

Issuance Examination Committee Connections and IPO Underpricing: Evidence from China^{*}

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Abstract

In the Chinese stock market, a firm's application for an initial public offering (IPO) must be approved by the Issuance Examination Committee (IEC), which is mainly comprised of representatives from social intermediaries. Therefore, China's IPO market provides researchers with a unique setting in which IPO candidates seek to establish IEC connections through rent-seeking targeted at IEC members for the purpose of achieving a successful IPO application. Using a sample of Chinese privately owned firms going for an IPO during the period 2007-2012, we provide strong and consistent evidence to show that IEC connections are significantly negatively associated with IPO underpricing, suggesting that the market undervalues a firm's rent-seeking behaviour towards IEC members. Moreover, the negative effect of IEC connections on IPO underpricing is less pronounced for firms in national priority industries than for their counterparts in other industries. The above results are robust to alternative measures of IPO underpricing and IEC connections; furthermore, our conclusions remain valid after controlling for the endogeneity problem.

Keywords: Rent-seeking, Issuance Examination Committee (IEC) Connections, National Priority Industrial Policy, IPO Underpricing, China

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发审委联系与 IPO 抑价：基于中国资本市场的经验证据^{*}

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摘要

在中国资本市场中，当且仅当一家公司得到中国证监会的发行审核委员会（发审委）——主要由来自于社会中介的代表组成——的批准同意，才能够首次公开发行股票（IPO）。因此，在中国 IPO 市场中，拟 IPO 的公司往往通过寻租来建立发审委联系，借以提高其 IPO 申请成功的概率。这一独特制度背景为研究者提供了重要的研究机会。基于 2007-2012 年期间拟 IPO 的民营上市公司样本，本文的经验证据表明，发审委联系与 IPO 抑价显著负相关，说明市场负面评价了拟 IPO 公司针对发审委员的寻租行为。进一步，对于国家产业政策扶持行业内的公司而言，发审委联系对 IPO 抑价的负向影响相对较弱。在敏感性测试中，本文进一步构建了其他针对 IPO 抑价与发审委联系的变量，发现了基本类似的结果。此外，上述结论在控制了发审委联系与 IPO 抑价之间的内生性后依然成立。

关键词：寻租、发审委联系、国家产业政策、IPO 抑价、中国

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“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way — in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only”.

A Tale of Two Cities, Chapter 1 (Opening Para.), Charles Dickens (1859)

I. Introduction

Similar to the situation described by Charles Dickens, the Chinese stock market is now in a dilemma, with investors always running the gamut of feelings from hope to despair and from light to darkness. On the one hand, it is the best time for investors to share the fruits of China’s reform and opening-up policy (e.g. an average GDP growth of above 8% for the past three decades and the glory of being the second largest economy in the world; Du *et al.*, 2013b). On the other hand, the stock market is usually viewed as an economic barometer throughout much of the world, but this is not the case in China, where the Shanghai Composite Index and the Shenzhen Component Index have fallen by about 22% and 28%, respectively. As a result, investors find that it is actually the worst time for the Chinese stock market. Against this background, an intuitive, important, and unresolved question emerges: Why cannot the Chinese stock market show better performance to act as a barometer of China’s economy?

Prior literature has attributed this disparity to government intervention and weak corporate governance in Chinese listed firms (Chen *et al.*, 2006; Cheung *et al.*, 2010; Fan *et al.*, 2007; Gul *et al.*, 2010; Jiang *et al.*, 2010; Su, 2005; Sun and Tong, 2003). In this study, we argue that heavy government intervention in the initial public offering (IPO) market is responsible for such a disparity between the stock market and China’s economic achievement. In fact, government intervention motivates a number of Chinese to-be-listed firms to establish connections with the Issuance Examination Committee (IEC) through rent-seeking, which eventually distorts resource allocation efficiency in China’s IPO market. Extant studies have examined the impacts of IEC connections on the likelihood of IPO applications being approved, the market shares of social intermediaries, and the change in accounting performance between the pre- and post-IPO periods (Du *et al.*, 2013a, 2013b; Lai and Du, 2012; Yang, 2013), but they provide little evidence on the association between IEC connections and IPO underpricing. To fill this gap, this study addresses the influence of IEC connections on IPO underpricing and further investigates the moderating effect of the “national priority industrial policy”.

Regulations and laws in the Chinese stock market have been significantly improved, along with the transition from a central-planning system to a market-oriented system, but strong government intervention is still a typical feature of China's IPO market (Du *et al.*, 2013b). To ensure the quality of IPO firms, the China Securities Regulatory Commission (CSRC) has established the IEC to verify and approve IPO applications. In other words, a to-be-listed firm can go for an IPO in the Chinese stock market if and only if it is approved by the IEC. As a result, the approval of the IEC creates a "rent", which induces rent-seeking behaviour towards IEC members in the IPO process (Huang, 2011).

Given the strong government intervention in China's IPO market, as well as the important role of *guanxi* (connections) in China's *guanxi*-based society, IPO firms are prone to establish connections with IEC members to increase the likelihood of being approved by the IEC. Since the IEC is mainly comprised of representatives from social intermediaries (e.g. accounting and law firms), auditors and lawyers with notable expertise occupy more than 55% of the seats on the IEC. Therefore, we define an IPO firm's IEC connections as the auditing and/or legal service providers it hires whose auditors and/or lawyers are current IEC members.

For the empirical tests, we hand-collect a sample of Chinese firms going for an IPO during the period 2007-2012 and then examine the relation between IEC connections and IPO underpricing. Moreover, we examine the moderating effect of national priority industrial policy on the above relation. In summary, our findings reveal the following: (1) IEC connections are significantly negatively associated with IPO underpricing, suggesting that the market undervalues firms with IEC connections; (2) the negative association between IEC connections and IPO underpricing is less pronounced for firms in national priority industries than for their counterparts in other industries; (3) the above results are robust to alternative measures of IPO underpricing and IEC connections; (4) our conclusions are still valid after using the propensity score matching approach to address the endogeneity concern.

This study makes several contributions to the literature. First, to the best of our knowledge and according to the literature in hand, this study is the first to examine the impact of IEC connections on IPO underpricing. We construct a direct measure of IEC connections in China's IPO market by identifying whether an IPO firm hires social intermediary organisations whose auditors or/and lawyers are current IEC members. Then, our study recognises IEC connections as an additional explanation for IPO underpricing which may be applied to emerging markets with heavy government intervention.

Second, this study offers additional evidence to the existing literature on government intervention and rent-seeking (Krueger, 1974; Shleifer and Vishny, 1994, 1998; Stigler, 1971). In emerging economies such as China, legal systems are underdeveloped and institutional voids are inevitable (Keister, 2000), resulting in heavy government intervention

in resource allocation. Furthermore, the heavy government intervention creates many rent-seeking activities and motivates IPO firms to establish IEC connections. We find a negative relation between IEC connections and IPO underpricing, implying that both IPO firms and social intermediary organisations (auditing and legal service providers) seek economic rents at the expense of minority shareholders' interests (Du *et al.*, 2013a, 2013b).

Third, this study extends the prior literature on political connections, an issue which has attracted much attention from researchers in recent years (Bliss and Gul, 2012; Boubakri *et al.*, 2008; Claessens *et al.*, 2008; Fan *et al.*, 2007; Ferguson and Voth, 2008; Fisman, 2001; Faccio, 2006, 2010; Goldman *et al.*, 2009; Li *et al.*, 2008). In this study, IEC connections are viewed as quasi-political connections in China's IPO market (Du *et al.*, 2013a, 2013b; Yang, 2013), and our findings show that IEC connections facilitate approval from the IEC for to-be-listed firms. As a result, our findings can provide supplementary evidence about the dark side of political connections.

Finally, focusing on the Chinese context in which the central government formulates a series of five-year plans to promote the development of given industries, we explore the moderating effect of national priority industrial policy. The results reveal that national priority industrial policy attenuates the negative association between IEC connections and IPO underpricing, suggesting the substitutive effects between macro-level government intervention (national priority industrial policy) and micro-level government intervention *via* (quasi-) political connections on IPO underpricing.

The remainder of the paper is organised as follows. In the second section, we review the literature, discuss the institutional background, and develop the research hypotheses. The third section introduces the empirical model specifications, variables, sample, and data. The fourth section reports the descriptive statistics, Pearson correlation analysis, and main findings. The fifth section reports on robustness checks and addresses the endogeneity problem. The sixth section reports our conclusions.

II. Literature, Background, and Hypotheses Development

2.1 Literature Review

In the extant literature, scholars provide a variety of hypotheses to interpret IPO underpricing. The first category of hypotheses is based on information asymmetry among stakeholders and includes seven hypotheses: winner's curse hypothesis, investment banker prestige hypothesis, dynamic information acquisition hypothesis, investment banker's monopoly power hypothesis, dividend signalling hypothesis, seasoned equity offering signalling hypothesis, and insider signalling hypothesis. The second category derives from behavioural finance and includes three hypotheses: bandwagon hypothesis, speculative bubble hypothesis, and market climate hypothesis.

The winner's curse hypothesis views IPO underpricing as compensation for unwitting

investors (Rock, 1986; Keloharju, 1993). According to the investment banker prestige hypothesis (Beatty and Ritter, 1986; Carter and Manaster, 1990; Smith, 1986), the degree of IPO underpricing is lower for reputable underwriters than for non-reputable underwriters. The dynamic information acquisition hypothesis (Benveniste and Spindt, 1989; Ruud, 1993) argues that underwriters motivate institutional investors to disclose their true quotes by placing new stocks at a lower issue price. Overall, the winner's curse hypothesis, investment banker prestige hypothesis, and dynamic information acquisition hypothesis are related to adverse selection. On the basis of moral risk, Baron (1982) argues that underwriters wish to raise the success rate of a new stock issue with a relatively lower issue price; this is known as the investment banker's monopoly power hypothesis.

With regard to the dividend signalling hypothesis, the extant literature (Allen and Faulhaber, 1989; Michaely and Shaw, 1994) argues that IPO underpricing can convey a firm's good performance to the market. According to the seasoned equity offering signalling hypothesis (Downes and Heinkel, 1982; Jegadeesh *et al.*, 1993; Welch, 1989, 1996), firms with a better performance voluntarily lower their new stock issue prices in order to attract investors, and thus they make a favourable impression on investors, thereby supporting their seasoned equity offerings. The insider signalling hypothesis states that IPO underpricing can convey the same positive signal as insider shareholdings to outside investors (Grinblatt and Hwang, 1989). In summary, the dividend signalling hypothesis, seasoned equity offering signalling hypothesis, and insider signalling hypothesis base their arguments on the signalling theory of information asymmetry.

In essence, the market climate hypothesis, speculative bubble hypothesis, and bandwagon hypothesis of IPO underpricing base their arguments on behavioural finance. McGuinness (1993) formulates the market climate hypothesis and finds that IPO underpricing is significantly positively associated with the market climate. According to Ritter (1987), the speculative bubble hypothesis refers to the motivation of investors to raise the stock prices of the secondary market and thus bring about a greater degree of IPO underpricing. The bandwagon hypothesis (Henshel and Johnston, 1987; Welch, 1992) argues that some firms intentionally lower their issue prices to attract a proportion of investors to buy their stocks and thus attract more investors through the bandwagon effect or the herd mentality.

The above hypotheses about IPO underpricing are based on the contexts of developed markets, and thus they may not fit in well with emerging markets such as China due to the different institutional settings. Therefore, it is still necessary for researchers to delve into IPO underpricing in the Chinese stock market. Furthermore, considering the differences in stock-issuing systems and rent-seeking during a firm's IPO application, in this study, we focus on IEC connections and examine their influence on IPO underpricing.

2.2 Institutional Background on Government Regulation and the IEC

Since the establishment of the Shanghai Stock Exchange and Shenzhen Stock Exchange in 1990, the Chinese stock market has been endowed with the mission of helping financially distressed state-owned enterprises to raise outside capital (Lee, 2001). Initially, a “quota” system was introduced; this system was characterised by strong government regulation (Huang, 2011). Specifically, under the quota system, the central government schematised the total number of securities offerings each year and then allocated quotas to local governments. Any firm seeking listing had to first get a quota from the local government and then get approval from the central government. Therefore, under the quota system, IPO qualification was a scarce resource and state-owned enterprises dominated the IPO market.

The “channel” system (also known as the recommendation system) started in 1999. Under this system, the CSRC was endowed with the right to approve or reject IPO applications on the basis of certain given criteria (Huang, 2011). Specifically, under the recommendation system, the CSRC required that a firm’s IPO application must be recommended by qualified securities firms, which were assigned a certain number of “channels” by the CSRC. Each channel could only be used for one IPO application, and only after that application made through a particular channel had been approved by the CSRC could the same channel be reused for a new IPO application (Du *et al.*, 2013b). Compared with the quota system, the channel system was relatively more market-oriented, with less government intervention. Nevertheless, strong administrative regulation of the number of channels meant that these channels became a scarce resource.

In 2004, the CSRC introduced the “sponsoring” system. Under the sponsoring system, the number of IPO applications recommended by a securities firm is unrestricted (Huang, 2011). In other words, securities firms decide whether to sponsor an offering and how many offerings to sponsor, and thus these firms play a crucial role in the sponsoring system. However, IPO applications recommended by securities firms still have to be approved by the IEC and the CSRC. To further promote openness, transparency, and fairness in verifying IPO applications, the CSRC made significant reforms to the composition of the IEC, including (1) announcing information on the time, committee list, list of IPO applications, and results of each IEC meeting; (2) decreasing the number of IEC members (from 80 to 25 for the Main Board and 35 for the Growth Enterprise Board); and (3) requiring the IEC to be comprised of specialists with diverse professional backgrounds (e.g. auditors, lawyers, representatives of institutional investors and underwriters, and government officials).

According to our statistics, accounting and law firm professionals make up more than 50% of the IEC’s membership; thus, the importance of getting support from auditors and lawyers who are IEC members is self-evident. Against this context, it is inevitable that to-be-listed firms seek to build up implicit IEC connections by hiring social intermediary organisations whose auditors and/or lawyers have been elected as IEC members for auditing

and/or legal services.

2.3 IEC Connections and IPO Underpricing (Hypothesis 1)

All IPO applications must be approved by the IEC, so the current sponsoring system makes rent-seeking valuable in China's IPO market. To increase the likelihood of IPO applications being approved by the IEC, IPO firms tend to build up IEC connections. Although it is less likely for IPO firms to build direct IEC connections, indirect and implicit IEC connections are unavoidable.

