Market Manipulation Rules and IPO Underpricing

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ABSTRACT

Using a large sample of 13,459 initial public offerings (IPOs) from 37 countries, we find that trading rules on market manipulation reduce IPO underpricing. The effect is weaker for IPOs certified by reputable intermediaries, in countries with greater shareholder rights protection, better financial reporting quality, and after the adoption of International Financial Reporting Standards. Better trading rules on market manipulation are also related to higher IPO proceeds, subscription-level, and trading volume, lower IPO listing fees, and better long-term post-IPO performance. Our findings are consistent with the notion that exchange trading rules mitigate information asymmetry problems for investors, resulting in lower IPO underpricing.

JEL Classification*:* G10: G14: G15: G30

Keywords: Exchange trading rules; market manipulation; IPO pricing; information asymmetry

1. Introduction

Stock market manipulation is of great concern to regulators and market participants, since it undermines investor confidence and hampers the efficiency and integrity of financial markets (e.g. Aggarwal and Wu, 2006; Cumming et al., 2011). While prior research has provided important insights into manipulative trading strategies (Aggarwal and Wu, 2006; Ben-David et al., 2013; Lee et al., 2013; Griffin and Shams, 2018), how stock exchanges' trading rules on market manipulation affect firms' financing costs has remained largely unexplored to date. We address this issue by examining the effect of market manipulation trading rules on initial public offering (IPO) underpricing around the world.

IPOs provide a natural platform for investigating the impact of market manipulation trading rules on stock prices for several reasons. First, IPOs are an important source of capital in terms of financing new growth opportunities and expansion for firms around the world (Boulton et al., 2017). Second and more importantly, the high degree of information asymmetry regarding issuing firms and the complexity of the IPO process render IPOs susceptible to irregularities and manipulative conduct (Ritter, 2011). Indeed, prior literature shows that manipulation practices involving IPOs result in long-term underperformance (Hao, 2007; Neupane et al., 2017).

Third, IPOs are significantly underpriced around the world, with the average first-day initial returns ranging from 28.3% to 38.7% as documented in various studies (see, among others, Boulton et al., 2017, 2020; Chen et al., 2020a). These returns represent significant costs to the issuing firms and highlight the importance of understanding if trading rules on market manipulation have any implications for IPO pricing. Finally, by examining the effect of market manipulation trading rules on IPO underpricing around the world, we contribute to the literature on IPO pricing (e.g. Ritter, 2003; Ljungqvist, 2007). Understanding the determinants of IPO pricing in non-U.S. markets is particularly important in light of an increase in the share

of global IPO activity for non-U.S. firms (e.g. Doidge, Karolyi, and Stulz, 2013; Gao, Ritter, and Zhu, 2013).

We argue that restrictive stock exchange market manipulation trading rules can have a significant effect on the pricing of IPOs. Exchange trading rules are typically unambiguous and purposely communicated clearly to all market participants (Aitken, Cumming, and Zhan, 2015). By disseminating knowledge on prohibited conducts and facilitating the oversight of these activities, detailed trading rules can reduce information asymmetry problems and improve investor confidence (Cumming et al., 2011). Prior literature shows that mechanisms mitigating information asymmetry, such as country-level earnings quality (Boulton et al., 2011), accounting conservatism (Boulton et al., 2017), and pre-IPO media coverage (Chen et al., 2020a), are associated with lower levels of IPO underpricing around the world. Synthesizing this evidence, we predict a lower level of IPO underpricing in countries with more restrictive stock exchange trading rules on market manipulation.

We utilize a comprehensive sample of international IPOs from Securities Data Company's (SDC) Platinum New Issue Database for 2000–2016. Our key variable of interest is the *Market Manipulation Index,* with a higher value indicating the existence of trading rules that prohibit manipulation activities such as price manipulation, volume manipulation, spoofing, and disclosure manipulation (Cumming et al., 2011). In our baseline regression, we find that the *Market Manipulation Index* is negatively related to first-day IPO returns. This finding suggests that the degree of IPO underpricing is lower in countries with more restrictive market manipulation trading rules. Our finding is economically significant, in that a one standard deviation increase in the *Market Manipulation Index* is associated with a reduction of anywhere between 10.4% and 14.2% of an IPO's first-day return, compared to the sample average.

Although we document a strong negative relation between the *Market Manipulation Index* and IPO underpricing, our results could be driven by omitted variables that are correlated with both the *Market Manipulation Index* and IPO underpricing. We address this issue in two separate analyses. First, we use the implementation of the Directive for Markets in Financial Instruments (MiFID) in November 2007 for the fifteen EU countries in our sample in a quasi-natural experiment setting. We find that IPO underpricing is lower in these EU countries relative to other countries after the implementation of MiFID with stricter trading rules on market manipulation. Among the EU countries, we also find that IPO underpricing is lower after the implementation of MiFID.

Second, we perform an instrumental variable regression in which we use the neighbouring countries' average *Market Manipulation Index* (*Regional Market Manipulation Index*) as an instrument for the *Market Manipulation Index*. This instrument satisfies the relevance condition, since neighbouring countries often share similar histories, political cultures, practical problems, and close informational ties (Kuran, 1989; Lohmann, 1994; Ellis and Fender, 2011; Acemoglu, Naidu, Restrepo, and Robinson, 2019). Economic reforms in one country are also influenced by neighbouring countries' past experience with reforms (Buera, Monge-Naranjo, and Primiceri, 2011). The instrument is also likely to satisfy the exclusion condition, since it is unlikely that IPO returns in one country are affected by the rules on market manipulations in neighbouring countries. Our findings from this instrumental variable regression analysis show that the *Market Manipulation Index* is negatively related to IPO first-day returns.

Next, we examine the cross-sectional variation of the relation between the *Market Manipulation Index* and IPO underpricing. Prior literature suggests that investors rely on external certifications of validation from venture capital firms (Megginson and Weiss, 1991; Loughran and Ritter, 2004), high-quality auditors (Menon and Williams, 1991), and

underwriter reputation (Carter and Manaster, 1990) when pricing IPOs. To the extent that these external information signals mitigate investors' information asymmetry problem, the effect of the *Market Manipulation Index* on IPO pricing should be weaker for IPOs backed by venture capital firms, or those with high-quality auditors or more reputable underwriters; we find evidence supportive of this conjecture.

We further consider the role of the country-specific institutional setting and information environment as sources of cross-sectional variations in the relation between *Market Manipulation Index* and IPO underpricing. If more stringent exchange rules for market manipulation mitigate information asymmetry problems and improve investor confidence, the effect of the *Market Manipulation Index* on IPO underpricing should be weaker in countries with stronger shareholder protection and better information environment. Prior research suggests that minority shareholders are better protected in countries with stronger security laws (La Porta et al., 2006); stronger anti-director rights (Djankov et al., 2008); better rule of law (La Porta et al., 1998) and in common law countries (La Porta et al., 1998). Using these proxies for shareholder protection, we find that the relation between *Market Manipulation Index* and IPO underpricing is less pronounced in countries with better shareholder protection. We further use accounting conservatism as a measure of information environment transparency (Boulton et al., 2017) and find that the effect of *Market Manipulation Index* on IPO underpricing is mitigated in countries with greater accounting conservatism.

We next examine how the relation between the *Market Manipulation Index* and IPO underpricing varies over time. First, we consider the adoption of International Financial Reporting Standards (IFRS) across countries, since Horton et al. (2013) argue that IFRS adoption improves the quality of financial information within a country. Consistent with this view, our results show that IFRS adoption moderates the negative relation between the market manipulation index and IPO underpricing. Second, we examine how the relation between the

Market Manipulation Index and IPO underpricing varies in high- versus low-sentiment periods. Ljungqvist, Nanda, and Singh (2006) find that underpricing arises in high-sentiment periods to compensate 'regular investors' for the possibility that sentiment demand could disappear. Our results show that the negative relation documented between the market manipulation index and IPO underpricing is amplified during periods of optimistic sentiment. In the final set of analyses, we consider how the *Market Manipulation Index* affects other IPO outcomes. We find that higher values of *Market Manipulation Index* are associated with higher IPO subscription level, IPO proceeds, and trading volume, and lower gross spread and investment bank fees. We also find that the long-term performance following IPO improves in markets with higher *Market Manipulation Index* values.

We contribute to multiple literatures. First, our study contributes to the understanding of IPO underpricing. In an attempt to explain the substantial cross-country variation in IPO underpricing, prior literature emphasizes the importance of firm-specific characteristics such as accounting conservatism, earnings quality (Boulton et al., 2011, 2017), and external agents such as the media (Chen et al., 2020a) in affecting IPOs' pricing internationally. More recently, Boulton, Smart, and Zutter (2020) document IPO underpricing to be greater in countries that ban short selling or security lending or in countries where short selling is not practiced. We contribute to this strand of literature by highlighting the role of market regulation in general and market manipulation rules in particular in alleviating information asymmetry concerns and mitigating IPO underpricing.

Our second contribution is to the broader literature on market manipulation. Prior studies in this area typically focus on understanding the trading strategies of manipulators (e.g. Aggarwal and Wu, 2006; Ben-David et al., 2013; Lee et al., 2013; Griffin and Shams, 2018). In the context of IPOs, Hao (2007) shows that laddering – a manipulative sales practice in which underwriters require customers to purchase additional shares in the aftermarket in return

for IPO allocations – contributes to higher offer prices and aftermarket prices but lower long-run performance. Neupane et al. (2017) use prosecuted cases of Indian IPOs and show that manipulated IPOs exhibit abnormally high returns, trading volumes, and volatility immediately after their listing, followed by substantial drops in returns after the first week of listing. We contribute to this strand of literature by documenting the real effect of trading rules on market manipulation on the pricing of IPOs around the world.

Finally, our paper is related to the recent literature on the real effects of financial markets (Bond, Edmans, and Goldstein, 2012). Prior studies show that regulations or improvements in the design of market structure and other aspects of trading, such as a reduction in tick size (e.g. Fang, Noe, and Tice, 2009; Fang, Tian, and Tice, 2014; Brogaard, Li, and Xia, 2017) or a relaxation of short selling constraints (e.g. Grullon et al., 2015; Fang, Huang, and Karpoff, 2016; De Angelis et al., 2017; Chang et al., 2019) have real implications for corporate policies and outcomes. We complement these studies by highlighting the importance of trading rules in general and market manipulation rules in particular that affect the financing outcomes for firms in international markets.

The remainder of the paper is organized as follows. We discuss the sample selection and variable construction in Section 2. Section 3 presents the results for the baseline regression and identification tests. We discuss the findings of the cross-sectional tests in Section 4 and explore the association between the market manipulation index and other IPO outcomes in Section 5. Section 6 concludes the paper.

2. Sample Selection and Variables

2.1. Sample selection

Our sample period commences in 2000 for two main reasons. First, since this is an international study, we do not want our results to be influenced by the East Asian financial

crisis, which affected more than 10 markets in our sample. Second, in 2000, the European Union (EU) commenced initiatives to adopt new market abuse directives and transparency directives to mitigate agency concerns such as insider trading, market manipulation, falsified corporate reporting, and inadequate disclosure (Christensen et al., 2016). The sample period ends in 2016, which gives us a minimum of three years of post-listing data to estimate the long-run performance of newly listed firms.

We obtain the data for this study from several sources. The market quality data are obtained from Cumming et al. (2011) and updated for the recent years with data from Aitken et al. (2015). Our key variable of interest is the *Market Manipulation Index,* which encompasses price manipulation, volume manipulation, spoofing, and disclosure manipulation (Cumming et al., 2011; Aitken et al., 2015). Firm-level financial information and stock price data are obtained from Datastream and Worldscope. Data on country-level economic development and the quality of listing stock exchanges are obtained from the World Bank's World Development Indicators.

We collect the IPO data from the SDC Platinum New Issue Database from 2000 through 2016. Following prior research (Boulton et al., 2010, 2017; Espenlaub et al., 2016, 2020; Chen et al., 2020a), we exclude exchange-traded funds, American depositary receipts, rights offerings, spin-off private placements, closed-end funds, real estate investment trusts, and limited partnerships and Global depositary receipts. Next, we require IPO firms to at least have information in Datastream or Worldscope for the IPO year. Further, we exclude countries for which we are unable to source data for the market manipulation index and its four components.

