGC eligible issuers. These results are similar if we leave a buffer period

between the pre- and post-JOBS periods, and they are stronger when we compare the five quarters before the act with post-2012.

This evidence that the post-JOBS increase in IPO volume is largest for EGCs suggests that if something other than the JOBS Act is responsible, it must be something that also affects EGCs more than non-EGCs. Moreover, the result suggests that if there are differences in IPO issuers pre- and post-JOBS, the differences are likely to be concentrated amongst EGC eligible issuers. To the extent that the JOBS Act drives this increase in IPOs by EGC eligible firms, we expect the post-JOBS IPO volume increase to be largest for small firms and firms with high proprietary disclosure costs, which we argue benefit most from the act's provisions.

Table 3 provides descriptive statistics on our sample of pre- and post-JOBS issuers with less than \$1 billion in pre-IPO annual revenue, a subsample that we refer to as EGC-eligible issuers. As in Panel B of Table 2, we define the pre- and post-JOBS samples as issuers that both file and issue in the two years before and after April 1, 2012. As shown in Table 3, the post-JOBS period contains smaller issuers and issuers that are more research-intensive, consistent with our conjecture that smaller firms and those with high proprietary disclosure costs would be most likely to benefit from the JOBS Act. We also find that the median post-JOBS issuer is less profitable and holds more cash than the median pre-JOBS issuer, but pre- and post-JOBS issuers have similar governance, pay, and IPO characteristics, including issuance fees. Notably, comparing IPO characteristics of EGC firms (firms with EGC status under JOBS) with non-EGC (NEGC) firms (firms that would have qualified for EGC had their IPO occurred post-JOBS), Barth,

<sup>9</sup> The purpose of this restriction is to drop issuers that file pre-JOBS but benefit from some of the act's provisions by issuing afterward. To equalize the pre- and post-JOBS sample periods, we also exclude issuers from the pre-JOBS period that file before April 1, 2010.

**Table 1**

International difference-in-differences analysis of initial public offering (IPO) volume.

Each dependent variable measures quarterly IPO activity for the US and the five other developed nations with the largest stock exchanges: Australia, Canada, Hong Kong, Japan, and the United Kingdom. The sample runs from the first quarter of 2001 through the first quarter of 2014, yielding a sample of 318 nation-quarters. The dependent variable in Models 1–3 is a nation's quarterly IPO volume scaled by the number of domestically listed public firms in percentage terms [ $100 \times (IPOs \div public\ firms)$ ]. The dependent variable in Models 4–6 is a nation's quarterly IPO proceeds as a percentage of the aggregate market capitalization of public domestic firms as of the most recent year end [ $100 \times (IPO\ proceeds \div total\ market\ capitalization)$ ]. *Post-JOBS* is an indicator variable equal to one for nation-quarters after June 2012. *Lag stock return* is the monthly compounded return for a given nation in the year prior to the beginning of the quarter (in decimal form). *Country MTB* is the average of the Fama and French industry median market-to-book ratios in a given nation-quarter as in [Doidge, Karolyi, and Stulz \(2013\)](#). *GDP growth* is the annual percent change in GDP ending at the end of the most recent calendar year (although 2012 figures are used for the first quarter of 2014). Finally, we include year-quarter and nation fixed effects and their interaction with *Lag stock return* and *Country MTB* in Models 3 and 6. The sample excludes financial issuers (including real estate investment trusts), shell companies, limited partnerships, unit offerings, non-original and foreign IPOs, and IPOs of less than \$5 million. Standard errors are clustered by time and are presented below the coefficients. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Parameter	IPOs/public firms			IPO proceeds/total market capitalization		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
US $\times$ <i>Post-JOBS</i>	0.618*** [0.119]	0.562*** [0.125]	0.410*** [0.141]	0.026*** [0.008]	0.022** [0.010]	0.033** [0.014]
<i>Lag stock return</i>		0.364* [0.189]			0.031 [0.025]	
<i>Lag stock return</i> (for US indicator)			0.731*** [0.254]			0.042 [0.039]
<i>Country MTB</i> (for US indicator)			0.134 [0.278]			–0.094* [0.049]
<i>GDP growth</i>			0.622 [1.463]			–0.042 [0.214]
Nation fixed effects	Y	Y	Y	Y	Y	Y
Year $\times$ Quarter fixed effects	Y	Y	Y	Y	Y	Y
Nation $\times$ <i>Lag stock return</i>	N	N	Y	N	N	Y
Nation $\times$ <i>Country MTB</i>	N	N	Y	N	N	Y
Adjusted $R^2$	0.487	0.495	0.595	0.339	0.340	0.365
Number of observations	318	318	318	318	318	318

**Table 2**

US initial public offering (IPO) activity by post-Jumpstart Our Business Startups Act (JOBS Act) and emerging growth company (EGC) eligibility.

This table presents the number of US IPOs pre- and post-JOBS partitioned by whether they have over \$1 billion in annual revenue in the year before the IPO. Only issuers below this revenue threshold qualify as EGCs. Non-emerging growth companies do not benefit from the JOBS Act. Panel A considers firms that filed a registration statement in the two years prior to JOBS (from April 1, 2010 through March 31, 2012) and successfully completed issuance before 7/9/2014. IPOs filed in the two years post-JOBS (from April 1, 2012 through March 31, 2014) resulting in issuance before 7/9/2014 are classified as post-JOBS IPOs. Panel B restricts this sample to issuers that both file a registration statement and complete an IPO within these same two-year periods. Thus, the sample in Panel B differs from that in Panel A because it excludes issuers that file pre-JOBS and issue post-JOBS as well as firms that file, but do not issue, before 4/1/2014. The sample excludes financial and regulated industries, unit offerings, non-original IPOs, IPOs by non-US companies, and IPOs with proceeds below \$5 million.

Panel A: By IPO filing date, pre- and post-JOBS			
EGC eligibility	Pre-JOBS IPO filing date: 4/1/10–3/31/12	Post-JOBS IPO filing date: 4/1/12–3/31/14	Growth post-JOBS
EGC-eligible ( < \$1 billion in revenue)	135	200	48%
EGC-ineligible ( $\geq$ \$1 billion in revenue)	28	26	– 7%
Difference in growth rates			55%
Panel B: By IPO filing and issuance date, pre- and post-JOBS			
EGC eligibility	Pre-JOBS IPO filing and issuance date: 4/1/10–3/31/12	Post-JOBS IPO filing and issuance date: 4/1/12–3/31/14	Growth post-JOBS
EGC-eligible ( < \$1 billion in revenue)	102	156	53%
EGC-ineligible ( $\geq$ \$1 billion in revenue)	20	22	10%
Difference in growth rates			43%

[Landsman, and Taylor \(2014\)](#) find higher IPO underpricing and post-IPO return volatility for EGC firms than for NEGC firms.

In the two years prior to JOBS, the median issuer had annual revenue of \$78 million. Post-JOBS, the median revenue is only \$48 million, a decline of 42%. Post-JOBS



**Table 3**

Descriptive statistics for emerging growth company (EGC)-eligible issuers two years pre- and post-Jumpstart Our Business Startups Act (JOBS Act).

This table provides descriptive statistics on EGC-eligible issuers. Pre-JOBS Act covers 102 firms that both file an initial public offering (IPO) registration and issue an IPO in the two years prior to JOBS (from 4/1/2010 through 3/31/2012). Similarly, Post-JOBS Act covers 156 firms that both file and issue an IPO in the two years post-JOBS (from 4/1/2012 through 3/31/2014). Test statistics are computed using a *t*-test and the Wilcoxon rank test for a significant change in means and medians, respectively. The sample excludes financial and regulated industries, unit offerings, non-original IPOs, IPOs by non-US companies, IPOs with proceeds below \$5 million, and non-EGC issuers. All variables are defined in Table C1. \*, \*\*, \*\*\* indicate difference in means or medians significant at the 10%, 5%, and 1% level, respectively, assuming independence.