Specifically, a common way for IPO firms to build up indirect IEC connections is to hire social intermediary organisations whose auditors and/or lawyers are current IEC members; this does not violate the existing regulations. What is more, the amount of fees paid for these social intermediaries is highly dependent on the approval results of IPO applications in China. Therefore, both auditing and legal service providers have a strong incentive to work closely with their IPO client firms to obtain approval of IPO applications from the IEC. On the other hand, although the CSRC requires IEC members from social intermediaries (auditors and lawyers) to cut off all economic relationships with their former employers (auditing and legal firms), implicit economic relationships are inevitable. The fact is that up to 90% of IEC members return to work for their former employers as auditors and lawyers after their retirement from the IEC (Du *et al.*, 2013a). This means that there exist unclear and subtle interest relations between IEC members and their former employers. In this regard, the extant studies find that IEC members have the incentive and preference to approve the IPO applications of firms that hire their former employers to provide auditing and legal services; this results in IPO firms paying premium fees to these auditing/legal services providers and in the latter gaining significantly bigger market shares in the IPO market (Du *et al.*, 2013a; Yang, 2013).⁴ These findings suggest that social intermediary organisations (auditing and legal service providers) get significant economic rent from their IPO client firms with IEC connections. Given the above discussions, IEC connections would create incentives among IPO firms, IEC-connected intermediaries, and IEC members to seek and maintain such connections.

Firms going for an IPO are expected to meet high performance requirements in China,⁵

⁴ In China, the development of the bond market is still in its infancy, so going for IPO is the most important channel to directly raise external financing (Allen *et al.*, 2005). In this context, since IEC-connected intermediary organisations (auditing and legal service providers) may help IPO firms obtain approval of their IPO applications from the IEC, IPO firms will compete to hire these IEC-connected social intermediaries. Extant studies (Du *et al.*, 2013a, 2013b) find that (1) IEC-connected intermediaries may attract many more IPO client firms than their counterparts in China's IPO market and (2) IEC-connected intermediaries will charge their IPO client firms a fee premium.

⁵ A requirement for going public in China is that the yearly net earnings should be positive and accumulated net earnings should be no less than 30 million RMB in the last three fiscal years before an IPO application. Another requirement is that the accumulated net cash flow generated from operating activities should be no less than 50 million RMB or the operating income should be no less than 300 million RMB in the last three fiscal years before an IPO application.

resulting in severe earnings management and even accounting fraud in China's IPO firms.⁶ The worse firms perform, the severer the earnings management and the more likely it is that (a) these problems will be found by the IEC and (b) the IPO applications of these firms will be denied by the IEC. Therefore, firms that perform worse are more prone to seek social capital (IEC connections) to help them obtain approval of their IPO applications from the IEC. As a result, IEC connections facilitate the approval of a firm's IPO application by the IEC, even for firms with suspicious pre-IPO earnings.⁷

Moreover, even though social intermediary organisations value their reputation highly, they would still be less likely to exercise sufficient diligence in providing intermediary services for their IPO client firms and facilitating approval of their clients' IPO applications from the IEC, which would further motivate earnings management in IPO firms and undermine the quality of their client IPO firms. Worse still, due to the weak legal protection for minority shareholders (Du, 2013), social intermediaries and their irresponsible behaviours are rarely discovered or punished by the regulators, whereas the success of their clients' IPO applications would bring them an expected high income. Consequently, IPO firms with IEC connections are more likely to perform worse than IPO firms without IEC connections in the post-IPO period (Du *et al.*, 2013a).

Furthermore, according to Krueger (1974) and Murphy *et al.* (1993), rent-seeking hinders economic growth and efficient resource allocation. As such, as a non-productive activity, seeking to obtain IEC connections through rent-seeking behaviour towards IEC members negatively affects corporate long-term development and thus results in worse post-IPO financial performance (Du *et al.*, 2013a, 2013b; Lai and Du, 2012). In this regard, IEC connections pass a negative signal to the market about both a firm's true performance in the pre-IPO period and suspicious future earnings in the post-IPO period. Consequently, investors link the negative effects of IEC connections with the underperformance of IPO firms and thus would lower the prices they are willing to pay for these stocks. Therefore, we

⁶ These problems also happen in Chinese firms that go public on overseas markets. For instance, since March 2011, a large number of China concept stocks listed on the US markets have been suspended from trading or even delisted by the NASDAQ Stock Exchange and the New York Stock Exchange for severe accounting fraud problems.

⁷ Previous studies argue that firms may establish political connections to prevent the government intervening in their companies (Fan *et al.*, 2007). Borrowing support from the existing literature on political connections, we cannot exclude *ex ante* the possibility that good firms may also establish connections with the IEC to prevent the IEC picking fault with them. As a response, referring to extant studies (Fan *et al.*, 2007), we define good firms as those with better financial performance (ΔROA , ΔROE , $\Delta GROWTH$) after going for IPO. Specifically, ΔROA (ΔROE) is measured as the difference in returns on total assets (returns on equity) between the year after IPO and the year before IPO. $\Delta GROWTH$ is measured as the difference in the growth rate of sales revenue between the year after IPO and the year before IPO. Clearly, ΔROA , ΔROE , and $\Delta GROWTH$ embody whether IPO candidates are less likely to manipulate earnings to meet the CSRC requirements. Using rent-seeking towards IEC members (IEC) as the dependent variables, untabulated results show that the coefficients on ΔROA , ΔROE , and $\Delta GROWTH$ are all significantly negative (-1.4263 with $z = -1.78$, -0.9222 with $z = -1.99$, and -0.2400 with $z = -1.65$, respectively), suggesting that firms with better financial performance are less likely to seek connections with IEC members via rent-seeking.

formulate Hypothesis 1 as follows:

Hypothesis 1: *Ceteris paribus*, IEC connections are negatively related with IPO underpricing.

2.4 The Moderating Role of the National Priority Industrial Policy (Hypothesis 2)

To this day, China's economy is still heavily branded with aspects of the planned economy era such as the five-year development plans, which mainly aim to stipulate the objectives and directions for national economic development. Given our sample period of 2007 to 2012, our study may be affected by the impacts of both the 11th (2006-2010) and 12th (2011-2015) five-year plans. Specifically, for each five-year development plan, the government will carry out a national priority industrial policy to promote the development of some chosen industries by providing preferential policies and critical resources from a national strategic perspective. Accordingly, it is naturally expected that IPO firms belonging to state-backed industries would be more likely to obtain approval of their IPO applications from the IEC (Du *et al.*, 2013a) even though they may not fully meet the strict IPO standards required by the CSRC and may have a worse post-IPO financial performance (Du *et al.*, 2013a; Fan *et al.*, 2007). Worse still, the government and the CSRC may employ their administrative power to quicken the approval process of IPO candidates in national priority industries and shorten the time lag from the stock issue day to the first trading day if the market climate is favourable, resulting in insufficient acquisition of information and thus leading to lower underpricing according to the dynamic information acquisition hypothesis (Chen *et al.*, 2004; Beveniste and Spindt, 1989; Fan *et al.*, 2007; Ruud, 1993). As a response, investors would lower the prices they are willing to pay for these stocks, resulting in the negative association between national priority industrial policy and IPO underpricing.

Next, we further address the moderating effect of national priority industrial policy on the relation between IEC connections and IPO underpricing. In essence, the national priority industrial policy embodies an important macro-government regulation. However, IEC connections embody micro-government regulation in the IPO market. According to Williamson's (2000) institutional analysis framework, the national priority industrial policy can be viewed as a formal institution and IEC connections (quasi-political connections) can be considered as an informal system. As Williamson (2000) argues and Du (2013) validates, formal institutions and informal systems have substitutive effects on corporate behaviour and financial consequences. As a result, we rationally predict that the national priority industrial policy and IEC connections, taken together, exert substitutive effects on IPO underpricing.

Furthermore, given the highly regulated characteristic of China's IPO market (Huang, 2011), we further address why the national priority industrial policy can attenuate the negative association between IEC connections and IPO underpricing. First, the CSRC

allows IPO candidates in national priority industries to select favourable time windows to issue stocks in order to help them raise as much money as possible, thereby alleviating the pressure on the central (local) government's fiscal budget. Therefore, IPO candidates in national priority industries are inclined to issue their stocks during upswings in the market (Du *et al.*, 2013a), and consequently the negative effect of IEC connections on IPO underpricing is mitigated for firms in national priority industries (the market climate hypothesis; McGuinness, 1993). Second, for the purpose of helping IPO candidates in national priority industries to increase the amount of financing, these firms are always allowed to issue their stocks with a higher price-to-EPS ratio (Chen *et al.*, 2004; Guo and Brooks, 2008). As a result, the speculative bubble is larger for IPO candidates in national priority industries, which weakens the negative relation between IEC connections and IPO underpricing for firms in national priority industries (the speculative bubble hypothesis; Ritter, 1987). On the basis of the above discussions, we formulate Hypothesis 2 as follows:

Hypothesis 2: *Ceteris paribus*, the negative effect of IEC connections on IPO underpricing is less pronounced for firms in national priority industries than for their counterparts in other industries.

III. Empirical Models Specification and Variables

3.1 Multivariate Test Model for Hypothesis 1

Hypothesis 1 predicts a negative association between IEC connections and IPO underpricing. To test Hypothesis 1, we employ an OLS regression to estimate Eq. (1) including IEC connections (*IECC*) and other determinants:

$$\begin{aligned}
 UPRICE = & \alpha_0 + \alpha_1 IECC + \alpha_2 AUDITOR + \alpha_3 LAWYER + \alpha_4 UWR + \alpha_5 UW_PC \\
 & + \alpha_6 IND_UW + \alpha_7 UW_AUD + \alpha_8 ACC_LAW + \alpha_9 EDU \\
 & + \alpha_{10} FEMALE + \alpha_{11} AGE + \alpha_{12} EXPERTISE + \alpha_{13} CGI + \alpha_{14} SIZE \\
 & + \alpha_{15} LEV + \alpha_{16} MTB + \alpha_{17} WLR + \alpha_{18} TURNR + \alpha_{19} DELAY + \alpha_{20} SSE \\
 & + \alpha_{21} FIRMAGE + \alpha_{22} GOVSHR + \alpha_{23} MSE + \alpha_{24} RETRIAL \\
 & + \alpha_{25} CROSS + Industry\ Dummies + Year\ Dummies + \varepsilon
 \end{aligned} \tag{1}$$

In Eq. (1), the dependent variable is *UPRICE*, the label for IPO underpricing, measured as the change in a firm's stock price from the initial public offering to the final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002). The independent variable is *IECC*, the label for IEC connections, which equals 1 if a firm going for IPO hires IEC-connected social intermediaries (accounting or/and law firms) and 0 otherwise (Du *et al.*, 2013a, 2013b; Yang, 2013). In Eq. (1), if the coefficient on *IECC* (i.e. α_1) is significantly negative, Hypothesis 1 is supported.

To isolate the influence of IEC connections on IPO underpricing, we follow the extant

literature and include a set of control variables (Chen *et al.*, 2004; Chambers and Dimson, 2009; Chi and Padgett, 2005; Fan *et al.*, 2007; Guo and Brooks, 2008; Ritter and Welch, 2002; Schenone, 2004). First, we address the impacts of auditors, lawyers, and underwriters associated with IPO candidates on IPO underpricing. *AUDITOR* is a dummy variable for audit firms which equals 1 if the auditor of a firm's IPO is a Big 4 audit firm (including affiliated firms) according to the official rankings of the Chinese Institute of Certified Public Accountants and 0 otherwise (Fan and Wong, 2005). *LAWYER* is a dummy variable for law firms which equals 1 if the lawyer of a firm's IPO is a Big 5 law firm according to the rankings of Asian Legal Business and 0 otherwise. *UWR* is a dummy variable for underwriters which equals 1 if the underwriter of a firm's IPO is a Big 10 underwriter according to the official rankings provided by the Securities Association of China based on total underwriting amount and 0 otherwise.

Second, we control for the impacts of politically connected underwriters (*UW_PC*) and the underwriting approach (*IND_UW*) on IPO underpricing. *UW_PC* is an indicator variable which equals 1 if the ultimate owner of the underwriter is a central (local) government agency or government controlled state-owned enterprise and 0 otherwise. *IND_UW* is an indicator variable which equals 1 if an underwriter is solely in charge of a firm's IPO and 0 otherwise.

Third, we address the impacts of the degree of cooperation among auditors, lawyers, and underwriters on IPO underpricing and thus incorporate two variables, *UW_AUD* and *ACC_LAW*, into Eq. (1). *UW_AUD* is a dummy variable which equals 1 if the number of clients recommended by an underwriter and audited by an auditor simultaneously is greater than (or equal to) 2 and the ratio of clients with relationships between an underwriter and an auditor to the total number of underwriting clients for the relevant underwriter is greater than 25% and 0 otherwise. *ACC_LAW* is a dummy variable for the degree of cooperation between an auditor and a lawyer which equals 1 if the number of clients audited by an auditor and served by a lawyer simultaneously is greater than (or equal to) 2 and the ratio of clients with relationships between an auditor and a lawyer to the total number of IPO clients for the relevant auditor is greater than 25% and 0 otherwise.

Fourth, we control for several variables related to CEO characteristics and corporate governance mechanisms. *EDU* is a dummy variable which equals 1 if the CEO has obtained a master's degree or above and 0 otherwise. *FEMALE* is an indicator variable which equals 1 for a female CEO and 0 otherwise. *AGE* denotes the age of a firm's CEO. *EXPERTISE* is a dummy variable for CEO's expertise which equals 1 if the CEO has obtained qualification certificates in accounting, auditing, or/and security analysis and 0 otherwise. *CGI* denotes the corporate governance index following Gompers *et al.* (2003), including eight indexes covering ownership structure, board independence, and managerial compensation.

Fifth, we introduce three variables of firm-specific financial characteristics, *SIZE*, *LEV*, and *MTB*, into Eq. (1). *SIZE* denotes firm size, measured as the natural logarithm of total assets before IPO. *LEV* is financial leverage, measured as long-term debts divided by total assets before IPO. *MTB* is the market-to-book ratio, measured as the market value of equity on the first trading day scaled by the book value of equity before IPO (Fan *et al.*, 2007).

Sixth, we include four variables, *WLR*, *TURNR*, *DELAY*, and *SSE*, into Eq. (1) to address the impacts of market forces on IPO underpricing. *WLR* is the natural logarithm of a firm's winning lottery ratio (Chi and Padgett, 2005; Guo and Brooks, 2008). *TURNR* is the turnover rate on the first trading day after IPO (Guo and Brooks, 2008). *DELAY* is the time lag from a firm's stock issue day to the first trading day after IPO, measured as the number of days from stock issue to the first trading day scaled by 365 (Chen *et al.*, 2004; Fan *et al.*, 2007). *SSE* is a dummy variable which equals 1 if a firm is listed on the Shanghai Stock Exchange and 0 otherwise (Chen *et al.*, 2004; Fan *et al.*, 2007).

