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JOBS Act 2017 and Corporate Governance on IPOs Underpricing.

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JOBS Act 2017 and Corporate Governance on IPOs Underpricing

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Abstract

This study examines the impact of Jumpstart Our Business Startups (JOBS Act) of 2017 and corporate governance on underpricing of IPO firms in shorter and longer horizon. A significant outcome of this new practice is that the revised confidential submission process is available to all public issuers, including non-Emerging Growth Companies. The nonpublic review process existed for EGCs under JOBS Act 2012 remains unchanged. For our analysis, we used a dataset of 787 US IPO firms for the period January 2013 to October 2020. Our findings suggest that there is not statistically significant higher underpricing in the post-JOBS Act period for non-EGCs, while for smaller firms (EGCs) we found significant higher information uncertainty in the period after the revised practice of 2017. Furthermore, we detected that the difference of underpricing of non-EGCs between the pre- and post- JOBS Act period is not statistically significantly higher than that of EGCs. Finally, from the regression analysis, for the board-related corporate governance mechanism and CEO compensation, we found a statistically significant association between Independence as well as Duality and underpricing in all windows.

Keywords: IPO underpricing, JOBS Act 2017, corporate governance, non-EGCs.

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Βεβαιούται ότι η μεταπτυχιακή φοιτήτρια Στυλιανή Λάσκου (Αρ. Ταυτότητας) ολοκλήρωσε με επιτυχία την προφορική υποστήριξη της διπλωματικής της μελέτης σε εξέταση που έλαβε χώραν ενώπιον διμελούς εξεταστικής επιτροπής, στις 21 Δεκεμβρίου 2020. Παρέδωσε την διπλωματική της μελέτη στις 19 Ιανουαρίου 2021.

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Table of Contents

1. Introduction	1
2. Institutional Setting and Literature Review	3
2.1. Institutional Framework	3
2.2. Related Literature	5
2.3. Hypotheses Development.....	9
3. Research Design	11
3.1. Methodology	11
3.1.1. Empirical Model	11
3.1.2. Measurement of Variables	12
3.2. Sample and Dataset	13
3.3. Econometric tests	15
3.3.1. Outliers Test.....	15
3.3.2. Multicollinearity Test.....	15
3.3.3. Heteroskedasticity Test.....	16
3.3.4. Normality Test	16
4. Empirical Results.....	17
4.1. Data Description.....	17
4.2. Correlation Analysis.....	19
4.3. Univariate Analysis	21
4.4. Regression Results	22
5. Sensitivity Analysis	24
6. Conclusions	26
7. Limitations.....	27
8. Recommendations	28
9. References	29
Tables Appendix	33
Sensitivity Analysis	47
Figures Appendix.....	50

List of Tables

Table 1. Variables Description	33
Table 2. Sample Description.....	34
Table 3. Multicollinearity Test	35
Table 4. Heteroskedasticity Test.....	36
Table 5. Normality Test	36
Table 6. Descriptive Statistics.....	37
Table 7. Correlation Matrix for non-EGCs.....	40
Table 8. Correlation Matrix for EGCs	42
Table 9. Test of differences	44
Table 10. Regression Analysis.....	46
Table 11. Test of differences - Sensitivity Analysis	47
Table 12. Regression Analysis - Sensitivity Analysis	49

List of Figures

Figure 1. Q-Q plot.....	50
Figure 2. Q-Q plot.....	51
Figure 3. Q-Q plot.....	52
Figure 4. Histogram	53
Figure 5. Histogram	54
Figure 6. Histogram	55

1. Introduction

The aim of this study is to provide an empirical review of the potential impact of the confidential submission process as well as the corporate governance mechanism to non-EGCs and EGCs underpricing during IPO procedure. The nonpublic review, which signed into law on July 10, 2017 by the Securities and Exchange Commission, is an expansion of the confidential review of draft registration statements under the JOBS Act of 2012. The benefits of this law which were, previously, available only to EGCs are now being expanded to include all new issuers, such as non-EGCs, encouraging them to have access to affordable capital and public markets. The revised nonpublic review provides important accommodations to non-EGCs, while the existing submission process remained unaffected. Particularly, the new policy includes provisions that permit non-EGCs to omit financial details during the first steps of IPO, to decide whether to enter public markets in order to achieve the benefits of public issuance and to withdraw the registration draft and terminate the IPO process. To classify firms as EGCs and non-EGCs, we used the revenue threshold of \$1.07 billion, and therefore, an EGC is a firm with revenues less than this threshold in the last completed fiscal year before the IPO and a non-EGC is an IPO with more than \$1.07 billion in annual revenues.

The main purpose of the new and revised policy available to all issuers is an attempt to help companies to cover their capital needs by reducing the burdensome costs of going public procedure and to encourage them to conduct an IPO and, hence, to strengthen US economy. However, this practice reduces the mandatory disclosures which leads to higher information uncertainty and thus, higher IPO underpricing.

The contribution of this analysis to the existing literature is twofold. First and foremost, we extend the research of Barth, Landsman, & Taylor (2017) and Charitou, Karamanou, & Loizides (2019) since we examine whether the revised nonpublic review process of 2017 could affect the existence and the magnitude of IPO underpricing, both in a shorter and longer horizon. Moreover, this analysis aims to provide an empirical insight into the relationship between IPO underpricing phenomenon and corporate governance mechanism. In addition, we use very recent data, i.e. we analyze companies, which have been founded and/or incorporated in US with IPO until October 2020.

In our project, we use a sample of 787 American IPOs, including 93 non-EGCS and 694 EGCs, listed in NYSE, Nasdaq and/or AMEX for the period January 2013 to October 2020. Through test for difference and regression analysis, we examine the effect of the new policy on non-EGCs and EGCs IPO underpricing. Furthermore, following the existing literature, we test the relationship between IPO information uncertainty and corporate governance variables as possible determinants of underpricing of newly issued firms. As corporate governance variables we use the board size, the independent directors, the CEO-Chairperson duality and CEO's compensation. We divided CEO compensation into two sub-variables; Fixed Salary and Risk Income.

Following prior research, we use three different measures of IPO underpricing. We measure the underpricing as the market-adjusted return based on the offer and closing price on the day of IPO, the closing stock price one day after the IPO and 30 trading days after the securities issuance (Barth, Landsman, & Taylor, 2017). Using test of difference in means (medians) and test of difference in differences, we found that the underpricing of non-EGCs at the post-JOBS Act period is not greater than the underpricing at the pre-JOBS Act period. On the other hand, contrary to our predictions, we found that the level of underpricing of EGCs is substantially higher at the post-JOBS Act period. Also, we found no evidence that the difference of underpricing of non-EGCs between the pre- and post- JOBS Act period is greater than that of EGCs. Furthermore, from regression analysis, we found that all three measures of market-adjusted returns are not affected by the firm's status (EGC, non-EGC). On the other hand, we conclude that the first two measures of information uncertainty, i.e. Underpricing(0,0) and Underpricing(0,1) are larger for companies with IPO after the implementation of the revised policy of 2017. Moreover, for the corporate governance variables, we find that only Independence and Duality affect the firms' market-adjusted returns in all three measures. On the contrary to Zimmerman (2015) study, we found a positive association between underpricing and Independence for the industrial firms.

The remainder of the paper is organized as follow: Section 2 reviews the existing literature and provides the hypotheses development, which is the basis of our forecasts. Section 3 explains the research design, i.e. the empirical model, the sample and dataset, as well the econometric tests done. Section 4 presents the results from our analysis relating to underpricing. Section 5 provides a robustness test for our findings,

Section 6 offers a summary of our findings and finally, Section 7 states the limitations of the research¹.

2. Institutional Setting and Literature Review

2.1. Institutional Framework

On April 5, 2012, the US Congress with the American President Barack Obama signed the Jumpstart Our Business Startups (JOBS) Act in order to mitigate the burdens of going public for the small enterprises and startups (Knight, 2016). Small and young firms have been called the backbone of the economy and the job-creation engine; therefore, their development is essential for growth and prosperity but this requires access to capital and funds. The legislation of 2012, which passed with overwhelming bipartisan support, allows young firms to raise capital from the markets ensuring simultaneously the sound investors protection.

The JOBS Act 2012 created a new group of firms, the Emerging Growth Companies, i.e. firms with total gross revenue less than \$1.07 billion at the pre-IPO completed fiscal year. Moreover, the provisions of the pioneering JOBS Act, which permit additional freedom to the issuers to raise capital and creates exemptions to many accounting and auditing rules, actually eliminate some parts of the regulatory burden, overly mandatory disclosures and the cost of going public process. Particularly, the provisions allow the EGCs to submit the IPO registration statement confidentially to the Securities and Exchange Commission in draft form for review at least 15 days prior the effective date of registration, to report less details about the executive compensation and financial statements information or sensitive business strategies, to detain the adoption of new accounting rules and revised financial standards which were mandatory disclosure requirements under the law of Sarbanes-Oxley Act, and finally to withdraw the registration draft and end the public issuance process whether the market conditions are not beneficial (Barth, Landsman, & Taylor, 2017).

¹ I would like to thank Professor A. Charitou for giving me this research idea which is based on his current work entitled: “Charitou, A., Karamanou, I., & Loizides, G. (2019). The impact of SEC’s permission of the non-public review of Draft registration statements to EGCs and non EGC IPO issuers, related to 2012 and 2017 Acts. *The International Journal of Accounting Symposium, Athens, Greece*.”

On June 29, 2017, the Corporate Finance Division of Securities and Exchange Commission announced that it will approve confidential submissions of draft registration statements for all initial public issuers for review on a non-public basis, including issuers classified as non-Emerging Growth Companies under the JOBS Act of 2012. The expanded confidential submission process, which took effect on July 10, 2017, provides extra opportunities for more firms to access and participate in SEC's public company disclosure-based scheme. Despite the fact that the SEC has not extended to non-EGCs other accommodations of the JOBS Act applicable to EGCs, the nonpublic review process inspires more businesses to consider initial public offering, which can lead to more choices for investments, job creation and capital growth.

The new and revised draft registration statement submission process is linked with revisions at the Securities Act and it is available for initial registration of a class of securities under Exchange Act Section 12(b). In particular, in order to issue some problems associated with the participation in the IPO procedure, it provides higher flexibility to firms to decide whether the market conditions are actually more favorable for them before they suffer the costs and the burdensome procedures of initial issuance. In addition, the expanded confidential submission process permits companies to conceal sensitive financial information, financial statements and business strategies, required under Regulation S-X, Article 11, to the public markets during the first steps of IPO and at the time of public filing. Furthermore, firms may have an early discussion with the SEC's staff on accounting standards and mandatory disclosures. It, also, allows firms to withdraw the registration draft and discontinue the initial offering process whether the conditions are not appropriate. Moreover, the new policy may be an incentive for all companies to accelerate the public issuance procedure experiencing the benefits of timely entrance to the public markets.

Additionally, an issuer must confirm if he will publicly submit the draft registration statement, together with any nonpublic confidential draft submissions to the SEC no later than 15 days before to its road show, if any, or otherwise, before the requested effective date of the registration statement. The Securities and Exchange Commission may also accept draft registration statements submitted before the end of the first year following the effective date of an issuer's initial Securities Act registration statement or an issuer's Exchange Act Section 12(b) registration statement for confidential review. The post-IPO non-public review process mitigates the risks for

prolonged exposure to market volatility that can have a detrimental effect on the offering procedure and harm current public stockholders. As well, the Division's announcement clarifies that the foreign private issuers are allowed to choose to continue either with the expanded submission process or the directions of JOBS Act 2012 (Breheny & al, 2017).

2.2. Related Literature

Initial Public Offerings (IPOs) underpricing is a phenomenon that has been widely examined. Underpricing refers to the difference between the offer price and the closing price of stocks at the day of IPO. In general, initial public issues are undervalued, with significant variation of underpricing magnitude (Ritter & Welch, 2002). Using a variety of datasets and testing different periods, Loughran & Ritter (2004) argue that for the period from 1980 to 1989 the average level of underpricing for the US market was around 7%, while for the years 1990-1998 the first-day returns was doubled. During the dot-com bubble the mean underpricing exploded to 65% and then was stabilized at around 12%.

Previous research and the very recent literature try to determine the factors that affect the value of firm's common stocks during the IPO procedure. A handful of studies link the mispricing of IPO firms with the information asymmetry. Beatty & Ritter (1986) refer that the issuers are better informed about the real value of the firm than investors. Investors' uncertainty about the IPO intrinsic value leads to a higher closing price, thus, to higher underpricing. Moreover, Roni & Wayne (1994) find evidence that the anomalies to asymmetric information between issuers, underwriters and potential investors increase the risk factors related to the true value of the firm, and the IPO value reflects the higher risk premium paid to shareholders. According to Baron & Holmstrom (1980) underwriters are more and better informed about the potential shares demand and exploit this information to underprice public issues and thus, to increase the underwriter spread². This allows investment banks to be compensated by

² Underwriter spread = Sell price – Offer price. The underwriter spread increases as the offer price decreases, or in other words as the underpricing increases. Underwriters agree to buy shares during IPO process in order to increase stock demand and later they sell them at a higher price.

issuers for their knowledge and, hence, the latter accept a lower offer price leading to a higher underpricing.