Finally, we drop all IPOs from countries with fewer than 5 IPOs during our sample period.[1] These steps result in a final sample of 13,459 IPOs listed in 37 countries.[2]

2.2. Variables

Our dependent variable is the IPO first-day return (*Day One Return*). Following prior studies (Ellul and Pagano 2006; Boulton et al., 2010, 2011, 2017; Chen et al., 2020a, 2020b), we calculate *Day One Return* as the first-day closing price of an IPO minus its offer price scaled by the offer price. Our primary variable of interest is the quality of the listing stock exchange (*Market Manipulation Index*). Price manipulation can be carried out in different ways and take several forms. One common method involves one broker (or colluding brokers) entering purchase orders at successively higher prices to create the appearance of active interest in a security, a practice known as ramping or gouging. This is likely for IPO firms that experience higher information asymmetry, and can thus be used for the expropriation of retail investors.

Volume manipulation can take two forms. The first form involves excessively trading a stock to inflate its volume, giving the false impression of positive investor sentiment regarding the stock, and creating the misleading appearance of active interest in a stock by having the same client reference on both sides of a trade. These practices can give the impression of a high trading volume to uninformed traders, especially on the day of listing. The second form of volume manipulation, spoofing, involves actions taken by market participants to create an improper or false impression of unusual activity or price movement in a security. For instance, brokers could delete orders on one side of the market as they approach

[1] In line with Boulton et al. (2011), we do not impose a minimum offer price restriction. Applying a $1.00 minimum offer price (converting local currency to U.S. dollars based on the exchange rate as of the IPO date) filter would greatly reduce the number of IPOs in many emerging countries. Therefore, the main analysis presented here imposes no minimum offer price, but we do verify that our results are unaffected by the exclusion of IPOs with low offer prices.

[2] We believe that our final sample of 13,459 IPOs from 37 countries over a 17-year period is not only exhaustive, but also representative of a truly global IPO dataset. It is in line with recent international studies, such as those of Boulton et al. (2017), with 13,285 IPOs from 36 countries between 1998 and 2014; more recently, Boulton et al. (2020), with 17,151 IPOs from 36 countries between 1998 and 2018; Chen et al. (2020a), with 11,716 IPOs from 39 countries between 2000 and 2014; and Espenlaub et al. (2020), with 10,490 IPOs from 40 countries between 2000 and 2013.

priority and then enter them again on the same side of the market to reflect continuous market interest in a specific stock. Although we believe that spoofing would be rather uncommon for IPO firms on the day of listing, IPOs in exchanges with no checks and balances to counter this issue could suffer detrimental effects on their listing day performance.

Finally, in terms of disclosure, some market participants could actively distribute misleading information that can distort the marketplace, or there can be a failure to disclose mandatory information, such as ownership interests when they reach a threshold. In the case of IPO firms, misleading information distributed by market participants, could potentially affect the stock's listing day returns. Therefore, following Cumming et al. (2011), we define the *Market Manipulation Index* as the sum of the exchange level index values for *Price Manipulation Index*, *Volume Manipulation Index*, *Spoofing Index,* and *Disclosure Manipulation Index*.[3]

Our selection of control variables follows prior literature (Ellul and Pagano 2006; Çolak et al. 2017; Chen et al. 2020a, 2020b): *IPO Size* is calculated as the natural logarithm of total assets of the IPO firm; *Profitability* is defined as earnings before interest and taxes, divided by total assets; *Leverage* is measured as the ratio of total debt over total assets; *IPO Age* is the natural logarithm of one plus the difference in years since the firm was established up to the year of listing; *IPO Commitment* and *Bookbuilding* are dummy variables equal to one if the underwriter purchased securities from the issuer to be offered to the public or if the IPO is conducted using bookbuilding, respectively, and zero otherwise; and *Shares issued* is the natural logarithm of the total number of shares issued by the IPO firm.

[3] IPOs globally have a lockup period of at least three months, extending up to a year from the day of listing, depending upon the exchange of listing (Aggarwal et al., 2002; Ritter and Welch, 2002). During this time, firm insiders are legally prohibited from trading their stocks, and we therefore believe that the insider trading index will not have any direct effect on the listing day returns of the IPO firm. In untabulated test, we repeat our baseline analysis with *Insider Trading Index* as key explanatory variable for IPO underpricing. As expected, the coefficient on *Insider Trading Index* is statistically insignificant (coeff=0.0035; t-stat=0.83).

Following prior literature (Ellul and Pagano, 2006; Boulton et al., 2010, 2017; Espenlaub et al., 2016, 2020; Chen et al., 2020a), we control for the state of the economy and the level of capital market development in the country where an IPO takes place. We include *IPO Activity*, defined as the ratio of the number of IPOs issued in a year to the total number of firms listed in that country, and *GDP per capita Growth*, measured as growth in the annual gross domestic product (GDP) per capita. We also control for *Market Size*, measured as the ratio of the annual total market capitalization of stocks traded to the GDP; and *Market Liquidity*, measured as the ratio of the annual total value of stocks traded to the GDP. Detailed definitions of the variables are presented in Appendix A. To mitigate the effect of potential outliers, we winsorize all variables (except for dummy variables) at both the top and bottom one percentile level.

2.3. Summary statistics

We report the sample distribution in Table 1, where information regarding the number of IPOs, the average IPO first-day return, and the value of the market manipulation index for each of our 37 sample markets is presented. It is important to note here that we undertake our sample IPOs' country-allocation and the value of the market manipulation index based on the main stock exchange on which the IPO is first listed (rather than the IPO-company's country of incorporation).[4] Our results show that just under half of the IPOs in our sample are concentrated in five markets: Australia, China, Japan, the U.K., and the U.S. On average, the first-day return of our sample IPOs is 29.82%; most markets (30 out of 37) generate a below-average first-day return, but, for the rest of the markets, we observe some notably high IPO

[4] Coffee (2002) suggests that firms list abroad to bond themselves to foreign listing standards. For example, firms listing in the U.S. subject themselves to SEC oversight, agree to meet generally accepted accounting principles (GAAP), and face the scrutiny of financial intermediaries involved in security markets. While most of our IPOs originate and list in the same country, some choose to list outside their home country. Therefore, we retain firms that list their shares directly in a foreign market. Most of these firms list in the U.S., the U.K, or Hong Kong. Since listing abroad can bond management to the listing country's standards, the country where the firm undertakes its primary listing is the relevant location for this study. In unreported robustness checks, we find that our results are not sensitive to the exclusion of firms that choose to list in a foreign country. We are grateful to an anonymous referee for the suggestion.

first-day returns. The values of the market manipulation index reveal a dispersed stock exchange quality internationally, with developed markets (the U.K., Canada, and the U.S.) featuring among the top index scores, as well as notable emerging markets (Turkey, the Philippines, Chile) exhibiting values of zero. Although the distribution of these values tends towards a developed–emerging market split, we also observe the odd cases of developed markets (Austria, Germany, Israel, and Japan) with relatively low scores and emerging markets (Thailand) with relatively high scores.

[Table 1 about here]

Table 2 presents the summary statistics. The average (median) first-day return of our IPO sample is 0.2982 (0.1035). The average (median) value of the market manipulation index is 6.7888 (6.0000), with most markets (20 out of 37) exhibiting values below the sample mean (as Table 1 illustrates). Our sample includes small IPO firms with assets of \$1.79 million ($e^{0.5822}$ = 1.79) at the 5% breakpoint and large IPO firms with assets worth \$1,455.2 million ($e^{7.2829}$ = 1455.2) at the 95% breakpoint, with an average IPO size of \$39.83 million ($e^{3.6847}$ = 39.83). The average (median) age of the IPO firm at the time of listing is 5.6 (7.0) years. A total of 59.95% of the IPOs come with a commitment clause from the underwriter, and 59.51% use bookbuilding. The results reported in Table 2 are largely consistent with prior studies on international IPOs (Ellul and Pagano, 2006; Boulton et al., 2020; Chen et al., 2020a). Furthermore, the highest Variance Inflation Factor among the explanatory variables is 2.21, suggesting that multicollinearity is not a concern in our analysis. The correlation matrix for the variables used in the baseline model of this study is presented in Appendix B.

[Table 2 about here]

3. Empirical Results

3.1. Baseline regression analysis

To assess whether the country-level market manipulation index has a significant effect on IPO first-day returns, we first rely on a series of baseline regressions drawing on the following specification:

$$\begin{aligned} Day\ One\ Return_{i,j,t} = {} & \alpha + \beta_1 Market\ Manipulation\ Index_{j,t} + \beta_2 IPO\ size_{i,j,t} + \beta_3 Profitability_{i,j,t} + \\ & \beta_4 Leverage_{i,j,t} + \beta_5 IPO\ Age_{i,j,t} + \beta_6 IPO\ Commitment_{i,j,t} + \beta_7 Bookbuilding_{i,j,t} + \beta_8 Shares \\ & Issued_{i,j,t} + \beta_9 IPO\ Activity_{j,t} + \beta_{10} GDP\ per\ capita\ Growth_{j,t} + \beta_{11} Market\ Size_{j,t} + \\ & \beta_{12} Market\ Liquidity_{j,t} + \sum FE + \varepsilon_{i,j,t} \end{aligned} \quad (1)$$

The subscripts i, j and t denote IPO firm, country and year, respectively; $\sum FE$ denotes year, and industry[5] fixed effects; and ε represents the error term. The model's estimation is based on pooled ordinary least squares (OLS), adjusting standard errors for heteroscedasticity, clustered at the country level.

Table 3 presents the results drawing on a series of nested models: one with year, and industry fixed effects but no control variables (Model 1); one including firm-level control variables (Model 2); and one also including country-level control variables (i.e. corresponding to the full baseline model, Model 3). Consistent across all three specifications, the coefficient of the *Market Manipulation Index* is significantly negative (at the 1% level), indicating that IPO first-day returns tend to decline as the market manipulation index increases. To the extent that the latter reflects a stock exchange's quality, these results are in line with previous research (Boulton et al., 2011, 2017), suggesting that IPO underpricing tends to decline with higher quality country-level earnings reporting practices. We also observe that a one standard deviation increase in *Market Manipulation Index* values (3.4998) reduces the average IPO first-

[5] To account for industry fixed effects, we employ Kenneth French's 10-industry classification (retrieved from http://mba.tuck.dartmouth.edu/pages/faculty/ken.french).

day return by anywhere between 3.11 and 4.23 percentage points,[6] corresponding to a reduction of 10.4% to 14.2% compared to the sample mean first-day IPO return, a rather significant result in economic terms. With regards to the estimates of the rest of the variables, we document a positive (negative) relation between IPO first-day returns and *IPO Age*, *IPO Commitment*, *IPO Activity*, *GDP per capita growth,* and *Market liquidity* (*IPO Size*, *Leverage*, *Bookbuilding*, *Shares issued,* and *Market size*). These results are largely in line with the literature (Ellul and Pagano, 2006; Demers and Joos, 2007; Boulton et al., 2011, 2017, 2020; Chen et al., 2020a).

[Table 3 about here]

3.2. Robustness tests

To the extent that our sample comprises of a wide cross-section of markets, IPO market characteristics, regulatory changes, sectors, and ownership structures, we now examine whether the negative effect of the market manipulation index on IPO first-day returns reported above holds for a battery of sensitivity tests. We present the results of the robustness tests in Table 4. To conserve space, we only report the coefficient of *Market Manipulation Index* and additional control variables for each test performed in Table 4.

To begin with, we control for the impact of factors that have been documented in the literature as relevant to the IPO process,[7] including *Advertising Intensity*, defined as the ratio of advertising expenditures to sales (Chen et al., 2020b); *IPO Float*, defined as the percentage of regular shares issued by the firm to the public that are available to trade (Brennan and Franks, 1997); and *Hot Issue Market*, defined as the average initial return for IPOs issued over the three months prior to a firm's listing (Espenlaub et al., 2016, 2020). We also control for *Asset Turnover*, defined as sales divided by the IPO firm's total assets (Chen et al., 2020b), and *Foreign Listing,* the case in which an IPO firm is listed in a foreign stock exchange and not

[6] Calculated as 3.4998 (-0.0121) = -0.0423 for Model 1; 3.4998 (-0.0089) = -0.0311 for Model 2; and 3.4998 (-0.0110) = -0.0385 for Model 3.