Seventh, we control for firm-specific features such as *FIRMAGE*, *GOVSHR*, *MSE*, *RETRIAL*, and *CROSS* in Eq. (1). *FIRMAGE* is the natural logarithm of a firm's age since its establishment (Schenone, 2004). *GOVSHR* denotes the percentage of shares owned by a (central or local) government agency or government-controlled enterprise (Chen *et al.*, 2004). *MSE* is a variable for the extent of minority shareholder expropriation, measured as other receivables scaled by total assets before IPO (Jiang *et al.*, 2010). *RETRIAL* is a dummy variable which equals 1 if a firm submitted IPO applications two or more times before it obtained approval for the IPO and 0 otherwise. *CROSS* is a dummy variable for cross-listing which equals 1 if a firm is listed on two or more stock markets and 0 otherwise.

Finally, we also include industry and year dummy variables in Eq. (1) to control for industry and year fixed effects. Appendix 1 outlines the definitions and data sources for all the variables used in our study.

3.2 Multivariate Test Model for Hypothesis 2

Hypothesis 2 predicts that national priority industrial policy (*NPIP*) attenuates the negative association between IEC connections and IPO underpricing. To test Hypothesis 2, we estimate Eq. (2) including *IECC*, *NPIP*, the interaction of *IECC*×*NPIP*, and other determinants:

$$\begin{aligned}
 UPRICE = & \beta_0 + \beta_1 IECC + \beta_2 NPIP + \beta_3 IECC \times NPIP + \beta_4 AUDITOR \\
 & + \beta_5 LAWYER + \beta_6 UWR + \beta_7 UW_PC + \beta_8 IND_UW + \beta_9 UW_AUD \\
 & + \beta_{10} ACC_LAW + \beta_{11} EDU + \beta_{12} FEMALE + \beta_{13} AGE + \beta_{14} EXPERTISE \\
 & + \beta_{15} CGI + \beta_{16} SIZE + \beta_{17} LEV + \beta_{18} MTB + \beta_{19} WLR + \beta_{20} TURNR \\
 & + \beta_{21} DELAY + \beta_{22} SSE + \beta_{23} FIRMAGE + \beta_{24} GOVSHR + \beta_{25} MSE \\
 & + \beta_{26} RETRIAL + \beta_{27} CROSS + Industry\ Dummies + Year\ Dummies + \varepsilon
 \end{aligned} \tag{2}$$

In Eq. (2), the dependent variable and the main independent variable are still *UPRICE* and *IECC*, respectively. The moderating variable is *NPIP*, a dummy variable for national priority industrial policy (favoured industrial policy) which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. In Eq. (2), if the coefficient on $IECC \times NPIP$ (β_3) is positive and significant, Hypothesis 2 is supported by empirical evidence. Also, consistent with Hypothesis 1 and extant studies, both the coefficients on *IECC* and *NPIP* should be significantly negative. In Eq. (2), the control variables are the same as those in Eq. (1), which are defined in Appendix 1.

3.3 Identification of Sample

The initial sample consists of all 887 Chinese privately owned firms going for IPO during the period 2007-2012. Since 2004, the CSRC has made the list of IEC members (names, organisations/institutions, positions, etc.) public, thus enabling us to conduct our study. However, the Chinese government stopped IPO applications during the period between May 2005 and June 2006 due to the reform of the IPO system and the share split structure reform. As a result, there were only four IPO applications in 2005 and relatively few firms applying for an IPO in 2006. To improve the comparability of observations for IPO applications and to ensure that our findings are not affected by the discontinuity of China's IPO market, we choose 2007 as the start of our sample period. Moreover, for the same reasons, the CSRC decided to suspend the issue of new shares from November 2012 to December 2013. Therefore, we choose 2012 as the end of our sample period.

After identifying the initial sample, we then delete IPO firms pertaining to the banking, issuance, and other financial industries and IPO firms for which the data required to measure firm-specific control variables are unavailable. Finally, we obtain a sample of 869 IPO firms. Furthermore, we winsorise the top and the bottom 1% of each variable's distribution to control for the influence of extreme observations.⁸

3.4 Data Sources

We collect data for the variables in this study from various sources. Data on IEC connections (*IECC*) are obtained by reading the prospectuses of all the IPO candidates. We calculate data on IPO underpricing (*UPRICE*) using the CSMAR (China Stock Market and Accounting Research) database, which is frequently used in the extant China studies (e.g. Jian and Wong, 2010; Jiang *et al.*, 2010). Using information sources on national-level industrial policy planning in China (the 11th Five-Year Plan and the 12th Five-Year Plan), we hand-collect data on the national priority industrial policy (*NPIP*), which indicates whether an IPO firm is located in a national priority industry. We hand-collect other data

⁸ Results are not qualitatively changed by deleting the top and the bottom 1% of the sample or by no winsorisation.

from the prospectuses of IPO candidates, the Chinese Institute of Certified Public Accountants (www.cicpa.org.cn), the rankings of Asian Legal Business (www.legalbusinessonline.com/asia), and the official rankings provided by the Securities Association of China (www.sac.net.cn) based on the total underwriting amount. See Appendix 1 for detailed information on the data sources.

IV. Results

4.1 Descriptive Statistics

Sections A and B of Table 1 present the descriptive statistics of the variables used in this study and the results of univariate tests, respectively. As Section A shows, the mean value of *UPRICE* (IPO underpricing) is about 54.93%, suggesting that compared with its issue price, a firm's stock price increases by about 54.93% from the initial public offering to the final price recorded on the first day of trading. Moreover, the mean value of *IECC* is 0.4016, meaning that 40.16% of privately owned firms have IEC connections. *NPPI* has a mean value of 0.2186, revealing that 21.86% of privately owned firms that go for IPO are located in national priority industries.

With regard to the descriptive statistics of the control variables, the following findings are noteworthy:

- (1) 2.07%, 26.58%, and 40.62% of privately owned firms that go for IPO hire Big 4 auditors (*AUDITOR*), Big 5 lawyers (*LAWYER*), and Big 10 underwriters (*UWR*) to provide audit, legal, and underwriting services, respectively;
- (2) 69.62% of underwriters are politically connected (*UW_PC*), and 90.56% of IPO firms are underwritten by a sole underwriter (*IND_UW*);
- (3) The underwriter-auditor relationship (*UW_AUD*) and auditor-lawyer relationship (*ACC_LAW*) appear in 7.48% and 2.19% of IPO firms, respectively;
- (4) 54.66% of CEOs in IPO candidates have obtained a master's degree or above (*EDU*), 8.98% of CEOs are female (*FEMALE*), the average age of CEOs in IPO firms (*AGE*) is 46.15 years, 0.81% of CEOs have obtained qualification certificates in accounting, auditing, or/and security analysis (*EXPERTISE*), and the average *CGI* index for IPO firms is 5.90;
- (5) Firm size (*SIZE*) is 440.84 million RMB, the ratio of long-term debts divided by total assets before IPO (*LEV*) is 5.01%, the market-to-book ratio (*MTB*) is 17.2815, the winning lottery ratio (*WLR*) for IPO firms is 64.70% ($e^{-0.4354}$), the turnover rate on the first trading day after IPO (*TURNR*) is 70.59%, the number of days from stock issue to the first trading (*DELAY*) is 11.53 days (0.0316×365), 6.10% of stocks are listed on the Shanghai Stock Exchange (*SSE*), a firm's average age from establishment to IPO (*FIRMAGE*) is 7.54 years ($e^{2.0197}$), the percentage of shares held by a (central or local) government agency or government-controlled enterprise (*GOVSHR*) is 1.56%, the

Table 1 Descriptive Statistics and Univariate Tests

Variable	Section A: Descriptive statistics											Section B: Univariate tests			
	(1)											(2)			
	N	Mean	S. D.	Min	Q1	Median	Q3	Max	IECC=1 (N=349)	S. D.	Mean	S. D.	IECC=0 (n=520)	S. D.	t-value
<i>UPRICE</i>	869	0.5493	0.7694	-0.2633	0.1004	0.3149	0.6744	6.2674	0.4899	0.6389	0.5892	0.8440	0.5892	0.8440	-1.87*
<i>IECC</i>	869	0.4016	0.4905	0	0	0	1	1	0.2751	0.4472	0.1808	0.3852	0.1808	0.3852	3.31***
<i>NPPI</i>	869	0.2186	0.4136	0	0	0	0	1	0.0315	0.1750	0.0135	0.1154	0.0315	0.1154	1.83*
<i>AUDITOR</i>	869	0.0207	0.1425	0	0	0	0	1	0.3324	0.4717	0.2212	0.4154	0.2212	0.4154	3.66***
<i>LAWYER</i>	869	0.2658	0.4420	0	0	0	1	1	0.4155	0.4935	0.4000	0.4904	0.4000	0.4904	0.45
<i>UWR</i>	869	0.4062	0.4914	0	0	0	1	1	0.6905	0.4629	0.7000	0.4586	0.7000	0.4586	-0.30
<i>UW_PC</i>	869	0.6962	0.4602	0	0	1	1	1	0.9169	0.2764	0.8980	0.3028	0.8980	0.3028	0.93
<i>IND_UW</i>	869	0.9056	0.2925	0	1	1	1	1	0.0888	0.2849	0.0654	0.2474	0.0654	0.2474	1.29
<i>UW_AUD</i>	869	0.0748	0.2632	0	0	0	0	1	0.0143	0.1190	0.0269	0.1620	0.0269	0.1620	-1.24
<i>ACC_LAW</i>	869	0.0219	0.1463	0	0	0	0	1	0.5673	0.4961	0.5326	0.4994	0.5326	0.4994	1.00
<i>EDU</i>	869	0.5466	0.4981	0	0	1	1	1	0.0830	0.2764	0.0942	0.2924	0.0942	0.2924	-0.56
<i>FEMALE</i>	869	0.0898	0.2860	0	0	0	0	1	46.1370	5.8111	46.1530	6.2964	46.1530	6.2964	-0.04
<i>AGE</i>	869	46.1466	6.1028	28.0000	43.0000	46.4530	49.0000	72.0000	0.0085	0.0924	0.0076	0.0874	0.0076	0.0874	0.14
<i>EXPERTISE</i>	869	0.0081	0.0894	0	0	0	0	1	5.8510	1.2250	5.9384	1.1446	5.9384	1.1446	-1.07
<i>CGI</i>	869	5.9033	1.1777	3.0000	5.0000	6.0000	7.0000	8.0000	19.8341	0.8546	19.9513	0.8737	19.9513	0.8737	-1.96*
<i>SIZE</i>	869	19.9042	0.8675	18.3015	19.2979	19.7718	20.3872	24.6929	0.0477	0.0680	0.0517	0.0763	0.0517	0.0763	-0.78
<i>LEV</i>	869	0.0501	0.0731	0.0000	0.0000	0.0187	0.0746	0.3638	17.8619	10.0700	16.8920	8.9212	16.8920	8.9212	1.49
<i>MTB</i>	869	17.2815	9.4058	3.2920	10.3800	15.2700	21.4900	54.2292	-0.3911	1.0681	-0.4650	1.1960	-0.4650	1.1960	-0.93
<i>WLR</i>	869	-0.4354	1.1463	-4.3473	-0.9359	-0.3871	0.2123	4.1824	0.7112	0.1842	0.7023	0.2013	0.7023	0.2013	0.66
<i>TURNR</i>	869	0.7059	0.1946	0.1800	0.6300	0.7700	0.8500	0.9500	0.0323	0.0109	0.0311	0.0101	0.0311	0.0101	1.73*
<i>DELAY</i>	869	0.0316	0.0104	0.0192	0.0247	0.0301	0.0356	0.0959	0.0487	0.2156	0.0692	0.2541	0.0692	0.2541	-1.24
<i>SSE</i>	869	0.0610	0.2394	0	0	0	0	1	1.9893	0.6513	2.0402	0.6460	2.0402	0.6460	-1.14
<i>FIRMAGE</i>	869	2.0197	0.6482	0.6931	1.6094	2.1972	2.4849	3.1772	0.0145	0.0484	0.0164	0.0486	0.0164	0.0486	-0.56
<i>GOVSHR</i>	869	0.0156	0.0485	0.0000	0.0000	0.0000	0.0000	0.3323	0.0174	0.0191	0.0172	0.0211	0.0172	0.0211	0.16
<i>MSE</i>	869	0.0173	0.0203	0.0001	0.0052	0.0115	0.0212	0.1205	0.0287	0.1671	0.0423	0.2015	0.0423	0.2015	-1.05
<i>RETRIAL</i>	869	0.0368	0.1884	0	0	0	0	1	0.0057	0.0756	0.0058	0.0758	0.0057	0.0758	-0.01
<i>CROSS</i>	869	0.0058	0.0757	0	0	0	0	1							

Note: ***, **, and * represent the 1%, 5%, and 10% levels of significance, respectively, for two-tailed tests. This table reports the results of descriptive statistics and univariate tests. *UPRICE* denotes IPO underpricing, measured as a firm's stock price change from the initial public offering to the final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002). *IECC* is a dummy variable for IEC connections; it equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise. *NPPI* is a dummy variable for national priority or favourable industrial policy; it equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All other variables are defined in Appendix 1.

extent of minority shareholder expropriation (*MSE*) is 1.73%, 3.68% of firms experience two or more IPO applications, and 0.58% of firms' stocks are listed on two or more stock markets.

Section B of Table 1 reports the results of univariate tests for the mean differences between the *IECC* subsample and the non-*IECC* subsample. Compared with the non-*IECC* subsample, (1) underpricing in the *IECC* subsample is significantly lower (*UPRICE*) (t-value = -1.87), lending preliminary support to Hypothesis 1; and (2) the *IECC* subsample has a significantly higher likelihood of being located in national priority industries (t = 3.31). These findings motivate us to address the interactive effects between IEC connections and policy support on IPO underpricing.

Moreover, the results in section B of Table 1 show that compared with the non-*IECC* subsample, the *IECC* subsample has a significantly higher likelihood of hiring a Big 4 auditor (*AUDITOR*), a higher likelihood of employing a Big 5 lawyer to provide legal services (*LAWYER*), a smaller firm size (*SIZE*), and longer time lags from stock issue to the first trading day (*DELAY*).