Extant studies support that information uncertainty is linked with mandatory and voluntary disclosures. Schrand & Verrecchia (2005) mention that a lower volume of disclosure leads to higher illiquidity and, hence, to greater underpricing. Similarly, Leone, Rock, & Willenborg (2007) indicate that there is a negative relationship between the disclosure of accounting information and underpricing of IPOs. The Jumpstart Our Business Startups (JOBS) Act is associated with the reduction of mandatory accounting information disclosure (Agarwal, Gupta, & Israelsen, 2017) and/or mitigations of burdensome regulations during IPO procedure (Dambra, Field, Gustafson, & Pisciotta, 2018). Thus, the reduction of mandatory disclosure leads to higher information uncertainty and investors' suspiciousness for the true value of the firm as investors do not have access to enough information in order to make an investment decision. Therefore, JOBS Act is a factor that increases underpricing during stock public issuance. Furthermore, existing studies have shown that there is a positive association between JOBS Act and underpricing, i.e. businesses with IPO after the implementation of the law present higher underpricing. Barth, Landsman, & Taylor (2017) and Charitou, Karamanou, & Loizides (2019), examining the JOBS Act of 2012, find evidence that the asymmetric information increases as the announcement of mandatory information related to the Act decreases, especially for the firms qualified as Emerging Growth Companies. As well, Chaplinsky, Hanley Weiss, & Moon (2017) demonstrate that the underpricing is greater, since indirect costs that inherent in JOBS Act do not reduce.

In addition, there are numerous studies that link corporate governance variables with IPO underpricing. According to the existing literature, good corporate governance practices reduce the level of underpricing of IPOs by minimizing the information asymmetry (Afza, Yousaf, & Alam, 2013) and agency costs. Barnhart & Rosenstein (1998) refer that part of the internal mechanism of the corporate governance mechanism are the board structure and the executive compensation.

The size of the board of directors is a controversial issue in the recent studies. On the one hand, Hermalin & Weisbach (2003) argue that a board with a greater size is inefficient. Xie, Davidson, & DaDalt (2001) state that a smaller board can decrease the

problems and the costs caused by bureaucratic issues, hence, it is more effective. On the other hand, Daradi & Gunawan (2012) find evidence that the size of the board has an opposite effect on the IPO underpricing, as a greater board mitigates the asymmetric information between the newly issued firm and the investors. Moreover, Hidayat & Kusumastuti (2014) find that the greater size of the board is beneficial, because there is pluralism and directors with different and various backgrounds, hence, the structure of the corporate governance can be improved and the information uncertainty can be addressed. Also, Certo & Dalton (2001) found that there is an adverse relationship between board size and underpricing.

Related to board independence, Zimmerman (2015) finds that the independent members of the board have a significant negative relationship with the IPO underpricing. This is a sign to the investors that the firm implement the corporate governance system well, since, the directors exercise an independent judgment. Furthermore, the potential new investors see the presence of independent board members positively, so the underpricing is lower. In addition, Baker & Gompers (2003); Li & Naughton (2007) report that an increase in independent members can decrease the underpricing of the IPO firms, since it mitigates the uncertainty, agency costs and hence, affects positively the offer price of the firm (Chahine & Filatotchev, 2008). Finally, Dalton & Daily (1999) refer that a more independent board consists an effective control mechanism that reduce information asymmetry between issuers and investors, and thus, the underpricing is lower.

Chahine & Tohmé (2009) argues that when the Chief Executive Officer also holds the position of the chairperson of the board, the information uncertainty is higher, hence, the underpricing is higher. Judge, Witt, Zattoni, & Talaulicar (2015) find evidence that CEO duality has a significant positive impact on underpricing of the IPOs, because it makes difficult the effective supervision of the board and the address of agency problems. In addition, Jensen (1993) states that it is essential to there is dual ownership, in order the board to be effective. Thus, the dual leadership structure has a significant negative relationship with the IPO underpricing, i.e. in other words, the CEO duality is positively correlated with underpricing.

The existing literature is quite silent about the connection of IPO underpricing and top executive compensation. However, there are certain studies related to this issue.

Elston & Goldberg (2003), who link executive compensation with firm performance, argue that a large and profitable company compensates more its CEO, hence, he has more incentives to improve the performance of the company. So, CEO compensation is aligned with the shareholders interests, thus it is increased firm credibility and public trust, which lead to lower underpricing (Jensen & Meckling, 1978). In addition, Fricke (2018) confirmed that a lower level of underpricing of IPOs could be achieved by a CEO who receives a higher cash compensation. This is based on the argument that a well-paid CEO can negotiate for a higher IPO offer price and, thus, leading to less undervalued IPOs. Instead, it is believed that a higher level of non-cash compensation could be seen as a risk factor and an additional conflict of interests between managers and investors, and the latter would “demand” a higher risk premium as a compensation for the uncertainty of firm’s value (Rock, 1986). As a result, this would lead to a higher IPO underpricing. Moreover, Lawry & Murphy (2007) support that a CEO who holds stock options granted prior to the IPO has incentives to increase underpricing, since their value increases in this case. Also, Chahine & Goegen (2011) state that underpricing and stock options granted the year before IPO, especially when the company does not apply good corporate governance practices, have a positive relationship.

The contribution of this study to the dominant and very recent literature is remarkable. Initially, we extend the research of Barth, Landsman, & Taylor (2017) since we examine whether the revised nonpublic review process of 2017 as well as the corporate governance mechanism could affect the existence and the magnitude of IPO underpricing, both in a shorter and longer horizon. We also extend the study by Charitou, Karamanou and Loizides (2019) who examined both the 2012 and 2017 JOBS Act regulation by having a greater sample size and by incorporating additional governance and executive compensation measures in our model. As corporate governance variables, we use board-related characteristics, i.e. the board size, the independent members at the board of directors, the CEO duality and CEO compensation (cash and non-cash). In addition, we use very recent data, i.e. we analyze US companies with 4-digit Standard Industrial Classification code between 0100-5999 and 7000-8999 for the period January 2013 to October 2020.

2.3. Hypotheses Development

Hypothesis 1a: Non-EGCs with IPO after the JOBS Act 2017 should be more underpriced on average relative to a peer group with IPO before the Act.

The revised non-public review process, which is an expansion of the confidential submission process under JOBS Act of 2012 and previously available only to EGCs, provides important accommodations for all the eligible issuers who pursue to conduct a public issuance and allows firms to report a lower volume of mandatory disclosure. The reduction of mandatory documentation disclosure increases information asymmetries, and thereby, the investors have a limited access to information and do not know the fair price of the company. As a result, investors demand a premium as a compensation for the uncertainty and for the risk that they will take. Consequently, we assume that in the post-JOBS Act period companies are more undervalued. The revised confidential submission process affects the non-EGCs and hence, in the post JOBS Act 2017 period they will be on average more underpriced compared to non-EGCs before the implementation of the law.

Hypothesis 1b: Emerging Growth Companies level of underpricing should remain unchanged between the pre-JOBS Act 2017 period and post-JOBS Act period.

The confidential submission process is one of the procedural accommodations provided to Emerging Growth Companies under the JOBS Act of 2012 to encourage smaller firms to undertake an IPO. The nonpublic review process provides EGCs with greater flexibility to planning their IPOs by allowing them to commence the SEC review process without having to disclose publicly their intentions, strategies, and financial information. The Securities and Exchange Commission states that the expansion of the confidential submission procedure of 2017 is not expected to affect the existing process or provide any further disclosure accommodations available to EGCs under JOBS Act 2012. Therefore, considering that the existing nonpublic review process disposed to EGCs remain unaffected under the new policy of 2017, we assume that the level of underpricing will not change in the post-JOBS Act 2017 period.

Hypothesis 2: The difference of underpricing of non-EGCs between the pre- and post- JOBS Act period is expected to be greater than that of EGCs.

Under the new and revised confidential submission policy of 2017, as we have already mentioned, non-EGCs enjoy important accommodations and the advantage of not revealing sensitive information to the public during the first steps of IPO procedure. Moreover, in the pre-JOBS Act period, non-EGCs had no exemptions and therefore, we assume that the level of underpricing, for that period, will be closed to the “average” underpricing. So, we expect that the underpricing will be greater in the post JOBS Act period. On the other hand, since EGCs do not experience any extra benefit under this new practice, we expect that the level of underpricing in the post- JOBS Act period will remain unchanged. Consequently, we predict that the difference of underpricing between pre- and post- JOBS Act 2017 period will be greater for non-EGCs compared to the difference of EGCs.

Hypothesis 3: Companies with better quality of corporate governance are more likely to have lower underpricing.

Agency theory relates corporate governance with voluntary disclosure (Eng & Mak, 2003). The leading causes for lemon problems are the separation of ownership and the conflict of interest between the managers and the stakeholders. The presence of agency problem affects the value of the stock at IPO procedure, due to the increased information asymmetry and agency costs. Corporate governance mechanisms are effective solutions that can minimize the agency costs and resolve issues in the relationship between business principals and agents, because the firm is professionally managed and improve shareholder’s welfare without ignoring their interests. So, more often than not, firms with better corporate governance practices are more likely to provide voluntary disclosures and, thus, to mitigate agency problems and reduce uncertainty during the IPO procedure. According to the existing literature, we assume that a firm with the optimal size of board of directors will be more effective and will act as a control and supervisory mechanism of the managers-shareholders relationship. Hence, we expect board size to be negatively related to underpricing. The optimal board size is between 7 to 9 directors (Jensen M. , 1993; Lipton & Lorsch, 1992). Moreover, we expect that a more independent board is more feasible to disclose financial information about the company. Hence, the firm will be seen more transparent and as a result it will mitigate the information gap between managers and new protentional investors. Therefore, we expect that a more independent board will decrease underpricing. Furthermore, we anticipate that the separation of CEO and chairman

position will help the board's ability to monitor management and consequently, CEO-Chairman duality will have a significant positive relationship with underpricing. Finally, we predict that the higher the salary of the CEO, the lower the underpricing. Higher CEO cash compensation would ultimately result in better performance and wealth for shareholders who will demand lower risk premium. Also, CEOs will have more incentives to demand a higher offer price. To the contrary, according to prior research, we expect that the risk income of CEO will have a positive effect on IPO underpricing, since in this case the non-cash compensation of the CEO, i.e. stock and options, is worth more.

3. Research Design

3.1. Methodology

In our analysis, we develop a model in order to test whether the level of underpricing is greater for non-EGCs than for companies with EGC status, including IPOs from January 2013 to October 2020. Additionally, we examine whether the confidential submission process practice (JOBS Act 2017) increased the underpricing for non-EGCs in the post-JA period. Furthermore, we test the effect of corporate governance on underpricing during going public procedure both in shorter and longer horizon.

3.1.1. Empirical Model

We develop a linear regression model in order to examine the relationship among company status (EGC, non-EGC), JOBS Act 2017, corporate governance and firm specific characteristics, i.e.

$$\text{Underpricing}_{0,t} = b_0 + b_1 \text{nonEGC}_i + b_2 \text{JOBS Act}_i + b_3 \text{JA} * \text{nonEGC} \\ + b_4 \sum \text{Corporate governace}_i + b_5 \sum \text{Control Variables}_i$$

We test our predictions and hypotheses by estimating equation (1).

$$\begin{aligned}
 \text{Underpricing}_{0,t} = & b_0 + b_1 \text{nonEGC}_i + b_2 \text{JOBS Act}_i + b_3 \text{JA} * \text{nonEGC} \\
 & + b_4 \text{BoardSize}_i + b_5 \text{Independence}_i + b_6 \text{Duality}_i \\
 & + b_7 \text{FixedSalary}_i + b_8 \text{RiskIncome}_i + b_9 \text{Revenues}_i \quad (1) \\
 & + b_{10} \text{Assets}_i + b_{11} \text{ROA}_i + b_{12} \text{Big4}_i \\
 & + b_{13} \text{FirmAge}_i + \varepsilon_i
 \end{aligned}$$

where t=0,1,30 trading days after the Initial Public Offering.

3.1.2. Measurement of Variables

Underpricing is defined as the market-adjusted return³, i.e. the distance between the raw return and the market return⁴ (Kothari & Warner, 1997), where the raw return is the closing stock price minus the offer price of IPO divided by the IPO offer price. We measure our dependent variable over three intervals. For *Underpricing(0,0)*, we used the closing share price on the day of initial issuance, i.e. at time t=0. Furthermore, for *Underpricing(0,1)* and *Underpricing(0,30)* we used the closing price one trading day after the IPO, i.e. t=1 and the closing price at time t=30, i.e. 30 trading days after the public issuance, respectively. We used market-adjusted returns in order to include in our analysis the inhomogeneities in market conditions between EGCs and non-EGCs.