Characteristic	Pre-JOBS Act		Post-JOBS Act		Increase in mean	Increase in median
	Mean	Median	Mean	Median		
<b>Firm characteristics</b>						
Revenue (millions)	\$132.50	\$77.66	\$110.98	\$44.80	–16%	–42%***
Assets (millions)	\$229.20	\$84.64	\$212.31	\$56.12	–7%	–34%***
Net income-to-assets	–0.40	–0.05	–0.65	–0.23	–63%**	–360%***
Operating at loss	0.62		0.76		23%**	
R&D-to-sales	0.17	0.11	0.46	0.25	171%**	127%***
Cash-to-assets	0.39	0.21	0.44	0.39	13%	86%***
Debt-to-assets	0.53	0.19	0.55	0.16	4%	–16%
Number of employees	630.22	312.50	592.01	149.50	–6%	–52%***
Top employee with M.D.	6.86%		27.10%		295%***	
Top employee with Ph.D.	7.84%		26.45%		237%***	
Firm age	18.35	12.00	17.24	10.00	–6%	–17%
Smaller reporting company	3.92%		6.41%		64%	
Going concern	13.73%		19.87%		45%	
Venture backed	56.86%		69.23%		22%**	
Big four auditor	80.39%		81.41%		1%	
<b>Governance and pay characteristics</b>						
Board size	7.35	7.00	7.25	7.00	–1%	0%
Percent board independent	0.74	0.78	0.69	0.71	–7%**	–9%*
CEO total pay (millions)	\$1.35	\$0.75	\$1.11	\$0.64	–18%	–15%***
CEO salary (millions)	\$0.32	\$0.30	\$0.31	\$0.32	–3%	7%
CEO equity compensation (millions)	\$0.76	\$0.07	\$0.55	\$0.04	–28%	–43%
CEO equity percent	30.48%	8.44%	26.18%	3.58%	–14%	–58%
<b>IPO characteristics</b>						
IPO proceeds (millions)	\$126.17	\$97.76	\$131.03	\$83.83	4%	–14%
Number of IPO managers	5.52	5.00	5.21	5.00	–6%	0%
UR spread-to-proceeds	7.02%	7.00%	6.87%	7.00%	–2%*	0%
Accounting fees-to-proceeds	1.06%	0.77%	1.18%	0.93%	11%	21%
Legal fees-to-proceeds	1.59%	1.30%	1.78%	1.50%	12%	15%

issuers are also smaller in terms of total assets and number of employees. The finding that post-JOBS IPO issuers are smaller is noteworthy because it suggests that the JOBS Act could be achieving its stated goal of stimulating small firm IPO activity. In Table 4, we investigate this issue further by partitioning pre- and post-JOBS IPO volume on revenue. Importantly, we base our partitions on pre-JOBS revenue quartiles to see if the revenue distribution of IPO firms changes following the JOBS Act.

By construction, the top row of Table 4 contains an (approximately) equal number of IPOs in each revenue quartile in the pre-JOBS period. Under the null hypothesis that the JOBS Act has an equal effect on firms of all sizes, one would expect an equal number of IPOs in each size quartile in the post-JOBS period. The second row of Table 4 shows that this is not the case. The increase in IPO activity is concentrated in the lowest revenue firms. The number of low revenue issuers increases 147%, from 30 issuers pre-JOBS to 74 issuers post-JOBS. Most of the 74 post-JOBS low-revenue issuers are in the biotechnology/pharmaceutical industry, for which an IPO with zero trailing revenue is common. The other revenue quartiles also increase in the post-JOBS period, but none by more than 25%. This suggests that the predominant post-JOBS

increase in US IPO activity is attributable to the lowest revenue quartile.

One consequence of this recent increase in small firm IPO volume is that the post-JOBS period has the largest percentage of small firm IPOs since the high-tech IPO bubble in 2000. Between April 2013 and March 2014, 47% of IPO issuers in our sample have less than \$50 million in revenue (adjusted to January 2010 dollars). This is 68% (or 19 percentage points) larger than the average percentage of small firm IPOs since 2000, but less than the percentage between 1994 and 2000 [see Gao, Ritter, and Zhu (2013) for historical percentages of small revenue IPOs].

On the surface, the fact that the post-JOBS increase in IPO volume is concentrated in small issuers suggests that the act's de-burdening provisions, which reduce the fixed costs of being public, could be the reason more firms have gone public post-JOBS. However, Panels B and C of Table 4 provide descriptive evidence of alternative explanations for the post-JOBS increase in IPO activity.

Panel B of Table 4 shows that the post-JOBS increase in IPO activity is concentrated in firms with research and development (R&D) expenditures in the year before the IPO. The number of issuers with R&D expenditures increases by

**Table 4**

Initial public offering (IPO) volume by pre-Jumpstart Our Business Startups Act (JOBS Act) characteristic.

This table provides IPO volume partitioned by revenue adjusted to January 2010 dollars (Panel A), research and development (R&D) expenses (Panel B), and industry (Panel C). The pre-JOBS period covers firms that both file an IPO registration and issue an IPO in the two years prior to JOBS (from 4/1/2010 through 3/31/2012). Similarly, the post-JOBS period covers firms that both file and issue an IPO in the two years post-JOBS (from 4/1/2012 through 3/31/2014). In Panel A, the sample is partitioned on revenue cutoffs generated using pre-JOBS revenue quartiles. The pre-JOBS revenue quartile cutoffs are \$38 million, \$106 million, and \$309 million, respectively, for the second, third, and fourth quartile. For each panel, the first row shows that mechanically, 31 (or 30) pre-JOBS IPOs are in each revenue bin (revenue is measured in the year prior to the IPO). The second row shows post-JOBS IPO volume within each revenue range. Panel B partitions firms by research and development expenditures in the year prior to the IPO, and Panel C partitions firms by industry, using the Fama and French 49 industry classification, presenting the top three industries in terms of volume, pre- and post-JOBS. The sample excludes financial and regulated industries, unit offerings, non-original IPOs, IPOs by non-US companies, and IPOs with proceeds below \$5 million.

<i>Panel A: Partitions by pre-JOBS revenue quartile</i>					
	Bottom quartile	Second quartile	Third quartile	Top quartile	Total
Pre-JOBS number of IPOs	30	31	30	31	122
Post-JOBS number of IPOs	74	38	32	34	178
Growth post-JOBS	147%	23%	7%	10%	46%
<i>Panel B: Partitions by research and development</i>					
	R&D > 0		No R&D expense		Total
Pre-JOBS number of IPOs	63		59		122
Post-JOBS number of IPOs	112		66		178
Growth post-JOBS	78%		12%		46%
<i>Panel C: Partitions by industry</i>					
	Pharmaceutical products	Computer software	Business services	Other	Total
Pre-JOBS number of IPOs	15	28	15	64	122
Post-JOBS number of IPOs	61	34	15	68	178
Growth post-JOBS	307%	21%	0%	6%	46%

78% from the pre- to post-JOBS periods, while IPO activity among firms with no R&D expenditures increases by only 12%. Table 3 shows that this change in the mix of firms going public results in typical post-JOBS issuers spending twice as much on R&D and being approximately three times as likely to report top executives with M.D. or Ph.D. degrees. This transition toward research-intensive issuers with high proprietary disclosure costs suggests that it could be the de-risking provisions of the JOBS Act that are responsible for the recent increase in IPO volume.

To investigate whether an industry-specific surge in IPOs drives our findings, Panel C partitions the sample by industry, using the Fama and French (FF) 49 industry definitions. The three industries with the largest number of IPOs pre- and post-JOBS are pharmaceutical products (FF industry #13), computer software (FF industry #36), and business services (FF industry #34). No other industry had more than 10 IPOs in either the pre- or post-JOBS period. Panel C shows a large proportion of the post-JOBS increase is attributed to FF industry #13, pharmaceutical products, composed primarily of biotechnology and pharmaceutical firms. Within this industry, IPO volume jumps from 15 IPOs in pre-JOBS period to 61 post-JOBS, while all other industries combined increase by 10 IPOs.

This 307% post-JOBS increase in biotech/pharma IPOs is consistent with our conjecture that the de-risking provisions provide incentives for firms with higher proprietary costs of disclosure to go public. Guo, Lev, and Zhou (2004) argue that biotech/pharma companies face extremely high proprietary disclosure costs. Nonetheless, an alternative explanation for the dramatic increase in biotech/pharma IPOs is favorable industry conditions. Since passage of the JOBS Act, industry conditions have been strong for the biotech/pharma

industries: the New York Stock Exchange Arca Biotechnology Index (BTK) increased by 84% and the NYSE Arca Equal Weighted Pharmaceutical Index (DGE) increased by 59%, compared with 34% for the Standard & Poor's (S&P) 500 index. Moreover, the biotech business model involves a life cycle that begins with venture capital funding at an early stage and, if successful, eventual sale to a big pharmaceutical company, which has a comparative advantage at phase III clinical trials, production and marketing. Successful biotech companies have a high burn rate for many years, so if IPO costs fall, going public could become an attractive alternative to tap this source of funds. Thus, before attributing the post-JOBS increase in biotech/pharma IPO activity to the JOBS Act, we must control for the effects of market conditions.

### 5.3. The JOBS Act, market conditions, and the biotech/pharma industry

To identify the relative importance of the de-risking provisions, de-burdening provisions, and industry market conditions as drivers for post-JOBS growth in IPO volume, we employ a multiple regression in Table 5. We employ a probit model and regress an indicator equaling one for post-JOBS IPOs and zero for pre-JOBS IPOs on several explanatory variables. We control for measures of proprietary costs of disclosure, firm size, and industry returns, as well as other significant differences between pre- and post-JOBS issuers identified in Table 3.<sup>10</sup> As argued above,

<sup>10</sup> We intend for these regressions to offer insights into characteristics of firms pre- and post-JOBS. This model does not intend to imply that issuers decide whether to issue an IPO pre- or post-JOBS.

**Table 5**

Primary differences between pre- and post-Jumpstart Our Business Startups (JOBS) Act issuers.