4.2 Pearson Correlation Analysis

Table 2 reports a Pearson correlation analysis of the variables; the *p*-values are given in parentheses below the coefficients. First, *UPRICE* is significantly negatively associated with *IECC*, suggesting that firms with IEC connections have significantly lower IPO underpricing, thus providing preliminary support to Hypothesis 1. Second, *UPRICE* is significantly positively related with *AUDITOR*, *UW_AUD*, *EDU*, *MTB*, *TURNR*, *DELAY*, *GOVSHR*, and *CROSS* but significantly negatively associated with *UWR*, *SIZE*, *WLR*, *SSE*, and *FIRMAGE*, suggesting the necessity to control for these variables when we examine the effects of IEC connections on IPO underpricing. Finally, as expected, the pair-wise correlation coefficients among the control variables are generally low, implying that there is no serious multicollinearity problem when these variables are included in regressions simultaneously.

4.3 Multivariate Tests of Hypothesis 1

Hypothesis 1 predicts that IEC connections are significantly negatively related with IPO underpricing. Table 3 reports the OLS regression results of IPO underpricing (*UPRICE*) on IEC connections (*IECC*) and other determinants. Because our sample only includes IPO firms, all the reported t-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980; similarly, hereinafter).

As shown in Table 3, the coefficient on *IECC* is negative and significant at the 5% level (-0.0743 with -2.22), validating Hypothesis 1. This finding reveals that IPO underpricing is significantly related with IEC connections, implying that the market undervalues firms with IEC connections. Furthermore, the coefficient estimate on *IECC*

Table 2 Pearson Correlation Matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) <i>UPR/CE</i>	1.0000													
(2) <i>IECC</i>	-0.0633 (0.0622)	1.0000												
(3) <i>NPP</i>	0.1118 (0.5022)	0.1118 (0.0010)	1.0000											
(4) <i>AUDITOR</i>	0.0596 (0.0909)	0.0622 (0.0671)	0.0574 (0.0909)	1.0000										
(5) <i>LAWYER</i>	-0.0218 (0.1234)	0.1234 (0.0003)	0.0661 (0.0513)	0.0405 (0.2328)	1.0000									
(6) <i>UWR</i>	-0.0844 (0.0128)	0.0154 (0.6494)	-0.0010 (0.9759)	-0.0051 (0.8800)	0.0027 (0.8000)	1.0000								
(7) <i>UW_PC</i>	-0.0267 (0.4321)	-0.0267 (0.7667)	0.0589 (0.0829)	0.0258 (0.4476)	0.0123 (0.7166)	-0.0752 (0.0266)	1.0000							
(8) <i>IND_UW</i>	0.0098 (0.7731)	0.0316 (0.3525)	0.0755 (0.0260)	-0.1189 (0.0004)	0.0160 (0.6373)	-0.0296 (0.3838)	-0.0078 (0.8184)	1.0000						
(9) <i>UW_AUD</i>	0.0710 (0.0364)	0.0437 (0.1983)	0.0189 (0.5774)	0.0508 (0.1346)	0.0170 (0.6158)	0.0452 (0.0000)	0.0452 (0.1836)	0.0020 (0.9531)	1.0000					
(10) <i>ACC_LAW</i>	0.0289 (0.3953)	-0.0422 (0.1217)	-0.0220 (0.5177)	0.1440 (0.0000)	0.0525 (0.1217)	-0.0115 (0.7349)	0.0132 (0.6973)	-0.0056 (0.8696)	-0.0425 (0.2106)	1.0000				
(11) <i>EDU</i>	0.0771 (0.0240)	0.0341 (0.3151)	0.1294 (0.0001)	0.0351 (0.3017)	0.0352 (0.2995)	0.0417 (0.3287)	0.0330 (0.2190)	-0.0300 (0.3306)	-0.0047 (0.8911)	0.0097 (0.7749)	1.0000			
(12) <i>FEMALE</i>	0.0158 (0.6409)	-0.0191 (0.5739)	-0.0297 (0.3811)	0.0957 (0.0048)	0.0480 (0.1575)	0.0108 (0.7509)	0.0061 (0.8576)	0.0738 (0.0296)	-0.0281 (0.4085)	0.0907 (0.0075)	-0.0375 (0.2697)	1.0000		
(13) <i>AGE</i>	-0.0019 (0.9565)	-0.0013 (0.9698)	-0.0409 (0.2282)	-0.0049 (0.8843)	-0.0100 (0.7690)	-0.0639 (0.0595)	0.0040 (0.9058)	0.0246 (0.4693)	0.0428 (0.2072)	0.0671 (0.0479)	-0.0716 (0.0347)	0.0259 (0.4460)	1.0000	
(14) <i>EXPERTISE</i>	0.0519 (0.1260)	0.0050 (0.8840)	0.0146 (0.6668)	-0.0131 (0.6996)	-0.0251 (0.4602)	-0.0211 (0.5151)	0.0315 (0.3531)	-0.0149 (0.6599)	0.0723 (0.0332)	0.0915 (0.0617)	-0.0214 (0.5293)	0.1068 (0.0016)	-0.0150 (0.6582)	1.0000
(15) <i>CGI</i>	-0.0215 (0.5262)	-0.0364 (0.2834)	0.0766 (0.0240)	-0.0910 (0.0073)	-0.0258 (0.4470)	-0.0236 (0.4863)	-0.0521 (0.1247)	0.0136 (0.6884)	0.0085 (0.8028)	-0.0613 (0.0711)	-0.0277 (0.4154)	0.0258 (0.4477)	-0.1568 (0.0673)	0.0621 (0.0000)
(16) <i>SIZE</i>	-0.1702 (0.0000)	-0.0662 (0.0509)	-0.3189 (0.0000)	0.2441 (0.0000)	0.0122 (0.7204)	0.0813 (0.0165)	0.0552 (0.1038)	-0.3350 (0.0000)	-0.0131 (0.7005)	0.0174 (0.6091)	-0.0067 (0.8442)	-0.0305 (0.3685)	0.0577 (0.0889)	0.0097 (0.7743)
(17) <i>LEV</i>	0.0202 (0.5523)	-0.0264 (0.4376)	-0.0494 (0.1456)	0.0178 (0.6003)	0.0108 (0.7509)	-0.0528 (0.1197)	0.0524 (0.1230)	-0.1197 (0.0004)	0.0028 (0.9347)	0.0065 (0.8490)	-0.0046 (0.8921)	-0.0203 (0.2090)	0.0203 (0.5003)	0.0174 (0.6090)
(18) <i>MTB</i>	0.3482 (0.0000)	0.0506 (0.1363)	0.1412 (0.0000)	-0.0381 (0.2614)	-0.0316 (0.3523)	-0.0747 (0.0277)	0.0334 (0.3258)	0.1160 (0.0006)	0.0376 (0.2681)	0.0172 (0.6124)	0.0367 (0.2792)	0.0137 (0.6873)	-0.0740 (0.2929)	-0.0006 (0.9852)
(19) <i>WLR</i>	-0.5933 (0.0000)	0.0317 (0.3513)	-0.0584 (0.0852)	0.0414 (0.2224)	-0.0024 (0.9438)	0.0831 (0.0143)	0.0498 (0.1423)	-0.0846 (0.0126)	-0.0739 (0.0294)	-0.0013 (0.9700)	-0.0023 (0.9458)	-0.0199 (0.5588)	-0.0276 (0.7590)	-0.0276 (0.4157)
(20) <i>TURNR</i>	0.3226 (0.0000)	0.0224 (0.5096)	0.0343 (0.3124)	0.0380 (0.2637)	-0.0388 (0.2532)	-0.0719 (0.0340)	-0.0280 (0.4092)	0.1021 (0.0026)	0.0737 (0.0259)	0.0262 (0.4404)	-0.0124 (0.7160)	0.0395 (0.2445)	0.0065 (0.4497)	0.0065 (0.8476)
(21) <i>DELAY</i>	0.1983 (0.0000)	0.0587 (0.0836)	0.0414 (0.2230)	0.0014 (0.9662)	-0.0292 (0.3908)	-0.1198 (0.0004)	0.0235 (0.4898)	0.0139 (0.6821)	0.0158 (0.5806)	0.0389 (0.2517)	-0.0054 (0.8726)	-0.0300 (0.3769)	-0.0571 (0.0926)	-0.0393 (0.2472)
(22) <i>SSE</i>	-0.1086 (0.2157)	-0.0420 (0.2157)	-0.1115 (0.0010)	0.1317 (0.0001)	-0.0118 (0.7272)	0.0731 (0.0311)	0.0533 (0.1161)	-0.2652 (0.0000)	-0.0359 (0.2904)	0.0277 (0.4154)	0.1452 (0.0000)	-0.0296 (0.3841)	-0.0077 (0.4990)	-0.0230 (0.8203)
(23) <i>FIRIMAGE</i>	-0.2345 (0.0000)	-0.0385 (0.2564)	-0.0203 (0.5491)	0.0209 (0.8430)	-0.0067 (0.1602)	0.0477 (0.1913)	0.0444 (0.1158)	0.0249 (0.4637)	0.0146 (0.6668)	0.0534 (0.1158)	-0.0220 (0.5164)	-0.0194 (0.5682)	0.0592 (0.0813)	0.0335 (0.3235)
(24) <i>GO/SHR</i>	0.0633 (0.0624)	-0.0190 (0.5756)	0.0648 (0.0563)	0.0039 (0.9075)	-0.0326 (0.3368)	-0.0198 (0.5593)	0.0081 (0.8107)	-0.0298 (0.3800)	-0.0497 (0.1431)	0.0765 (0.0242)	0.0511 (0.1320)	-0.0387 (0.2547)	0.0341 (0.3156)	0.0031 (0.9267)
(25) <i>MSE</i>	0.0049 (0.8846)	0.0054 (0.8747)	0.0431 (0.2049)	-0.0320 (0.3459)	-0.0203 (0.5511)	-0.0405 (0.2325)	0.0143 (0.6746)	0.0296 (0.3829)	-0.0072 (0.8332)	0.0200 (0.5553)	0.0307 (0.3653)	-0.0414 (0.2227)	-0.0254 (0.4551)	-0.0192 (0.5715)
(26) <i>RET/AL</i>	-0.0529 (0.1193)	-0.0355 (0.2953)	0.0001 (0.9988)	0.1003 (0.0031)	0.0208 (0.5396)	0.0622 (0.0668)	-0.0568 (0.0940)	-0.0623 (0.0664)	-0.0091 (0.7879)	0.1379 (0.0000)	-0.0306 (0.3679)	0.0669 (0.0488)	0.0542 (0.1102)	0.0507 (0.1351)
(27) <i>CROSS</i>	0.0782 (0.0212)	-0.0003 (0.9941)	-0.0402 (0.2360)	0.0231 (0.0000)	0.0610 (0.4964)	0.0610 (0.0723)	0.0610 (0.1388)	-0.0795 (0.0190)	0.0362 (0.2864)	0.0927 (0.0063)	0.0082 (0.8102)	0.0293 (0.3877)	0.0069 (0.3333)	-0.0069 (0.8401)

Table 2 (Continued)

Variable	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(15) <i>CGI</i>	1.0000												
(16) <i>SIZE</i>	-0.1509 (0.0000)	1.0000											
(17) <i>LEV</i>	0.0207 (0.5416)	0.2100 (0.0000)	1.0000										
(18) <i>MTB</i>	-0.0229 (0.4994)	-0.3971 (0.0000)	-0.0783 (0.0210)	1.0000									
(19) <i>WLR</i>	-0.0061 (0.8582)	0.2506 (0.0000)	-0.0210 (0.5370)	-0.1367 (0.0001)	1.0000								
(20) <i>TURNR</i>	-0.0166 (0.6259)	-0.1703 (0.0000)	-0.0021 (0.9502)	0.2123 (0.0000)	-0.3626 (0.0000)	1.0000							
(21) <i>DELAY</i>	0.0486 (0.1519)	-0.1157 (0.0006)	-0.0169 (0.6188)	0.2499 (0.0000)	-0.0888 (0.0088)	0.0710 (0.0364)	1.0000						
(22) <i>SSE</i>	-0.0894 (0.0084)	0.4672 (0.0000)	0.0618 (0.0686)	-0.1749 (0.0000)	0.2686 (0.0000)	-0.1346 (0.0001)	-0.0877 (0.0097)	1.0000					
(23) <i>FIRMAGE</i>	0.0047 (0.8901)	0.1077 (0.0015)	-0.0065 (0.8489)	-0.2598 (0.0000)	0.2869 (0.0000)	-0.0682 (0.0445)	-0.2160 (0.0000)	0.1246 (0.0002)	1.0000				
(24) <i>GOVSHR</i>	0.0574 (0.0908)	-0.0116 (0.7332)	0.0929 (0.0061)	-0.0356 (0.2940)	-0.0493 (0.1467)	0.0102 (0.7646)	0.0224 (0.5087)	-0.0402 (0.2361)	0.0421 (0.2155)	1.0000			
(25) <i>MSE</i>	0.0310 (0.3609)	-0.0667 (0.0495)	-0.1047 (0.0020)	0.0567 (0.0951)	-0.0721 (0.0336)	0.0753 (0.0265)	0.0256 (0.4510)	-0.0282 (0.4057)	-0.0760 (0.0251)	0.0222 (0.5125)	1.0000		
(26) <i>RETREAL</i>	0.0420 (0.2160)	0.0455 (0.1802)	0.0100 (0.7674)	-0.1522 (0.0000)	0.0521 (0.1246)	-0.0047 (0.8902)	-0.0747 (0.0276)	0.1289 (0.0001)	0.1688 (0.0000)	-0.0154 (0.6497)	0.0090 (0.7905)	1.0000	
(27) <i>CROSS</i>	0.0321 (0.3446)	0.2225 (0.0000)	0.0551 (0.1047)	-0.0943 (0.0054)	0.0763 (0.0244)	-0.0148 (0.6624)	-0.0543 (0.1098)	0.0442 (0.1931)	0.0708 (0.0370)	-0.0245 (0.4709)	0.0139 (0.6813)	0.0659 (0.0521)	1.0000

Note: This table reports the results of the Pearson Correlation Matrix. *UPPRICE* denotes IPO underpricing, measured as a firm's stock price change from the initial public offering to the final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002). *IECC* is a dummy variable for IEC connections; it equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise. *NPPI* is a dummy variable for national priority or favourable industrial policy; it equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All other variables are defined in Appendix 1.

suggests that the average IPO underpricing is about 7.43% lower for firms with IEC connections than for their counterparts without IEC connections, equalling about 13.53% of the mean value of IPO underpricing. Clearly, the coefficient estimate on *IECC* is economically significant.