[7] Due to the unavailability of these additional control variables for some of the IPO firms, we are unable to control for them in our baseline regression model and therefore only account for them in robustness tests.

where it was initially incorporated / domiciled (Coffee, 2002). In addition, we control for *Security Law*, sourced from the World Bank's Doing Business indicators. It is the average of the country-specific disclosure requirements by stock exchange, liability standards, and the public enforcement of legal contracts – where the IPO firm is primarily listed (La Porta et al., 2006), *Social Trust*, defined as the proportion of a country's population that believe people in their country are generally trustworthy, based on the World Value Survey (La Porta et al., 1997), and *IPO Withdrawal*, defined as the total number of IPOs first initiated, but then withdrawn prior to the listing date in the issue year divided by the number of listed firms for the country of listing (Helbing et al., 2019). The results presented in Panel A of Table 4 show that the coefficient on *Market Manipulation Index* retains its significantly negative sign.

To gauge whether our estimates are driven by our sample's largest IPO markets, we repeat our estimations excluding IPOs from China, Japan, and the U.S. (which jointly account for almost a third of our sample IPOs). The results presented in Panel B of Table 4 show that the *Market Manipulation Index* coefficient is again negative, yet of lower magnitude (-0.0067) compared to its coefficients reported in Table 3, suggesting that the inclusion of the three largest IPO markets helps inflate the negative effect of *Market Manipulation Index* on IPO first-day returns. This is possibly because two of these three markets entail above average IPO first-day returns (China and Japan)[8]; their exclusion, therefore, leads to a sample with lower average underpricing, effectively dampening the negative relation between these two measures.

To investigate whether our results are driven by markets with the highest manipulation index values, we remove Canada, the U.K., and the U.S. (the top three markets with highest manipulation index values) and re-estimate our baseline regression model. The results reported in Panel B of Table 4 show that the *Market Manipulation Index* coefficient remains negative

[8] These two markets jointly account for a fifth of our sample IPOs, with both entailing very high underpricing levels and below-average market manipulation index values.

and significant, with its value (-0.0172) being of a magnitude far higher than that of its corresponding estimates reported thus far. Our results indicate that excluding the IPOs of the top three markets with the highest manipulation index values does not alter the findings on the negative effect of the *Market Manipulation Index* on IPO underpricing.

We further consider whether firms from highly regulated sectors or ownership concentration drive our results. We repeat the estimations above, this time excluding utility and financial IPOs from our sample. The results reported in Panel B of Table 4 again confirm the significance of the negative relation between *Market Manipulation Index* and IPO first-day returns. To mitigate the possible effect of highly concentrated ownership structures, we re-estimate the baseline regression model excluding IPOs from state-owned enterprises, a particularly prolific form of ownership in China and other emerging and European countries (Goyal et al., 2020), and business group firms (Marisetty and Subrahmanyam, 2010). Once again, the market manipulation index retains its significantly negative effect on IPO first-day returns.

The fact that many firms choose to go public in their home country or overseas by listing their shares in an exchange venue other than a country's main stock exchange raises an issue in our study's context (Coffee, 2002; Johan, 2010), considering that the *Market Manipulation Index* values utilized pertain to each country's main stock exchange (Cumming et al., 2011). To assess whether non-main stock exchange listings bear an effect over our results, we repeat our estimations excluding IPOs not listed on countries' main stock exchanges. The results reported in Panel B of Table 4 confirm the negative effect of *Market Manipulation Index* over IPO underpricing, indicating that inclusion of listings on non-main stock exchanges does not materialy affect our findings.

We further examine whether market manipulation rules are relevant for both components of IPOs first-day returns: the pre-listing returns (the price difference between the offer price and the opening price of the first day) and the post-listing returns (the price difference between the opening price and the closing price of the first day) (Barry and Jennings, 1993; Boulton et al., 2020). As far as the post-listing returns are concerned, one would expect strict (weak) market manipulation rules to help curtail (amplify) them. With respect to the pre-listing returns, several markets allow traders to revise or cancel their orders at minimal or no costs in the pre-opening auctions. As a result, potential market manipulation can arise in the pre-opening session that prevents information from being fully incorporated into the pre-opening price (Medrano and Vives, 2001; Biais, Bisiere, and Pouget, 2014). This is especially relevant for IPOs firms without any price history. Kuk, Liu and Pham (2015) find that strategic orders in which traders submit an originally aggressive limit order and then withdraw it (or revise it to a non-executable order) before trading opens are observed in 45.4 percent of their sample of Australian IPOs. Provided that some liquidity providers fail to adjust their order book in response to the cancellations or revisions of these strategic orders, the orders can lead to distorted opening price. In sum, the above discussion suggests that the negative effect of the *Market Manipulation Index* values over IPO-underpricing is expected to be relevant for both the pre- and post-listing component of IPO first-day returns.

We test for this empirically by partitioning IPO first-day returns into their primary (offer-to-open) and secondary (open-to-close) components and repeat our estimations using each component as the dependent variable. The results presented in Panel C of Table 4, show that the *Market Manipulation Index* is significantly negative when using both primary and secondary returns.

The EU region accounts for 15 countries out of 37 countries in our sample.[9] Therefore, we consider whether our baseline regression results are robust in the EU region. In addition, we examine whether the regulatory interventions observed in the EU during the GFC had an impact over the negative relation between market manipulation rules and IPO underpricing. To that end, we perform two estimations. First, we test for the effect of the short selling ban imposed as a response to the crisis (whereby we introduce the country-specific dummy variable *Short Sell Ban*, which assumes the value of unity during the period where regulators imposed a ban on short selling as a market stabilising response to 2008-09 financial crisis, zero otherwise, as per Jain et al., 2013). Second, we exclude all IPOs listed between 2007 and 2010 in the European Union (to control for the regulatory intervention by the European Central Bank in view of the declining stock markets at the time). The results from both estimations are presented in Panel D of Table 4 and reveal consistently negative values for the *Market Manipulation Index*.

Finally, we examine whether the aforementioned negative relation holds when each of the market manipulation index components (price manipulation index, volume manipulation index, spoofing index, and false disclosure index) enters the baseline regression model individually. The findings presented in Panel E of Table 4 confirm that the relation between each of the four components and IPO first-day returns is negative and significant, with a magnitude far exceeding (the relevant coefficients are far more negative) that reported in Table 3. Lastly, as far as the control variables are concerned across all the robustness tests, their signs and significance levels are qualitatively and quantitatively similar to those reported earlier in the baseline model.

[Table 4 about here]

[9] In our sample, the EU countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and the U.K.

3.3. Endogeneity

The results presented thus far indicate that stronger manipulation rules in a market tend to decrease IPO underpricing. However, it is still possible that this effect is due to one or more factors correlated with both the market manipulation index and first-day IPO returns. We perform two sets of analyses to address this issue.

First, considering that the market manipulation index is a reflection of a stock exchange's quality, we examine whether our results hold in the aftermath of changes in securities regulation. Following Cumming et al. (2011), we use the implementation of the MiFID in November 2007 for the fifteen EU countries in our sample in this analysis. The MiFID formed part of the Financial Services Action Plan (FSAP), launched in 1999 with the intention of enhancing quality and integration across European capital markets. FSAP included a variety of directives, including the Market Abuse Directive (MAD), the Transparency Directive, the International Accounting Standards Regulation, the Prospectus Directive, and the Takeover Directive. The introduction of the MiFID facilitated the implementation of earlier directives (e.g. MAD) by reiterating their provisions in the MiFID framework, stipulating the need for the implementation of their principles by November 2007 (Cumming et al., 2011).

Since stock exchange rules on market manipulation became stricter in the fifteen EU countries after the implementation of MiFID (Cumming et al., 2011), we examine how this exogenous change in market manipulation rules affected IPO underpricing. First, we use IPOs in the fifteen EU countries as the treatment group and IPOs in other countries as the control group. We compare IPO underpricing for the treatment versus control group following the implementation of MiFID. Specifically, we regress IPO underpricing on a dummy variable for treatment group (*EU IPOs*), another dummy variable for the post-MiFID period (*After*), the interaction of these two variables, and other control variables. The results presented in Model 1 of Table 5A show that the coefficient estimate for the interaction term *EU IPOs* * *After*, is

negative and significant. This finding indicates that IPO underpricing is lower in the fifteen EU countries relative to other countries, following the implementation of MiFID.

To address the concern that our results could be due to the difference among EU and non-EU countries, in Model 2 of Table 5A, we restrict our sample to the fifteen EU countries and examine how IPO underpricing changes following the implementation of MiFID. We find that the coefficient estimate for the dummy variable for the post-MiFID period (*After*) is negative and significant at the 5% level. To further minimize the possibility that firm or IPO characteristics could affect our results, we perform a propensity score matching analysis to compare the IPO underpricing for IPOs in periods before versus after the implementation of MiFID. Specifically, we calculate the propensity score by regressing a dummy variable for the implementation of the EU directive from November 2007 onward against the IPO level variables in Equation (1) (i.e., *Firm Size*, *Profitability, Leverage, IPO Age, IPO Commitment, Bookbuilding, and Shares Issued*), as well as industry fixed effects. The dummy variable takes the value of one for IPOs in the post-October 2007 period (i.e. the treatment group), after which the MiFID became effective. The dummy variable has a value of zero for IPOs up to October 2007 (i.e. the control group). For each of the 901 pre-directive implementation IPOs, we undertake one-to-one matching with the post-directive implementation IPO (with no replacement) that has the closest propensity score. For this matched sample of IPOs, we still observe a negative and significant relation at 1% level between *After* and IPO underpricing. Overall, our results reported in Models 2 and 3 indicate that stricter market manipulation rules following the implementation of MiFID reduce the level of IPO underpricing in EU countries in our sample.[10]

[10] The results in Table 5A are also robust when we control for the effect of the short selling ban in EU countries, or when we exclude IPOs listed between 2007 and 2010 in the European Union, to control for the regulatory intervention by the European Central Bank in view of the declining stock markets at the time. We are grateful to an anonymous referee for suggesting that we perform this analysis to establish the robustness of our findings.

Second, we estimate the baseline model using the instrumental variable approach. For an instrumental variable to be valid in our empirical setting, it should satisfy the *relevance* condition (i.e. be significantly correlated with the market manipulation index and not correlated with the residuals from the baseline model) and the *exclusion* condition (*i.e.* it should not, in itself, impact IPO first-day returns) (Larcker and Rusticus, 2010). We use the average *Market Manipulation Index* of all the land and water bordering neighbouring countries as the instrumental variable.[11] Our choice of this instrument is inspired from prior work which argues that countries within a region tend to have similar histories, political cultures, practical problems, and close informational ties (Kuran, 1989; Lohmann, 1994; Ellis and Fender, 2011; Acemoglu, Naidu, Restrepo, and Robinson, 2019). Buera, Monge-Naranjo, and Primiceri (2011) highlight that neighbouring countries' past experience with reforms influence domestic reforms through their effect on policymakers' beliefs (Buera, Monge-Naranjo, and Primiceri, 2011). Indeed, the creation of a national stock exchange, a core instrument of financial globalization, is dependent on whether a country's neighbors have adopted stock exchanges (Weber, Davis, and Lounsbury, 2009).

With respect to the *relevance* condition, the results reported for Stage 1 in Table 5B confirm the presence of a highly significantly positive relation between *Regional Market Manipulation Index* and the *Market Manipulation Index* (the coefficient of *Regional Market Manipulation Index* is 0.5061, significant at the 1% level).[12] The F-statistic of 698.94 shows that the instrument used in the first stage is a valid instrument, under the Hausman, Stock and Yogo (2005) critical values. With respect to the *exclusion* condition, it is unlikely that IPO first-day returns in one country should be related to the average *Regional Market Manipulation Index*. The results of our instrumental variable estimation presented in Stage 2 of Table 5B

[11] For the fifteen EU countries in our sample, there are two values – up to October 2007 and from November 2007 onward.

[12] A significantly positive correlation between the two variables is also reported by Cumming et al. (2011) and Aitken et al. (2015).

show that the fitted value of the *Market Manipulation Index* retains its significantly negative effect (at the 1% level) on IPO first-day returns.