This table presents probit regressions in which the dependent variable equals one for US firms that both file and issue an initial public offering (IPO) in the two years post-JOBS (from 4/1/2012 through 3/31/2014) and zero for US firms both file and issue an IPO in the two years pre-JOBS (from 4/1/2010 through 3/31/2012). *Biotech/pharma* is an indicator variable equal to one for firms with Global Industry Classification Standard (GICS) code 352010 and firms in Fama and French 49 industry #13 (pharmaceutical products). *R&D-to-sales* is research and development expenses divided by total sales in the fiscal year prior to IPO. *Herfindahl Index* equals the sum of squares of the market shares of the firms within an industry as of the first quarter of 2012 (our 50 industry designations separate biotech firms with GICS code 352010 from Fama and French 49 industries). *12-month industry returns* are measured over the 12-month period ending the first day of the IPO quarter. We use equal-weighted industry Center for Research in Securities Prices (CRSP) returns for non-biotech industries and the NYSE Arca Biotechnology Index returns for the biotech industry (GICS code 352010).  $\ln(\text{Revenue})$  [ $\ln(\text{Assets})$ ] is one plus the natural log of revenues [assets], measured in millions, in the fiscal year prior to the IPO. *Cash-to-assets* and  $\ln(\text{Number of employees})$  are also measured at the fiscal year-end prior to the IPO. *Operating-at-loss* equals one if net income is negative during the most recent fiscal year ending prior to the IPO and zero otherwise. See Table C1 for more detailed variable definitions. The sample excludes financial and regulated industries, unit offerings, non-original IPOs, IPOs by non-US companies, IPOs with proceeds below \$5 million, and non-emerging growth company issuers. Standard errors are clustered by our 50 industry designations (Fama and French 49 plus biotech) and are presented below the coefficients. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Parameter	All firms				Excluding biotech/ pharma
	Model 1	Model 2	Model 3	Model 4	Model 5
<i>R&amp;D-to-sales</i>		0.127** [0.063]	0.097 [0.063]	0.105* [0.060]	0.126* [0.065]
<i>Herfindahl Index</i>			7.708** [3.381]	6.450** [2.719]	5.711* [3.235]
<i>12-month industry returns</i>				2.850*** [0.793]	1.977*** [0.449]
<i>Biotech/pharma</i>	0.886** [0.347]	0.798** [0.358]	0.423 [0.363]	0.077 [0.318]	
$\ln(\text{Revenue})$	0.081 [0.088]	0.081 [0.088]	0.116 [0.081]	0.199*** [0.072]	0.257*** [0.099]
$\ln(\text{Assets})$	-0.034 [0.071]	-0.029 [0.069]	-0.042 [0.060]	-0.070 [0.083]	-0.065 [0.077]
<i>Cash-to-assets</i>	-0.144*** [0.051]	-0.148*** [0.051]	-0.114*** [0.040]	0.020 [0.033]	0.250 [0.299]
$\ln(\text{Number of employees})$	-0.029 [0.063]	-0.029 [0.063]	-0.055 [0.061]	-0.110 [0.074]	-0.111 [0.078]
<i>Operating-at-loss</i>	0.273 [0.213]	0.260 [0.214]	0.331* [0.200]	0.347* [0.182]	0.462*** [0.172]
Pseudo $R^2$	0.064	0.067	0.096	0.208	0.105
Number observations	258	258	258	258	179

we expect firms with higher proprietary costs of disclosure to go public more often post-JOBS to take advantage of the de-risking provisions, and we expect smaller firms to go public post-JOBS to take advantage of the de-burdening provisions.

We measure proprietary costs of disclosure using two variables: R&D-to-sales, which we set to zero for firms with no R&D and to one for firms with R&D greater than sales, and the Herfindahl Index, which Harris (1998), Ali, Klasa, and Yeung (2014), and Dambra, Wasley, and Wu (2013) use to measure proprietary disclosure costs. These empirical proxies are especially relevant in our setting, because theory suggests that competitive costs can deter firms from public issuance (Maksimovic and Pichler, 2001), and research-intensive firms often require external financing from the equity market given their lack of collateral. The two measures are positively correlated (0.2) and both suggest that the biotech/pharma industry has high proprietary costs. Its correlation with R&D is 0.4, and it is one of the 10 most concentrated industries.

Model 1 of Table 5 indicates that, controlling for the differences between pre- and post-JOBS issuers observed in Table 3 but not controlling for proprietary disclosure costs, post-JOBS issuers are significantly more likely to be in the

biotech/pharma industry. Model 3 shows that as we control for proprietary disclosure costs, the biotech/pharma industry coefficient drops by more than half and becomes statistically insignificant, while our measures of proprietary disclosure costs are positively associated with post-JOBS IPOs. In addition, measures of firm size are statistically insignificant (or positive) in all specifications, casting doubt on whether the de-burdening provisions, which lower the fixed costs of regulatory reporting, have a material effect on issuers' going public decision.

Given the drastic shift in the industry distribution of IPOs pre- and post-JOBS, it is important to control for industry-specific market conditions. In particular, without controlling for biotech/pharma industry conditions, we cannot separate our contention that biotech/pharma IPOs have become more popular because of the JOBS Act from the alternative that a hot market drove the post-JOBS IPO increase. Unfortunately, the FF 49 industry classification does not separately identify biotechnology and pharmaceutical companies, which is important given their differential market conditions since the passage of JOBS. Moreover, the Global Industry Classification Standard (GICS), which separately identifies biotech firms, suggests that two other FF 49 industries contain biotech firms. Thus,

we create a separate biotech industry (GICS #3252010) and classify the remainder of FF industry #13 as pharma. We use 50 industry designations: biotech, pharma, and the remaining 48 FF industries, purged of GICS code 325010 (all results are robust to using the FF 49 industries).

Model 4 of Table 5 shows that after controlling for industry returns, the point estimate on the biotech/pharma industry indicator drops to almost zero, while industry returns, the Herfindahl Index, and R&D-to-sales are significant positive predictors of post-JOBS IPO activity.<sup>11</sup> These findings suggest that the post-JOBS spike in biotech/pharma IPO activity is due to both high industry returns and the industry's proprietary nature. Marginal effects suggest that a 1 standard deviation increase in the Herfindahl Index increases the probability of a post-JOBS IPO relative to a pre-JOBS offering by 12%, while a similar increase in industry returns has a 19% effect.

Model 5 shows that the importance of proprietary costs and market returns in determining the mix of pre- and post-JOBS IPO issuers remains even after excluding biotech/pharma firms. Notably, none of the three measures for firm size provides any evidence that smaller firms are more likely to go public post-JOBS, regardless of the model

biotech/pharma firms (Models 1–4) and biotech/pharma firms (Models 5–8).

All models in Table 6 show that firms, whether biotech/pharma or not, are significantly more likely to go public post-JOBS. While including controls for industry economic conditions reduces the post-JOBS coefficient by only 8.25% for non-biotech/pharma (comparing Models 1 and 4), the post-JOBS coefficient estimate for biotech/pharma decreases by approximately 33% (comparing Models 5 and 8). The relatively large role of market conditions in explaining recent IPO activity in the biotech/pharma industry makes sense because the post-JOBS market-to-book ratios in the biotechnology and pharmaceutical industries have been 1.5 and 2 standard deviations, respectively, above their 2000–2011 levels, compared with less than half a standard deviation in other industries.

To use these percentages to estimate the increase in IPO volume due to JOBS, we replicate Table 2 separately for the biotech/pharma industry and other industries (not tabulated). Due to the small sample size and the lack of discernable increase in non-EGC IPO activity, we focus on the increase in IPO activity for EGC eligible issuers only. We compute the quarterly IPO volume effect of the JOBS Act as:

$$\text{Quarterly IPO volume increase} = \frac{(1 - \text{Percentage explained by market}) \times (\Delta \text{EGC IPO volume})}{\text{Number of post-JOBS quarters}} \quad (1)$$

specification. Thus, it does not appear that the types of firms we argue would benefit most from the de-burdening provisions go public more often post-JOBS. Interestingly however, less profitable firms are more likely to conduct IPOs post-JOBS.

Overall, these findings corroborate the conjecture that the JOBS Act's de-risking provisions benefit firms with high proprietary disclosure costs, which is a characteristic of the biotech/pharma industry (Guo, Lev, and Zhou, 2004). However, we have yet to offer direct insight into how much of the recent increase in IPO volume can be attributed to the JOBS Act. We investigate this question in Table 6 by employing a multiple regression in which the dependent variable equals the number of IPOs in an industry-quarter scaled by the number of public firms in Compustat at the end of the previous quarter. The control variables are industry and year-quarter fixed effects, industry returns, industry market-to-book ratios, and GDP growth.<sup>12</sup> Given the abnormal market performance of biotech/pharma in our sample period, we partition our sample between non-

We obtain our estimate of the percentage difference explained by the market from Table 6 via the difference in the post-JOBS coefficient estimate with and without controls for market conditions. The change in EGC IPO volume is obtained by comparing the number of pre- and post-JOBS EGC IPO filings and issuances. We conservatively define the number of post-JOBS quarters as eight, which implicitly assumes that the benefits of the JOBS Act take immediate effect.<sup>13</sup>

There were nine more IPO filings and 11 more issuances by non-biotech/pharma firms in the two years following JOBS compared with the two prior years. Because the coefficient on the post-JOBS variable drops from 0.206 in Column 1 of Table 6, which contains no controls for market conditions, to 0.189 in Column 4 when we control for market conditions, we attribute 8.25%, or  $[1 - (0.189 \div 0.206)]$ , of the post-JOBS increase in non-biotech/pharma IPO volume to improved market conditions. Thus, using Eq. (1), we estimate the IPO increase due to JOBS to be  $[(1 - 8.25\%) \times (10 \text{ IPOs}) \div (8 \text{ post-JOBS quarters})]$  or just over one IPO per quarter in the non-biotech/pharma industries.<sup>14</sup>

Within the biotech/pharma industry, the JOBS Act has had a larger effect. In the two years since the passage of

<sup>11</sup> The market return used for biotech firms is the NYSE Arca Biotechnology Index (BTX), which is an equally weighted index. Because the NYSE Arca Equal Weighted Pharmaceutical Index (DGE) is unavailable before December 2003, we use an equally weighted Center for Research in Securities Prices (CRSP) industry return for pharma. Similarly, we use an equally weighted CRSP index return for all other 48 industries.