To evaluate the short and long-run IPO underpricing, following prior studies, we include in Equation (1) two group of variables: corporate governance mechanism variables and control variables. Particularly, we incorporate as corporate governance variables board size, independence, duality, and CEO compensation (cash and non-cash). As firm specific characteristics, we include revenues, total assets, firm's profitability, auditor's quality, and firm's age (Barth, Landsman, & Taylor, 2017; Kelton & Yang, 2008; Laksmana, 2008; Leone, Rock, & Willenborg, 2007; Zimmerman, 2015).

³ We calculated market-adjusted returns over the respective windows using the buy and hold abnormal return formula: $\prod_{t=n}^0 (1 + R_{it}) - 1 - (\prod_{t=n}^0 (1 + R_{Mt}) - 1) = \prod_{t=n}^0 (1 + R_{it}) - \prod_{t=n}^0 (1 + R_{Mt})$.

⁴ For market returns we used the returns on market index, i.e. S&P500 Index.

NonEGC is a dummy variable that equals 1 when a firm is qualified as non-Emerging Growth Company, and 0 otherwise. *JOBS Act* is an indicator variable that equals 1 in case a firm went public under the law of 2017, and 0 otherwise, i.e. if the issuing was before disclosure exemptions. *JA*nonEGC* is the interaction between nonEGC and JOBS Act interaction. *Board Size* shows the number of the members at the board of directors. *Independence* represents the percentage of independent directors at the board. *Duality* is an indicator variable taking the value 1 if the CEO and the Chairman of the Board are the same person, and 0 otherwise. *Fixed Salary* reflects the salary of the CEO. *Risk Income* is the sum of executive's bonus, stock and options awards, non-equity incentive plans compensation and all other compensation. *Revenues* is the natural logarithm of one plus the total revenues. *Assets* is the natural logarithm of one plus total assets. *ROA* is net income scaled by total assets. *Big4* is an indicator variable that equals one if the IPO firm's auditor is Deloitte, PwC, EY or, KPMG and zero otherwise. *Firm Age* is the natural logarithm of one plus the number of years from the foundation or the incorporation of a company to the IPO.

Our predictions for determinants of IPO according to the existing and relative literature are the following: For *NonEGC* we expect a positive relation with our dependent variable, i.e. a company qualified as non-EGC is expected to increase underpricing. Also, *JOBS Act* is anticipated to be positively related with underpricing, i.e. a firm with IPO after the implementation of the new policy will increase market-adjusted returns. Moreover, the interaction between nonEGC and JOBS Act is assumed to be positively associated with information uncertainty and hence, underpricing. This means that the returns will increase whether a company is classified as nonEGC and did an IPO after July 10, 2017. Turning to corporate governance variable, we predict that board size, independence and risk income will be negatively related to underpricing, while duality and fixed income will have a positive effect on market-adjusted returns.

[insert Table 1 here]

3.2. Sample and Dataset

Initially, we identified a list with all firms that went public between January 2013 and October 2020 from the Compustat database. The sample period starts one

year after the JOBS Act of 2012 in order to avoid containing in our sample IPOs under this “transition”. From the initial sample of 1737 IPOs, we excluded the companies that have been founded and/or incorporated outside of US. Moreover, following the filtering criteria of the existing IPO literature, we decided to investigate firms with a 4-digit SIC code between 0100-5999 and 7000-8999, so, we eliminated American Depository Receipts (ADRs), foreign issuers, closed-ends funds, Real Estate Investment Trusts (REITs), limited partnership interests, right issues, unit issues and blank-check offerings (Chaplinsky, Hanley Weiss, & Moon, 2017). Furthermore, we retrieved the exchange code⁵ of the firms from Compustat as we restricted our sample and we included companies only with IPOs on the NASDAQ, NYSE and/or AMEX. Finally, we reduced further our sample because we removed observations with missing corporate governance information, and/or compensation of CEO and/or financial values, and/or offer price. Hence, our final sample is composed of 787 US IPOs from January 2013 to October 2020, which include information about company name, public offering date, corporate governance variables, firm specific characteristics, and IPO underpricing.

From the total sample, 461 firms went public before the implementation of JOBS Act 2017 and 326 under the law. In other words, our final sample consists of 694 firms with revenues less than \$1.07 billion at the most recent and completed fiscal year before the IPO, from which 397 issued before the JOBS Act and 297 after it and 93 qualified as non-Emerging Growth Companies, with 64 IPOs before the July 10, 2017 and 29 after the law was implemented. From our total dataset, 88.2% is EGCs and 11.8% is non-EGCs.

[insert Table 2 here]

For the dataset, we collected the offer price of each company manually from its final prospectus file on the SEC EDGAR website. For the closing share prices and market returns, we obtained data from Common Research and Security Prices (CRSP) and Yahoo Finance for companies with IPO in 2020. In addition, the data regarding the board size, independent members, duality, and CEO’s compensation of IPOs were hand collected from firm final prospectus in the forms of 424B on Securities and Exchange Commission website. Moreover, the data for revenues, assets, ROA, and auditor were

⁵ Specific code according to the exchange is listed a firm.

selected from Compustat database. Finally, we collected the firms' founded year manually from Field-Ritter dataset and Yahoo Finance for the most recent IPOs, i.e. firms with initial issuance in 2020⁶.

3.3. Econometric tests

3.3.1. Outliers Test

Before performing statistical analyses, we identified possible outliers. Outliers are observations that lie an abnormal distance from other values in a sample and they are not representative of the rest of the data. In other words, they are abnormal values in a dataset (Booth, 1985). These extreme values are troublesome for many statistical analyses because they can cause either miss significant findings or distort real results. In our analysis, we used three different methods to detect extreme values: two visual assessments and one more analytical approach. Graphing our data to identify outliers, box plot and histogram displayed explicitly the extreme values contained in our dataset and gave us a first picture for the presence of abnormal observations. Additionally, Interquartile Range⁷, a quantitative method, provided us a more robust and clearer picture about the outliers of our dataset.

The diagnostic tools we used showed that there are outliers in our sample. Therefore, after detecting extreme values in our dataset, we took care of them with winsorization⁸ technique at 1st and 99th percentile, which allows us to smooth the effect of the unusual values and to avoid reduce our sample by deleting them.

3.3.2. Multicollinearity Test

Multicollinearity refers to the phenomenon in which one predictor variable is linearly predicted from one or more independent variables (Gujarati & Porter, 2009). In our research, we used the Variance Inflation Factor (VIF) and Tolerance Factor

⁶ I would like to thank Dr. George Loizides and Professor Charitou for assisting us with data collection as well as providing us with part of data needed for this study.

⁷ The Interquartile Range used is the default Interquartile Range of 1.5.

⁸ We used winsorization at 1% and 99%. Winsorization at 1% and 99% means that values that are below the 1st percentile are replaced by this specific value, and values that are above the 99th percentile take the value of this point.

(TOL) in order to examine if there is high correlation between two or more predictor variables. From the theory (Shrestha, 2020; Tay, 2017), it is known that a VIF greater than 5 signifies the presence of multicollinearity issues and shows that the variation of a predictor is increased. In contrast, a TOL factor lower than 0.2 shows higher instability of beta coefficients.

In our analysis, both VIF and TOL reveal that there is not linear relationship among the independent variables. The maximum VIF value is 4.36 for assets which is significantly lower than the default threshold of 5 and therefore, there are no intercorrelations among our predictor variables. Likewise, the minimum value of TOL is 0.230, signifying that there is no multicollinearity issue.

[Insert Table 3 here]

3.3.3. Heteroskedasticity Test

Afterwards, we checked for heteroskedasticity issues. Heteroskedasticity refers to a condition in which the variance of the residual term is not constant. The existence of heteroskedasticity can cause inaccurate estimations and invalid prediction limits for the dependent variable (Stock & Watson, 2011). In our research, we, initially, run Breusch-Pagan test (Zaman, 2008). From table 4, we observe that under this diagnostic test none of the regressions have constant errors, i.e. heteroskedasticity is assumed. So, in order to restore homoskedasticity violations, we run robust regressions and under the White's diagnostic test (Zafiropoulos & Milonas, 2017) we notice that the residual terms are constant, and all the independent variables have the same finite variance.

[Insert Table 4 here]

3.3.4. Normality Test

Finally, we tested for normality issues. Normality is the assumption that the underlying residuals are normally distributed, i.e. the error terms are symmetric around the mean and the dataset is well-modeled and can produce accurate results (Gujarati & Porter, 2009). In our analysis, we used two graphical and one analytical diagnostic methods; q-q plot, histogram, and Shapiro-Wilcoxon test (Zafiropoulos & Milonas, 2017).

According to q-q plots, we notice that for each regression the points do not lie along the straight line which means that our error terms are not normally distributed.

[Insert Figure 1 here] [Insert Figure 2 here] [Insert Figure 3 here]

Similarly, since there is no a symmetric bell-shaped histogram of residuals which is distributed around zero, the second graphical approach indicates that the hypothesis of residuals normality is violated for all of the three regressions (Gujarati & Porter, 2009).

[Insert Figure 4 here] [Insert Figure 5 here] [Insert Figure 6 here]

Regarding Shapiro-Wilcoxon test, we observe that there are undoubtedly normality problems since the p-values for each regression are close to 0 and hence, the hypothesis of normality is rejected (Zafiropoulos & Milonas, 2017).

[Insert Table 5 here]

Consequently, in our study, all the diagnostics tests identify non-normality of the residual terms. However, violation of the normality assumption becomes an issue only for small sample sizes (Pandis, 2015). According to Central Limit Theorem (CLT) for large sample sizes any deviation from the assumption of normality is less important because the mean of the sample is closer to the mean of the overall population, despite the actual distribution of the data (Kwak & Kim, 2017). Especially, the data is accurate whether the distribution is normal or not, and no correction is needed (Pek, Wong, & Wong, 2018). Therefore, in our analysis, since the sample size is large, the normality violation is not a problem and usual inferential procedures are not adversely affected.

4. Empirical Results

4.1. Data Description

Table 6 provides the descriptive statistics summary for the three measures of IPO underpricing, the corporate governance variables and the firm specific characteristics for the firms analyzed in the study period. Also, it reports the difference in means between pre- and post-JOBS Act for each group. Panel A reveals that firms qualified as non-EGCs are, at the day of IPO, on average underpriced by 0.138 or

13.8%. Consistent with prior studies, this signifies that IPOs are in general underpriced with an underpricing magnitude close to 12%-13%. Moreover, the mean (median) underpricing one trading day and 30 trading day after the IPO is 15.6% (11.3%) and 20.5% (17.2%), respectively. These findings demonstrate that the underpricing perseveres in a longer horizon and, simultaneously, that it is not affected by the short-term support of underwriters. The mean value of Board Size is 8.398, suggesting that, on average, non-EGCs have the optimal size for the board of directors. The mean value of Independence is 0.479 suggesting that, on average, about half of the directors of the board of 93 non-EGCs of our sample are independent. This value is significant smaller than the average of independent members in established firms which is close to 0.72 (Kelton & Yang, 2008). This is reasonable since the corporate governance data used, concern information before the IPO process and the companies were not subject to regulatory requirements. For Duality the mean is 0.269 showing that, for the sample of non-EGCs, CEO and Chairman position are occupied by two different persons.

Panel B presents statistics for the sample of 694 Emerging Growth Companies. The mean (median) value of underpricing at the day of IPO is 0.226 (0.132) or 22.6%. In the longer horizon, *Underpricing(0,1)* and *Underpricing(0,30)* the mean (median) undervaluation is 22.5% (13.5%) and 26.1% (17.1%), respectively. These findings suggest that underpricing is higher for EGCs and that it is a phenomenon that persists over a longer horizon. These statistics are comparable to those reported by Barth, Landsman, & Taylor (2017), who analysed a slightly different dataset but for a previous period and under JOBS Act 2012. The mean value of board size is 7.231, evidence that the size of the board of directors, on average, for EGCs is the optimal. Furthermore, 70.3% of the directors are independent. This is consistent with the exchange requirements that firms should have at least 50% of the directors at the board independent. Here, we notice that in firms with higher market-adjusted returns the independence of directors is greater and it is a potential sign that the direction of the relationship between independence and underpricing is not the predicted one. Also, the mean value of duality is 0.392, showing that 39.2% of 694 firms have CEO that hold also the Chairman position.

Panel C shows the differences in means between the pre- and the post- Act period, both for non-EGCs and EGCs. Moreover, it presents the difference of means between the two group of firms. So, in Panel C, we observe that the difference in mean

for non-EGCs between pre- and post- JOBS Act for Underpricing(0,0) and Underpricing(0,1) (0.068 and 0.054) is greater from that of EGCs (0.057 and 0.046). On the other hand, for 30-day window, difference in mean for EGCs is greater from non-EGCs (0.051>-0.020).