[Tables 5A and 5B about here]

4. Cross-Sectional and Time-Series Tests

4.1. IPO certification effect

Although the findings reported thus far highlight a negative relation between the market manipulation index and IPO underpricing, the level of third-party IPO certification could have a moderating effect on the relation. This notion is based on the fact that investors have been found to assess the quality of a firm going public for the first time contingent on whether its IPO is backed by venture capital firms (Megginson and Weiss 1991; Loughran and Ritter 2004), audited by a high-quality auditor pre-IPO (Menon and Williams 1991), and the underwriter has a good reputation (Carter and Manaster 1990). It has been suggested that this tendency on behalf of investors is motivated by concerns over the perceived information asymmetry between the firm and its prospective investors, prompting the latter to rely on various information signals to judge the quality of an IPO. In that sense, the participation of venture capitalists or reputable underwriters helps produce a reduced sense of risk for the IPO, by providing investors the assurance of its quality. If this is the case, the involvement of quality third parties in an IPO would mitigate the negative effect of the market manipulation index on IPO underpricing documented above.

We control for IPO certification through a series of proxies established in prior literature (e.g. Carter and Manaster 1990; Megginson and Weiss 1991; Menon and Williams 1991; Loughran and Ritter 2004). Our first proxy, *Underwriter Rep*, is equal to one if the investment bank underwriting the IPO is in the top quartile, based on combined IPO proceeds raised in a financial year, and zero otherwise. Our second proxy, *Big 4 Auditor*, is equal to one

if the IPO firm is audited by one of the Big 4 auditing firms, and zero otherwise. Our last proxy, *VC Backing*, is equal to one if the IPO firm is backed by a venture capital firm, and zero otherwise.

Each of the three proxies is introduced into the baseline regression model both separately as well as in interaction with the *Market Manipulation Index.* The results presented in Table 6 reveal that the coefficients of the proxies are negative and significant, indicating that the IPO certification effect leads to lower underpricing. The coefficients of the interactive terms are positive and significant (at the 1% level), demonstrating that IPO certification helps mitigate the negative effect of the market manipulation index on IPO underpricing. Overall, the results suggest that the effect of the market manipulation index on IPO first-day returns is weaker for IPOs underwritten by reputable underwriters, IPOs audited by a Big 4 auditing firm, or IPOs backed by venture capital. These findings are likely because IPOs certified by third party reputable financial intermediaries have less information uncertainty, which reduces the effect of the market manipulation index.

[Table 6 about here]

4.2 Effects of country-level institutional factors

Our findings thus far suggest that countries with stronger provisions against market manipulation tend to, on average, experience lower IPO underpricing. However, the relation between IPO underpricing and the market manipulation index can be affected by the quality of a country's institutional design. To the extent that the quality of earnings reporting or the level of investor protection is high in a country, it stands to reason that this can mitigate the negative effect of the market manipulation index on IPO underpricing. We now test for this effect empirically.

To begin with, we test for the effect of shareholder rights protection on the relation documented between market manipulation index and IPO underpricing. This is a particularly

important determinant in terms of investors' willingness to participate in equity financing, since it defines their rights as shareholders and the extent to which these rights are legally enforced/protected. We proxy for shareholder rights protection through three proxies. The first is *Security Law*, sourced from the World Bank's Doing Business indicators, which measures the average number of country-specific disclosure requirements by stock exchange, liability standards, and the public enforcement of legal contracts (La Porta et al., 2006).

The second proxy is *Shareholder Rights*, which reflects the anti-director self-dealing rights index of the IPO's jurisdiction, obtained from Djankov et al. (2008) and Spamann (2010). Lastly, we employ *Rule of Law*, sourced from La Porta et al. (1998), which reflects the survey assessments regarding the quality of country-level law enforcement. Overall, higher values for any of the three proxies indicate greater levels of investor protection. Each of these proxies is interacted with the *Market Manipulation Index*, with the interaction terms included separately in the baseline model. The results reported in Models 1 to 3 in Table 7 show that the coefficients of the three interaction terms are positive and significant (at the 1% level), indicating that the effect of the market manipulation index on IPO underpricing is mitigated in countries with stronger levels of shareholder rights protection.

Next, we turn our attention to the role of earnings quality on the relation between the market manipulation index and IPO underpricing. Our proxy for earnings quality is the accounting conservatism score of Boulton et al. (2017). Boulton et al. (2017) report lower levels of IPO underpricing in jurisdictions where the practice of accounting conservatism prevails,[13] ascribing this decrease to the contribution of accounting conservatism to the

[13] Accounting conservatism reflects a set of accounting practices founded upon higher verification standards for reported information, particularly positive information. Generally, conservatism leads to a downward (upward) bias in the book value of assets (liabilities), culminating overall in lower net asset book values relative to market values. To the extent that conservatism leads to the timelier realization of negative news and constrained potential for the reporting of inflated earnings, Boulton et al. (2017) argue that accounting conservatism reduces IPO underpricing by improving the quality of information and, hence, dampening the information asymmetry between insiders and outsiders.

reduction of information asymmetry between issuers and outside investors. To test for the effect of accounting conservatism in our empirical setting, we augment the baseline model with the interaction term between the *Accounting Conservatism* score of Boulton et al. (2017) and *Market Manipulation Index*.

The results reported in Model 4 of Table 7 show that the coefficient of interaction between the market manipulation index and accounting conservatism is positive and significant (at the 1% level). This result denotes that, to the extent that accounting conservatism enhances the quality of financial reporting, it tends to moderate the effect of the market manipulation index on IPO underpricing in jurisdictions where accounting conservatism is more prevalent by reducing the information asymmetry between firm insiders and outsiders.

We finally test whether the negative relation between the market manipulation index and IPO underpricing holds when controlling for a country's legal origin. La Porta et al. (1998) find that common (civil) law countries tend to endow minority shareholders with greater (less) protection, thus fostering (deterring) their participation in equity investing. To account for the effect of legal origin, we introduce the dummy variable *Common Law*,[14] which assumes the value of unity if the IPO is listed in a market of the common law tradition, and zero if listed in a market belonging to a civil law country. This dummy is introduced into our baseline regression model in its interaction with *Market Manipulation Index*. The results reported in Model 5 of Table 7 denote that the coefficient of this interactive term is positive and significant, thus confirming that the effect of the market manipulation index on IPO underpricing is mitigated in jurisdictions offering stronger investor protection. Simply put, countries whose legal rules originate in the common law tradition tend to protect investors considerably more

[14] The common law countries in our sample are Australia, Canada, Hong Kong, India, Ireland, Israel, Malaysia, New Zealand, Singapore, Thailand, the U.K., and the U.S.

from managerial expropriation than countries whose laws originate in the civil law tradition, thereby moderating the effect of the market manipulation index.

[Table 7 about here]

4.3. Market manipulation index and IPO underpricing: IFRS adoption and investor sentiment

Previous work (Hong et al. 2014) shows that IPO underpricing is lower and the amount of capital raised is higher following the adoption of IFRS in international capital markets. Boulton et al. (2020) show that a country that imposes restrictions on short selling experiences higher levels of underpricing, but not if it has also adopted IFRS. To the extent that both reporting standards and manipulation-related regulation reflect the quality of a market's institutional design, IFRS adoption could have an impact on the relation documented between IPO first-day returns and *Market Manipulation Index*. We test for this conjecture in Model 1 of Table 8.

The results presented in Table 8 (Model 1) show that the negative relation between *Market Manipulation Index* and IPO first-day returns holds. The effect of *Market Manipulation Index* on IPO underpricing is mitigated following IFRS adoption, as reflected by the positive and significant coefficient for the interaction term between *Market Manipulation Index* and the IFRS dummy. This finding implies that the adoption of IFRS improves the quality of financial information, thereby reducing information asymmetry. Therefore, IFRS adoption moderates the negative relationship documented between *Market Manipulation Index* and IPO underpricing.

A recent stream of literature considers the role of investor sentiment in IPO pricing (Derrien, 2005; Cornelli, Goldreich, and Ljungqvist, 2006; Ljungqvist et al., 2006; Bajo and Raimondo, 2017). Sentiment-based theories assume two types of investors: informed institutional investors and sentiment-driven bullish individual investors. The investment banker

sets the offer price above the intrinsic value of the issue (as reflected in institutional investor valuations) but below the valuation of individual investors. Institutional investors benefit from flipping their shares to individual investors in early aftermarket trading (Derrien, 2005; Ljungqvist et al., 2006).

Since IPO firms have no prior price history and are young, immature, and informationally opaque, investors are likely to have wider ranges of priors on market values, making IPOs a natural setting for investor sentiment to influence valuations (Cornelli et al., 2006; Ljunqvist, 2007). Baker and Wurgler (2006) show that investor sentiment has a significant effect on the cross section of stock returns. Ljungqvist, Nanda, and Singh (2006) state that an initial price runup could be due to the presence of exuberant investors, leading to long-run underperformance. In a recent paper, Boulton et al. (2020) find that IPO underpricing is three to four percentage points higher during periods of high investor sentiment.

Given this discussion, we examine how the relation between *Market Manipulation Index* and IPO underpricing varies between high- and low-sentiment periods. We use the monthly Business Confidence Index and Consumer Confidence Index from the Organisation for Economic Co-operation and Development as our proxies for investor sentiment.[15] We introduce two dummies in our baseline regression model: one for a high business confidence index (*High BCI*) and one for a high consumer confidence index (*High CCI*). The variable *High BCI* (*High CCI*) assumes the value of one if the IPO is issued in a month when the country's Business Confidence Index (Consumer Confidence Index) is in the top quintile of all the months for a specific country in the sample, and zero otherwise.

The results presented in Table 8 (Models 2 and 3) suggest that high consumer/business sentiment is positively related to IPO underpricing. This relation becomes stronger and more significant when consumer sentiment is high, since the magnitude of the *High CCI* estimate is

[15] Data are available at https://data.oecd.org/leadind/consumer-confidence-index-cci.htm

almost twice that of the *High BCI* one, with the significance of *High CCI* (*High BCI*) identified with the 1 (10) % level of significance. In general, consumer sentiment could be more strongly related to retail investor sentiment, whose relation to IPO underpricing has been established in prior literature (Ljungqvist et al., 2006). The coefficients of the interaction terms are negative and significant, thus denoting that the negative effect of the market manipulation index on IPO underpricing is amplified during periods of optimistic sentiment. Ljungqvist et al. (2006) hypothesize a positive relation between investor sentiment and underpricing and find that some investors express strong sentiment and are sometimes irrationally exuberant. Consistent with the authors' findings, we find that the negative effect of the market manipulation index on IPO underpricing is more pronounced in high-sentiment periods, when investors are potentially irrationally exuberant. We also find that the negative relation originally documented between the market manipulation index and IPO first-day returns continues to hold.

[Table 8 about here]

5. Further Tests on Other IPO Characteristics

5.1. Market manipulation index and other IPO aspects

Given the negative relation documented between the market manipulation index and IPO underpricing, we now examine whether the index is also related to other aspects of the IPO process. To test for this, we estimate the baseline regression model using each of the five factors vital for the firm undergoing the IPO process: *IPO Over-subscription*, a dummy variable equal to one if the IPO is oversubscribed by more than four times at the time of offering, and zero otherwise (Chen et al., 2020b); *Proceeds Raised*, equal to the IPO's total proceeds scaled by the total assets at the time of listing (Hong et al., 2014); *Trading Volume*, equal to the listing day total trading volume scaled by the total shares issued by the IPO firm at the time of listing (Aggarwal et al., 2002); *Gross Spread*, equal to the total administrative

fee of issuing the IPO scaled by the IPO's total proceeds (Dunbar, 2000); and *Investment Bank Fee*, equal to the fee charged by the investment bank underwriting the IPO, divided by the IPO's total proceeds (Dunbar, 2000).

The findings presented in Table 9 offer interesting insights into the role of the market manipulation index in the IPO process. We find that *Market Manipulation Index* is significantly (at the 5% level) positively (negatively) related to *IPO Over-subscription*, *Proceeds Raised* and *Trading Volume* (*Gross Spread* and *Investment Bank Underwriting Fee*), indicating that IPOs in jurisdictions with stronger anti-manipulation provisions tend to be oversubscribed, raise more money and enjoy higher investor interest in the form of enhanced trading activity, while also entailing lower costs (in terms of administrative and underwriting fees). Coupled with the earlier findings on the negative relation between IPO underpricing and the market manipulation index, these results demonstrate that regulatory authorities can tacitly support the success of their IPO markets in their jurisdiction by ensuring that the legal framework is effectively enforced to tackle manipulation (La Porta et al., 2006).