As for the signs and significance of the control variables, it is worth noting the following:

- (1) *UW_PC* has a negative and significant coefficient (-0.0624 with $t = -1.90$), suggesting the negative association between politically connected underwriters and IPO underpricing, which is supported to some extent by Fan *et al.* (2007).
- (2) The coefficient on *MTB* is significantly positive (0.0237 with $t = 7.56$), suggesting that firms with a higher market-to-book ratio have significantly higher IPO underpricing, which is consistent with Chen *et al.* (2004).
- (3) *WLR* has a significantly negative coefficient (-0.1862 with $t = -5.82$), suggesting that a firm whose stock has a higher winning lottery ratio experiences lower IPO underpricing, which echoes the findings in Chi and Padgett (2005).
- (4) *TURNR* is significantly positively associated with *UPRICE* (0.8218 with $t = 12.76$), meaning that a higher turnover rate on the first trading day can provide some explanation for greater IPO underpricing, a finding that is supported to some extent by Guo and Brooks (2008).
- (5) The coefficient on *DELAY* is positive and significant (2.9809 with $t = 1.86$), which is consistent with Chen *et al.* (2004) and Fan *et al.* (2007).
- (6) *SSE* has a significantly positive coefficient (0.1461 with $t = 2.42$), meaning that IPO underpricing is significantly greater for firms listed on the Shanghai Stock Exchange than for firms listed on the Shenzhen Stock Exchange. Firms whose stocks are listed on the Shanghai Stock Exchange are always large-scale and relatively mature companies (Chen *et al.*, 2004; Fan *et al.*, 2007), so this result is well supported by findings about the positive association between large-scale (mature) companies and IPO underpricing in extant studies (DeAngelo *et al.*, 2007; Lowry and Shu, 2002; Michaely and Shaw, 1994).⁹
- (7) The coefficient on *GOVSHR* is significantly positive (0.6728 with $t = 1.84$), indicating that privately owned firms with higher proportion of government ownership have significantly greater IPO underpricing. This finding echoes Chen *et al.* (2004).
- (8) *CROSS* has a significantly positive coefficient, implying that cross-listed firms have higher IPO underpricing.

⁹ Michaely and Shaw (1994) argue that the underwriter needs to lower the issuing price to ensure successful placement for large-scale firms due to the difficulty in selling large issues. Lowry and Shu (2002) document a positive association between market capitalisation and IPO underpricing. In addition, DeAngelo *et al.* (2007) argue that mature companies have the incentive of “liquidity squeeze” to engage in seasoned equity offerings, and thus mature companies are inclined to set a relatively low IPO price to make a favourable impression on investors interested in seasoned equity offerings.

Table 3 Results of Regression of IPO Underpricing on IEC Connections and Other Determinants

Variable	The dependent variable: IPO underpricing (<i>UPRICE</i>)	
	Coefficient	t-value
<i>IECC</i>	-0.0743**	-2.22
<i>AUDITOR</i>	-0.0217	-0.12
<i>LAWYER</i>	0.0498	1.36
<i>UWR</i>	-0.0258	-0.83
<i>UW_PC</i>	-0.0624*	-1.90
<i>IND_UW</i>	0.0027	0.06
<i>UW_AUD</i>	0.0572	0.84
<i>ACC_LAW</i>	-0.1085	-0.74
<i>EDU</i>	0.0398	1.20
<i>FEMALE</i>	0.0141	0.20
<i>AGE</i>	0.0015	0.49
<i>EXPERTISE</i>	0.2818	1.30
<i>CGI</i>	-0.0122	-0.89
<i>SIZE</i>	0.0137	0.49
<i>LEV</i>	-0.0754	-0.37
<i>MTB</i>	0.0237***	7.56
<i>WLR</i>	-0.1862***	-5.82
<i>TURNR</i>	0.8218***	12.76
<i>DELAY</i>	2.9809*	1.86
<i>SSE</i>	0.1461**	2.42
<i>FIRMAGE</i>	-0.0258	-0.92
<i>GOVSHR</i>	0.6728*	1.84
<i>MSE</i>	-0.5991	-0.90
<i>RETRIAL</i>	0.0438	0.64
<i>CROSS</i>	1.4951*	1.65
<i>INTERCEPT</i>	-0.7639	-1.28
Industry effects		Yes
Year effects		Yes
<i>adj_R</i> ²		65.73%
Observations		869
F-value (p-value)		41.61***(0.0000)

Note: ***, **, and * represent the 1%, 5%, and 10% levels of significance, respectively, for two-tailed tests. All reported t-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980).

This table uses the OLS regression to report the results of regressing IPO underpricing on IEC connections and other determinants. The dependent variable is IPO underpricing with the label of *UPRICE*, measured as a firm's stock price change from the initial public offering to the final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002). The independent variable is *IECC*, a dummy variable for IEC connections which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise. All control variables are defined in Appendix 1.

4.4 Multivariate Tests of Hypothesis 2

Hypothesis 2 states that the national priority industrial policy attenuates the negative relation between IPO underpricing and IEC connections. Table 4 reports the regression results of IPO underpricing on IEC connections, national priority industrial policy, and other determinants.

Table 4 Results of Regression of IPO Underpricing on IEC Connections, National Priority Industrial Policy, and Other Determinants

Variable	The dependent variable: IPO underpricing (<i>UPRICE</i>)	
	Coefficient	t-value
<i>IECC</i>	-0.1201***	-3.13
<i>NPIP</i>	-0.2748**	-2.34
<i>IECC</i> × <i>NPIP</i>	0.2169***	3.35
<i>AUDITOR</i>	-0.0154	-0.09
<i>LAWYER</i>	0.0507	1.38
<i>UWR</i>	-0.0285	-0.92
<i>UW_PC</i>	-0.0580*	-1.77
<i>IND_UW</i>	0.0090	0.19
<i>UW_AUD</i>	0.0581	0.84
<i>ACC_LAW</i>	-0.1124	-0.76
<i>EDU</i>	0.0409	1.25
<i>FEMALE</i>	0.0134	0.20
<i>AGE</i>	0.0016	0.51
<i>EXPERTISE</i>	0.3241	1.53
<i>CGI</i>	-0.0117	-0.86
<i>SIZE</i>	0.0088	0.32
<i>LEV</i>	-0.0397	-0.20
<i>MTB</i>	0.0236***	7.71
<i>WLR</i>	-0.1855***	-5.83
<i>TURNR</i>	0.8165***	12.76
<i>DELAY</i>	2.6253	1.61
<i>SSE</i>	0.1516**	2.51
<i>FIRMAGE</i>	-0.0304	-1.08
<i>GOVSHR</i>	0.6913*	1.90
<i>MSE</i>	-0.7303	-1.09
<i>RETRIAL</i>	0.0507	0.73
<i>CROSS</i>	1.5014*	1.66
<i>INTERCEPT</i>	-0.6582	-1.10
Industry effects	Yes	
Year effects	Yes	
<i>adj_R</i> ²	66.05%	
Observations	869	
F-value (p-value)	40.27 ***(0.0000)	
Joint F-test:	3.06*(0.0807)	
<i>IECC</i> + <i>IECC</i> × <i>NPIP</i>		

Note: ***, **, and * represent the 1%, 5%, and 10% levels of significance, respectively, for two-tailed tests. All reported t-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980).

This table uses the OLS regression to report the results of regressing IPO underpricing on IEC connections, national priority industrial policy, and other determinants. The dependent variable is IPO underpricing with a label of *UPRICE*, measured as a firm's stock price change from the initial public offering to the final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002). The independent variable is *IECC*, a dummy variable for IEC connections which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise. The moderating variable is *NPIP*, a dummy variable for national priority or favourable industrial policy which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All control variables are defined in Appendix 1.

As shown in Table 4, the coefficient on *IECC* is negative and significant at the 1% level (-0.1201 with $t = -3.13$), providing additional support to Hypothesis 1. Moreover, the coefficient estimate on *IECC* means that for firms that are not in national priority industries, the average IPO underpricing is about 12.01% lower for firms with IEC connections than for their counterparts. Clearly, the coefficient estimate on *IECC* is greater than that in Table 3 and economically significant. Moreover, the coefficient on *NPPI* is negative and significant at the 5% level (-0.2748 with $t = -2.34$), consistent with theoretical expectation. More importantly, the coefficient on *IECC*×*NPPI* is positive and significant at the 1% level (0.2169 with $t = 3.35$), validating that national priority industrial policy attenuates the negative effect of IEC connections on IPO underpricing. This finding lends strong support to Hypothesis 2 and suggests that the mitigating effect of IEC connections on IPO underpricing is less pronounced for firms in national priority industries than for their counterparts in other industries.

As for the signs and significance of the control variables in Table 4, they are qualitatively similar to those in Table 3. Specifically, *UPRICE* is significantly negatively related with *WLR* and *UW_PC* but significantly positively associated with *MTB*, *TURNR*, *SSE*, *GOVSHR*, and *CROSS*.

V. Robustness Checks and Endogeneity

5.1 Robustness Checks Using Alternative Measures of IEC Connections

To ensure that our findings in the main tests are robust to alternative measures of *IECC* as the independent variables, we re-estimate Eq. (1) and Eq. (2) to test hypotheses 1 and 2 and report the results in Table 5.

First, in columns (1) and (2) of Table 5, we employ *IECCMAX* as the independent variable to conduct robustness checks. *IECCMAX* denotes the degree of IEC connections and equals 2 if a firm going for IPO hires an IEC-connected auditing service provider and an IEC-connected legal service provider at the same time, 1 if the firm only hires an IEC-connected auditing service provider or an IEC-connected legal service provider, and 0 otherwise. In column (1), *IECCMAX* has a negative and significant coefficient (-0.0579 with $t = -2.32$), consistent with Hypothesis 1. In column (2), the coefficient on *IECCMAX* is still significantly negative (-0.0910 with $t = -3.06$), supporting Hypothesis 1. Moreover, *NPPI* has a significantly negative coefficient (-0.1544 with $t = -2.18$), echoing the finding in Table 4. Furthermore, the coefficient on *IECCMAX*×*NPPI* is positive and significant at the 1% level (0.1283 with $t = 2.75$), validating Hypothesis 2 again.

Second, in columns (3) and (4), a more generalised approach is adopted to define *IECC*. Specifically, *IECC_G* is a dummy variable which equals 1 if a firm going for IPO hires an IEC- or pre-IEC-connected audit firm and/or legal service provider and 0 otherwise. As shown in column (3), the significantly negative relation between IPO underpricing and

Table 5 Robustness Checks of Hypotheses 1 and 2 Using Alternative Measures of IECC

Variable	The dependent variable: IPO underpricing (<i>UPRICE</i>)							
	(1)		(2)		(3)		(4)	
	Hypothesis 1		Hypothesis 2		Hypothesis 1		Hypothesis 2	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
<i>IECCMAX</i>	-0.0579**	-2.32	-0.0910***	-3.06				
<i>IECC_G</i>					-0.1015**	-2.21	-0.1524***	-2.80
<i>NPIP</i>			-0.1544**	-2.18			-0.2833***	-2.72
<i>IECCMAX</i> × <i>NPIP</i>			0.1283***	2.75				
<i>IECC_G</i> × <i>NPIP</i>							0.2466***	2.62
<i>AUDITOR</i>	-0.0428	-0.26	-0.0385	-0.23	-0.0594	-0.36	-0.0582	-0.36
<i>LAWYER</i>	0.0518	1.32	0.0526	1.34	0.0583	1.48	0.0542	1.38
<i>UWR</i>	-0.0257	-0.82	-0.0258	-0.83	-0.0255	-0.82	-0.0195	-0.63
<i>UW_PC</i>	-0.0582*	-1.79	-0.0526	-1.62	-0.0593*	-1.82	-0.0515	-1.59
<i>IND_UW</i>	0.0057	0.12	0.0074	0.15	-0.0009	-0.02	-0.0050	-0.10
<i>UW_AUD</i>	0.0508	0.73	0.0526	0.75	0.0508	0.72	0.0453	0.64
<i>ACC_LAW</i>	-0.1043	-0.72	-0.1015	-0.70	-0.0924	-0.64	-0.1014	-0.69
<i>EDU</i>	0.0341	1.06	0.0364	1.14	0.0360	1.12	0.0406	1.27
<i>FEMALE</i>	0.0168	0.25	0.0141	0.21	0.0154	0.23	0.0102	0.15
<i>AGE</i>	0.0018	0.57	0.0017	0.53	0.0019	0.60	0.0017	0.53
<i>EXPERTISE</i>	0.2696	1.27	0.2931	1.40	0.2528	1.20	0.2472	1.15
<i>CGI</i>	-0.0109	-0.82	-0.0119	-0.89	-0.0103	-0.78	-0.0111	-0.84
<i>SIZE</i>	0.0181	0.66	0.0122	0.44	0.0206	0.76	0.0183	0.67
<i>LEV</i>	-0.0647	-0.32	-0.0549	-0.27	-0.0844	-0.41	-0.0805	-0.40
<i>MTB</i>	0.0235***	7.67	0.0233***	7.71	0.0235***	7.65	0.0235***	7.75
<i>WLR</i>	-0.1885***	-5.84	-0.1868***	-5.83	-0.1894***	-5.85	-0.1898***	-5.86
<i>TURNR</i>	0.8109***	12.73	0.8111***	12.77	0.8134***	12.81	0.8184***	12.79
<i>DELAY</i>	3.0410*	1.92	2.7634*	1.72	2.8222*	1.77	2.5491	1.57
<i>SSE</i>	0.1547***	2.59	0.1543***	2.59	0.1515**	2.55	0.1430**	2.39
<i>FIRMAGE</i>	-0.0242	-0.86	-0.0290	-1.04	-0.0226	-0.81	-0.0250	-0.90
<i>GOVSHR</i>	0.6460*	1.76	0.6647*	1.79	0.6444*	1.78	0.6789*	1.86
<i>MSE</i>	-0.6596	-0.98	-0.7350	-1.08	-0.7144	-1.06	-0.8561	-1.25
<i>RETRIAL</i>	0.0492	0.76	0.0470	0.72	0.0380	0.57	0.0623	0.92
<i>CROSS</i>	1.4462	1.60	1.4504	1.61	1.4701	1.61	1.4765	1.62
<i>INTERCEPT</i>	-1.1524**	-2.09	-1.0178*	-1.82	-1.1069**	-2.01	-0.9949*	-1.78
Industry effects	Yes		Yes		Yes		Yes	
Year effects	Yes		Yes		Yes		Yes	
<i>adj_R</i> ²	65.71%		65.91%		65.75%		66.02%	
Observations	869		869		869		869	
F-value (p-value)	41.57***(0.0000)		40.03***(0.0000)		41.64***(0.0000)		40.22***(0.0000)	

Note: ***, **, and * represent the 1%, 5%, and 10% levels of significance, respectively, for two-tailed tests. All reported t-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980). This table reports the results for hypotheses 1 and 2 using alternative measures of IEC connections. The dependent variable is IPO underpricing with a label of *UPRICE*, measured as a firm's stock price change from the initial public offering to the final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002). In columns (1) and (2), the independent variable is *IECCMAX*, the strength of IEC connections, which equals 2 if a firm going for IPO hires an IEC-connected auditing service provider and an IEC-connected legal service provider at the same time, 1 if the firm only hires an IEC-connected auditing service provider or an IEC-connected legal service provider, and 0 otherwise. In columns (3) and (4), the independent variable is *IECC_G*, a dummy variable for IEC connections which equals 1 if a firm going for IPO hires an IEC- or pre-IEC-connected audit firm and/or legal service provider and 0 otherwise. The moderating variable is *NPIP*, a dummy variable for national priority or favourable industrial policy which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All control variables are defined in Appendix 1.