<sup>12</sup> Results are similar when including change in industry sales, the average standard deviation of earnings forecasts by industry, or the closed-end fund discount as in Lowry (2003).

<sup>13</sup> The first IPO in our post-JOBS sample occurs on July 18, 2012 by Five Below Inc., over three months after the passage of the JOBS Act.

<sup>14</sup> Dividing the lower bound of the 95% confidence interval on the post-JOBS coefficient of 0.189 in Model 4 of Table 6 by the pre-JOBS average IPO volume yields a similar estimate of a 4.4% increase in non-biotech/pharma IPO activity, amounting to approximately one IPO per quarter.

**Table 6**

Effect of Jumpstart Our Business Startups Act (JOBS Act) on initial public offering (IPO) frequency as percentage of publicly traded firms, by industry.

This table presents ordinary least squares regressions in which the dependent variable equals the number of IPOs in a given industry-quarter scaled by the number of firms in the industry in Compustat (in percentage terms) at the beginning of the quarter. The sample period begins in January 2001 and ends in April 2014. *Post-JOBS* is an indicator variable equal to one for transactions after June 2012. We use 50 industry designations that comprise the Fama and French 49 industries, excluding biotechnology firms with Global Industry Classification Standard (GICS) code 352010, plus a separate designation for the biotech industry. *Biotech* consists of firms with GICS code 352010, and *Pharma* consists of firms in Fama and French 49 industry number 13 (pharmaceutical products), excluding firms with GICS code 352010. Models 1–4 exclude all biotech and pharmaceutical firms, and Models 5–8 present an identical analysis including only biotechnology and pharmaceutical firms. *12-month industry return* is measured over the 12 months ending the first day of the IPO quarter and is given in decimal form. For biotech firms, we use the NYSE Arca Biotechnology Index returns to calculate *12-month industry return*. For all other industries, we use equal-weighted Center for Research in Securities Prices returns. *Industry MTB* is the median market-to-book ratio in the industry at the most recent quarter-end. *US GDP growth* is the annual percentage change in gross domestic product at the most recent quarter end. Finally, we include industry fixed effects and in Models 4 and 8 interact them with *Industry return* and *Industry MTB*. The sample excludes financial industries (including real estate investment trusts), shell companies, limited partnerships, unit offerings, non-original IPOs, and IPOs raising less than \$5 million. Standard errors are clustered by time and are presented below the coefficients. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Parameter	Excluding biotech/pharma				Only biotech and pharma			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
<i>Post-JOBS</i>	0.206** [0.102]	0.182* [0.095]	0.166* [0.087]	0.189** [0.084]	1.036*** [0.404]	0.846** [0.360]	0.729** [0.302]	0.692* [0.355]
<i>12-month industry return</i>		0.284*** [0.101]	0.147 [0.108]			1.067*** [0.187]	0.598** [0.257]	
<i>Industry MTB</i>			0.190*** [0.069]				0.266* [0.136]	
<i>US GDP growth</i>			2.521 [1.511]	0.046 [1.724]			7.876* [4.300]	11.295** [4.280]
Industry fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Industry fixed effects × <i>Industry MTB</i>	N	N	N	Y	N	N	N	Y
Industry fixed effects × <i>Industry return</i>	N	N	N	Y	N	N	N	Y
Adjusted R <sup>2</sup>	0.045	0.055	0.065	0.133	0.410	0.486	0.521	0.641
Number of observations	2,332	2,332	2,332	2,332	106	106	106	106

JOBS, there were approximately 50 more biotech/pharma IPOs than in the two years before JOBS. Comparing the coefficients on the post-JOBS variable in Models 5 and 8 suggests that favorable market conditions explain 33% of the post-JOBS increase in biotech/pharma IPO activity. There were 56 more IPO filings and 43 more issuances by biotech/pharma firms in the two years following JOBS compared with the two prior years. Plugging this average increase of 50 biotech/pharma IPOs back into Eq. (1) translates to an increase of approximately four biotech/pharma IPOs per quarter.

Overall, the evidence suggests that the JOBS Act has increased IPO volume. After controlling for market conditions, we find a residual increase of approximately just over one non-biotech/pharma and four biotech/pharma IPOs per quarter. Thus, our evidence suggests that the JOBS Act has increased IPO volume by 21 IPOs per year since its passage, which represents a 25% increase over US IPO volume between 2001 and 2011. Importantly, the short time period and sustained bull market since the passage of JOBS makes these estimates preliminary. For instance, our estimated effect of JOBS could be overstated if we have not completely controlled for market conditions or understated if the act's full effects occur with a delay.

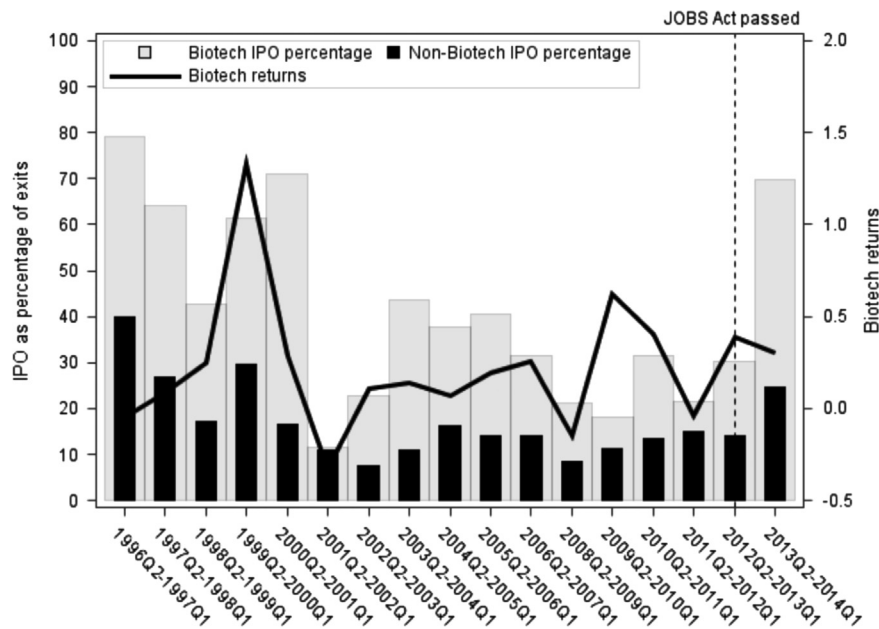
#### 5.4. The choice between IPO and acquisition

Firms choosing to do an IPO could have alternatively chosen to sell themselves via a trade sale. Although

venture capitalists have historically earned their biggest payoffs on portfolio companies that go public (Smith, Pedace, and Sathe, 2011), most venture capital exits since the Internet bubble have been through trade sales. As shown by Gao, Ritter, and Zhu (2013), between 1990 and 2000, exits via IPOs and trade sales were both common, although the percentage of exits via trade sale was rising. However, from 2001 to 2012, Gao, Ritter, and Zhu (2013) show that IPO exits have become uncommon while trade sale exits have become the norm.

Thus, we next examine the choice between acquisition and IPO both before and after the JOBS Act. This test is particularly applicable to the biotech/pharma industry because the vast majority of these firms are venture-backed and thus seeking either an IPO or acquisition exit (see, for example, Lerner, 1994). This makes acquisition activity an important benchmark for IPO volume as it controls for the number of exit-ready firms. If the JOBS Act affects IPO volume, it should also affect the ratio of IPOs to acquisitions, particularly in the biotech/pharma industry.