[Table 9 about here]

5.2. Long-run IPO returns

It is well documented in the literature that newly listed IPOs underperform in the long-run (Ritter, 1991; Loughran and Ritter, 1995; Ritter and Welch, 2002). Therefore, we conclude our empirical analysis by assessing the relation between the market manipulation index and long-run IPO returns, motivated by the widely documented underperformance of IPOs over long horizons. To that end, we assume both buy-and-hold and cumulative abnormal returns for our IPO sample and repeat our baseline model using each measure in turn as the dependent variable.

The results presented in Table 10 are for four different horizons (6, 12, 24 and 36 months) of returns in each case. As the estimates show, *Market Manipulation Index* maintains

a consistently positive and significant (at the 10% level or higher) relation with long-run IPO returns. We observe this result for both the buy-and-hold abnormal returns in Panel A and the cumulative abnormal returns in Panel B. The magnitude of the relation between *Market Manipulation Index* and future post-IPO long-term returns also increases monotonically with the horizon length. These findings suggest that firms going public in stock markets with stronger anti-manipulation regulatory treatment tend, on average, to perform better in the long-run following their IPO.

Coupled with the negative effect of *Market Manipulation Index* on IPO first-day returns documented in Table 3, our analysis suggests that the effect of stronger anti-manipulation laws on the listing-day return reverts in the three years after listing. The results on the relation between *Market Manipulation Index* and IPO first-day returns and long-run returns lend support for investor protection as the mechanism underpinning our findings.

[Table 10 about here]

Overall, our results highlight the importance of market manipulation rules in explaining IPO underpricing and other IPO outcomes around the world. It is potentially beneficial to understand how secondary market regulations in general and market manipulation rules in particular, affect other IPO outcomes such as the time to go public for an IPO firm or the variation in frequency of firms going public in different regions. In addition, we document the role of underwriter reputation, Big 4 Auditor, or VC-backing in moderating the effect of the *Market Manipulation Index* on IPO underpricing. It will be important to understand how venture capital reputation influences the relation between *Market Manipulation Index* and IPO outcomes. We leave these issues for future work.[16]

[16] We are grateful to an anonymous referee for suggesting these important directions for future research.

6. Conclusion

Using a comprehensive sample of 13,459 IPOs issued in 37 countries, we examine the relation between market manipulation rules and IPO underpricing. Our main finding is that IPO underpricing is lower in markets with more stringent rules on market manipulation. We conduct a number of robustness checks and our main findings hold. We also find that IPO underpricing is lower in EU countries that experience stricter trading rules on market manipulation after the implementation of MiFID. We further use neighbouring countries' *Market Manipulation Index* as an instrument for the *Market Manipulation Index* in an instrumental variable regression analysis and find consistent results.

Further analyses reveal that the effect of *Market Manipulation Index* on IPO underpricing is weaker in countries with stronger shareholder protection and among firms with IPO certification from third parties, such as venture capital backing, underwriter reputation, or certification from a Big 4 auditing firm. The influence of *Market Manipulation Index* on IPO underpricing is stronger in high-sentiment periods, but becomes less pronounced following the adoption of IFRS. Stringent rules on market manipulation also benefit IPO firms in other aspects, such as IPO oversubscription, larger IPO proceeds, higher trading activity, lower investment bank fees, and better long-run performance. Collectively, our results provide new insights into the importance of stock exchange trading rules in explaining firm financing costs.

References

Acedo-Ramírez, M.Á., Díaz-Mendoza, A.C. and Ruiz-Cabestre, F.J., 2019. IPO underpricing in the second and main markets: The case of the London Stock Exchange. International Finance, 22(1), 103-117.

Acemoglu, D., Naidu, S., Restrepo, P., Robinson, J.A., 2019. Democracy Does Cause Growth. J. Poli. Econ. 127, 47-100. https://doi.org/10.1086/700936

Aggarwal, R.K., Krigman,L., Womack, K.L., 2002. Strategic IPO underpricing, information momentum, and lockup expiration selling. J. Financ. Econ. 66, 105-137. https://doi.org/10.1016/S0304-405X(02)00152-6

Aggarwal, R.K., Wu, G., 2006. Stock market manipulations. J. Bus. 79, 1915-1953. http://dx.doi.org/10.1086/503652

Aitken, M., Cumming, D., Zhang, F., 2015. Exchange trading rules, surveillance and suspected insider trading. J.Corp. Finan. 34, 311-330. https://doi.org/10.1016/j.jcorpfin.2015.07.013

Bajo, E., Raimondo, C., 2017. Media sentiment and IPO underpricing. J. Corp. Finan. 46, 139-153. https://doi.org/10.1016/j.jcorpfin.2017.06.003

Baker, M., Wurgler, J., 2006. Investor Sentiment and the Cross-section of Stock Returns. J. Finan. 61, 1645-1680. https://doi.org/10.1111/j.1540-6261.2006.00885.x

Biais, B., Bisiere, C., Pouget, S., 2014. Equilibrium discovery and preopening mechanisms in an experimental market. Manag. Scie. 60, 753-769.

Ben-David, I., Graham, J.R., Harvey, C.R., 2013. Managerial miscalibration. Q.J. Econ. 128,1547-1584. https://doi.org/10.1093/qje/qjt023

Bond,P., A.Edmans., and I.Goldstein., 2012. The Real Effects of Financial Markets. An.Rev.Financ. Econ. 4, 339-360. https://doi.org/10.1146/annurev-financial-110311-101826

Boulton, T.J., Smart, S.B., Zutter, C.J., 2010. IPO underpricing and international corporate governance. J. Int. Bus. Stud. 41, 206-222. https://doi.org/10.1057/jibs.2009.38

Boulton, T.J., Smart, S.B., Zutter, C.J., 2011. Earnings quality and International IPO underpricing. Acc. Rev. 86, 483-505. https://doi.org/10.2308/accr.00000018

Boulton, T.J., Smart, S.B., Zutter, C.J., 2017. Conservatism and International IPO underpricing. J. Int. Bus. Stud. 48, 763-785. https://doi.org/10.1057/s41267-016-0054-8

Boulton, T.J., Smart, S.B., Zutter, C.J., 2020. Worldwide short selling regulations and IPO underpricing. J. Corp. Finan. 62. https://doi.org/10.1016/j.jcorpfin.2020.101596

Brennan, M.J., Franks, J., 1997. Underpricing, ownership and control in initial public offerings of equity securities in the UK. J. Financ. Econ. 45, 391-413. https://doi.org/10.1016/S0304-405X(97)00022-6

Brogaard, J., Dan, L., Ying, X., 2017. Stock liquidity and default risk. J. Financ. Econ. 124, 486-502. https://doi.org/10.1016/j.jfineco.2017.03.003

Buera, F.J., Monge-Naranjo, A., Primiceri, G.E., 2011. Learning the Wealth of Nations. Econometrica 79, 1-45. https://doi.org/10.3982/ECTA8299

Carter, R., Manaster,S., 1990. Initial public offerings and Underwriter reputation. J. Finan. 45, 1045-1067. https://doi.org/10.1111/j.1540-6261.1990.tb02426.x

Chang, E.C., Lin, T-C., Ma, X., 2019. Does short-selling threat discipline managers in mergers and acquisitions decisions? J. Acc. Econ. 68, 101-223. https://doi.org/10.1016/j.jacceco.2018.12.002

Chen, Y., Goyal, A., Veeraraghavan, M., Zolotoy, L., 2020a. Media coverage and IPO pricing around the world. J. Financ. Quant. Anal. 55, 1515-1553. https://doi.org/10.1017/S0022109019000486

Chen, Y., Goyal, A., Veeraraghavan, M., Zolotoy, L., 2020b. Terrorist attacks, investor sentiment, and the pricing of initial public offerings. J. Corp. Finan. *forthcoming.*

Christensen, H.B., Hail, L., Luez, C., 2016. Capital-market effects of securities regulation: Prior conditions, Implementation, and Enforcement. Rev. Financ. Stud. 29, 2885-2924. https://doi.org/10.1093/rfs/hhw055

Coffee Jr, J.C., 2002. Racing towards the top?: The impact of cross-listings and stock market competition on international corporate governance. Columbia Law Review, 1757-1831.

Çolak, G., Durnev, A., Qian, Y., 2017. Political Uncertainty and IPO activity: Evidence from US gubernatorial elections. J. Financ.Quant. Anal. 52, 2523-2564. https://doi.org/10.1017/S0022109017000862

Cornelli, F., Goldreich, D., Ljungqvist, A., 2006. Investor Sentiment and Pre-IPO Markets. J. Finan. 61, 1187-1216. https://doi.org/10.1111/j.1540-6261.2006.00870.x

Cumming, D., Johan, S., Li, D., 2011. Exchange trading rules and stock market liquidity. J. Financ. Econ. 99, 651-671. https://doi.org/10.1016/j.jfineco.2010.10.001

De Angelis, D., Grullon, G., Michenaud,S., 2017. The Effects of Short-selling threats on incentive contracts: Evidence from an experiment. Rev. Financ. Stud. 30, 1627-1659. https://doi.org/10.1093/rfs/hhw105

Demers, E., Joos. P., 2007. IPO Failure Risk. J. Acc. Res. 45, 333-371. https://doi.org/10.1111/j.1475-679X.2007.00236.x

Derrien, F., 2005. IPO Pricing in "Hot" Market Conditions: Who Leaves Money on the Table? J. Finan. 60, 487-521. https://doi.org/10.1111/j.1540-6261.2005.00736.x

Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 2008. The law and economics of self-dealing. J.Financ. Econ.88, 430-465. https://doi.org/10.1016/j.jfineco.2007.02.007

Doidge, C., Karolyi, G.A., Stulz, R.M., 2013. The US left behind? Financial globalization and the rise of IPOs outside the US. J. Financ. Econ. 110, 546-573. https://doi.org/10.1016/j.jfineco.2013.08.008

Dunbar, C.G., 2000. Factors affecting investment bank initial public offering market share. J. Financ. Econ., 55(1), pp.3-41.

Ellis, C.J., Fender, J., 2011. Information Cascades and Revolutionary Regime Transitions. Econ. J. 121, 763-792. https://doi.org/10.1111/j.1468-0297.2010.02401.x

Ellul, A., M. Pagano., 2006. IPO underpricing and after-market liquidity. Rev. Financ. Stud. 19, 381-421. https://doi.org/10.1093/rfs/hhj018

Espenlaub, S., Goyal, A., Mohamed, A., 2016. Impact of legal institutions on IPO survival: A global perspective. J.Financ. Stab. 25, 98-112. https://doi.org/10.1016/j.jfs.2016.06.003

Espenlaub, S., Goyal, A. and Mohamed, A., 2020. The impact of shareholders and creditors rights on IPO performance: An international study. The British Accounting Review, 52(1), 100872.

Fang, V.W., Noe, T.H., Tice, S., 2009. Stock market liquidity and firm value. J. Financ. Econ. 94, 150-169. https://doi.org/10.1016/j.jfineco.2008.08.007

Fang, V.W., Tian, X., Tice, S., 2014. Does Stock Liquidity Enhance or Impede Firm Innovation? J. Finan. 69, 2085-2125. https://doi.org/10.1111/jofi.12187

Fang, V.W., Huang, A.H., Karpoff, J.M., 2016. Short selling and earnings management: A controlled experiement. J. Finan. 71, 1251-1294. https://doi.org/10.1111/jofi.12369

Gao, X., Ritter, J.R., Zhu,Z., 2013. Where have all the IPOs gone? J.Financ.Quant.Anal. 48, 1663-1692. https://doi.org/10.1017/S0022109014000015

Goyal, A., Jategaonkar, S.P., Muckley, C.B., 2020. Why do privatized firms pay higher dividends? J. Corp. Finan. 60. https://doi.org/10.1016/j.jcorpfin.2019.101493

Griffin, J.M., Shams, A., 2018. Manipulation in the VIX? Rev. Financ. Stud. 31, 1377-1417. https://doi.org/10.1093/rfs/hhx085

Grullon, G., Michenaud, S., Weston, J.P., 2015. The Real Effects of Short-selling constraints. Rev. Financ. Stud., 28, 1737-1767. https://doi.org/10.1093/rfs/hhv013

Hao, Q., 2007. Laddering in initial public offerings. J. Financ. Econ. 85, 102-122. https://doi.org/10.1016/j.jfineco.2006.05.008

Hong, H.A., Hung, M., Lobo, G.J., 2014. The Impact of Mandatory IFRS Adoption on IPOs in Global Capital Markets. Acc. Rev. 89, 1365-1397. https://doi.org/10.2308/accr-50720

Horton, J., Serafeim, G., Serafeim,I., 2013. Does Mandatory IFRS Adoption Improve the Information Environment? Cont. Acc. Res. 30, 388-423.
https://doi.org/10.1111/j.1911-3846.2012.01159.x

Hausman, J., Stock, J.H., Yogo, M., 2005. Asymptotic properties of the Hahn–Hausman test for weak-instruments. Economic Letters 89, 333-342. https://doi.org/10.1016/j.econlet.2005.06.007

Helbing, P., Lucey, B.M. and Vigne, S.A., 2019. The determinants of IPO withdrawal–Evidence from Europe. J. Corp. Finan. 56, 415-436.