[Insert Table 6 here]

4.2. Correlation Analysis

Table 7 presents the statistics of Spearman Rank Correlation⁹ which measures the strength of association among the variables included in Equation (1) for non-EGC firms. Panel A is referred to the pre-JOBS Act 2017 period and provides evidence on the weak negative correlation between Underpricing(0,30) and Board Size (-0.303) at 5% significance level, suggesting that IPO companies with a greater board are more likely to have lower underpricing. Also, there is a weak negative relationship between Underpricing(0,1) and Duality (-0.210) at 10% significance level. This finding is inconsistent with the results of Afza, Yousaf, & Alam (2013) study. A slightly higher correlation coefficient is depicted between Underpricing(0,30) and Risk Income (-0.212) at the same significance level. The remaining corporate governance variables have a weak negative but not statistically significant relationship with the dependent variable in all windows. Turning to the control variables, we notice a weak negative and significant association of the Assets with the market-adjusted returns, in all intervals, i.e. at the day of IPO, at 1-day window and 30-day window. The strongest positive relationship is appeared between Assets and Revenues (0.608) at 1% significance level. This finding is consistent with the research of Matar & Bilal (2018) who found a positive and statistically significant association ($p < 0.001$) between Assets and Revenues (0.752).

Panel B reveals Spearman correlation for the 29 firms with IPO after the revised practice of 2017. Here, we observe that there is not statistically significance association between underpricing, in all windows, and corporate governance variables at any tested significant level. Concerning the firm specific characteristics there is a moderate

⁹ We use Spearman's Correlation because it can evaluate both a linear and a monotonic relationship between two variables, whereas Pearson's Correlation works only with a linear relationships (Weaver, Morales, Dunn, Godde, & Weaver, 2017).

negative relationship between the three measures of underpricing and Assets at 5% significance level. Likewise, there is evidence on the weak negative association between the market-adjusted returns and Firm Age up to 10% significance level. Moreover, Underpricing(0,0) and ROA are highly negative correlated (-0.673) at 5% significance level. Finally, the highest positive correlation is between Assets and Revenues with a coefficient equals to 0.679 (p-value=0.0000).

[Insert Table 7 here]

Table 8 reports the Spearman correlation values for Emerging Growth Companies in the pre- and post- JOBS Act 2017 period. In Panel A, turning to corporate governance, we notice a moderate positive association of Duality with Underpricing in all windows up to 5% significance level. This finding is consistent with Afza, Yousaf, & Alam (2013) results. For the remaining corporate governance variables there is not a statistically significant relationship with the market-adjusted returns for the firms with IPO before the law of 2017. For the control variables, we observe a weak positive and significant association of Revenues and Big4 with Underpricing. Finally, with a correlation coefficient equals to 0.759 Assets and Revenues have the strongest positive relationship at 1% significance level.

Panel B provides important findings for the correlation of our variables for the EGCs with IPO before the revised nonpublic review practice of 2017. Initially, we notice a moderate positive and statistically significant association between Board Size, Independence as well as Fixed Salary and Risk Income and underpricing in all windows. These results signify that EGCs with greater board, more independent directors and higher CEO compensation may experience higher returns. Furthermore, Duality has a weak and positive relation with Underpricing(0,30). Likewise, all control variables, are positively correlated up to 10% significance level with Underpricing(0,0), Underpricing(0,1) and Underpricing(0,30). The strongest positive and statistically significant relationship is appeared between Revenues and Assets (0.624).

[Insert Table 8 here]

4.3. Univariate Analysis

Table 9 reports the means and medians, separately, of each variable included in Equation (1) for non-EGCs and EGCs. Panel A reveals that for non-EGCs in the pre-JOBS Act and post JOBS Act period, means (medians) of Underpricing(0,0) are 11.7% and 18.5% (8,1% and 10,9%), of Underpricing(0,1) are 13,9% and 19,3% (10,5% and 12,6%) and of Underpricing(0,30) are 21,1% and 19,1% (17,3% and 16,2%). From these statistics we notice that firms are substantially underpriced, but inconsistent with our hypothesis (H1a), underpricing is not statistically significantly larger in the post JOBS Act 2017 period, both for the shorter and longer horizon. All of the differences in means and medians for the variables of interest and control variables are not statistically significant, except for Risk Income, which demonstrate that, in the post-JOBS Act period, CEO receives, on average, significantly higher non-cash compensation (p-value =0.024 and 0.691).

Panel B reports statistics for EGCs in the pre-JOBS Act and post JOBS Act period. Means (medians) of Underpricing(0,0) are 20.2% and 25,9% (10.8% and 17.2%) of Underpricing(0,1) are 20.6% and 25.2% (11.4% and 17.2%) and of Underpricing(0,30) are 23.9% and 29% (16.6% and 19.7%). These findings and p-values suggest that, inconsistent with our expectations (H1b), EGCs in the post-JOBS Act 2017 period have statistically significant higher returns at the day of IPO and one day after the issuance. The p-values for differences in means (medians) for between pre- and post-JOBS Act period for Underpricing(0,0) and Underpricing (0,1) are 0.033 and 0.087 (0.032 and 0.131). One potential implication of this finding is that these companies might have been affected from the change in regulations for non-EGCs. Moreover, it suggests that, since non-EGCs acquired important disclosure relief during IPO procedures, EGCs might provide fewer voluntary disclosures that, previously, was used as a substitute for mandatory disclosures and hence, the information uncertainty increased. In addition, panel B shows that all the differences in means and/or medians for the corporate governance variables, apart from Board size and Duality, are statistically significant. Therefore, firms classified as EGCs, in the post- JOBS Act 2017 period have, on average, more independent members on the board and CEO receives a slightly higher compensation (cash and non-cash). For example, p-values for the differences in means (medians) for Independence, Fixed Salary and Risk Income are

0.001, 0.065 and 0.046 (0.001, 0.001 and 0.469). Furthermore, concerning the firm specific characteristics, we observe that EGC firms in the post-JOBS Act period are less profitable and younger relative to the peer group in the pre period. For instance, the p-values for differences in means (medians) for Revenues, ROA and Firm Age are 0.004, 0.436 and 0.004 (0.007, 0.009 and 0.010), respectively.

Panel C provides information about the test of differences in differences for firms' mean. Initially, we notice that, inconsistent with our expectations (H2), the difference of underpricing, in all windows, for non-EGCs is not statistically significantly higher than that of EGCs. Particularly, at the day of IPO, the difference is higher, but it lacks statistical significance (p-value=0.894). Similarly, for the 1-day window, the difference of undervaluation is substantially but not statistically significantly higher for non-EGCs. The p-value in this case is 0.916. On the contrary, for the 30-day window, inconsistent with our predictions (H2), the difference in underpricing for non-EGCs is lower than that of EGCs, but the p-value is 0.513, which means that this difference is not statistically significant. For corporate governance variables, we observe that only the difference in Risk Income of CEO is substantially and statistically significant higher for non-EGCs than smaller firms, at 1% significance level. This shows that the CEO of non-EGCs firms receives higher non-cash compensation than the Chief Executive Officer of EGCs. This is reasonable since bigger firms offer, on average, higher compensation in form of stocks, options, non-equity plans and all other non-cash compensation benefits.

[Insert Table 9 here]

4.4. Regression Results

Table 10 reports the results by estimating Equation(1) for the three different intervals of underpricing, i.e. Underpricing(0,0), Underpricing(0,1) and Underpricing(0,30). In our analysis, surprisingly, we notice that the nonEGC indicator variable is not statistically significant, which means that the underpricing, both in shorter and longer horizon, is not affected by the company's status, i.e. whether a firm is qualified as EGC or non-EGC. This result is contrary to Barth, Landsman, & Taylor, (2017), who found a statistically significant association with EGC indicator variable and information uncertainty. On the other hand, consistent with prior research, JOBS

Act has a positive and statistically significant effect on market-adjusted returns for Underpricing(0,0) and Underpricing(0,1). The coefficients of JOBS Act are 0.0646 and 0.0520 (p-values=0.012 and 0.041). This finding indicates that the revised policy of 2017 may positively affect the returns of the newly issued firms with IPO after its implementation. Also, the interaction between nonEGC and JOBS Act has no statistical relation with underpricing and an opposite sign than the expected.

Moreover, turning to corporate governance variables, we observe that, inconsistent with our predictions (H3) and prior research (Daradi & Gunawan, 2012), the coefficient of Board Size is not statistically significant different from zero for any of underpricing window; thus, there is not sufficient evidence to assume a relationship between the number of the members at the board of directors and the existence of underpricing both in shorter and longer horizon. On the other hand, the coefficient on Independence is statistically significant different than zero ($p < 0.01$) for Underpricing(0,0), Underpricing(0,1) and $p < 0.5$ for Underpricing(0,30)), but inconsistent with our hypothesis (H3) and the findings of (Filatotchev & Bishop, 2002), it has a positive effect on market-adjusted returns, i.e. the more independent the members of the board, the higher the underpricing. However, consistent with the empirical results of Daradi & Gunawan (2012), this finding suggests that the independent directors may not decrease information asymmetry between the firm and the investors. In addition, signal theory suggests that investors perceive greater independence as a signal of a high quality firm that fulfill requirements and protect shareholders interests and as a result they may increase the demand and hence, underpricing. Moreover, this finding would be explained by the existence of many smaller firms (EGCs) in our sample, which have less need for control, increasing the information uncertainty and hence, underpricing (Bertoni, Meoli, & Vismara, 2014). Furthermore, existing literature in banking crisis explain that the greater the independence of directors, the worst the bank's performance during crisis periods. This is because the independence of the board members is linked with more risky decisions. Therefore, since we have observations for 2020, which is considered as a crisis period due to the Covid-19 pandemic, we assume that the information uncertainty increases as the independent members increase. As predicted, CEO Duality has a positive and statistically significant impact on underpricing, both in shorter and longer horizon. The coefficients on Duality are 0.0486, 0.0482 and 0.0725 (p-values= 0.057, 0.058 and

0.042). These findings suggest that the information uncertainty is higher because CEO duality makes difficult the effective supervision of the board. The efficiency of the board decreases because the CEO gains more power over the board and may influence the directors and serves his personal interests. Regarding CEO compensation, despite the fact that both Fixed Salary and Risk Income have the predicted effect on information uncertainty and hence, on underpricing, we notice that the coefficient on both is not significantly different from zero. Contrary to Fricke (2018) who found a statistically significant relationship between the level of cash compensation and IPO underpricing, in our analysis we do not have evidence that Fixed Salary affects market-adjusted returns. Furthermore, contrary to Chahine & Goegen (2011) who found a significant and negative association between Risk Income and underpricing when the independence of directors, the CEO duality and venture-capital backing are taken into consideration, this study found a negative but not statistically significant relation between Risk Income and our dependent variable, despite the fact that we took into account the factors of independence and CEO-Chairman duality.

With respect to control variables, we observe that ROA and auditor's quality are statistically and positively significant in all underpricing intervals, implying that a better performance and auditor's reputation may be seen as a signal of a firm with high quality. The coefficient on Revenues is statistically significant different from zero for the first two measures of market-adjusted returns, while Assets is significant for Underpricing(0,0) regression at 5% confidence level. Finally, the age of the firm seems not to determine the level of underpricing contrary to Barth, Landsman, & Taylor (2017) findings.

[Insert Table 10 here]

5. Sensitivity Analysis

Finally, we used sensitivity analysis to support the robustness and the credibility of our results (Thabane, Mbuagbaw, & Zhang, 2013). To assess the extent to which our inferences are influenced by changes in methods, methodologies and/or models, we altered the measurement of our dependent variable. The estimations using raw returns, instead of market-adjusted returns, reveal that there are no deviations or changes from the results of the main analysis. Specifically, through test of difference in means and

medians, we confirmed that, inconsistent with our hypothesis, the underpricing of non-EGCs in the post-JOBS Act is not statistically significantly higher than the pre-JOBS Act period. Moreover, we found that, surprisingly, the underpricing of EGCs is higher in the post-JOBS Act period, and likewise, using test of difference in differences, we verified that, inconsistent with our 2nd hypothesis, the difference of underpricing of non-EGCs between the pre- and post- JOBS Act period is not statistically greater than that of EGCs for any interval.

[Insert Table 11 here]

Furthermore, table 12 reveals the same inferences as those of the main analysis. In particular, we notice that the coefficient of non-EGCs is not statistically different than zero, and hence, we do not have enough evidence to assume a relationship between the company status and underpricing in all intervals. On the other hand, the JOBS Act has a significant positive effect on raw-returns at the day of IPO and one day after the IPO (p-value=0.013 and 0.036). This is consistent with the existant literature, which links accommodations during with IPO process and underpricing. The interaction between nonEGC and JOBS Act is not statistically significant in any window and has an opposite sign than the expected one. Turning to corporate governance, we observe that Board Size has no significant effect on market-adjusted returns and an opposite sign than the expected for the first two intervals of Underpricing. On the contrary, Independence has a significant relationship with raw returns, but again an opposite effect than the expected one on underpricing. Specifically, there is a positive and significant association between the independent directors and the dependent variable. Duality is, consistent with our expectations (H3), significantly positive correlated with underpricing in all intervals, i.e. Underpricing(0,0), Underpricing(0,1) and Underpricing(0,30). This is because CEO duality decreases the effective control of the board. Concerning CEO compensation, we notice that Fixed Salary and Risk Income, despite the fact that they have the expected sign, they are not associated with underpricing.