We test this conjecture separately for biotech/pharma and other industries using data from the Thomson Reuters SDC Platinum M&A database to identify acquisitions and IPOs. As SDC does not provide Global Industry Classification Standard codes, we cannot separately identify biotechnology firms from pharmaceutical firms. Instead, we use the North American Industry Classification System (NAICS) to identify the combined biotech/pharma industry, as this classification is more accurate than SIC codes. Specifically,



**Fig. 2.** Initial public offering (IPO) activity compared with acquisition activity for biotechnology industry. On the left y-axis is the annual number of IPOs as a percentage of annual IPOs and acquisitions [i.e.,  $\text{IPOs} \div (\text{IPOs} + \text{M\&As})$ ], with an emphasis on the biotechnology/pharmaceutical industry (North American Industry Classification System codes 325412, 325413, 325414, and 541711). The gray bars represent the ratio in the biotech/pharma industry and the black bars all other industries. On the right y-axis, the solid black line plots the annual returns to the biotech market index [ticker: NYSE Arca Biotechnology Index (BTK)]. Financial industries (including real estate investment trusts), limited partnerships, non-US IPOs, and transactions under \$5 million are excluded. The acquisitions sample further excludes non-US targets, purchases of less than 20% of a target's shares, and transactions resulting in the acquirer owning less than 50% of the target. M&As is mergers and acquisitions.

we create 50 industries by separating the biotech/pharma industry, defined as NAICS codes 325412, 325413, 325414, and 541711, from the other FF 49 industries.

Fig. 2 plots the percentage of exits via IPO separately for biotech/pharma companies and all other industries. Between 2001 and 2012, 28% of biotech/pharma exits are by IPO. Since the JOBS Act, the percentage of IPO exits has returned to pre-2001 levels for all industries, although the effect is more dramatic for the biotech/pharma industry in which 70% of exits are by IPO.<sup>15</sup> However, Fig. 2 also demonstrates the need to control for biotech industry returns, as the NYSE Arca Biotechnology Index returned approximately 35% per year in the two years post-JOBS compared with 16% annual returns for the S&P 500.

To investigate the relative importance of the JOBS Act and industry conditions in this trend toward more IPO exits, we regress an indicator for an IPO (relative to an acquisition) on a post-JOBS indicator, industry returns, industry market-to-book ratios, and GDP growth in Table 7.<sup>16</sup> This multiple regression allows us to separately quantify the effect of the JOBS Act and market conditions

on the choice of exit. Because of the dramatic differences in exit strategy for the biotech/pharma industry, we separately measure the effects for biotech/pharma firms in Models 4–6 and for all other firms in Models 1–3.

Models 1–3 show that non-biotech/pharma firms are about 7% more likely to go public versus be acquired since passage of the JOBS Act. As in Table 6, controlling for industry economic conditions has little effect on this estimate. Models 4–6 show that the biotech/pharma industry is over 20% more likely to exit via IPO as opposed to acquisition post-JOBS. As suggested by Fig. 2, the magnitude of the effect for biotech/pharma is larger (in absolute terms) than in the other industries and suggests that, post-JOBS, IPOs are approximately twice as likely as acquisitions. Again, similar to Table 6, the results suggest that market conditions explain a portion, but not all, of the post-JOBS increase in biotech/pharma IPO activity.

## 6. JOBS Act provisions

The results thus far demonstrate that the post-JOBS increase in IPO volume is concentrated in firms with high proprietary disclosure costs, including those in the biotech/pharma industry. We now investigate whether such firms are more likely to take advantage of the JOBS Act provisions. If the JOBS Act drives the recent increase in IPO volume, then we would expect these firms with high proprietary disclosure costs to more frequently select the act's provisions. In Section 3, we conjecture that firms with high proprietary disclosure costs would be most likely to select the act's de-risking provisions. Panel A of Table 8

<sup>15</sup> Fig. 2 includes both venture backed and non-venture backed firms, as the SDC M&A database does not provide a reliable indicator variable for venture funding. However, the 2014 National Venture Capital Association Yearbook provides historical data on exits for venture-backed firms, and, using their data, we find similar IPO exit rates for biotech firms, with 27% of biotech IPO exits for 2001–2012 and 66% for 2013.

<sup>16</sup> Results are similar using industry-quarter observations in which the dependent variable equals IPOs scaled by IPOs plus acquisitions. In this analysis we exclude industry-quarters with no IPOs or acquisitions.

**Table 7**

Effect of Jumpstart Our Business Startups Act (JOBS Act) on choice between initial public offering (IPO) and acquisition.

This table presents ordinary least squares regressions in which the dependent variable equals one for IPOs and zero for mergers and acquisitions. The sample period begins in January 2001 and ends in April 2014. Because Global Industry Classification Standard (GICS) codes are not available for acquired firms, we cannot separately identify biotechnology and pharmaceutical firms. The biotech/pharma industry is thus defined by the following four North American Industry Classification System (NAICS) codes: 325412, 325413, 325414, and 541711. The full sample consists of 50 industries, which includes the biotech/pharma industry and the Fama and French 49 industries excluding firms with NAICS codes 325412, 325413, 325414, and 541711. *Post-JOBS* is an indicator variable equal to one for transactions after June 2012. *12-month industry return* is a 12-month equal-weighted Center for Research in Securities Prices industry return, ending the quarter before exit and is in decimal form. *Industry MTB* is the median market-to-book ratio in the industry at the most recent quarter-end before exit. *US GDP growth* is the annual percentage change in US gross domestic product ending the quarter before exit. Financial industries (including real estate investment trusts), limited partnerships, non-US IPOs, and transactions under \$5 million are excluded. The acquisitions sample further excludes non-US targets, purchases of less than 20% of a target's shares, and transactions resulting in the acquirer owning less than 50% of the target. Standard errors, presented below the coefficients, are clustered by time and industry (Models 4–6 include a single industry and thus are heteroskedasticity robust standard errors clustered by time). \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively.

Parameter	Excluding biotech/pharma			Only biotech/pharma		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Post-JOBS</i>	0.072*** [0.016]	0.070*** [0.016]	0.068*** [0.015]	0.287*** [0.083]	0.268*** [0.080]	0.210** [0.081]
<i>12-month industry returns</i>		0.055*** [0.012]	0.040*** [0.014]		0.133 [0.087]	0.031 [0.078]
<i>Industry MTB</i>			0.020* [0.011]			0.148*** [0.049]
<i>US GDP growth</i>			0.192 [0.308]			-0.104 [1.792]
Industry fixed effects	Y	Y	Y	N	N	N
Intercept	Y	Y	Y	Y	Y	Y
Adjusted R <sup>2</sup>	0.029	0.032	0.033	0.059	0.082	0.111
Number observations	8,183	8,183	8,183	575	575	575

reports the proportion of firms that select each JOBS Act provision (see Section 2 or Table A1 for provision details).

The first column of Panel A shows that for the full sample the de-risking provisions are most popular. More than two-thirds of firms engage their underwriter to test-the-waters, and 90% of firms elect to file their initial SEC registration statements confidentially. This is consistent with firms valuing delayed disclosure to the market and potential competitors until they are more certain that the IPO would be successful.

Of the de-burdening provisions, the most popular is reduced financial statement disclosure, which over half of issuers utilize. For the opt-out provisions, issuers typically leave the opt-out option open but do not explicitly commit to opting-out. Thus, our measures of issuers availing themselves of the opt-out provisions should be considered lower bounds. The one exception is the future accounting rule change opt-out, which over 85% of issuers elect to not take advantage of. Perhaps the most economically relevant opt-out provision is the auditor attestation opt-out, which 46% of issuers state they intend to use. Only 36% of issuers explicitly opt-out of Say-on-Pay voting, 47% elect to reduce compensation disclosure, and 18% explicitly opt-out of PCAOB rule changes.

To investigate whether small firms or those with high proprietary disclosure costs are more likely to benefit from JOBS provisions, in Table 8 we partition provision choice by pre-JOBS revenue quartiles (Panel A), R&D expenditure (Panel B), and whether or not the issuer is in the biotech/pharma industry (Panel C). Panels A and B of Table 8 show that when there is a significant difference by firm size or research intensity in the frequency with which firms select JOBS Act provisions, small and research intensive firms

select more provisions. In particular, both small and research-intensive firms are significantly more likely to take advantage of pre-IPO testing-the-waters. Small firms are also more likely to elect de-burdening provisions to reduce financial statement disclosure and opt-out of future PCAOB rulings.

Comparing biotech/pharma with all other firms in Panel C, we find that 90% of biotech/pharma firms elect testing-the-waters versus 55% of non-biotech/pharma firms. This is consistent with the de-risking provisions mitigating the high proprietary disclosure costs that biotechnology and pharmaceutical companies incur (Guo, Lev, and Zhou, 2004). Biotech/pharma firms are also more likely to elect the de-burdening provisions, including reduced financial statement disclosure, auditor attestation opt-outs, and PCAOB rulings opt-out.

Overall, the descriptive evidence shows that the de-risking provisions are the most popular JOBS Act provisions. The de-risking provisions are particularly attractive to biotech/pharma issuers, which we argue have high proprietary costs of disclosure. Notably, the post-JOBS increase in IPO issuance is also concentrated in these firms, suggesting that this increase can be attributed to the JOBS Act's de-risking provisions. Although some of the de-burdening provisions are also popular, there are at least two reasons that it is unlikely that the effects on IPO activity we observe since the JOBS Act can be ascribed to the de-burdening provisions. First, we find only mixed evidence that the types of firms more likely to go public post-JOBS routinely select the de-burdening provisions. In fact, to the extent that financial statements reveal proprietary information, the most commonly selected de-burdening provision, reduced financial statement disclosure, also de-risks the IPO process. Second,

**Table 8**

Jumpstart Our Business Startups Act (JOBS Act) provisions.