Jain, A., Jain, P.K., McInish, T.H. and McKenzie, M., 2013. Worldwide reach of short selling regulations. J. Financ. Econ. 109, 177-197.

Johan, S.A., 2010. Listing standards as a signal of IPO preparedness and quality. International Rev. Law and Econ. 30, 128-144.

Kuk, J., Liu, W-M., Pham, P.K., 2015. Strategic order submission and cancellation in the pre-opening periods: The case of IPO firms. Working paper, available at SSRN: https://ssrn.com/abstract=1362484.

Kuran, T., 1989. Sparks and prairie fires : A theory of unanticipated political revolution. Public Choice 61, 41-74. https://doi.org/10.1007/BF00116762

Larcker, D.F., Rusticus, T.O., 2010. On the use of instrumental variables in accounting research. J. Acc. Econ. 49, 186-205. https://doi.org/10.1016/j.jacceco.2009.11.004

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1997. Trust in large organizations. Am. Econ. Rev. 87, 333–338.

La Porta, R., Lopez-de-Silanes, F., Shleifer,A., Vishny, R.W., 1998. Law and finance. J. Pol. Econ. 106, 1113–1155. http://dx.doi.org/10.1086/250042

La Porta, R., Lopez-de-Silanes, F., Shleifer,A., 2006. What Works in Securities Laws. J. Finan. 61, 1-32. https://doi.org/10.1111/j.1540-6261.2006.00828.x

Lee, E.J., Eom, K.S., Park, K.S., 2013. Microstructure-based manipulation: Strategic behavior and performance of spoofing traders. J. Financ. Mark. 16, 227-252. https://doi.org/10.1016/j.finmar.2012.05.004

Ljungqvist, A., Nanda,V., Singh, R., 2006. Hot Markets, Investor Sentiment, and IPO Pricing. J. Bus. 79, 1667-1702. http://dx.doi.org/10.1086/503644

Ljungqvist, A. IPO Underpricing. In Handbook of Corporate Finance. Empirical Corporate Finance, Vol. I, B.E. Eckbo, eds. Elsevier, NH (2007)

Löffler, G., Panther, P.F. and Theissen, E., 2005. Who knows what when? The information content of pre-IPO market prices. J. Financ. Interm. 14, 466-484.

Lohmann, S., 1994. Information Aggregation through Costly Political Action. Am. Econ. Rev. 84, 518-530.

Loughran, T., Ritter, J.R., 1995. The New Issues Puzzle. J. Finan. 50, 23-51. https://doi.org/10.1111/j.1540-6261.1995.tb05166.x

Loughran, T., Ritter, J.R., 2004. Why has IPO underpricing changed over time? Financ. Manag. 33, 5-37.

Marisetty, V.B., Subrahmanyam, M.G., 2010. Group affiliation and the performance of IPOs in the Indian stock market. J. Financ. Mark. 13, 196-223. https://doi.org/10.1016/j.finmar.2009.09.001

Medrano, L.A., Vives, X., 2001. Strategic behaviour and price discovery. RAND J. Econ. 32, 221-248.

Megginson, W.L., Weiss, K.A., 1991. Venture capitalist certification in initial public offerings. J. Finan. 46, 879-903.https://doi.org/10.1111/j.1540-6261.1991.tb03770.x

Menon, K., Williams, D.D., 1991. Auditor credibility and initial public offerings. Acc. Rev. 66, 313-332.

Neupane, S., Rhee, S.G., Vithanage, K., Veeraraghavan, M., 2017. Trade-based manipulation: Beyond the prosecuted cases. J. Corp. Finan. 42, 115-130. https://doi.org/10.1016/j.jcorpfin.2016.11.011

Ritter, J.R., 1991. The long-run performance of initial public offerings. J. Corp. Finan. 46, 3-27. https://doi.org/ 10.2307/2328687

Ritter, J.R., Welch, I., 2002. A review of IPO activity, pricing, and allocations. J. Finan. 57, 1795-1828. https://doi.org/10.1111/1540-6261.00478

Ritter, J.R., 2003. Behavioural finance. Pac. Bas. Finan. J. 11, 429-437. https://doi.org/10.1016/S0927-538X(03)00048-9

Ritter, J.R., 2011. Equilibrium in the initial public offerings market. Ann. Rev. Financ. Econ. 3, 347-374. https://doi.org/10.1146/annurev-financial-102710-144845

Spamann, H., 2010, The "Antidirector Right Index" Revisited. Rev. Financ. Stud. 23,467-486. https://doi.org/10.1093/rfs/hhp067

Weber, K., Davis, G.F., Lounsbury, M., 2009. Policy as Myth and Ceremony? The Global Spread of Stock Exchanges, 1980-2005. Aca. Manag. J. 52, 1319-1347. https://doi.org/10.5465/amj.2009.47085184

Appendix A. Variable Definitions

Accounting Conservatism: Country-specific accounting conservatism score, based on Boulton et al. (2017).

Advertising Intensity: Advertising expenses divided by sales of the IPO firm at the time of listing.

Asset Turnover: Sales divided by total assets of the IPO firm at the time of listing.

Big 4 Auditor: Dummy variable equal to 1 if the IPO firm is audited by a Big 4 auditing firm, and 0 otherwise.

Bookbuilding: Dummy variable equal to 1 if IPO uses bookbuilding, and 0 otherwise.

Common Law: Dummy variable equal to 1 if IPO firm is listed in a common law country, and 0 otherwise.

Day one return: IPO's first-day closing price minus the offer price, scaled by the offer price.

False Disclosure Index: Sum of dummy variables for the dissemination of misleading and false information and parking or warehousing, based on Cumming et al. (2011).

Foreign Listing: Dummy variable equal to 1 if IPO firm is listed in a foreign country and not in the country where it is headquatered or domiciled, and 0 otherwise.

GDP per Capita Growth: Country-specific GDP per capita growth in the year of the IPO firm listing.

Gross Spread: Total administrative fee of issuing the IPO divided by the total proceeds raised in the IPO.

High BCI: Dummy variable equal to 1 if the IPO is issued in a month when the country's Business Confidence Index for the firm's IPO listing month–year is in the top quintile of all the months for a specific country in the sample, and 0 otherwise.

High CCI: Dummy variable equal to 1 if the IPO is issued in a month when the country's Consumer Confidence Index for the firm's IPO listing month–year is in the top quintile of all the months for a specific country in the sample, and 0 otherwise.

Hot Issue Market: Average initial return for IPOs issued during the three months prior to the month of the firm's IPO.

IFRS: Dummy variable equal to 1 for the post-2005 period for countries that adopted IFRS and 0 otherwise.

Investment Bank Fee: Fee charged by the investment bank underwriting the IPO, divided by the total proceeds raised in the IPO.

Regional Market Maipulation Index: Average Market Manipulation Index of all the land and water bordering neighbouring countries. For fifteen EU countries, there are two values – up to October 2007 and from November 2007 onward.

IPO Activity: Total number of IPOs in the issue year divided by the number of listed firms for the country of listing.

IPO Age: Logarithmic transformation of the sum of 1 and the difference in years since the firm was established up to the year of listing.

IPO Commitment: Dummy variable equal to 1 if the underwriter purchases securities from the issuer to be offered to the public, and 0 otherwise.

IPO Float: Regular shares issued to the public for trading divided by the total number of outstanding shares.

IPO Over-subscription: Dummy variable equal to 1 if the total volume of orders in the underwiting book exceeds the number of shares offered, and 0 otherwise

IPO Size: Logarithmic transformation of total assets of the IPO firm (in millions of U.S. dollars) at the time of listing.

IPO Withdrawal: Total number of IPOs first initiated, but then withdrawan prior to listing date in the issue year divided by the number of listed firms for the country of listing.

Leverage: Total debt divided by total assets of the IPO firm at the time of listing.

Market Liquidity: Country-specific total value of stock traded divided by GDP in the year of the IPO listing.

Market Manipulation Index: Sum of the price manipulation index, volume manipulation index, spoofing index, and the false disclosure index, based on Cumming et al. (2011). A higher value for the index indicates the trading rules that prohibit activities such as price manipulation, volume manipulation, spoofing, and disclosure manipulation.

Market Size: Country-specific total market capitalization of the stock traded divided by the GDP in the year of the IPO listing.

Price Manipulation Index: Sum of the dummy variables for marking the open, marking the close, misleading end-of-month/end-of-quarter/end-of-year trades, intraday ramping/gouging, market setting, prearranged trades, and domination and control, based on Cumming et al. (2011).

Primary Return: IPO first-day opening price minus offer price, scaled by offer price.

Proceeds: Total IPO proceeds divided by the total assets of the IPO firm at the time of listing.

Profitability: Earnings before interest and taxes divided by total assets of the IPO firm at the time of listing.

Rule of Law: Country-specific rule of law variable for the year of IPO firm listing, based on La Porta et al. (1998).

Secondary Return: IPO first-day closing price minus first-day opening price, scaled by first-day opening price.

Security Law: Country-specific securities law variable for the year of the IPO firm listing, based on La Porta et al. (2006).

Shareholder Right: Country-specific shareholder rights index, based on Djankov et al. (2008) and Spamann (2010).

Shares issued: Logarithmic transformation of total shares issued by the IPO firm at the time of listing.

Short Sell Ban: Dummy variable equal to 1 for the period when short selling was banned in the country as a regulatory response to 2008 financial crisis, and 0 otherwise. This definition is based on Jain et al. (2013).

Spoofing Index: Sum of dummy variables for giving up priority, switching, and layering bids/asks, based on Cumming et al. (2011).

Trading Volume: Listing day total trading volume scaled by the total shares issued by the IPO firm at the time of listing.

Trust: The proportion of a country's respondents that believe people in the country are generally trustworthy. This definition is based on World Value Survey.

Underwriter Rep: Dummy variable equal to 1 if the investment bank underwriting the IPO is in the top quartile, and 0 otherwise, based on Chen et al. (2020a).

VC Backing: Dummy variable equal to 1 if the IPO firm is backed by venture capital, and 0 otherwise.

Volume Manipulation Index: Sum of dummy variables for churning and wash trade, based on Cumming et al. (2011).

Appendix B. Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	Day One Return	1.0000												
(2)	Market Maipulation Index	-0.0416	1.0000											
(3)	IPO Size	-0.0675	-0.0014	1.0000										
(4)	Profitability	-0.0036	-0.0214	0.0151	1.0000									
(5)	Leverage	-0.0291	0.0340	0.1738	-0.0483	1.0000								
(6)	IPO Age	0.0580	-0.2387	0.1544	0.0004	0.0906	1.0000							
(7)	IPO Commitment	0.0840	-0.1793	0.2022	0.0162	0.1001	0.2406	1.0000						
(8)	Bookbuilding	0.0103	-0.0459	0.2645	-0.0068	0.1126	0.2175	0.3273	1.0000					
(9)	Shares Issued	-0.0385	-0.0125	0.3902	0.0198	0.0015	0.0047	0.1230	-0.0538	1.0000				
(10)	IPO Activity	0.0145	-0.0062	0.0610	0.0123	-0.0381	-0.0005	-0.0318	0.0816	0.0989	1.0000			
(11)	GDP per capita Growth	0.0473	-0.4010	0.0597	0.0205	-0.0262	0.1473	0.2156	-0.0413	0.2663	0.2941	1.0000		
(12)	Market Size	0.0063	0.0832	0.1040	0.0052	-0.0188	-0.0689	0.1258	0.1298	0.3686	-0.1724	-0.0987	1.0000	
(13)	Market Liquidity	0.0393	0.2054	0.1498	-0.0067	-0.0048	-0.0133	0.2253	0.2874	0.2672	-0.0245	-0.0769	0.2825	1.0000

This table presents the correlation matrix of the variables in the baseline analysis. Our sample consists of 13,459 IPOs across 37 countries spanning the period 2000 to 2016. Variable definitions and sources are presented in Appendix A.