[Insert Table 12 here]

The tabulated results indicate that our findings are robust, and they are not affected by changes in methodology and, especially, in variables measurement. The

robustness test evidences that our empirical study is resistant in errors and that our regression model produces strength results.

6. Conclusions

In our analysis, we examine the effect of the revised confidential submission process, which took effect on July 10, 2017 on underpricing in IPO firms. The Act is available for all initial public issuers, including issuers that are classified as non-Emerging Growth Companies under the JOBS Act 2012. This new policy encourages more businesses to consider Initial Public Offering and therefore, provides more opportunities for funds raising. Particularly, it offers more flexibility to companies to insert public markets, by allowing them to conceal sensitive information during the initial steps of going public procedure. Also, it allows issuers to draft all the necessary registration statements at least 15 days before the date of registration. The law provided no extra benefits for the issuers qualified as EGCs, according the criteria of JOBS Act 2012.

Using a sample of 93 non-EGCs and 694 EGCs with IPO from January 2013 to October 2020, we tested for differences in means and medians in the three measures of IPO underpricing between pre- and post-JOBS Act period, both for non-EGCs and EGCs. We found that, inconsistent with our predictions (H1a), the underpricing on non-EGCs in the post-JOBS Act period is not statistically significant larger from the pre-JOBS Act period. On the other hand, the firms qualified as Emerging Growth Companies, in the post-JOBS Act period, are significantly more underpriced at the day of IPO and one day after the IPO, i.e. Underpricing(0,0) and Underpricing (0,1). Inconsistent with our expectations (H1b), the underpricing for EGCs increased regarding to the revised confidential submission process. This finding shows that these companies might have been affected by the change in regulations and/or they reduced their voluntary disclosures used as a substitute of mandatory disclosures relief. In addition, we tested for differences in differences between the two groups of firms, in order to examine whether the difference of underpricing of non-EGCs between the pre- and post- JOBS Act period is statistical significantly higher than that of EGCs. From our analysis, we concluded that, at the shorter horizon, i.e. Underpricing (0,0) and

Underpricing(0,1), the difference is greater for non-EGCs, but it is statistically insignificant.

Furthermore, tests of determinants indicate a statistically significant relation between independent board members as well as CEO duality and underpricing, in all examined windows. Particularly, our analysis finds, inconsistent with our hypothesis (H3) and existing literature, a positive association between the number of independent directors and underpricing. Moreover, CEO duality has, consistent with our expectations (H3), a significant positive relationship with underpricing, both in shorter and longer horizon. Board Size is statistically insignificant in all windows, Underpricing(0,0), Underpricing(0,1) and Underpricing(0,30). Likewise, CEO compensation, Fixed Salary and Risk Income, are not related with underpricing in all windows. Turning to control variables, we notice that all firm specific characteristics, except for Firm Age, are statistically significant and have an impact on the dependent variable.

In conclusion, taken together, we conclude that our findings for non-EGCs and EGCs underpricing between pre- and post-JOBS Act 2017 period are not consistent with our predictions. Additionally, the test of difference in differences indicates that, inconsistent with our expectations, there is no statistically significant evidence that the difference of underpricing for non-EGCs between pre- and post- period is greater than that of EGCs. Finally, for corporate governance mechanism and CEO compensation, we observe that there is an association between board-related variables and underpricing that is partially consistent with our expectations. Our findings were confirmed by sensitivity analysis and robustness tests. Therefore, our results are robust, and our model produces vigorous conclusions.

7. Limitations

The empirical results reported herein should be considered in the light of some limitations. In our analysis, the dominant constrain to the generalization of these results is the insufficient sample size for statistical measurement. In particular, the sample size of the non-EGCs, especially, in the post-JOBS Act period is inadequate, and therefore, it is difficult to ensure the robustness, the accuracy and the validation of our findings. Secondly, for the financial data, we used the values from the most recent and completed

fiscal year before the public issuance. While this has been used and validated in previous research, the financial situation of the company may have changed until the official date of Initial Public Offering. These limitations may influence the interpretation of the findings in our study.

8. Recommendations

The scope of present analysis is restricted to basic corporate board-related governance characteristics and CEO compensation, which is a sub-category of the overall corporate governance mechanism of the organization. Therefore, further analysis could be directed to examine other variables, such as composition and existence of committees (audit, compensation, etc.) and/or the independent members in committees or CEO characteristics, like gender, age, tenure and whether the CEO is also a founder.

9. References

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Tables Appendix

Table 1. Variables Description

This table reports the variables that used in the analysis above and the databases that we used to extract the data. The dependent variable, underpricing, measures the market-adjusted returns for three different periods. Underpricing (0,0) measures the underpricing at the day of the IPO, Underpricing (0,1) the underpricing one day after the IPO and Underpricing (0,30) measures the market-adjusted return 30 trading days after the IPO. The independent variables are divided in two groups the corporate governance variables and the firm specific characteristics.

Variables	Description	Database
Underpricing	It measures market-adjusted return, i.e. raw return minus market return.	SEC/CRSP/Yahoo Finance
NonEGC	A dummy variable that equals 1 when a firm is qualified as non-Emerging Growth Company, and 0 otherwise	-
Jobs Act	A dummy variable which takes value 0 if the firm entered the stock exchange (IPO) before JOBS Act, and 1 otherwise.	-
JA*nonEGC	The interaction between nonEGC and JOBS Act.	-
Board Size	It shows the number of the members at the board of directors.	SEC
Independence	It represents the percentage of independent directors at the board.	SEC
Duality	Indicator variable of one if the CEO and the Chairman of the Board is the same person, and 0 otherwise.	SEC
Fixed Salary	It reflects the salary of the CEO.	SEC
Risk Income	It is the sum of executive's bonus, stock and options awards, non-equity incentive plans compensation and all other compensation.	SEC
Revenue	It is the natural logarithm of one plus revenue.	Compustat
Assets	It is the natural logarithm of one plus total assets.	Compustat
ROA	It is net income scaled by total assets.	Compustat
Big4	Indicator variable that equals one if the IPO firm's auditor is Deloitte, Ernst & Young (EY), KPMG, or PwC, and zero otherwise.	Compustat
Firm Age	It is the natural logarithm of one plus the number of years from the foundation or the incorporation of a company to the IPO.	Field-Ritter/Yahoo Finance

Table 2. Sample Description

Panel A of the table below reports the initial and the final sample. After the sample reductions because of restrictions and lack of data, we concluded with 787 observations. Panel B describes, analytically, year by year observations, regarding their status (EGCs, non-EGCs).

Panel A. Sample Size

Sample Period: 2013-2020	IPOs
Initial Sample	1737
Less:	
Firms Incorporated outside US and/or with SIC code 6000-6999	888
Initial Public Offering at a stock market other than NASDAQ, NYSE, or AMEX	23
Missing corporate governance information and/or control variables values and/or offer price	39
Total:	787

Panel B. Year by year Observations

Year	All IPOs	EGCs	Non-EGCs
2013	112	89	23
2014	147	130	17
2015	95	88	7
2016	65	57	8
2017	82	70	12
2018	118	106	12
2019	97	89	8
2020	71	65	6
Total	787	694	93

Table 3. Multicollinearity Test

This table presents the results from multicollinearity test. The diagnostic tests that we used are the Variance Inflation Factor (VIF) and the Tolerance Factor (TOL). From the table below we can conclude that there is not linear relationship between the independent variables, as the highest VIF and the TOL is 4.36 and 0.230, respectively for assets. The final sample consists of 787 observations from January 2013 to October 2020.

Variation Inflation Factor (VIF) and Tolerance Factor (TOL)

Variables	VIF	1/VIF
Assets	4.36	0.230
Revenues	3.82	0.262
Non-EGC	2.56	0.391
Firm Age	2.05	0.488
Fixed Salary	1.99	0.503
JA*nonEGC	1.62	0.619
ROA	1.53	0.653
Board Size	1.32	0.758
Independence	1.30	0.772
Big4	1.21	0.828
JOBS Act	1.19	0.937
Risk Income	1.17	0.857
Duality	1.10	0.913

Table 4. Heteroskedasticity Test

The table below reports the p-values of the Breusch-Pagan and White test for each regression. The null hypothesis in a heteroskedasticity test is that there is homoscedasticity, and the alternative hypothesis is that homoskedasticity is violated. From the results, we can deduce that the assumption of residual term's constant variance is violated according to Breusch-Pagan test. Afterwards, we run robust regressions and White's test shows that the problem of heteroskedasticity is solved. The final sample consists of 787 observations from January 2013 to October 2020.

***, **, * define the significance level at 1%, 5% and 10% respectively.

	Breusch-Pagan	Robust White test
Underpricing (0,0)	0.0000***	0.9912
Underpricing (0,1)	0.0002***	0.9576
Underpricing (0,30)	0.0000***	0.3256

Table 5. Normality Test

Table 5 shows the p-values of Shapiro-Wilcoxon normality test. Here, the null hypothesis is errors are normally distributed, and the alternative is that the error terms are not normally distributed. From the table below, we reject the null hypothesis at each predefined significance level and hence, we conclude that we have normality issues. The final sample consists of 787 observations from January 2013 to October 2020.

***, **, * define the significance level at 1%, 5% and 10% respectively.

Shapiro-Wilcoxon test

	P > z
Underpricing (0,0)	0.0000***
Underpricing (0,1)	0.0000***
Underpricing (0,30)	0.0000***

Table 6. Descriptive Statistics

In this table, we report the main descriptive statistics (Mean, Median, Standard Deviation, Q25, Q75, Min, Max) for non-EGCs and EGCs used in our analysis. The last column shows the difference in means between pre- and post-JOBS Act period for each group. Panel A shows the descriptive statistics for the non-EGCs in the pre- and post-JOBS Act period. Panel B presents the mean, median, standard deviation, 1st and 3rd quartile, the minimum and the maximum values for firms qualified as non-EGCs. Panel C reports the mean difference for each group and the difference between the two groups.

Panel A. Non-EGCs descriptive statistics

Variables	N	Mean	St. D	Min	Q25	Median	Q75	Max	¹⁰ Mean Difference
Underpricing (0,0)	93	0.138	0.215	-0.225	0.008	0.099	0.218	1.216	0.068
Underpricing (0,1)	93	0.156	0.228	-0.261	0.027	0.113	0.234	1.285	0.054
Underpricing (0,30)	93	0.205	0.273	-0.330	0.063	0.172	0.301	1.215	-0.020
Non-EGC	93	1.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000
JOBS Act	93	0.312	0.466	0.000	0.000	0.000	1.000	1.000	1.000
JA*nonEGC	93	0.312	0.466	0.000	0.000	0.000	1.000	1.000	1.000
Board Size	93	8.398	1.770	3.000	7.000	9.000	9.000	14.000	0.023
Independence	93	0.479	0.244	0.100	0.300	0.429	0.750	0.909	0.089
Duality	93	0.269	0.446	0.000	0.000	0.000	1.000	1.000	-0.04
Fixed Salary	93	7.5e+05	3.0e+05	0.000	5.7e+05	7.5e+05	9.5e+05	1.6e+06	9.0e+04
Risk Income	93	6.0e+06	1.3e+07	2.1e+04	9.4e+05	1.8e+06	5.7e+06	1.1e+08	7.0e+06
Revenues	93	7.944	0.831	6.977	7.291	7.738	8.335	11.042	0.144
Assets	93	8.072	1.068	5.360	7.378	8.025	8.684	12.370	0.263
ROA	93	0.004	0.087	-0.495	-0.009	0.009	0.028	0.242	-0.010
Big4	93	0.946	0.227	0.000	1.000	1.000	1.000	1.000	0.028

¹⁰ Mean difference = $(Mean_{post-JOBS Act} - Mean_{pre-JOBS Act})$

Firm Age	93	3.616	0.914	1.609	2.944	3.714	4.357	5.118	-0.124
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Panel B. EGCs descriptive statistics

Variables	N	Mean	St. D	Min	Q25	Median	Q75	Max	Mean Difference
Underpricing (0,0)	694	0.226	0.352	-0.361	-0.002	0.132	0.381	1.972	0.057
Underpricing (0,1)	694	0.225	0.349	-0.354	-0.007	0.135	0.380	1.811	0.046
Underpricing (0,30)	694	0.261	0.478	-0.538	-0.084	0.171	0.518	2.444	0.051
Non-EGC	694	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
JOBS Act	694	0.428	0.495	0.000	0.000	0.000	1.000	1.000	1.000
JA*nonEGC	694	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Board Size	694	7.231	1.505	4.000	6.000	7.000	8.000	11.000	0.115
Independence	694	0.703	0.173	0.143	0.600	0.750	0.857	0.900	0.042
Duality	694	0.392	0.489	0.000	0.000	0.000	1.000	1.000	-0.056
Fixed Salary	694	3.6e+05	1.5e+05	1.000	2.8e+05	3.6e+05	4.3e+05	9.7e+05	2.0e+04
Risk Income	694	1.6e+06	4.2e+06	0.000	1.4e+05	4.5e+05	1.4e+06	4.6e+07	7.0e+05
Revenues	694	2.898	2.366	0.000	0.000	3.331	4.905	6.975	-0.519
Assets	694	4.273	1.622	0.110	3.262	4.267	5.339	8.194	0.060
ROA	694	-0.695	1.410	-10.078	-0.705	-0.287	-0.036	0.059	-0.084
Big4	694	0.800	0.401	0.000	1.000	1.000	1.000	1.000	-0.026
Firm Age	694	2.297	0.698	0.693	1.792	2.303	2.708	4.248	-0.153