This table is restricted to the 156 eligible post-JOBS Act issuers and provides the percentage of emerging growth companies that choose each JOBS provision. The sample contains US firms that both filed and issued initial public offerings (IPOs) during the post-JOBS period of April 2012 through March 2014. See [Table A1](#) for a detailed description of JOBS Act provisions. In Panel A, size partitions are based on pre-JOBS revenue quartiles for IPO firms that file and issue an IPO in the two years prior to JOBS Act (revenues are inflation adjusted to January 2010). Panel B partitions on whether firm has research and development (R&D) expense in fiscal year prior to IPO. Panel C partitions firms by a *biotech/pharma indicator*, which equals one for biotech firms (with Global Industry Classification Standard Code 352010) or other pharmaceutical firms (those in Fama and French 49 industry number 13). The sample excludes financial and regulated industries, unit offerings, non-original IPOs, IPOs by non-US companies, and IPOs with proceeds below \$5 million. In Panel A, \*, \*\*, and \*\*\* indicate a statistically significant coefficient in a probit with an indicator variable for the smallest revenue quartile as the regressor variable and the JOBS provision indicator variable as the regressand at the 10%, 5%, and 1% level, respectively. Standard errors are clustered by our 50 industry designations (Fama and French 49 plus biotech). In Panel B, \*, \*\*, and \*\*\* indicate a statistically significant coefficient in a probit with an indicator variable for firms that have positive R&D expense as the regressor variable and the JOBS provision indicator variable as the regressand at the 10%, 5%, and 1% level, respectively. Standard errors are clustered by our 50 industry designations (Fama and French 49 plus biotech). In Panel C, \*, \*\*, and \*\*\* indicate a statistically significant difference in means at the 10%, 5%, and 1% level, respectively, assuming independence.

Panel A: JOBS Act provisions by revenue quartiles						
JOBS Act provision	Full sample mean	Top three quartiles		Smallest quartile		Difference in means
		Number of firms	Mean	Number of firms	Mean	
De-risking provisions						
<i>Testing-the-waters</i>	67.9%	82	57.3%	73	79.7%	22.4%***
<i>Confidential filings</i>	89.7%	82	90.2%	73	89.2%	–1.1%
De-burdening provisions						
<i>Reduced statement disclosure</i>	53.2%	74	29.7%	65	80.0%	50.3%***
<i>Reduced compensation disclosure</i>	47.4%	82	46.3%	73	48.6%	2.3%
<i>Auditor attestation opt-out</i>	45.5%	82	40.2%	73	51.3%	11.1%
<i>Future accounting standards opt-out</i>	13.5%	82	10.9%	73	16.2%	5.2%
<i>PCAOB rulings opt-out</i>	17.9%	82	12.2%	73	24.3%	12.1%**
<i>Executive compensation vote opt-outs</i>	35.8%	82	36.6%	73	35.1%	–1.5%
Panel B: JOBS Act provisions by R&D expense						
JOBS Act provision	No R&D expense		R&D > 0		Difference in means	
	Number of firms	Mean	Number of firms	Mean		
De-risking provisions						
<i>Testing-the-waters</i>	46	54.3%	110	73.6%	19.3%**	
<i>Confidential filings</i>	46	91.3%	110	89.1%	–2.2%	
De-burdening provisions						
<i>Reduced financial statement disclosure</i>	37	43.2%	102	56.9%	13.7%	
<i>Reduced compensation disclosure</i>	46	52.2%	110	45.4%	–6.8%	
<i>Auditor attestation opt-out</i>	46	37.0%	110	49.1%	12.1%	
<i>Future accounting standards opt-out</i>	46	15.2%	110	12.7%	–2.5%	
<i>PCAOB rulings opt-out</i>	46	10.9%	110	20.9%	10.0%	
<i>Executive compensation vote opt-outs</i>	46	30.4%	110	38.2%	7.8%	
Panel C: JOBS Act provisions by biotech/pharma industry indicator						
JOBS Act provision	Excluding biotech/pharma		Only biotech/pharma		Difference in means	
	Number of firms	Mean	Number of firms	Mean		
De-risking provisions						
<i>Testing-the-waters</i>	97	54.6%	59	89.8%	35.2%***	
<i>Confidential filings</i>	97	88.7%	59	91.5%	2.9%	
De-burdening provisions						
<i>Reduced financial statement disclosure</i>	85	36.5%	54	79.6%	43.2%***	
<i>Reduced compensation disclosure</i>	97	44.3%	59	52.5%	8.2%	
<i>Auditor attestation opt-out</i>	97	38.1%	59	57.6%	19.5%**	
<i>Future accounting standards opt-out</i>	97	15.5%	59	10.2%	–5.3%	
<i>PCAOB rulings opt-out</i>	97	12.4%	59	27.1%	14.7%**	
<i>Executive compensation vote opt-outs</i>	97	34.0%	59	39.0%	5.0%	

smaller reporting companies (SRCs; firms with public floats less than \$75 million) have had access to most of the de-burdening provisions since 2008. Nonetheless, even among SRCs we observe a post-JOBS increase in IPO frequency. Post-JOBS, 10 issuers or 14% of the firms in the lowest revenue

quartile have SRC status, compared with only four SRC IPOs in the two years prior to JOBS. Thus, our evidence is consistent with [Gao, Ritter, and Zhu \(2013\)](#), [Ritter \(2013\)](#), and [Doidge, Karolyi, and Stulz \(2013\)](#), who conjecture that the de-burdening provisions are unlikely to spur IPO activity.



**Table 9**

Analyst coverage, emerging growth company (EGC)-eligible versus EGC-ineligible firms.

This table displays analyst coverage by firm for all initial public offerings (IPOs) issued from April 2010 to December 2013. We utilize the revenue cutoff of \$1 billion to determine whether firms would be eligible for EGC treatment. The pre-Jumpstart Our Business Startups Act (JOBS Act) period covers firms that both file an IPO registration and issue an IPO in the two years prior to JOBS (from 4/1/2010 through 3/31/2012). Similarly, the post-JOBS period covers firms that both file and issue an IPO in the two years post-JOBS (from 4/1/2012 through 3/31/2014). Panel A provides the average number of sell-side equity analysts following the issuing firms in the 60 days after the IPO. Panel B provides the mean and median number of days from IPO to coverage initiation for both EGC-eligible and EGC-ineligible firms. The sample excludes financial and regulated industries, unit offerings, non-original IPOs, IPOs by non-US companies, and IPOs with proceeds below \$5 million. \*, \*\*, and \*\*\* indicate significant differences between the pre- and post-JOBS means at the 10%, 5%, and 1% level, respectively.

Panel A: Mean number of analysts for pre- and post-JOBS IPOs							
EGC eligibility	Pre-JOBS		Post-JOBS		<i>t</i> -statistic for difference in means		
	Number of firms	Mean number of analysts	Number of firms	Mean number of analysts			
EGC-eligible	102	4.8	110	5.2	0.75		
EGC-ineligible	20	9.4	21	10.3	0.43		

Panel B: Time to first analyst recommendation, pre- and post-JOBS IPOs							
EGC eligibility	Pre-JOBS			Post-JOBS			<i>t</i> -statistic for difference in means
	Number of analysts	Mean coverage initiation days	Median coverage initiation days	Number of analysts	Mean coverage initiation days	Median coverage initiation days	
EGC-eligible	487	40.7	41	570	26.7	26	29.10***
EGC-ineligible	185	37.7	41	216	39.1	41	–1.40

In summary, our results suggest that the same firms driving the post-JOBS IPO volume increase, biotech/pharma firms and other firms with higher proprietary disclosure costs, also most frequently avail themselves of the JOBS Act provisions. In particular, such issuers are more likely to take advantage of the de-risking provisions allowing for pre-IPO communications.

### 6.1. The JOBS Act and analyst coverage

In addition to the changes in SEC reporting requirements, the JOBS Act also introduces new regulations on analyst coverage. Specifically, it eliminates the requirement that affiliated analysts wait 40 calendar days after the IPO to initiate coverage and allows affiliated sell-side analysts to participate in communications with internal sales personnel and company management (Latham & Watkins LLP, 2014).<sup>17</sup>

Panel A of Table 9 provides no evidence that these changes have affected the amount of analyst coverage. However, Panel B shows that, on average, analyst coverage on EGC-eligible firms begins 15 days earlier after the JOBS Act. Notably, analysts of EGC-eligible firms typically wait until 25 days after the IPO to initiate coverage, which had been the pre-2003 requirement for affiliated analysts, even though the JOBS Act allows them to issue reports earlier. Overall, we find limited evidence that the JOBS Act affects analyst coverage and consider it an unlikely explanation for the recent increase in IPO volume.

<sup>17</sup> Company management must be present in conversations with sales personnel, and underwriters must be present in conversations with company management. In addition, regulators still prevent sell-side analysts from participating in marketing- or roadshow-related activities.