IECC_G (-0.1015 with $t = -2.21$) suggests that Hypothesis 1 is still valid. As column (4) shows, *IECC_G* has a significantly negative coefficient (-0.1524 with $t = -2.80$), consistent with Hypothesis 1. Moreover, as theoretically expected, the coefficient on *NPIP* is negative and significant. What is even more crucial is that *IECC_G*×*NPIP* has a positive and significant coefficient (0.2466 with $t = 2.62$), validating Hypothesis 2 again.

Overall, using alternative measures of *IECC* (*IECCMAX* and *IECC_G*), both hypotheses 1 and 2 are supported, and thus our findings are insensitive to alternative measures of IEC connections.

5.2 Robustness Checks Using Alternative Measures of IPO Underpricing

To examine whether our findings are robust to alternative measures of the dependent variables, in Table 6 and Table 7, we use additional measures of IPO underpricing to re-estimate Eq. (1) and Eq. (2).

First, in columns (1) and (2) of Table 6, we follow Chambers and Dimson (2009) and adopt *LNUPRICE*, measured as the natural logarithm of (1+underpricing), as the dependent variable. In column (1), *IECC* has a significantly negative coefficient (-0.0299 with $t = -2.19$), reinforcing the negative relation between IEC connections and IPO underpricing. In column (2), the coefficient on *IECC*×*NPIP* is significantly positive (0.0820 with $t = 2.77$), validating Hypothesis 2.

Second, in columns (3) and (4), we follow Carter *et al.* (1998) and use the market-index-adjusted IPO underpricing with a label of *UPRICE_ADJ* to re-estimate Eq. (1) and Eq. (2). As shown in columns (3) and (4), we find that hypotheses 1 and 2 are still valid using *UPRICE_ADJ* as the dependent variable.

Third, we use cumulative abnormal returns (CAR) on the first day of trading as the proxy for IPO underpricing. As columns (5) and (6) show, hypotheses 1 and 2 are still valid.

Fourth, in Table 7, we further address whether our findings are robust to underpricing based on different time windows. In doing so, we follow Chambers and Dimson (2009) to calculate a set of additional variables for IPO underpricing (i.e. *UPRICE_N* ($N = 1, 2, 3, 4, 5, 10, 20$)). *UPRICE_N* represents variables of IPO underpricing from day 0 to day N ($N=1, 2, 3, 4, 5, 10, 20$) (Chambers and Dimson, 2009). Panels A and B of Table 7 provide the regression results of hypotheses 1 and 2, respectively.

As shown in Panel A of Table 7, for *UPRICE_N* ($N=1, 2, 3, 4, 5, 10, 20$) as the dependent variables, the coefficients on *IECC* are all significantly negative, providing support to Hypothesis 1. In Panel B of Table 7, with *UPRICE_N* ($N=1, 2, 3, 4, 5, 10, 20$) as the dependent variables, *IECC* in all columns has significant and negative coefficients, consistent with Hypothesis 1. Moreover, the coefficients on *IECC*×*NPIP* are all significantly positive, lending strong support to Hypothesis 2.

In summary, the results in Table 6 and Table 7 suggest that the main conclusions are not qualitatively changed using alternative measures of dependent variables.

Table 6 Robustness Checks of Hypotheses 1 and 2 Using Alternative Measures of IPO Underpricing

Variable	The dependent variable: the natural logarithm of (1-underpricing) (<i>LNUPRICE</i>)		The dependent variable: market-index-adjusted underpricing (<i>UPRICE_ADJ</i>)		The dependent variable: Cumulative abnormal returns on the first day of trading (<i>CAR</i>)	
	(2)		(3)		(5)	
	Hypothesis 1	Hypothesis 2	Hypothesis 1	Hypothesis 2	Hypothesis 1	Hypothesis 2
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
<i>IBCC</i>	-0.0299**	-2.19	-0.0761**	-2.29	-0.1180***	-3.09
<i>NPIP</i>					-0.1686**	-2.39
<i>IECC</i> × <i>NPIP</i>					0.1932***	3.02
<i>AUDITOR</i>	-0.0146	-0.22	-0.0263	-0.16	-0.0148	-0.09
<i>LAWYER</i>	0.0061	0.39	0.0582	1.51	0.0493	1.20
<i>UWR</i>	-0.0147	-1.10	-0.0258	-0.84	-0.0256	-0.83
<i>UW_PC</i>	-0.0339**	-2.43	-0.0591*	-1.82	-0.0525	-1.63
<i>IND_UW</i>	-0.0116	-0.53	0.0142	0.29	0.0182	0.38
<i>UW_AUD</i>	0.0295	1.07	0.0300	1.08	0.0547	0.79
<i>ACC_LAW</i>	0.0034	0.06	-0.1062	-0.75	-0.1053	-0.74
<i>EDU</i>	0.0156	1.16	0.0313	0.98	0.0312	0.99
<i>FEMALE</i>	0.0073	0.29	0.0037	0.06	-0.0001	-0.00
<i>AGE</i>	0.0003	0.24	0.0021	0.06	0.0020	0.64
<i>EXPERTISE</i>	0.1473	1.53	0.1537*	1.68	0.2469	1.21
<i>CGI</i>	-0.0058	-1.05	-0.0056	-1.01	-0.0059	-0.44
<i>SIZE</i>	0.0040	0.35	0.0018	0.16	0.0171	0.63
<i>LEV</i>	0.0556	0.61	0.0598	0.66	-0.0628	-0.37
<i>MTB</i>	0.0096***	8.55	0.0237***	7.85	0.0236***	7.94
<i>WLR</i>	-0.0890***	-8.09	-0.2022***	-6.32	-0.2017***	-6.34
<i>TURNR</i>	0.6644***	21.83	0.7324***	11.60	0.7277***	11.60
<i>DELAY</i>	1.7494***	2.63	2.8020*	1.69	2.4099	1.44
<i>SSE</i>	0.0803***	2.76	0.1578***	2.64	0.1603***	2.68
<i>FIRMAGE</i>	-0.0126	-1.03	-0.0258	-0.93	-0.0307	-1.11
<i>GOVSHR</i>	0.2548*	1.87	0.6652*	1.78	0.6983*	1.85
<i>MSE</i>	-0.3267	-1.07	-0.7859	-1.16	-0.8662	-1.28
<i>RETREAL</i>	0.0304	1.00	0.0501	0.79	0.0539	0.85
<i>CROSS</i>	0.4247*	1.75	1.3973	1.55	1.3971	1.56
<i>INTERCEPT</i>	-0.5903**	-2.48	-1.2091**	-2.22	-1.0856*	-1.96
Industry and Year effects	Yes	Yes	Yes	Yes	Yes	Yes
<i>adj_R²</i>	74.99%	75.17%	65.34%	65.60%	61.38%	61.51%
Observations	869	869	869	869	869	869
F-value (p-value)	64.47***(0.0000)	62.10***(0.0000)	40.92***(0.0000)	39.50***(0.0000)	34.61***(0.0000)	33.22***(0.0000)

Note: ***, **, and * represent the 1%, 5% and 10% levels of significance, respectively, for two-tailed tests. All reported t-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980). This table reports results for hypotheses 1 and 2 using alternative measures of IPO underpricing. In columns (1) and (2), the dependent variable is *LNUPRICE*, measured as the natural logarithm of (1-underpricing) (Chambers and Dimson, 2009). In columns (3) and (4), the dependent variable is *UPRICE_ADJ*, computed as the market-index-adjusted IPO underpricing (Carter *et al.*, 1998). In columns (5) and (6), the dependent variable is *CAR*, measured as cumulative abnormal returns based on market-adjusted model on the first day of trading. The independent variable is *IECC*, a dummy variable for IEC connections which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise. The moderating variable is *NPIP*, a dummy variable for national priority or favourable industrial policy which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All control variables are defined in Appendix 1.

Table 7 Robustness Checks of Hypotheses 1 and 2 Using Other Dependent Variables Based on Different Time Windows

Variable	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	UPRICE_1	UPRICE_2	UPRICE_2	UPRICE_2	UPRICE_3	UPRICE_3	UPRICE_4	UPRICE_4	UPRICE_5	UPRICE_5	UPRICE_10	UPRICE_10	UPRICE_20	UPRICE_20
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Panel A: Robustness checks of Hypothesis 1														
IECC	-0.0681**	-2.16	-0.0656**	-2.14	-0.0576*	-1.91	-0.0603**	-2.01	-0.0665**	-2.17	-0.0721**	-2.25	-0.0571*	-1.87
AUDITOR	0.0166	0.11	0.0249	0.18	0.0305	0.22	0.0547	0.41	0.0471	0.37	0.0435	0.34	0.0302	0.31
LAWYER	0.0457	1.21	0.0486	1.30	0.0530	1.45	0.0504	1.43	0.0579	1.59	0.0339	0.91	0.0602	1.58
UWR	-0.0126	-0.41	-0.0144	-0.47	-0.0172	-0.57	-0.0137	-0.46	-0.0165	-0.55	-0.0105	-0.33	-0.0086	-0.28
UW_PC	-0.0588*	-1.84	-0.0561*	-1.74	-0.0506	-1.60	-0.0515*	-1.66	-0.0508	-1.58	-0.0278	-0.84	-0.0006	-0.02
IND_UW	0.0070	0.15	0.0069	0.15	0.0032	0.07	0.0039	0.09	0.0101	0.22	0.0214	0.47	0.0207	0.47
UW_AUD	0.0610	0.96	0.0622	1.09	0.0697	1.22	0.0680	1.14	0.0733	1.10	0.0792	1.19	0.0632	0.98
ACC_LAW	-0.0563	-0.42	-0.0703	-0.54	-0.0571	-0.46	-0.0549	-0.45	-0.0365	-0.31	-0.1069	-0.92	0.0270	0.17
EDU	0.0262	0.86	0.0258	0.86	0.0269	0.93	0.0262	0.92	0.0255	0.86	0.0449	1.47	0.0243	0.82
FEMALE	-0.0028	-0.04	-0.0021	-0.03	-0.0062	-0.10	-0.0175	-0.29	-0.0165	-0.27	-0.0282	-0.48	-0.0494	-0.90
AGE	0.0013	0.46	0.0020	0.79	0.0019	0.75	0.0029	1.16	0.0029	1.08	0.0027	0.97	0.0027	1.05
EXPERTISE	0.2614	1.55	0.2299	1.47	0.2123	1.48	0.2536*	1.87	0.2269*	1.66	0.1797	1.35	0.2259	1.07
CGI	-0.0138	-1.10	-0.0115	-0.95	-0.0153	-1.26	-0.0161	-1.37	-0.0139	-1.16	-0.0105	-0.84	-0.0047	-0.39
SIZE	0.0254	1.00	0.0298	1.19	0.0208	0.85	0.0175	0.71	0.0145	0.58	-0.0177	-0.68	-0.0397	-1.60
LEV	-0.0070	-0.04	0.0333	0.18	0.0901	0.49	0.1116	0.63	0.1289	0.69	0.1560	0.79	0.3396	1.43
MTB	0.0224***	7.65	0.0228***	7.14	0.0213***	6.91	0.0202***	6.64	0.0198***	6.44	0.0166***	5.27	0.0155***	5.36
WLR	-0.1887***	-6.23	-0.1754***	-6.12	-0.1603***	-5.83	-0.1447***	-5.43	-0.1426***	-5.41	-0.1304***	-4.73	-0.1018***	-3.98
TURNR	0.7375***	12.17	0.7161***	12.18	0.7248***	12.47	0.7407***	12.95	0.7225***	12.42	0.7566***	12.64	0.7394***	11.15
DELAY	2.4536	1.52	1.3088	0.84	1.7986	1.16	1.8821	1.24	1.6559	1.05	1.5173	0.97	4.0959***	2.92
SSE	0.1252**	2.20	0.1303**	2.30	0.1177**	2.17	0.1113**	2.08	0.1181**	2.19	0.1482**	2.58	0.1177**	2.14
FIRMAGE	-0.0257	-0.95	-0.0256	-0.96	-0.0262	-0.98	-0.0342	-1.28	-0.0329	-1.21	-0.0439	-1.54	-0.0282	-0.97
GOVSHR	0.5233	1.54	0.4575	1.44	0.5185	1.59	0.4470	1.39	0.4887	1.38	0.3661	1.00	0.4194	1.17
MSE	-0.7566	-1.23	-0.8375	-1.42	-0.8660	-1.51	-0.8959	-1.60	-0.7301	-1.26	-0.9593	-1.50	-0.2309	-0.32
RETAL	0.0227	0.37	0.0307	0.52	0.0539	0.93	0.0535	0.93	0.0580	0.99	0.0588	0.97	0.0742	0.99
CROSS	1.2952*	1.68	1.1718*	1.79	1.1116*	1.79	1.1307*	1.80	1.0978*	1.94	1.1905*	1.86	0.9555**	2.01
INTERCEPT	-1.2675**	-2.41	-1.3718***	-2.64	-1.2021**	-2.33	-1.1535**	-2.22	-1.0716**	-2.00	-0.4587	-0.82	-0.0490	-0.09
Industry and Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj R ²	65.84%		65.42%		65.38%		65.24%		63.94%		61.70%		60.77%	
Observations	869		869		869		869		869		869		869	
F-value (p-value)	41.81***(0.0000)		41.06***(0.0000)		40.98***(0.0000)		40.73***(0.0000)		38.54***(0.0000)		35.10***(0.0000)		33.79***(0.0000)	