Panel C. Difference in Means

		Non-EGCs	EGCs	Total Sample
		Mean Difference	Mean Difference	¹¹Difference
Underpricing (0,0)	787	0.068	0.057	0.011
Underpricing (0,1)	787	0.054	0.046	0.008
Underpricing (0,30)	787	-0.020	0.051	-0.071
Non-EGC	787	0.000	0.000	0.000
JOBS Act	787	1.000	1.000	0.000
JA*nonEGC	787	1.000	0.000	1.000
Board Size	787	0.023	0.115	-0.092
Independence	787	0.089	0.042	0.272
Duality	787	-0.04	-0.056	0.016
Fixed Salary	787	9.0e+04	2.0e+04	7.0e+04
Risk Income	787	7.0e+06	7.0e+05	6.3e+06
Revenues	787	0.144	-0.519	0.663
Assets	787	0.263	0.060	0.203
ROA	787	-0.010	-0.084	0.074
Big4	787	0.028	-0.026	0.054
Firm Age	787	-0.124	-0.153	0.029

¹¹Difference = (Mean Difference_{non-EGCs} – Mean Difference_{EGCs})

Table 7. Correlation Matrix for non-EGCs

Table 7 presents Spearman Rank Correlations for each variable for non-EGCs. Panel A shows the correlation matrix for the 64 non-EGCs that did IPO before 2017 and Panel B presents the correlation matrix for the 29 non-EGCs with initial stock issuance after the law of 2017.

***, **, * define the significance level at 1%, 5% and 10% respectively.

Panel A. Correlation Matrix for non-EGCs before JOBS Act 2017

	Underpricing (0,0) (1)	Underpricing (0,1) (2)	Underpricing (0,30) (3)	Board Size (4)	Independence (5)	Duality (6)	Fixed Salary (7)	Risk Income (8)	Revenues (9)	Assets (10)	ROA (11)	Big4 (12)	Firm Age (13)
(1)	1												
(2)	0.981***	1											
(3)	0.788***	0.805***	1										
(4)	-0.173	-0.184	-0.303**	1									
(5)	-0.010	0.006	-0.006	0.135	1								
(6)	-0.176	-0.210*	-0.050	-0.213*	-0.080	1							
(7)	-0.145	-0.135	-0.175	0.093	-0.012	-0.020	1						
(8)	-0.133	-0.165	-0.212*	0.104	0.066	0.259**	-0.043	1					
(9)	-0.185	-0.165	-0.204	0.168	-0.048	0.131	0.199	0.113	1				
(10)	-0.246**	-0.232*	-0.403***	0.075	0.036	0.152	0.112	0.184	0.608***	1			
(11)	-0.006	-0.004	-0.068	0.038	-0.110	-0.036	0.177	0.044	0.041	-0.045	1		
(12)	0.038	0.029	-0.101	0.112	0.190	-0.126	0.133	0.176	0.138	0.283**	0.144	1	
(13)	-0.081	-0.065	-0.123	0.190	0.069	-0.247	0.385***	0.057	0.131	0.032	0.003	0.087	1

Panel B. Correlation Matrix for non-EGCs after JOBS Act 2017

	Underpricing (0,0) (1)	Underpricing (0,1) (2)	Underpricing (0,30) (3)	Board Size (4)	Independence (5)	Duality (6)	Fixed Salary (7)	Risk Income (8)	Revenues (9)	Assets (10)	ROA (11)	Big4 (12)	Firm Age (13)
(1)	1												
(2)	0.982***	1											
(3)	0.853***	0.870***	1										
(4)	-0.198	-0.242	-0.206	1									
(5)	0.134	0.148	0.047	0.013	1								
(6)	0.142	0.223	0.073	0.004	0.295	1							
(7)	-0.268	-0.266	-0.231	0.319*	-0.029	-0.047	1						
(8)	0.029	0.060	0.023	0.171	0.209	0.333*	-0.163	1					
(9)	-0.305	-0.285	-0.262	0.514***	-0.157	0.025	0.596***	0.053	1				
(10)	-0.450**	-0.414**	-0.398**	0.341*	-0.216	-0.087	0.3284	0.065	0.679***	1			
(11)	-0.367**	-0.280	-0.212	0.034	0.153	0.219	-0.046	-0.019	0.014	0.231	1		
(12)	0.013	0.017	0.039	0.118	-0.237	0.107	0.028	0.081	0.157	0.220	-0.339*	1	
(13)	-0.382**	-0.323*	-0.222	-0.017	-0.107	-0.155	0.368**	-0.209	0.415**	0.503***	0.285	0.112	1

Table 8. Correlation Matrix for EGCs

Table 8 presents Spearman Rank Correlations for each variable for EGCs. Panel A shows the correlation matrix for the 397 EGCs that did IPO before 2017 and Panel B presents the correlation matrix for the 297 EGCs with initial stock issuance after the law of 2017.

***, **, * define the significance level at 1%, 5% and 10% respectively.

Panel A. Correlation Matrix for EGCs before JOBS Act 2017

	Underpricing (0,0) (1)	Underpricing (0,1) (2)	Underpricing (0,30) (3)	Board Size (4)	Independence (5)	Duality (6)	Fixed Salary (7)	Risk Income (8)	Revenues (9)	Assets (10)	ROA (11)	Big4 (12)	Firm Age (13)
(1)	1												
(2)	0.954***	1											
(3)	0.641***	0.669***	1										
(4)	-0.017	-0.014	0.005	1									
(5)	0.079	0.063	0.071	0.028	1								
(6)	0.122**	0.126**	0.086*	-0.165***	0.003	1							
(7)	-0.036	-0.018	-0.024	0.208***	-0.191***	-0.053	1						
(8)	0.041	0.035	0.029	0.172***	-0.095*	0.031	0.126**	1					
(9)	0.083	0.098*	0.009	0.206***	-0.246***	0.095*	0.332***	0.229***	1				
(10)	0.061	0.077	0.039	0.235***	-0.294***	0.085*	0.333***	0.280***	0.759***	1			
(11)	0.122**	0.122**	0.072	0.192***	-0.109**	0.013	0.189***	0.136***	0.443***	0.565***	1		
(12)	0.094*	0.065	0.109**	0.265***	0.037	0.041	0.155***	0.082	0.177***	0.224***	0.181*	1	
(13)	-0.010	0.004	0.011	0.161***	-0.151***	-0.050	0.425***	0.057	0.531***	0.318***	0.166***	0.040	1

Panel B. Correlation Matrix for EGCs after JOBS Act 2017

	Underpricing (0,0) (1)	Underpricing (0,1) (2)	Underpricing (0,30) (3)	Board Size (4)	Independence (5)	Duality (6)	Fixed Salary (7)	Risk Income (8)	Revenues (9)	Assets (10)	ROA (11)	Big4 (12)	Firm Age (13)
(1)	1												
(2)	0.955***	1											
(3)	0.71***	0.765***	1										
(4)	0.197***	0.205***	0.136	1									
(5)	0.110*	0.098*	0.118**	0.309***	1								
(6)	0.068	0.068	0.110*	-0.14**	-0.077	1							
(7)	0.117**	0.130**	0.111*	0.306***	0.106**	0.045	1						
(8)	0.161***	0.152***	0.133**	0.203***	0.050	0.090	0.076	1					
(9)	0.176***	0.203***	0.181***	0.165***	-0.156***	0.237***	0.304***	0.179***	1				
(10)	0.144**	0.195***	0.170***	0.360***	-0.018	0.126**	0.523***	0.251***	0.624***	1			
(11)	0.162***	0.191***	0.180***	0.162***	-0.003	0.073	0.249***	0.084	0.370***	0.605***	1		
(12)	0.118**	0.152***	0.168***	0.344***	0.213***	-0.084	0.387***	0.121**	0.128**	0.377***	0.198***	1	
(13)	0.106*	0.115**	0.075	0.116**	-0.035	0.098*	0.275***	0.097*	0.572***	0.299***	0.133**	-0.029	1

Table 9. Test of differences

Table 9 shows the mean and the median of each variable included in Equation (1). Panel A reports data for non-EGCS. Our sample consists of 64 non-EGCs with IPO before the confidential submission process practice signed in 2017 and 29 non-EGCs with IPO after the law. Panel B presents means and medians for firms qualified as EGCs. Our sample is composed of 397 EGCs with IPO before the JOBS Act 2017 and 297 EGCs IPO after the law. We report two-tailed p-values for tests of differences in means and medians using two different tests. For the means we used the t-test while for the test of difference in medians we used Wilcoxon signed rank test. Panel C reveals information about differences in means between the two group of firms. ***, **, * define the significance level at 1%, 5% and 10% respectively.

Panel A. Univariate differences between non-EGCs with IPO before and after JOBS Act

Variables	Before (N=64)		After (N=29)		P-values: Test of differences	
	Mean	Median	Mean	Median	Means	Medians
Underpricing (0,0)	0.117	0.081	0.185	0.109	0.158	0.296
Underpricing (0,1)	0.139	0.105	0.193	0.126	0.291	0.481
Underpricing (0,30)	0.211	0.173	0.191	0.162	0.746	0.797
nonEGC	1.000	1.000	1.000	1.000	-	-
JOBS Act	0.000	0.000	1.000	1.000	-	-
JA*nonEGC	0.000	0.000	1.000	1.000	-	-
Board Size	8.391	9.000	8.414	9.000	0.954	0.960
Independence	0.451	0.388	0.540	0.444	0.102	0.120
Duality	0.281	0.000	0.241	0.000	0.692	0.690
Fixed Salary	7.2e+05	7.5e+05	8.1e+05	7.1e+05	0.232	0.578
Risk Income	4.0e+06	1.8e+06	1.1e+07	1.7e+06	0.024**	0.691
Revenues	7.899	7.730	8.043	7.953	0.439	0.529
Assets	7.990	8.021	8.253	8.173	0.274	0.512
ROA	0.007	0.008	-0.003	0.010	0.600	0.556
Big4	0.938	1.000	0.966	1.000	0.584	0.581
Firm Age	3.655	3.783	3.531	3.555	0.546	0.681

Panel B. Univariate differences between EGCs with IPO before and after JOBS Act

	Before (N=397)		After (N=297)		P-values: Test of differences	
	Mean	Median	Mean	Median	Means	Medians
Underpricing (0,0)	0.202	0.108	0.259	0.176	0.033**	0.032**
Underpricing (0,1)	0.206	0.114	0.252	0.172	0.087*	0.131
Underpricing (0,30)	0.239	0.166	0.290	0.197	0.164	0.631
nonEGC	0.000	0.000	0.000	0.000	-	-
JOBS Act	0.000	0.000	1.000	1.000	-	-
JA*nonEGC	0.000	0.000	0.000	0.000	-	-
Board Size	7.181	7.000	7.296	7.000	0.320	0.151
Independence	0.685	0.714	0.727	0.750	0.002***	0.003***
Duality	0.416	0.000	0.360	0.000	0.140	0.140
Fixed Salary	3.5e+05	3.5e+05	3.7e+05	3.9e+05	0.065*	0.001***
Risk Income	1.3e+06	4.2e+05	2.0e+06	4.9e+05	0.046**	0.469
Revenues	3.120	3.814	2.601	2.398	0.004***	0.007***
Assets	4.247	4.185	4.307	4.370	0.633	0.319
ROA	-0.659	-0.257	-0.743	-0.339	0.436	0.009***
Big4	0.811	1.000	0.785	1.000	0.388	0.387
Firm Age	2.362	2.398	2.209	2.197	0.004***	0.010***

Panel C. Test of differences in differences

Variables	Non-EGCs (N=93)	EGCs (N=694)	Difference	P-value
	Mean (Difference)	Mean (Difference)		
Underpricing (0,0)	0.068	0.057	0.011	0.894
Underpricing (0,1)	0.054	0.046	0.008	0.916
Underpricing (0,30)	-0.020	0.051	-0.071	0.513
nonEGC	0.000	0.000	0.000	-
JOBS Act	1.000	1.000	0.000	-
JA*nonEGC	1.000	0.000	1.000	-
Board Size	0.023	0.115	-0.092	0.801
Independence	0.089	0.042	0.047	0.269
Duality	-0.04	-0.056	0.016	0.892
Fixed Salary	9.0e+04	2.0e+04	7.0e+04	0.164
Risk Income	7.0e+06	7.0e+05	6.3e+06***	0.000
Revenues	0.144	-0.519	0.663	0.209
Assets	0.263	0.060	0.203	0.584
ROA	-0.010	-0.084	0.074	0.814
Big4	0.028	-0.026	0.054	0.549
Firm Age	-0.124	-0.153	0.029	0.865

Table 10. Regression Analysis

Table 10 presents regression results on the determinants of Underpricing in the shorter and longer horizon. Column 2 presents the expected signs for EGCs and JOBS Act dummy variable and corporate governance variables. Column 3,4 and 5 reports the results of robust regressions for the three intervals of IPO underpricing, *Underpricing(0,0)*, *Underpricing(0,1)* and *Underpricing(0,30)*. P-values reported in parentheses below the coefficient estimates. The final sample consists of 787 observations from January 2013 to October 2020.