The findings in Table 9 are consistent with the predictions of Gao, Ritter, and Zhu (2013) and Doidge, Karolyi, and Stulz (2013) that changes in analyst regulations would have little effect on IPO activity. Interestingly, these findings contrast with survey evidence predicting that these changes in equity analyst regulation would be a main benefit of the JOBS Act (Ernst & Young, 2013b). Perhaps additional benefits of this regulation would become clear as it becomes empirically feasible to test the effect of the regulatory changes on outcomes such as analyst forecast accuracy or bias.

## 7. Conclusion

We find a significant increase in US IPO activity since the passage of the JOBS Act in April 2012, especially amongst small firms. Although IPO volume remains well below its pre-2001 levels, from April 2013 to March 2014, IPO volume and the proportion of small firm issuers was the largest since 2000. A portion of this increase can be attributed to high biotechnology/pharmaceutical valuations, but we find that the majority of the increase is not explained by nationwide or industry-specific market conditions. This residual increase in post-JOBS IPO activity, which we attribute to the act itself, amounts to approximately four biotech/pharma IPOs and just over one non-biotech/pharma IPO per quarter. Thus, our evidence suggests that the JOBS Act has increased IPO volume by 21 IPOs per year since its passage, which represents a 25% increase over 2001–2011 levels, although the short time period and sustained bull market since the passage of JOBS makes these estimates preliminary. For instance, our estimated effect of JOBS could be overstated if we have not completely controlled for market conditions or understated if the act's full effects occur with a delay.

The JOBS Act has most benefited firms with high proprietary costs of disclosure, as measured by R&D-to-sales and industry concentration. For these firms, the de-risking provisions of the JOBS Act, allowing confidential IPO filing and the ability to test-the-waters with qualified investors before the road show, are particularly attractive. The role of the de-burdening provisions of the JOBS Act, which reduce the disclosure and accounting costs associated with being public, are less clear. Although small firms are more likely to avail themselves of these provisions, our evidence suggests that they are adopted as a matter of convenience and are an unlikely cause for the recent surge in IPO activity.

Although our evidence suggests that the JOBS Act has been successful in encouraging emerging high growth companies to go public, the long-term outlook for these firms is uncertain. The average small firm going public since JOBS is not profitable and, for more than a third of these issuers, auditors have issued an audit opinion expressing doubt as to the firm's ability to continue as a going concern. Noting that small firms are increasingly unprofitable, [Gao, Ritter, and Zhu \(2013\)](#) contend that many small firms can create greater

operating profits by being acquired instead of relying on organic growth. [Gao, Ritter, and Zhu \(2013\)](#) propose the economies of scope hypothesis, which contends that the importance of getting big fast has increased over time, as the speed of technological innovation has increased. As shown by [Zingales \(1995\)](#) and [Mello and Parsons \(1998\)](#), a strategy of completing an IPO as the first stage in an eventual sale can maximize firm value. Thus, while it appears the JOBS Act has helped to improve access to the public market for some startups, going public could just be an intermediate step toward an eventual sale. This could be particularly true for biotech firms in which the business model involves a life cycle that begins with venture capital funding and often ends with an eventual sale to a big pharmaceutical company. Whether post-JOBS IPO issuers remain as stand-alone firms or pursue an acquisition strategy, as suggested by the economies of scope hypothesis, is a topic for future research.

## Appendix A

See [Table A1](#).

**Table A1**

Jumpstart Our Business Startups Act (JOBS Act) provisions under the “IPO on-ramp” for emerging growth companies (EGCs).

The information in the table is derived from *JOBS Act Quick Start*, Morrison & Foerster LLP and *JOBS Act*, Goodwin Procter LLP; and *The JOBS Act: 18 months later*, Ernst & Young, November 2013.

Provision	Pre-JOBS	Post-JOBS available to EGCs
De-risking provisions [affecting pre-initial public offering (IPO) communications]		
Confidential filing	No confidential filing for US issuers.	Emerging growth companies can submit draft IPO registration statements to the Securities and Exchange Commission (SEC) for confidential review (to go public, registration statements and any amendments must be publicly filed with SEC no later than 21 days before road show).
Testing-the-waters	Written and oral communications regarding the offering prior to filing registration statement generally prohibited. During offering, written communications other than prospectus generally prohibited.	EGCS, either before or after filing a registration statement, could test-the-waters by engaging in oral or written communications with qualified institutional buyers and individual accredited investors to determine interest in an offering.
De-burdening provisions (providing scaled disclosure and opt-outs of previous or future regulations)		
Reduced financial statement disclosure	Three years of audited financial statements in IPO registration statement. Five years of selected financial data in IPO registration statement, subsequent registration statements and periodic reports.	Two years of audited financial statements in IPO registration statement. Two years of selected financial data in IPO registration statement. Selected financial data in subsequent registration statements limited to earlier audited period presented in IPO registration statement.
Reduced compensation disclosure	Compensation, discussion, and analysis section and compensation disclosure for five named executive officers in IPO registration statement and subsequent annual reports.	No compensation, discussion, and analysis section. Compensation disclosure for three named executive officers in IPO registration statement and subsequent annual reports.
Auditor attestation opt-out	Management assessment and auditor attestation of internal control over financial reporting beginning with second 10-K following IPO.	Only management assessment of internal control over financial reporting beginning with second 10-K following IPO.
Future accounting standards opt-out	Must comply with applicable new or revised financial accounting standards.	Not required to comply with any new or revised financial accounting standards (cannot selectively comply).
Public Company Accounting Oversight Board (PCAOB) rulings opt-out	PCAOB considering requiring mandatory audit firm rotation and auditor discussion and analysis.	Exempt from mandatory audit firm rotation and auditor discussion and analysis. Future PCAOB rules apply only if specifically determined by SEC.
Executive compensation vote opt-outs	Must hold nonbinding advisory shareholder votes on executive compensation (Say-on-Pay, Say-on-Frequency, or Say-on-Golden Parachute vote required by the Dodd-Frank Wall Street Reform and Consumer Protection Act and SEC rules).	Exempt from holding nonbinding advisory shareholder votes on executive compensation (specifically, Say-on-Pay, Say-on-Frequency, or Say-on-Golden Parachute vote).

**Table B1**

Descriptive statistics for stock markets used in difference-in-differences regressions.

This table reports descriptive statistics for the US and the five other nations with the largest stock exchanges: Australia, Canada, Hong Kong, Japan, and the United Kingdom from the first quarter of 2001 through the first quarter of 2014. *IPO proceeds* is the US dollar amount of proceeds raised via initial public offerings (IPOs) in 2010 millions of US dollars. *IPO/public firms* is the number of nation-quarter IPOs scaled by the number of domestically listed public firms (multiplied by one hundred). *IPO proceeds/total market capitalization* is IPO proceeds scaled by the market value of equity (multiplied by one hundred) in a given nation-quarter, where the market value of equity is obtained from the World Development Indicators database as of the end of the most recent calendar year (we use 2012 numbers for 2013 and the first quarter of 2014 because 2013 data remain incomplete). *Country MTB* is the average of the Fama and French industry median market-to-book ratios at the beginning of a given nation/quarter, as in [Doidge, Karolyi, and Stulz \(2013\)](#). *Lag stock returns* is the monthly compounded returns for a given nation in the year prior to the beginning of the quarter (in decimal form). *GDP growth* is the annual percent change in gross domestic product ending at the end of the most recent calendar year (although 2012 figures are used for the first quarter of 2014). The sample excludes financial industries (including real estate investment trusts), shell companies, limited partnerships, unit offerings, non-original IPOs, foreign IPOs, and IPOs raising less than \$5 million.

Country	By issuer			By nation-quarter					
	IPO proceeds (millions of US dollars)			IPOs/public firms (percent)			IPO proceeds/total market capitalization (percent)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
Australia	474	70.86	11.92	53	0.57	0.43	53	0.06	0.03
Canada	312	78.72	45.06	53	0.19	0.14	53	0.04	0.03
Hong Kong	182	130.92	73.69	53	0.31	0.30	53	0.05	0.03
Japan	804	46.83	14.98	53	0.50	0.39	53	0.02	0.01
United Kingdom	499	94.80	22.79	53	0.40	0.26	53	0.03	0.01
United States	1242	167.40	106.20	53	0.47	0.48	53	0.02	0.02

Country	By nation-quarter								
	Lag stock returns			Country MTB			GDP growth		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
Australia	53	0.15	0.18	53	1.44	1.34	53	0.03	0.03
Canada	53	0.11	0.12	53	1.33	1.28	53	0.02	0.03
Hong Kong	53	0.11	0.15	53	1.27	1.21	53	0.04	0.05
Japan	53	0.03	0.03	53	1.04	0.99	53	0.01	0.02
United Kingdom	53	0.07	0.12	53	1.45	1.40	53	0.03	0.02
United States	53	0.06	0.10	53	1.60	1.63	53	0.02	0.02

**Table C1**

This table provides explanations of the variables used in Table 3. The source of the variables is given in parentheses. All data from initial public offering (IPO) prospectuses are hand-collected. All variables measured in US dollars are adjusted for inflation and presented in January 2010 dollars.