Table 7 (continued)

Panel B: Robustness checks of Hypothesis 2												Yes		Yes		Yes	
<i>IECC</i>	-0.1115***	-3.10	-0.1045***	-3.02	-0.0910***	-2.63	-0.0900***	-2.60	-0.0945***	-2.65	-0.1004***	-2.68	-0.0849***	-2.41			
<i>NPIP</i>	-0.1617**	-2.39	-0.1493**	-2.26	-0.1334**	-2.05	-0.1179*	-1.81	-0.1217**	-1.83	-0.1343*	-1.75	-0.1352*	-1.88			
<i>IECC×NPIP</i>	0.1985***	3.13	0.1785***	2.81	0.1536**	2.46	0.1369**	2.23	0.1301**	2.07	0.1325**	2.01	0.1308**	1.97			
<i>AUDITOR</i>	0.0284	0.20	0.0355	0.25	0.0396	0.29	0.0628	0.47	0.0547	0.43	0.0513	0.40	0.0379	0.39			
<i>LAWYER</i>	0.0464	1.22	0.0491	1.32	0.0536	1.47	0.0509	1.45	0.0584	1.61	0.0345	0.92	0.0608	1.60			
<i>UWR</i>	-0.0123	-0.40	-0.0141	-0.46	-0.0169	-0.56	-0.0135	-0.46	-0.0164	-0.54	-0.0104	-0.33	-0.0086	-0.28			
<i>UW_PC</i>	-0.0521	-1.64	-0.0502	-1.57	-0.0454	-1.44	-0.0469	-1.51	-0.0462	-1.44	-0.0229	-0.70	0.0043	0.14			
<i>IND_UW</i>	0.0113	0.24	0.0107	0.23	0.0064	0.14	0.0068	0.15	0.0128	0.27	0.0240	0.53	0.0232	0.53			
<i>UW_AUD</i>	0.0622	0.98	0.0633	1.11	0.0707	1.23	0.0689	1.15	0.0742	1.11	0.0802	1.20	0.0642	0.99			
<i>ACC_LAW</i>	-0.0559	-0.41	-0.0697	-0.53	-0.0564	-0.45	-0.0543	-0.44	-0.0355	-0.30	-0.1054	-0.89	0.0286	0.18			
<i>EDU</i>	0.0256	0.84	0.0254	0.85	0.0268	0.92	0.0261	0.92	0.0258	0.87	0.0252	0.87	0.0252	0.84			
<i>FEMALE</i>	-0.0065	-0.10	-0.0055	-0.08	-0.0092	-0.14	-0.0202	-0.33	-0.0193	-0.32	-0.0313	-0.54	-0.0525	-0.96			
<i>AGE</i>	0.0012	0.43	0.0019	0.76	0.0018	0.72	0.0029	1.13	0.0028	1.06	0.0026	0.94	0.0026	1.02			
<i>EXPERTISE</i>	0.2773*	1.75	0.2452*	1.67	0.2266*	1.66	0.2662**	2.07	0.2412*	1.85	0.1967	1.50	0.2434	1.17			
<i>CGI</i>	-0.0134	-1.07	-0.0111	-0.93	-0.0150	-1.23	-0.0159	-1.34	-0.0137	-1.14	-0.0104	-0.83	-0.0046	-0.38			
<i>MTB</i>	0.0224***	7.76	0.0227***	7.23	0.0212***	6.98	0.0202***	6.70	0.0197***	6.50	0.0166***	5.31	0.0154***	5.41			
<i>WLR</i>	-0.1883***	-6.25	-0.1750***	-6.13	-0.1599***	-5.84	-0.1444***	-5.43	-0.1423***	-5.41	-0.1301***	-4.73	-0.1015***	-3.98			
<i>TURN</i>	0.7326***	12.17	0.7117***	12.19	0.7211***	12.47	0.7374***	12.93	0.7194***	12.40	0.7535***	12.63	0.7364***	11.14			
<i>DELAY</i>	2.0520	1.26	0.9472	0.60	1.4869	0.95	1.6045	1.04	1.3912	0.87	1.2465	0.78	3.8284***	2.66			
<i>SSE</i>	0.1281**	2.27	0.1328**	2.36	0.1198**	2.22	0.1131**	2.13	0.1197**	2.23	0.1497***	2.62	0.1191**	2.17			
<i>FIRMAGE</i>	-0.0307	-1.14	-0.0301	-1.13	-0.0302	-1.13	-0.0377	-1.42	-0.0363	-1.34	-0.0476*	-1.67	-0.0318	-1.10			
<i>GOVSHR</i>	0.5552	1.62	0.4869	1.52	0.5447*	1.67	0.4702	1.45	0.5124	1.44	0.3921	1.06	0.4455	1.23			
<i>MSE</i>	-0.8313	-1.36	-0.9073	-1.54	-0.9295*	-1.61	-0.9518*	-1.70	-0.7897	-1.35	-1.0271	-1.60	-0.2995	-0.41			
<i>RETRIAL</i>	0.0263	0.43	0.0340	0.57	0.0570	0.98	0.0562	0.97	0.0608	1.04	0.0620	1.02	0.0774	1.04			
<i>CROSS</i>	1.2949*	1.69	1.1715*	1.80	1.1115*	1.80	1.1306*	1.81	1.0979*	1.95	1.1907*	1.87	0.9557**	2.03			
<i>INTERCEPT</i>	-1.1492**	-2.15	-1.2625**	-2.39	-1.1044**	-2.12	-1.0671**	-2.02	-0.9823*	-1.82	-0.3601	-0.63	0.0503	0.09			
Industry and Year effects																	
<i>adj R²</i>	66.13%		65.66%		65.55%		65.36%		64.05%		61.82%		60.90%				
Observations	869		869		869		869		869		869		869				
F-value (p-value)	40.41***(0.0000)		39.59***(0.0000)		39.41***(0.0000)		39.08***(0.0000)		36.96***(0.0000)		33.68***(0.0000)		32.44***(0.0000)				

Note: ***, **, and * represent the 1%, 5%, and 10% levels of significance, respectively, for two-tailed tests. All reported t-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980). This table reports results for hypotheses 1 and 2 using alternative measures of IPO underpricing. In columns (1)–(6), the dependent variable is *U/PRICE*. *N*, a variable for IPO underpricing from day 0 to day *N* (*N*=1, 2, 3, 4, 5, 10, 20) (Chambers and Dimson, 2009). The independent variable is *IECC*, a dummy variable for IEC connections, which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise. The moderating variable is *NPIP*, a dummy variable for national priority or favourable industrial policy which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All control variables are defined in Appendix 1.

5.3 Using the Propensity Score Matching (PSM) Approach to Control for Endogeneity

Next, we employ the propensity score matching (PSM) regression procedure to mitigate the potential endogeneity between IPO underpricing and IEC connections.

First, we refer to the prior literature (Chaney *et al.*, 2004; Choi *et al.*, 2009; Li, 2009) and identify a set of instrumental variables: (1) *INDSPEC_AUD* is a dummy variable for an auditor's industry expertise which equals 1 if an audit firm is ranked first in terms of the number of clients audited in an industry and 0 otherwise; (2) *INDSPEC_LAW* is a dummy variable for a lawyer's industry expertise which equals 1 if a law firm is ranked first in terms of the number of clients served in an industry and 0 otherwise; (3) *ACC_REG* denotes the minimum distance between an audit firm and three regulatory centres (Beijing, Shanghai, and Shenzhen) (Du *et al.*, 2015); (4) *LAW_REG* denotes the minimum distance between a law firm and three regulatory centres (Beijing, Shanghai, and Shenzhen); (5) *PENALTY_AUD* is the number of penalties that an audit firm received from the CSRC in the last year; (6) *PENALTY_LAW* is the number of penalties that a law firm received from the CSRC in the last year; (7) *IPOSHR_AUD* denotes the ratio of the number of clients audited by an audit firm to the total number of IPO firms in the Chinese stock market in a calendar year; (8) *IPOSHR_LAW* is the ratio of the number of clients served by a law firm to the total number of IPO firms in the Chinese stock market in a calendar year; (9) *GDP_AUD* is the natural logarithm of GDP *per capita* in the province in which an audit firm is located; (10) *GDP_LAW* is the natural logarithm of GDP *per capita* in the province in which a law firm is located.

Specifically, using the above instrumental variables, we match firms without IEC connections to those with IEC connections on the basis of a range of $\pm 0.3\%$ of the propensity score. We choose the matching range of $\pm 0.3\%$ for the following reasons: (1) it is a generally accepted standard for the PSM process (Dehejia and Wahba, 2002; Kurth *et al.*, 2005); (2) it does not lead to losing many treated firms as unmatchable; (3) if we relax (tighten) the propensity score to employ a range of $\pm 0.5\%$ (0.1%) as the criterion, the results remain qualitatively similar.

Second, after conducting the PSM to obtain the matched sample, we test the differences in instrumental and control variables between the *IECC* subsample (*IECC*=1) and the non-*IECC* subsample (*IECC*=0). As the descriptive statistics results in columns (1) and (2) of Table 8 show, the differences in instrumental and exogenous variables between the two subsamples are all insignificant (see column (3) of Table 8), suggesting that our matching work is relatively fairly done.

Third, column (4) of Table 8 reports the results of the first stage of the PSM regression procedures. As shown by the results, IEC is significantly positively (negatively) associated with *IPOSHR_LAW* and *GDP_LAW* (*ACC_REG* and *GDP_AUD*).

Table 8 Results Using the Propensity Score Matching (PSM) Sample to Control for the Potential Endogeneity between Underpricing and IECC

Variable	(1)		(2)		(3)		(4)		(5)		t-value
	IECC = 1		IECC = 0		t-test		The first stage		The second stage		
	Mean	Std. Dev.	Mean	Std. Dev.	Coefficient	z-value	Coefficient	t-value	Coefficient	t-value	
INDSPEC_AUD	0.2313	0.4224	0.2164	0.4125	0.0066	0.06					
INDSPEC_LAW	0.2089	0.4073	0.1679	0.3744	0.41	0.56					
ACC_REG	0.0449	0.1140	0.0473	0.1244	0.38	0.36					
LAW_REG	0.0647	0.1867	0.0424	0.1850	-1.5888***	1.61					
PENALTY_AUD	0.0783	0.2692	0.1044	0.3299	0.0620	1.13					
PENALTY_LAW	0.0037	0.0610	0.0037	0.0610	1.912	0.41					
IPOSHR_AUD	0.0414	0.0295	0.0420	0.0324	-2.4116	-1.41					
IPOSHR_LAW	0.0427	0.0360	0.0400	0.0372	4.9834**	2.32					
GDP_AUD	11.0365	0.3207	11.0571	0.3266	-0.5259**	-2.48					
GDP_LAW	11.1269	0.2784	11.1404	0.2451	0.7133***	3.07					
IECC											
NPIP											
IECC×NPIP											
AUDITOR	0.0186	0.1355	0.0186	0.1355	0.6971*	1.75					
LAWYER	0.2761	0.4479	0.2947	0.4567	-0.0967	-0.60					
UWR	0.4253	0.4953	0.4477	0.4981	0.0134	0.14					
UW_PC	0.7014	0.4584	0.6754	0.4691	-0.1081	-1.07					
IND_UW	0.9029	0.2965	0.8992	0.3015	0.0334	0.20					
UW_AUD	0.0597	0.2373	0.0783	0.2692	0.0230	1.08					
ACC_LAW	0.0111	0.1054	0.0223	0.1482	-0.6354	-1.60					
EDU	0.5559	0.4977	0.5522	0.4981	0.0778	0.83					
FEMALE	0.0708	0.2571	0.0932	0.2913	-0.1549	-0.92					
AGE	46.0005	6.0595	46.6417	6.4725	0.0021	1.08					
EXPERTISE	0.0111	0.1054	0.0074	0.0862	0.6250	1.14					
CGI	5.8768	1.2466	5.8619	1.1512	-0.0583	-1.44					
SIZE	19.8774	0.8819	19.8540	0.9791	-0.1021	-1.39					
LEV	0.0482	0.0686	0.0479	0.0718	0.0400	0.06					
MTB	17.3663	9.8829	17.4629	9.5373	0.0002	0.03					
WLR	-0.3984	1.1004	-0.3886	1.2045	0.1056**	0.78					
TURNR	0.7080	0.1843	0.7010	0.2090	0.2038	0.28					
DELEY	0.0315	0.0094	0.0305	0.0095	7.4856	1.53					
SSE	0.0597	0.2374	0.0485	0.2152	-0.2228	-0.97					
FIRMAGE	2.0341	0.6217	2.007	0.6652	-0.0704	-0.88					
GOSHR	0.0133	0.0476	0.0125	0.0407	-0.3518	-0.36					
MSE	0.0172	0.0192	0.0188	0.0188	0.3457	0.15					
RETRAL	0.0335	0.1804	0.0373	0.1898	-0.2254	-0.83					
CROSS	0.0037	0.0610	0.0037	0.0610	-0.6516	-0.72					
INTERCEPT											
Industry and Year effects											
Pseudo R ²					Yes	25.82%					
adj. R ²					Yes	22.64*** (0.0000)					
Observations					66.54%	822					
Wald Chi ² (p-value)					536	624.76*** (0.0000)					
F-value (p-value)					23.17*** (0.0000)	22.64*** (0.0000)					

Note: ***, **, and * represent the 1%, 5%, and 10% levels of significance, respectively, for two-tailed tests. All reported z(-t)-statistics are based on standard errors adjusted for heteroskedasticity (White, 1980).
 Column (4) reports the results of the propensity score matching approach. In column (4), the dependent variable is IECC, a dummy variable for IEC connections, which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organization (accounting or/and law firms) and 0 otherwise. ACC_REG denotes the minimum distance between an audit firm and three regulatory centres (Beijing, Shanghai and Shenzhen). IPOSHR_AUD is the ratio of IPO shares received from audit firms in the province in which an audit firm is located. IPOSHR_LAW is the ratio of IPO shares received from law firms in the province in which an audit firm is located. GDP_AUD is the natural logarithm of GDP per capita in the province in which an audit firm is located. GDP_LAW is the natural logarithm of GDP per capita in the province in which a law firm is located.
 Columns (5) and (6) report the results of the propensity score matching approach. In columns (5) and (6), the dependent variable is IECC, a dummy variable for IEC connections, which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organization (accounting or/and law firms) and 0 otherwise. The moderating variable is NPIP, a dummy variable for national priority or favourable industrial policy which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All control variables are defined in Appendix 1.
 exogenous variables between the two subsamples.
 Column (4) reports the results of the propensity score matching approach. In column (4), the dependent variable is IECC, a dummy variable for IEC connections, which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organization (accounting or/and law firms) and 0 otherwise. ACC_REG denotes the minimum distance between an audit firm and three regulatory centres (Beijing, Shanghai and Shenzhen). IPOSHR_AUD is the ratio of IPO shares received from audit firms in the province in which an audit firm is located. IPOSHR_LAW is the ratio of IPO shares received from law firms in the province in which an audit firm is located. GDP_AUD is the natural logarithm of GDP per capita in the province in which an audit firm is located. GDP_LAW is the natural logarithm of GDP per capita in the province in which a law firm is located.
 Columns (5) and (6) report the results of the propensity score matching approach. In columns (5) and (6), the dependent variable is IECC, a dummy variable for IEC connections, which equals 1 if a firm going for IPO hires an IEC-connected social intermediary organization (accounting or/and law firms) and 0 otherwise. The moderating variable is NPIP, a dummy variable for national priority or favourable industrial policy which equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise. All control variables are defined in Appendix 1.