Table 1
Sample Distribution.

Country	Observations	Day One Return	Market Manipulation Index
Argentina	11	0.2574	3.000
Australia	1013	0.1859	6.000
Austria	20	0.0365	2.650
Belgium	38	0.1110	8.789
Brazil	99	0.0639	1.000
Canada	691	0.3167	12.000
Chile	19	0.1928	0.000
China	1433	0.5685	5.000
Denmark	34	0.0300	9.000
Egypt	14	0.4731	2.000
Finland	26	0.1985	10.615
France	343	0.1529	8.032
Germany	180	0.1965	4.422
Greece	79	0.2790	3.570
Hong Kong	924	0.2711	7.000
India	575	0.2455	3.626
Indonesia	217	0.3691	3.000
Ireland	8	0.0288	9.500
Israel	23	0.6259	3.000
Italy	133	0.0196	5.759
Japan	1331	0.5078	2.000
Korea South	791	0.2883	9.000
Malaysia	433	0.2159	2.000
Mexico	38	0.0561	6.000
Netherlands	23	0.1102	9.522
New Zealand	51	0.0931	4.000
Norway	85	0.2679	8.047
Philippines	52	0.1947	0.000
Singapore	433	0.1541	7.000
Spain	49	0.2967	8.531
Sweden	111	0.0568	10.162
Switzerland	52	0.1202	7.827
Taiwan	922	0.2418	2.000
Thailand	347	0.2107	8.000
Turkey	106	0.1650	0.000
U.K.	1066	0.1334	12.385
U.S.A.	1689	0.3398	11.824
Total	13,459	0.2982	6.789

This table presents the distribution by country of the IPOs, average first-day returns, and country-level market manipulation index values from 2000 to 2016. Variable definitions are presented in Appendix A.

Table 2
Descriptive Statistics.

Variables	Observations	Mean	Std. Dev.	5th Percentile	Median	95th Percentile
Day One Return	13,459	0.2982	0.9863	-0.3000	0.1035	1.4579
Market Manipulation Index	13,459	6.7888	3.4998	2.0000	6.0000	13.0000
IPO Size	13,459	3.6847	1.9818	0.5822	3.5086	7.2829
Profitability	13,459	0.0426	2.4726	-0.5238	0.0656	0.3333
Leverage	13,459	0.2306	0.2676	0.0000	0.1507	0.7260
IPO Age	13,459	1.7222	1.2771	0.0000	1.9459	3.7136
IPO Commitment	13,459	0.5995	0.4585	0.0000	1.0000	1.0000
Bookbuilding	13,459	0.5951	0.4909	0.0000	1.0000	1.0000
Shares Issued	13,459	3.9022	1.9397	0.5546	3.9435	7.2651
IPO Activity	13,459	0.0804	0.0534	0.0203	0.0694	0.1973
GDP per capita Growth	13,459	0.0347	0.0322	-0.0006	0.0230	0.0946
Market Size	13,459	1.5007	2.2382	0.3488	0.9456	8.8612
Market Liquidity	13,459	1.3281	1.3174	0.2300	0.9122	3.9039

This table presents the descriptive statistics for the variables used in this study. Variable definitions are presented in Appendix A.

Table 3
Market Manipulation Index and IPO Day One Return: Baseline Regression Analysis.

Dependent Variable	Day One Return					
	Model 1		Model 2		Model 3	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
Market Manipulation Index	-0.0121	-4.98	-0.0089	-3.69	-0.0110	-4.21
IPO Size			-0.0254	-4.62	-0.0263	-4.80
Profitability			-0.0016	-0.75	-0.0017	-0.86
Leverage			-0.1236	-3.97	-0.0994	-3.20
IPO Age			0.0260	3.68	0.0280	3.94
IPO Commitment			0.0828	3.48	0.0433	1.76
Bookbuilding			-0.0257	-1.16	-0.0627	-2.62
Shares Issued			-0.0173	-3.80	-0.0287	-5.22
IPO Activity					0.7831	4.88
GDP per capita Growth					1.1848	3.45
Market Size					-0.0209	-2.41
Market Liquidity					0.0770	5.41
Industry Fixed Effects	Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes	
Observations	13,459		13,459		13,459	
Adj. R-squared	0.1326		0.1395		0.1456	

This table presents the regression results for the relation between country-level market manipulation index and IPO first-day returns. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 4
Market Manipulation Index and IPO Day One Return: Alternate Sample.

Panel A: Additional control variables

Model 1: Additional controls are asset turnover, IPO float, advertising intensity, foreign listing, hot issue market, security law, social trust, and IPO withdrawal (obs. = 11,248)

Dependent variable	Day One Return		
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0085	-2.83	
Asset Turnover	-0.0006	-0.48	
IPO Float	-0.1770	-5.44	
Advertising Intensity	-0.0200	-1.14	
Foreign Listing	-0.0345	-0.97	0.1655
Hot Issue Market	1.0198	3.51	
Security Law	-0.0903	-3.92	
Social Trust	0.1704	4.03	
IPO Withdrawal	0.0012	3.95	

Panel B: Alternative sample

Model 1: Excluding China, Japan, and the U.S., the 3 biggest IPO markets in this study (obs. = 9,006)

Dependent variable	Day One Return		
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0067	-2.17	0.1307

Model 2: Excluding Canada, the U.K., and the U.S., the markets with market manipulation index values in the top quartile in this study (obs. = 10,013)

Dependent variable	Day One Return		
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0172	-5.62	0.1782

Model 3: Excluding IPOs of utilities and financial institutions, i.e. firms in highly regulated sectors (obs. = 11,657)

Dependent variable	Day One Return		
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0113	-3.26	0.1505

Model 4: Excluding state-owned enterprises and business group family firms, i.e. firms generally with a highly concentrated ownership structure (obs. = 10,366)

Dependent variable	Day One Return		
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0101	-3.59	0.1464

Model 5: Excluding IPOs not listed on the main national stock exchange, i.e. firms not listed on the main stock exchange for which *Market Manipulation Index* score is not available from Cumming et al. (2011) (obs. = 10,777)

Dependent variable	Day One Return		
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0160	-5.46	0.1549

Panel C: Decomposition of IPO initial return

Model 1: Primary market return (obs. = 10,212)

Dependent variable		Primary Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0046	-3.60	0.2127

Model 2: Secondary market return (obs. = 10,211)

Dependent variable		Seconday Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0007	-2.24	0.0923

Panel D: Control for potential confounding regulatory intervention in the EU from 2008 to 2010

Model 1: Control for ban on short selling of stocks (obs. = 2,247)

Dependent variable		Day One Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0161	-2.99	0.1346
Short Sell Ban	-0.1504	-0.89	

Model 2: Excluding the IPOs listed between 2007-10 in the EU, i.e. period of significant regulatory intervention by European Central Bank to control the declining stock markets (obs. = 1,814)

Dependent variable		Day One Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Market Manipulation Index	-0.0188	-2.31	0.1393

Panel E: Components of Market Manipulation Index

Model 1: Price Manipulation Index (obs. = 13,459)

Dependent variable		Day One Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Price Manipulation Index	-0.0229	-4.67	0.1460

Model 2: Volume Manipulation Index (obs. = 13,459)

Dependent variable		Day One Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Volume Manipulation Index	-0.0446	-3.74	0.1457

Model 3: Spoofing Index (obs. = 13,459)

Dependent variable		Day One Return	
	Coeff.	*t*-Stat.	Adj. R-squared
Spoofing Index	-0.0240	-2.03	0.1446

Model 4: False Disclosure Index (obs. = 13,459)

Dependent variable		Day One Return	
	Coeff.	*t*-Stat.	Adj. R-squared
False Disclosure Index	-0.0354	-1.84	0.1442

This table presents the regression results for various robustness checks for the relation between the country-level market manipulation index and IPO first-day returns. For brevity, the table only reports the coefficient of the market manipulation index and additional control variables. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. Variable definitions are presented in Appendix A.

Table 5A
Market Manipulation Index and IPO Day One Return: Effect of Regulatory Change in fifteen European Union Countries.

Dependent Variable	Day One Return					
	Full Sample		Full EU Sample		PSM EU Sample	
	Model 1		Model 2		Model 3	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
EU IPOs	-0.0059	-0.13				
EU IPOs * After	-0.1280	-2.15				
After	-0.0373	-0.57	-0.1572	-2.02	-0.1343	-2.56
IPO Size	-0.0245	-4.44	-0.0272	-2.31	-0.0372	-2.10
Profitability	-0.0013	-0.62	0.0174	1.75	0.0235	2.43
Leverage	-0.1036	-3.29	-0.1993	-3.69	-0.2335	-2.98
IPO Age	0.0317	4.48	0.0320	1.91	0.0407	2.01
IPO Commitment	0.0489	1.67	-0.0096	-0.19	-0.0586	-0.90
Bookbuilding	-0.0601	-2.11	-0.1448	-1.73	-0.1495	-1.95
Shares Issued	-0.0311	-5.75	0.0408	3.10	0.0715	3.12
IPO Activity	0.7152	4.46	1.1194	2.22	1.4069	2.53
GDP per capita Growth	1.5439	4.74	1.0234	2.25	0.3134	1.94
Market Size	-0.0115	-1.35	-0.1617	-2.32	-0.5386	-2.91
Market Liquidity	0.0517	3.69	0.2468	2.91	-0.3141	-2.48
Industry Fixed Effects	Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes	
Observations	13,459		2,237		1,802	
Adj. R-squared	0.1453		0.1124		0.1545	

This table presents the regression results for the effect of the significant regulatory change which was implemented under the Directive for Markets in Financial Instruments (MiFID) from November 2007 for fifteen European Union (EU) countries and IPO first-day returns. We report the results for the Full Sample (Model 1), Full EU Sample (Model 2) and the Propensity Score Matched (PSM) EU Sample (Model 3) for the IPOs. In these tests, After is an indicator variable equal to one for November 2007 and every month thereafter, and zero in all prior rmonths. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 5B
Market Manipulation Index and IPO Day One Return: Instrumental Variable Estimation.

Dependent Variables	Market Manipulation Index Stage 1		Day One Return Stage 2	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
Regional Market Maipulation Index	0.5061	8.24		
Fitted Market Manipulation Index			-0.0387	-2.68
IPO Size	0.0590	8.44	-0.0437	-7.15
Profitability	0.0066	1.12	-0.0010	-0.33
Leverage	-0.0551	-1.44	-0.1202	-3.67
IPO Age	0.0019	0.23	0.0202	2.84
IPO Commitment	-0.1609	-5.04	0.0146	0.50
Bookbuilding	0.0930	3.27	-0.1514	-4.37
Shares Issued	-0.0265	-2.89	0.0129	1.61
IPO Activity	-1.6564	-5.09	-0.5676	-2.14
GDP per capita Growth	-3.2377	-4.75	3.3225	5.89
Market Size	0.1211	11.95	0.0165	1.35
Market Liquidity	-0.1788	-12.20	0.0465	3.15
Industry Fixed Effects	Yes		Yes	
Year Fixed Effects	Yes		Yes	
Observation	13,459		13,459	
Adj. R-squared	0.2448		0.1667	
F-Statistics of Excluded Instrument Test	698.94			
Probability	0.000			

This table presents the results for the instrumental variable estimation, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 6
Market Manipulation Index and IPO Day One Return: Effect of IPO Certification.