Variable	Definition [Sources]
<i>Revenue</i>	Non-pro forma revenues in millions in fiscal year prior to IPO. [IPO prospectus]
<i>Assets</i>	Non-pro forma total assets in millions in fiscal quarter prior to IPO. [IPO prospectus]
<i>Net income-to-assets</i>	Non-pro forma net income in the most recent fiscal year prior to IPO divided by Assets. [IPO prospectus]
<i>Operating at loss</i>	Equals one if net income to assets is negative and zero otherwise.
<i>R&amp;D-to-sales</i>	Non-pro forma research and development (R&D) expense in fiscal year prior to IPO divided by revenue. Set to zero if R&D equals zero and one if R&D is greater than revenue. [IPO prospectus]
<i>Cash-to-assets</i>	Non-pro forma cash divided by assets in fiscal quarter prior to IPO. [IPO prospectus]
<i>Debt-to-assets</i>	Non-pro forma debt (the sum of short-term, long-term, and convertible debt) divided by assets in the fiscal quarter prior to the IPO. [IPO prospectus]
<i>Number of employees</i>	Number of employees for most recently reported period before IPO. [IPO prospectus]
<i>Percent reporting top employee with M.D.</i>	Percent of firms reporting top employee in compensation section as having an M.D. degree. [IPO prospectus]
<i>Percent reporting top employee with Ph.D.</i>	Percent of firms reporting top employee in compensation section as having an Ph.D. degree. [IPO prospectus]
<i>Firm age</i>	Number of years between founded date and IPO date. [IPO prospectus]
<i>Smaller reporting company</i>	Indicator variable for smaller reporting company designation (public float less than \$75 million or revenues below \$50 million). [IPO prospectus]
<i>Going concern</i>	Indicator for auditor expressing a going concern opinion. [IPO prospectus]
<i>Venture backed</i>	Indicator for venture backed IPO. [Thomsen Reuters Securities Data Corp. (SDC)]
<i>Big four auditor</i>	Indicator for auditor being PricewaterhouseCoopers (PwC), KPMG, Ernst & Young, or Deloitte. [IPO prospectus]
<i>Board size</i>	Number of board members. [IPO prospectus]
<i>Percent board independent</i>	Percentage of independent board members. [IPO prospectus]
<i>CEO total pay</i>	Chief Executive Officer (CEO) total compensation in fiscal year prior to IPO. [IPO prospectus]
<i>CEO salary</i>	CEO salary compensation in the fiscal year prior to IPO. [IPO prospectus]
<i>CEO equity compensation</i>	CEO equity (stock+options) compensation in the fiscal year prior to IPO. [IPO prospectus]
<i>CEO equity percent</i>	Percent of CEO pay in equity in the fiscal year prior to IPO. [IPO prospectus]
<i>IPO proceeds</i>	IPO proceeds in millions. [SDC]
<i>Number of IPO managers</i>	Number of underwriters for the offering. [SDC]
<i>UR spread-to-proceeds</i>	Underwriter spread paid as a percentage of IPO proceeds. [IPO prospectus]
<i>Accounting fees-to-proceeds</i>	Estimated accounting fees paid as a percentage of IPO proceeds. [IPO prospectus]
<i>Legal fees-to-proceeds</i>	Estimated legal fees paid as a percentage of IPO proceeds. [IPO prospectus]

## Appendix B

See [Table B1](#).

## Appendix C

See [Table C1](#).

## Appendix D. Hand collection of Jumpstart Our Business Startups Act (JOBS Act) provisions

This appendix details the hand-collection process and demonstrates how we classify and identify provision selections of an emerging growth companies under the JOBS Act. The example EGC presented is Chimerix, a biotech company that completed its IPO on April 10, 2013.

### Appendix D1. Hand-collection process

Firms disclose their EGC status on the face of the first registration statement. The first provision we collect is whether the issuer's initial S-1 filing with the Securities and Exchange Commission (SEC) is confidential. We identify

specifically states that the issuer has not engaged the underwriter to conduct TTW, then we code the observations as not electing TTW. If there is no mention of TTW in the underwriter agreement, then we manually inspect the letters from the SEC review process in which the SEC requests TTW documentation. If the firm provides supplemental documentation, we code the observations as electing TTW. Otherwise, we code the observations as not electing TTW.

We hand-collect governance, auditing, accounting exemptions, and the reduced accounting disclosure from the EGC's final registration statement prior to the public offering (e.g., Form 424B). Typically, firms disclose these provisions in the Risk Factors section, Notes to the Financial Statements, or the Manager's Discussion and Analysis. We consider provision elections only when the EGC definitively states it intends to take advantage of a provision. For the reduced financial statement disclosure, we count the number of audited financial statement years in the income statement.

### Appendix D2. Example of EGC source documentation

This illustration below is from the SEC EDGAR database ([Source: www.sec.gov](http://www.sec.gov))

The screenshot shows the SEC EDGAR Search Results page for Chimerix Inc. The page includes the following information:

- Company Information:** CHIMERIX INC CIK#: 0001117480 (see all company filings). SIC: 2834 - PHARMACEUTICAL PREPARATIONS. State location: NC | State of Inc.: DE | Fiscal Year End: 1231 (Assistant Director Office: 1). Business Address: 2505 MERIDIAN PARKWAY, SUITE 340, DURHAM NC 27713, 919.806.1074. Mailing Address: 2505 MERIDIAN PARKWAY, SUITE 340, DURHAM NC 27713.
- Search Filters:** Filter Results: drs. Filing Type: drs. Prior to: (YYYYMMDD) 20130131. Ownership? include exclude only. Limit Results Per Page: 40 Entries.
- Table of Filings:**

Filings	Format	Description	Filing Date	File/Film Number
DRS	<a href="#">Documents</a>	[Cover]Draft Registration Statement Acc-no: 0001144204-13-004659 (33 Act) Size: 11 MB	2013-01-30	377-00100 13556964

confidential filings in two ways: (1) IPOs filed after October 1, 2012, confidentially file using Form DRS and (2) prior to October 1, 2012, an EGC would attach a Form S-1 with "Confidential Filing" on its title page to its first public registration statement.

Most EGCs disclose whether they authorize their underwriter to conduct testing-the-waters meetings in the underwriting agreement, which firms attach to Form S-1/A. If the agreement engages the underwriter to conduct TTW, then we code the observation as electing TTW. If the agreement

Form DRS is the form provided by the SEC to engage in a confidential filing. It is publicly available once the firm publicly issues its first S-1.

The following is an excerpt from the Underwriting Agreement ([Source: Exhibit 1.1 to Form S-1/A on March 27, 2013](#)).

(oo) From the time of initial confidential submission of the Registration Statement to the Commission (or, if earlier, the first date on which the Company engaged directly or through any person authorized to act on its behalf in any Testing-the-Waters Communication) through the date hereof, the

Company has been and is an “emerging growth company,” as defined in Section 2(a) of the Securities Act (an “Emerging Growth Company”). “Testing-the-Waters Communication” means any oral or written communication with potential investors undertaken in reliance on Section 5(d) of the Securities Act.

(pp) The Company (i) has not alone engaged in any Testing-the-Waters Communication, except as disclosed to the Representatives, and (ii) has not authorized anyone other than the Representatives to engage in Testing-the-Waters Communications. The Company reconfirms that the Representatives have been authorized to act on its behalf in undertaking Testing-the-Waters Communications. The Company has not distributed any Written Testing-the-Waters Communications other than those listed on Schedule III hereto. “Written Testing-the-Waters Communication” means any Testing-the-Waters Communication that is a written communication within the meaning of Rule 405 under the Securities Act.

The following is an excerpt from Management's Discussion & Analysis (Source: Form 424B on April 11, 2013).

#### JOBS Act

On April 5, 2012, the JOBS Act was enacted. Section 107 of the JOBS Act provides that an “emerging growth company” can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. In other words, an “emerging growth company” can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for other public companies.

We are in the process of evaluating the benefits of relying on other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, as an “emerging growth company,” we intend to rely on certain of these exemptions, including without limitation, (i) providing an auditor's attestation report on our system of internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act, and (ii) complying with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, known as the auditor discussion and analysis.

The following is an excerpt from audited financial statements (Source: Form 424B on April 11, 2013).

#### Chimerix, Inc. Statements of Operations and Comprehensive Loss (in thousands, except per share data)

	Year Ended December 31,		
	2010	2011	2012
Revenues:			
Collaboration and licensing revenue	\$ -	\$ 55	\$ 17,445
Contract and grant revenue	1,715	12,046	16,275
Total revenues	1,715	12,101	33,720

Per inspection of the income statement, Chimerix reported three audited financial statement years and did not appear to elect the opt-out.

For Chimerix, we classify the firm as (1) electing a confidential filing, (2) electing TTW, (3) electing the audit attestation opt-out, (4) electing the PCAOB rulings opt-out, (5) not electing reduced financial statement disclosure, and (6) not electing the reduced future accounting standards exemption. The registration statement does not discuss opting out of (7) reduced compensation disclosure or (8) Say-on-Pay, so we treat these provisions as nonelections.

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