***, **, * define the significance level at 1%, 5% and 10% respectively.

Variables	Expected Sign	Robust Underpricing (0,0)	Robust Underpricing (0,1)	Robust Underpricing (0,30)
nonEGC	+	-0.0648 (0.145)	-0.0745 (0.116)	-0.0057 (0.927)
Jobs Act	+	0.0682*** (0.013)	0.0558** (0.040)	0.0615 (0.108)
JA*nonEGC	+	-0.0254 (0.687)	-0.0275 (0.681)	-0.1211 (0.145)
Board Size	-	0.046 (0.549)	0.0029 (0.709)	-0.0020 (0.861)
Independence	-	0.1597*** (0.006)	0.1529*** (0.009)	0.1926** (0.016)
Duality	+	0.0486* (0.057)	0.0482* (0.058)	0.0725** (0.042)
Fixed Salary	-	-6.27e-08 (0.325)	-6.22e-08 (0.340)	-7.89e-08 (0.348)
Risk Income	+	2.71e-09 (0.159)	2.60e-09 (0.157)	4.74e-09 (0.121)
Revenue		0.0219** (0.013)	0.0208** (0.016)	0.0138 (0.293)
Assets		-0.0226** (0.047)	-0.0139 (0.218)	-0.0164 (0.293)
ROA		0.0324*** (0.000)	0.0308*** (0.000)	0.0369** (0.011)
Big4		0.0678** (0.031)	0.0617* (0.065)	0.1353*** (0.002)
Firm Age		-0.0117 (0.199)	-0.0099 (0.572)	0.0046 (0.866)
Constant		0.7932 (0.350)	0.0662 (0.430)	0.0429 (0.726)
N		787	787	787
R-square		0.0651	0.0612	0.0509

Sensitivity Analysis

Table 11. Test of differences - Sensitivity Analysis

Table 11 shows the mean and the median of each variable included in Equation (1) for robustness check. Panel A reports data for non-EGCS. Our sample consists of 64 non-EGCs with IPO before the confidential submission process practice signed in 2017 and 29 non-EGCs with IPO after the law. Panel B describes mean and median for firms qualified as EGCs. Our sample is composed of 397 EGCs with IPO before the JOBS Act 2017 and 297 EGCs IPO after the law. We report two-tailed p-values for tests of differences in means and medians using two different tests. For the means we used the t-test while for the test of difference in medians we used Wilcoxon signed rank test. Panel C shows information about differences in means between the two group of firms. ***, **, * define the significance level at 1%, 5% and 10% respectively.

Panel A. Univariate differences between non-EGCs with IPO before and after JOBS Act

Variables	Before (N=64)		After (N=29)		P-values: Test of differences	
	Mean	Median	Mean	Median	Means	Medians
Underpricing (0,0)	0.118	0.082	0.186	0.111	0.162	0.326
Underpricing (0,1)	0.140	0.105	0.194	0.115	0.286	0.515
Underpricing (0,30)	0.235	0.191	0.189	0.154	0.471	0.471
nonEGC	1.000	1.000	1.000	1.000	-	-
JOBS Act	0.000	0.000	1.000	1.000	-	-
JA*nonEGC	0.000	0.000	1.000	1.000	-	-
Board Size	8.391	9.000	8.414	9.000	0.954	0.960
Independence	0.451	0.388	0.540	0.444	0.102	0.120
Duality	0.281	0.000	0.241	0.000	0.692	0.690
Fixed Salary	7.2e+05	7.5e+05	8.1e+05	7.1e+05	0.232	0.578
Risk Income	4.0e+06	1.8e+06	1.1e+07	1.7e+06	0.024**	0.691
Revenues	7.899	7.730	8.043	7.953	0.439	0.529
Assets	7.990	8.021	8.253	8.173	0.274	0.512
ROA	0.007	0.008	-0.003	0.010	0.600	0.556
Big4	0.938	1.000	0.966	1.000	0.546	0.681
Firm Age	3.655	3.783	3.531	3.555	0.584	0.581

Panel B. Univariate differences between EGCs with IPO before and after JOBS Act

	Before (N=397)		After (N=297)		P-values: Test of differences	
	Mean	Median	Mean	Median	Means	Medians
Underpricing (0,0)	0.202	0.108	0.260	0.174	0.032**	0.032**
Underpricing (0,1)	0.206	0.115	0.254	0.186	0.076*	0.112
Underpricing (0,30)	0.253	0.179	0.298	0.201	0.224	0.769
nonEGC	0.000	0.000	0.000	0.000	-	-
JOBS Act	0.000	0.000	1.000	1.000	-	-
JA*nonEGC	0.000	0.000	0.000	0.000	-	-
Board Size	7.181	7.000	7.296	7.000	0.320	0.151
Independence	0.684	0.714	0.726	0.750	0.002***	0.002***
Duality	0.416	0.000	0.360	0.000	0.140	0.140
Fixed Salary	3.5e+05	3.5e+05	3.7e+05	3.9e+05	0.065*	0.001***
Risk Income	1.3e+06	4.2e+05	2.0e+06	4.9e+05	0.046**	0.469
Revenues	3.120	3.814	2.601	2.398	0.004***	0.007***
Assets	4.247	4.185	4.307	4.370	0.633	0.319
ROA	-0.659	-0.257	-0.743	-0.339	0.436	0.009***
Big4	0.811	1.000	0.785	1.000	0.004***	0.010***
Firm Age	2.362	2.398	2.209	2.197	0.388	0.387

Panel C. Test of differences in differences

Variables	Non-EGCs (N=93)	EGCs (N=694)	Difference	P-value
	Mean (Difference)	Mean (Difference)		
Underpricing (0,0)	0.068	0.058	0.010	0.902
Underpricing (0,1)	0.054	0.048	0.006	0.928
Underpricing (0,30)	-0.046	0.045	-0.091	0.405
nonEGC	0.000	0.000	0.000	-
JOBS Act	1.000	1.000	0.000	-
JA*nonEGC	1.000	0.000	1.000	-
Board Size	0.023	0.115	-0.092	0.801
Independence	0.089	0.042	0.047	0.274
Duality	-0.040	-0.056	0.016	0.892
Fixed Salary	9.0e+04	2.0e+04	7.0e+04	0.164
Risk Income	7.0e+06	7.0e+05	6.3e+06***	0.000
Revenues	0.144	-0.519	0.663	0.209
Assets	0.263	0.060	0.203	0.584
ROA	-0.010	-0.084	0.074	0.814
Big4	0.028	-0.026	0.054	0.865
Firm Age	-0.124	-0.153	0.029	0.549

Table 12. Regression Analysis - Sensitivity Analysis

Table 12 reports regression results on the determinants of Underpricing in the shorter and longer horizon for robustness test. Column 2 presents the expected signs for EGCs and JOBS Act dummy variable and corporate governance variables. Column 3,4 and 5 reports the results of robust regressions for the three intervals of IPO underpricing, *Underpricing(0,0)*, *Underpricing(0,1)* and *Underpricing(0,30)*. P-values reported in parentheses below the coefficient estimates. The final sample consists of 787 observations from January 2013 to October 2020.

***, **, * define the significance level at 1%, 5% and 10% respectively.

Variables	Expected Sign	Robust Underpricing (0,0)	Robust Underpricing (0,1)	Robust Underpricing (0,30)
nonEGC	+	-0.0634 (0.155)	-0.0731 (0.124)	0.0104 (0.869)
Jobs Act	+	0.0686** (0.013)	0.0573** (0.036)	0.0555 (0.151)
JA*nonEGC	+	-0.0254 (0.687)	-0.0281 (0.672)	-0.0141 (0.101)
Board Size	-	0.0042 (0.579)	0.0024 (0.753)	-0.0014 (0.906)
Independence	-	0.1577*** (0.006)	0.1522*** (0.009)	0.1858** (0.022)
Duality	+	0.0496* (0.052)	0.0486* (0.056)	0.0747** (0.039)
Fixed Salary	-	-6.51e-08 (0.309)	-6.50e-08 (0.319)	-9.38e-08 (0.286)
Risk Income	+	2.61e-09 (0.179)	2.58e-09 (0.161)	4.91e-09 (0.109)
Revenue		0.0219** (0.013)	0.0202** (0.020)	0.0127 (0.326)
Assets		-0.0223** (0.050)	-0.0130 (0.252)	-0.0162 (0.311)
ROA		0.0321*** (0.000)	0.0304*** (0.000)	0.0369** (0.012)
Big4		0.0682** (0.030)	0.0632* (0.059)	0.1427*** (0.001)
Firm Age		-0.0115 (0.506)	-0.0101 (0.566)	0.0044 (0.871)
Constant		0.0817 (0.335)	0.0682 (0.415)	0.0580 (0.641)
N		787	787	787
R-square		0.0646	0.0608	0.0506

Figures Appendix

Figure 1. Q-Q plot

The following q-q plot indicates that the errors are not normally distributed for underpricing at the day of IPO, since the points do not lie along the straight line.

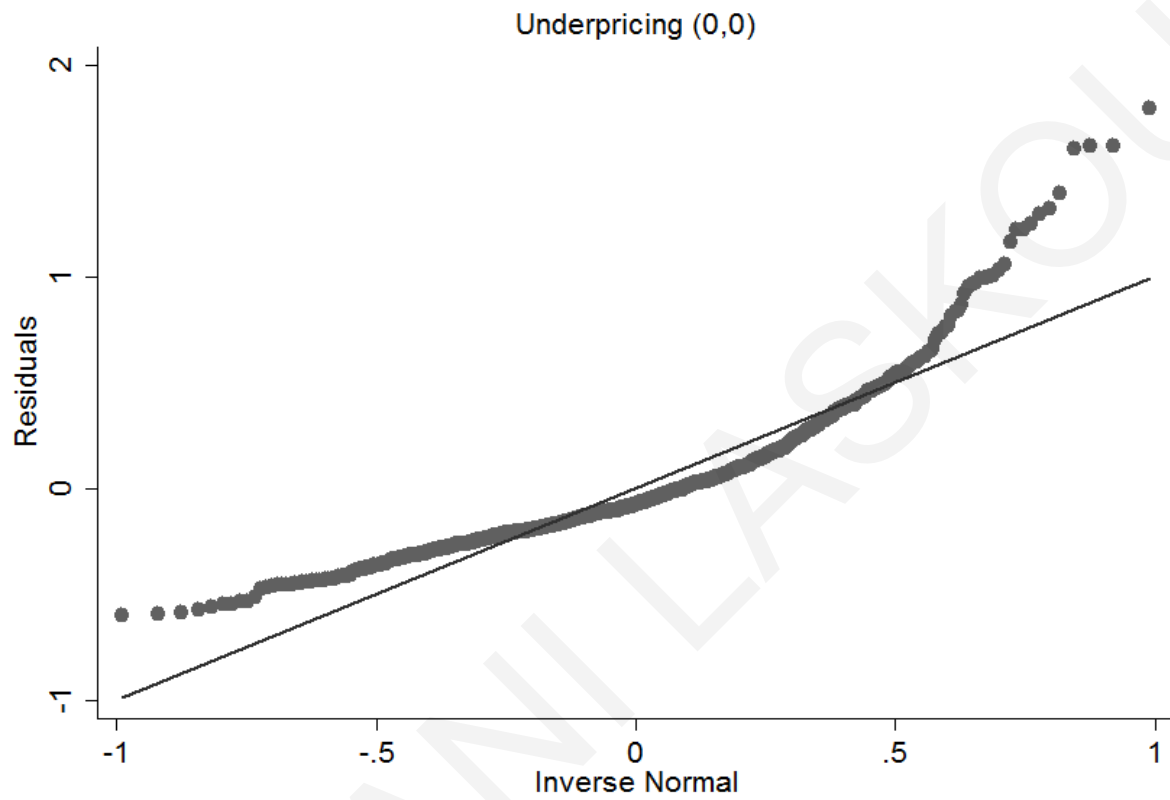


Figure 2. Q-Q plot

From figure 2, we observe that the residuals do not lie along the line, and hence, the normality hypothesis is violated for underpricing one day after the public issuance.