Dependent Variable	Day One Return					
	Model 1		Model 2		Model 3	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
Market Manipulation Index	-0.0130	-3.66	-0.0085	-2.65	-0.0069	-2.39
Market Manipulation Index * Underwriter Rep	0.1986	6.45				
Underwriter Rep	-0.0103	-2.34				
Market Manipulation Index * Big 4 Auditor			0.2186	5.40		
Big 4 Auditor			-0.0124	-2.43		
Market Manipulation Index * VC Backing					0.2820	6.32
VC Backing					-0.0341	-5.91
IPO Size	-0.0378	-6.66	-0.0293	-5.42	-0.0264	-4.79
Profitability	-0.0020	-1.04	-0.0018	-0.91	-0.0021	-1.03
Leverage	-0.1000	-3.22	-0.0981	-3.16	-0.0990	-3.19
IPO Age	0.0271	3.81	0.0283	3.97	0.0270	3.81
IPO Commitment	0.0323	1.34	0.0349	1.42	0.0453	1.86
Bookbuilding	-0.0970	-4.04	-0.0754	-3.11	-0.0679	-2.81
Shares Issued	-0.0363	-6.71	-0.0304	-5.58	-0.0235	-4.33
IPO Activity	0.4702	2.81	0.9439	5.90	0.6898	4.27
GDP per capita Growth	0.9697	2.85	1.5347	4.40	1.2177	3.55
Market Size	-0.0151	-1.77	-0.0215	-2.47	-0.0246	-2.81
Market Liquidity	0.0685	4.86	0.0698	4.92	0.0816	5.67
Industry Fixed Effects	Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes	
Observations	13,459		13,459		13,459	
Adj. R-squared	0.1504		0.1484		0.1521	

This table presents the regression results for the effect of IPO certification on the relation between the country-level market manipulation index and IPO first-day returns. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 7

Market Manipulation Index and IPO Day One Return: Effect of Country-Level Institutional Factors.

Dependent Variable	Day One Return									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
Market Manipulation Index	-0.0928	-10.06	-0.0188	-1.68	-0.0155	-3.62	-0.0377	-7.18	-0.0208	-6.01
Market Manipulation Index * Security Law	0.0455	9.47								
Security Law	-0.4416	-10.80								
Market Manipulation Index * Shareholder Rights			0.0108	3.78						
Shareholder Rights			-0.0453	-2.34						
Market Manipulation Index * Rule of Law					0.0142	3.44				
Rule of Law					-0.1293	-4.92				
Market Manipulation Index * Accounting Conservatism							0.1135	4.41		
Accounting Conservatism							-0.9736	-4.51		
Market Manipulation Index * Common Law									0.0285	5.30
Common Law									-0.2781	-6.71
IPO Size	-0.0375	-6.73	-0.0307	-5.42	-0.0251	-4.57	-0.0351	-6.16	-0.0316	-5.58
Profitability	-0.0022	-0.99	-0.0013	-0.59	-0.0018	-0.85	-0.0019	-0.85	-0.0022	-1.06
Leverage	-0.1110	-3.55	-0.0938	-3.02	-0.0977	-3.14	-0.1211	-3.79	-0.0994	-3.19
IPO Age	0.0280	3.91	0.0280	3.95	0.0240	3.32	0.0241	3.25	0.0273	3.80
IPO Commitment	0.0723	2.84	0.0539	2.09	0.0190	0.77	0.0184	0.75	0.0636	2.54
Bookbuilding	-0.1066	-4.23	-0.0682	-2.86	-0.0598	-2.49	-0.0258	-1.03	-0.0881	-3.54
Shares Issued	-0.0103	-1.80	-0.0276	-4.99	-0.0380	-6.59	-0.0197	-3.35	-0.0202	-3.45
IPO Activity	0.1021	0.57	0.1842	0.96	0.1872	0.98	0.0607	0.23	0.6505	3.98
GDP per capita Growth	1.6381	4.76	0.4626	1.21	0.1658	0.48	-1.5432	-3.93	0.9363	2.66
Market Size	-0.0024	-0.28	0.0002	0.02	-0.0233	-2.68	-0.0207	-2.14	-0.0056	-0.62
Market Liquidity	0.0521	3.68	0.0479	3.25	0.0846	6.03	0.0813	4.94	0.0569	3.98
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes	
Observations	13,459		13,459		13,459		12,012		13,459	
Adj. R-squared	0.1416		0.1370		0.1376		0.1377		0.1380	

This table presents the regression results for the effects of country-specific institutional characteristics on the relation between the country-level market manipulation index and IPO first-day returns. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 8
Market Manipulation Index, Reporting Quality, and Market Sentiment.

Dependent Variable	Day One Return					
	Model 1		Model 2		Model 3	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
Market Manipulation Index	-0.0265	-7.32	-0.0238	-6.32	-0.0231	-6.34
Market Manipulation Index * IFRS	0.0179	3.30				
IFRS	-0.3305	-7.27				
Market Manipulation Index * High CCI			-0.0152	-2.33		
High CCI			0.1355	2.94		
Market Manipulation Index * High BCI					-0.0140	-2.60
High BCI					0.0712	1.68
IPO Size	-0.0353	-5.72	-0.0304	-4.45	-0.0244	-3.78
Profitability	-0.0013	-0.53	-0.0011	-0.50	-0.0011	-0.52
Leverage	-0.1190	-3.55	-0.1017	-2.87	-0.0952	-2.76
IPO Age	0.0259	3.05	0.0285	2.93	0.0316	3.41
IPO Commitment	-0.0589	-2.12	0.0234	0.85	0.0060	0.22
Bookbuilding	-0.0525	-1.75	-0.1036	-2.98	-0.1352	-4.16
Shares Issued	-0.0133	-2.17	-0.0152	-2.12	-0.0168	-2.42
IPO Activity	0.3103	1.02	-0.9247	-3.39	-0.1134	-0.51
GDP per capita Growth	-1.9718	-3.42	4.8714	8.79	3.2583	6.89
Market Size	-0.0279	-2.27	0.1489	3.44	0.0832	2.04
Market Liquidity	0.1138	5.40	0.1423	6.42	0.1625	7.58
Industry Fixed Effects	Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes	
Observations	10,403		9,607		10,293	
Adj. R-squared	0.1474		0.1578		0.1523	

This table presents the regression results for the effect of reporting quality and market sentiment on the relation between the country-level market manipulation index and IPO first-day returns. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 9
Market Manipulation Index and Other IPO Outcomes.

Dependent Variable	IPO Over-Subscription		Proceeds		Trading Volume		Gross Spread		Investment Bank Fee	
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat
Market Manipulation Index	0.0620	5.72	0.0390	5.09	0.1202	2.07	-0.0011	-7.27	-0.0007	-10.77
IPO Size	0.1491	7.71	-0.1076	-3.32	0.8585	3.78	-0.0027	-19.32	-0.0026	-21.12
Profitability	0.0191	3.41	-0.0032	-1.31	0.0422	2.72	-0.0001	-1.26	0.0000	-0.53
Leverage	-0.2633	-1.92	0.1068	0.76	-0.4323	-1.82	-0.0003	-0.29	-0.0014	-1.88
IPO Age	-0.0733	-2.85	-0.0314	-1.98	-0.0187	-0.17	0.0006	2.96	0.0009	5.26
IPO Commitment	-0.3384	-4.15	-0.4376	-3.31	1.1496	3.23	-0.0122	-6.27	-0.0089	-16.43
Bookbuilding	-0.0862	-1.16	0.1523	1.34	0.6007	1.37	-0.0077	-3.53	-0.0072	-14.75
Shares Issued	0.1591	7.10	-0.0121	-0.33	-3.0702	-5.16	-0.0035	-21.67	-0.0042	-30.46
IPO Activity	-1.2145	-1.32	-1.3214	-1.28	4.5792	2.38	0.0124	2.02	-0.0064	-1.41
GDP per capita Growth	-5.6163	-4.32	1.4878	1.87	3.1501	2.36	-0.0086	-0.44	0.1107	13.94
Market Size	0.3394	9.65	-0.0449	-1.40	0.2753	1.12	-0.0051	-4.46	-0.0006	-3.77
Market Liquidity	-0.4892	-7.02	0.0835	1.52	0.3146	2.04	0.0070	2.76	-0.0014	-4.35
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes	
Observations	13,459		13,459		12,322		13,459		13,459	
Pseudo / Adj. R-squared	0.1506		0.0508		0.0849		0.3281		0.5466	

This table presents the regression results for the relation between the country-level market manipulation index and different IPO outcomes: the level of subscription (Model 1), proceeds raised (Model 2), trading volume (Model 3), total administrative fee, that is, the gross spread (Model 4), and the investment bank underwriting fee (Model 5). The regression for Model 1 is performed using Logit and for Models 2-5 are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.

Table 10
Market Manipulation Index and Long-Term IPO Returns: Additional Analysis.

Dependent Variable	Panel A: Buy-and-Hold Abnormal Returns								Panel B: Cumulative Abnormal Returns							
	6 Months Model 1		12 Months Model 2		24 Months Model 3		36 Months Model 4		6 Months Model 1		12 Months Model 2		24 Months Model 3		36 Months Model 4	
	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.	Coeff.	*t*-Stat.
Market Manipulation Index	0.0023	1.72	0.0047	2.83	0.0051	2.19	0.0112	2.77	0.0050	4.29	0.0068	4.27	0.0111	5.19	0.0176	7.06
IPO Size	0.0060	2.37	0.0128	3.26	0.0298	3.94	0.0370	3.17	0.0094	3.96	0.0253	7.60	0.0601	13.23	0.0858	15.98
Profitability	0.0010	0.84	0.0016	1.08	0.0031	1.32	0.0049	1.53	0.0011	1.03	0.0026	1.39	0.0054	1.66	0.0079	1.86
Leverage	-0.0560	-3.42	-0.0368	-1.29	-0.0388	-1.10	0.0071	0.16	-0.0508	-3.37	-0.0755	-3.62	-0.1466	-4.49	-0.2004	-5.02
IPO Age	0.0102	2.67	0.0187	4.02	0.0212	3.53	0.0298	4.29	0.0071	2.14	0.0188	4.33	0.0334	5.76	0.0548	8.03
IPO Commitment	-0.0599	-5.47	-0.0328	-2.10	-0.0094	-0.40	-0.0350	-1.02	-0.0592	-5.78	-0.0569	-4.08	-0.0106	-0.54	0.0258	1.11
Bookbuilding	0.0188	1.82	-0.0036	-0.25	-0.0296	-1.38	0.0635	1.49	0.0091	0.94	-0.0107	-0.85	-0.0434	-2.48	-0.0262	-1.25
Shares Issued	0.0194	6.40	0.0187	3.88	0.0069	0.77	0.0045	0.42	0.0149	5.55	0.0166	4.44	0.0026	0.51	-0.0120	-2.05
IPO Activity	1.4819	11.10	0.5033	3.96	-0.0788	-0.51	0.0463	0.23	0.9528	10.24	0.5281	4.86	0.1063	0.74	0.3659	2.18
GDP per capita Growth	0.5112	3.00	0.8023	3.46	1.1465	3.49	1.6659	3.54	0.4502	2.95	0.8829	4.29	2.0273	7.23	3.1727	9.53
Market Size	-0.0519	-8.67	-0.0473	-6.43	-0.0245	-3.20	-0.0051	-0.58	-0.0359	-6.99	-0.0424	-6.63	-0.0255	-3.24	-0.0079	-0.94
Market Liquidity	0.0810	7.75	0.0630	5.14	0.0142	1.03	-0.0408	-2.48	0.0435	5.13	0.0434	4.08	0.0144	1.10	-0.0205	-1.43
Industry Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Year Fixed Effects	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	12,548		12,625		12,691		12,732		12,548		12,625		12,691		12,732	
Adj. R-squared	0.0924		0.0417		0.0205		0.0195		0.0730		0.0647		0.0662		0.0710	

This table presents the regression results for the relation between the country-level market manipulation index and long-run IPO returns up to 36 months after listing. Panel A reports the buy-and-hold abnormal returns and Panel B the cumulative abnormal returns for six months (Model 1), 12 months (Model 2), 24 months (Model 3), and 36 months (Model 4) from the listing date. The regressions are performed by OLS, with *t*-statistics computed using standard errors robust to heteroscedasticity and clustered at the country level. The intercept, industry fixed effects based on Kenneth French's 10-industry classification, and year fixed effects are included in all the regressions. Variable definitions are presented in Appendix A.