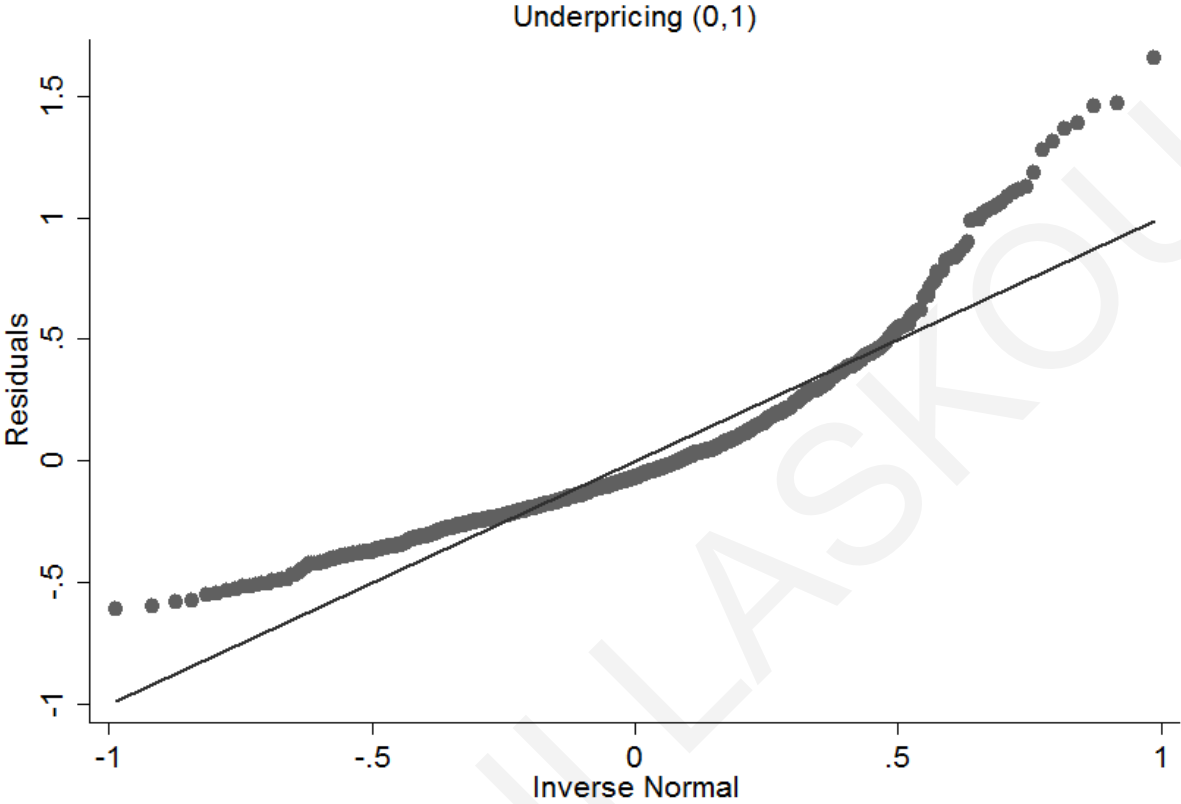


Figure 3. Q-Q plot

This figure presents the q-q plot for 30-day window. It shows that the residuals are not normally distributed since the points do not lie along the straight line.

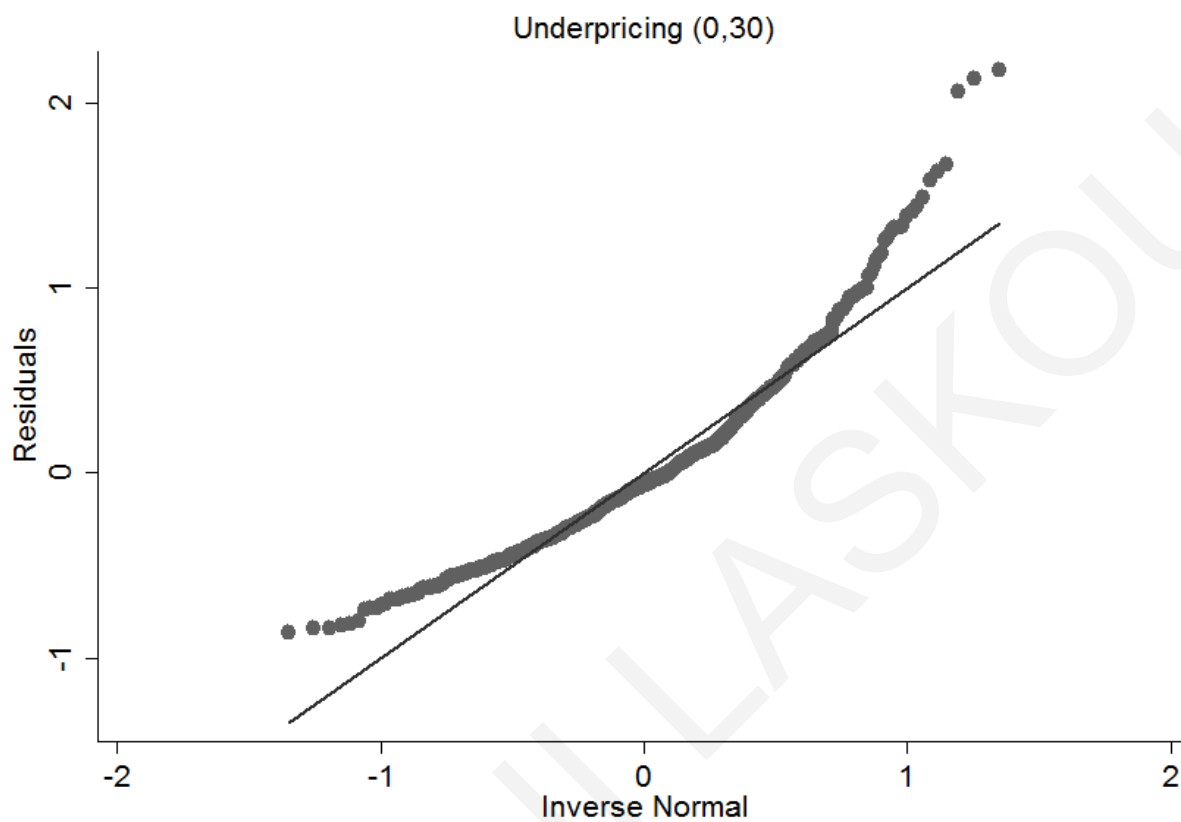


Figure 4. Histogram

In this figure, we observe that there is no a symmetric bell-shaped histogram of residuals distributed around 0 and hence, again, the hypothesis of normality is violated, for the regression with dependent variable the underpricing at the day of IPO.

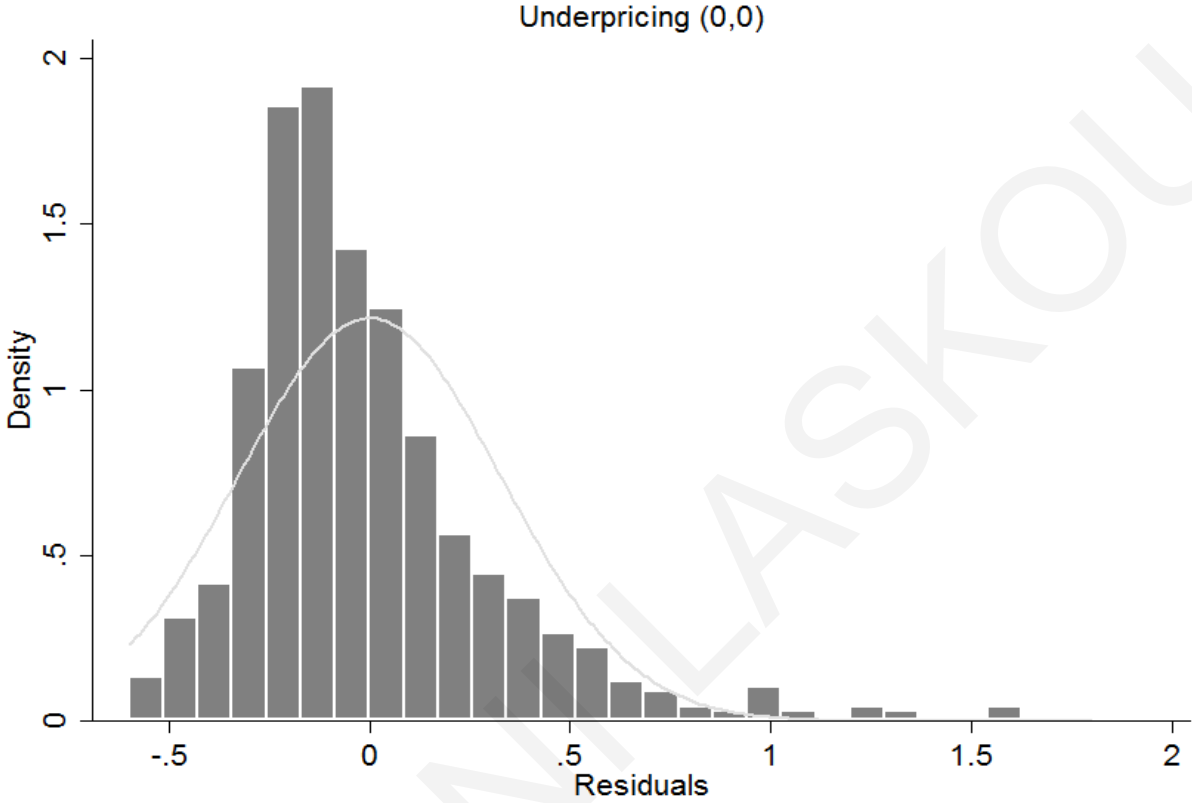


Figure 5. Histogram

The following histogram shows that the hypothesis of residuals normality is violated, as the error terms are not symmetric around 0 for the second regression, i.e. with dependent variable the underpricing one day after the IPO.

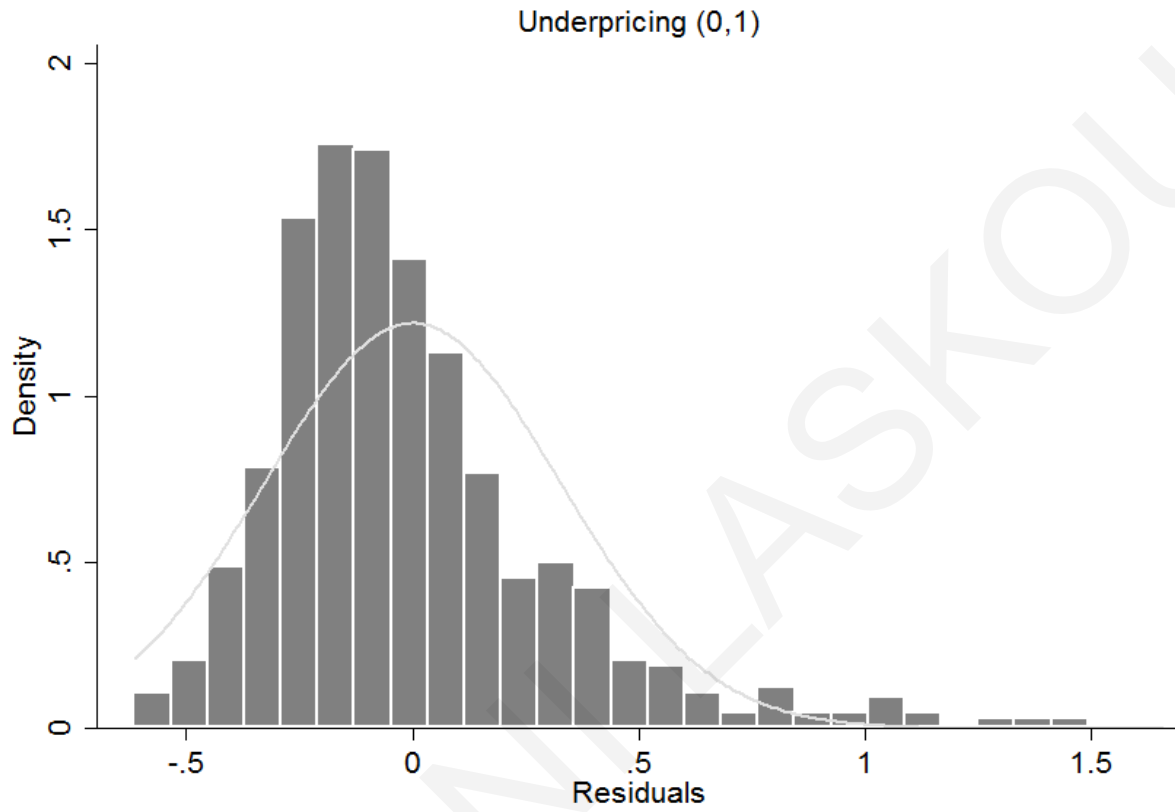


Figure 6. Histogram

Finally, the histogram of the 30-day window shows that there are normality issues since the error terms are not symmetric around 0.