Finally, we report the results of the second stage of the PSM regression procedures. In column (5a) of Table 8, *IECC* has a significantly negative coefficient (-0.0890 with $t = -2.44$), consistent with Hypothesis 1. As shown in column (5b) of Table 8, the coefficient on *IECC*×*NPPI* is positive and significant (0.2134 with $t = 2.73$), lending support to Hypothesis 2.

VI. Conclusions

This study examines how IEC connections affect IPO underpricing and further investigates the moderating role of national priority industrial policy in the association between IEC connections and IPO underpricing. Our findings show that IEC connections are significantly negatively associated with IPO underpricing, suggesting that the market undervalues a firm's IEC connections. Moreover, the negative association between IEC connections and IPO underpricing is less pronounced for firms in national priority industries than for their counterparts in other industries.

Our findings have several potential implications. First, our study provides a proper explanation for the great contrast in performance between macroeconomic growth and the Chinese stock market: that is, relevant to our study, due to the resultant rent-seeking problems associated with severe government intervention, many firms that perform relatively poorly have been approved to go for IPO in China. In this context, the stock market of course cannot perform as a barometer of the economy in China.

Second, our findings suggest that although the regulation governing the IPO market in China has improved much in the transition from a central-planning system to a market-oriented system, there is a long way to go before China establishes a fully market-based stock market. In the process, the Chinese government should gradually reduce regulation on economic activities and emphasise the role of the invisible hand of the market. Only in this way will the stock market be able to achieve high efficiency in terms of capital resource allocation, which in turn will promote further growth in the economy in China.

Third, the heavy government regulation in China's IPO market, including the setting up of the IEC for approving IPO qualifications and the national priority industrial policy, has created severe rent-seeking activities among IPO firms. Rent-seeking, as a non-productive activity (Krueger, 1974; Murphy *et al.*, 1993), harms corporate long-term development and resource allocation efficiency. Specifically, our findings reveal that firms with IEC connections have significantly lower IPO underpricing, which contributes an additional explanation of IPO underpricing. Moreover, as shown by our empirical evidence, the unique national priority industrial policy in China is responsible for IPO underpricing to some extent. As a result, both IEC connections and the national priority industrial policy negatively reduce IPO underpricing. As a response, the government should face up to the negative externalities about IEC connections and then take all possible measures, including

the improvement of the approval system related to IPO applications, to reduce the dark side of IEC connections to a minimum.

Finally, our findings from China's IPO market are also meaningful to other emerging economies that have strong government intervention in the stock markets. These economies can learn from the experience of China's IPO market that heavy government intervention in the IPO process will create rent-seeking activities and thus will have significantly negative consequences on the quality of IPOs and the performance of IPO firms.

Our study, of course, has two limitations that can be addressed in future research. First, following extant studies (Du *et al.*, 2013a, 2013b; Lai and Du, 2012; Yang, 2013), we focus on two typical social intermediary organisations (audit firms and law firms) which make up more than 50% of IEC members to examine the impact of IEC connections on IPO underpricing. Because of the limitations of data availability, we do not consider IEC connections with other representatives, such as officials from the Ministry of Finance (MOF) and the State-owned Assets Supervision & Administration Commission (SASAC). Future research can further examine whether IEC connections with other organisations or governments have similar effects on IPO underpricing. Second, our study focuses on China's IPO market, where government regulation plays a crucial role, and thus our conclusion may not fit in well with developed markets with weak government intervention.

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Appendix 1 Variable Definitions

Variable	Definition	Data Source
Variables for main tests		
<i>UPPRICE</i>	= A variable for initial public offering (IPO) underpricing, measured as a firm's stock price change from initial public offering to final price recorded on the first day of trading (Chambers and Dimson, 2009; Ritter and Welch, 2002).	Authors' calculation
<i>IECC</i>	= A dummy variable for IEC connections; equals 1 if a firm going for IPO hires an IEC-connected social intermediary organisation (accounting or/and law firms) and 0 otherwise (Du <i>et al.</i> , 2013a, 2013b; Yang, 2013).	Authors' hand-collection from the firm's prospectus
<i>NPIP</i>	= A dummy variable for national priority or favourable industrial policy; equals 1 if a firm going for IPO is on the lists of key industries supported by the central or/and local governments and 0 otherwise.	Authors' hand-collection
<i>AUDITOR</i>	= A dummy variable for audit firms; equals 1 if the auditor of a firm's IPO is a Big 4 audit firm (including affiliated firms) according to the official rankings of the Chinese Institute of Certified Public Accountants and 0 otherwise (Fan and Wong, 2005).	www.cicpa.org.cn
<i>LAWYER</i>	= A dummy variable for law firms based on the rankings of Asian Legal Business (www.legalbusinessonline.com/asia); equals 1 if the lawyer of a firm's IPO is a Big 5 law firm and 0 otherwise.	www.legalbusinessonline.com/asia
<i>UWR</i>	= A dummy variable for reputable underwriters; equals 1 if the underwriter of a firm's IPO is a Big 10 underwriter according to the official rankings provided by the Securities Association of China based on the total underwriting amount and 0 otherwise.	www.sac.net.cn
<i>UW_PC</i>	= An indicator variable for politically connected underwriters; equals 1 if the ultimate owner of the underwriter is a central (local) government agency or government-controlled state-owned enterprise and 0 otherwise.	Authors' hand-collection
<i>IND_UW</i>	= An indicator variable; equals 1 if an underwriter is solely in charge of a firm's IPO and 0 otherwise (two or more underwriters are jointly in charge of a firm's IPO).	CSMAR

<i>UW_AUD</i>	= A dummy variable for the degree of cooperation between an underwriter and an auditor; equals 1 if the number of clients recommended by an underwriter and audited by an auditor simultaneously is greater than (or equal to) 2 and the ratio of clients with a relationship between an underwriter and an auditor to the total number of underwriting clients for the relevant underwriter is greater than 25% and 0 otherwise.	Authors' calculation based on a firm's prospectus
<i>ACC_LAW</i>	= A dummy variable for the degree of cooperation between an auditor and a lawyer; equals 1 if the number of clients audited by an auditor and served by a lawyer simultaneously is greater than (or equal to) 2 and the ratio of clients with a relationship between an auditor and a lawyer to the total number of IPO clients for the relevant auditor is greater than 25% and 0 otherwise.	Authors' calculation based on a firm's prospectus
<i>EDU</i>	= A dummy variable for CEO's educational level; equals 1 if the CEO has obtained a master's degree or above and 0 otherwise.	Authors' hand-collection
<i>FEMALE</i>	= An indicator variable; equals 1 for a female CEO and 0 otherwise.	Authors' hand-collection
<i>AGE</i>	= The age of a firm's CEO.	Authors' hand-collection
<i>EXPERTISE</i>	= An indicator variable for CEO's expertise; equals 1 if a CEO has obtained qualification certificates in accounting, auditing, or/and security analysis and 0 otherwise.	Authors' hand-collection
<i>CGI</i>	= Corporate governance index following Gompers <i>et al.</i> (2003); includes eight indexes covering ownership structure, board independence, and managerial compensation. Referring to Gompers <i>et al.</i> (2003) and considering the unique characteristic of the Chinese stock market, we construct a corporate governance index (CGI) on the basis of the following simple and straightforward procedures: I. Ownership structure: (1) If the percentage of shares held by the largest shareholder is less than 20%, we give 2 points; if the percentage of shares held by the largest shareholder is greater than 20% but less than 50%, we give 1 point; otherwise, we give 0 points. (2) If the ratio of the largest proportion of shareholding to the second to the fifth largest proportion of	Authors' calculation

shareholdings is greater than the sample median, we give 1 point, otherwise we give 0 points. (3) If a firm is listed on two or more stock markets, we give 1 point, otherwise we give 0 points.

II: Board of Directors Index (*BDIN*): (4) If the number of board members of a firm is in the top/bottom quartile in our sample, we give 1 point, otherwise we give 0 points. (5) If the chairman of the board and the CEO are different persons, we give 1 point, otherwise we give 0 points. (6) If the percentage of independent directors in the board is greater than 50%, we give 2 points; if between 50% and one third, we give 1 point; otherwise we give 0 points.

III: Management Compensation Index (*COMIN*): (7) If any of the chairman of the board and the top five executives own the listed firm's stocks, we give 1 point, otherwise we give 0 points. (8) If the chairman of the board is paid by the listed firm, we give 1 point, otherwise we give 0 points. In a substantial number of cases, the chairman of the board is also a senior executive of the controlling shareholder and is not paid by the listed firm. Finally, we add up the total score of items 1 to 8 and then obtain the corporate governance index (*CGI*).

<i>SIZE</i>	= Firm size, measured as the natural logarithm of total assets before IPO.	CSMAR
<i>LEV</i>	= Financial leverage, measured as long-term debts divided by total assets before IPO.	CSMAR
<i>MTB</i>	= The market-to-book ratio, measured as the market value of equity on the first trading day scaled by the book value of equity before IPO (Fan <i>et al.</i> , 2007).	CSMAR
<i>WLR</i>	= The natural logarithm of a firm's winning lottery ratio (Chi and Padgett, 2005; Guo and Brooks, 2008).	CSMAR
<i>TURNR</i>	= The turnover rate on the first trading day after IPO (Guo and Brooks, 2008).	CSMAR
<i>DELAY</i>	= The time lag from a firm's stock issue day to the first trading day after IPO, measured as the number of days from stock issue to the first trading day scaled by 365 (Chen <i>et al.</i> , 2004; Fan <i>et al.</i> , 2007).	CSMAR
<i>SSE</i>	= A dummy variable; equals 1 if a firm lists on the Shanghai Stock Exchange (SSE) and 0 otherwise (Chen <i>et al.</i> , 2004; Fan <i>et al.</i> ,	CSMAR

	2007).	
<i>FIRMAGE</i>	= The natural logarithm of a firm's age since its establishment (Schenone, 2004).	A firm's prospectus
<i>GOVSHR</i>	= The percentage of shares owned by a (central or local) government agency or government-controlled enterprise (Chen <i>et al.</i> , 2004).	CSMAR
<i>MSE</i>	= A variable for the extent of minority shareholder expropriation, measured as other receivables scaled by total assets before IPO (Jiang <i>et al.</i> , 2010).	Author's calculation
<i>RETRIAL</i>	= A dummy variable; equals 1 if a firm went through two or more applications before it was approved to go for IPO and 0 otherwise.	Author's calculation
<i>CROSS</i>	= A dummy variable for cross-listing; equals 1 if a firm's stock lists on two or more stock markets and 0 otherwise.	CSMAR

Variables for robustness tests and endogeneity tests

<i>IECCMAX</i>	= The strength of IEC connections; equals 2 if a firm going for IPO hires an IEC-connected auditing service provider and an IEC-connected legal service provider at the same time, 1 if the firm only hires an IEC-connected auditing service provider or an IEC-connected legal service provider, and 0 otherwise.	Author's calculation based on a firm's prospectus
<i>IECC_G</i>	= A dummy variable for IEC connections; equals 1 if a firm going for IPO hires an IEC- or pre-IEC-connected audit firm and/or legal service provider and 0 otherwise.	Author's calculation based on a firm's prospectus
<i>LNUPRICE</i>	= The natural logarithm of (1+underpricing) (Chambers and Dimson, 2009).	Author's calculation
<i>UPRICE_ADJ</i>	= The market-index-adjusted IPO underpricing (Carter <i>et al.</i> , 1998).	Author's calculation
<i>CAR</i>	= Cumulative abnormal returns based on market-adjusted model on the first day of trading.	Author's calculation
<i>UPRICE_N</i>	= A variable for IPO underpricing from day 0 to day <i>N</i> (<i>N</i> =1, 2, 3, 4, 5, 10, 20) (Chambers and Dimson, 2009).	Author's calculation
<i>INDSPEC_AUD</i>	= A dummy variable for an auditor's industry expertise; equals 1 if an audit firm is ranked first in terms of the number of clients audited in an industry and 0 otherwise.	Author's calculation
<i>INDSPEC_LAW</i>	= A dummy variable for a lawyer's industry expertise; equals 1 if a law firm is ranked first in terms of the number of clients served in an industry and 0 otherwise.	Author's calculation

<i>ACC_REG</i>	= The minimum distance between an audit firm and three regulatory centres (Beijing, Shanghai, and Shenzhen) (unit: 1,000 km).	Author's calculation
<i>LAW_REG</i>	= The minimum distance between a law firm and three regulatory centres (Beijing, Shanghai, and Shenzhen) (unit: 1,000 km).	Author's calculation
<i>PENALTY_AUD</i>	= The number of penalty that an audit firm received from China Securities Regulatory Commission (CSRC) in last year.	Author's calculation
<i>PENALTY_LAW</i>	= The number of penalty that a law firm received from China Securities Regulatory Commission (CSRC) in last year.	Author's calculation
<i>IPOSHR_AUD</i>	= The ratio of the number of clients audited by an audit firm to the total number of IPO firms in the Chinese stock market in a calendar year.	Author's calculation
<i>IPOSHR_LAW</i>	= The ratio of the number of clients served by a law firm to the total number of IPO firms in the Chinese stock market in a calendar year.	Author's calculation
<i>GDP_AUD</i>	= The natural logarithm of GDP <i>per capita</i> in the province in which an audit firm is located.	China Statistical Yearbook
<i>GDP_LAW</i>	= The natural logarithm of GDP <i>per capita</i> in the province in which a law firm is located.	China Statistical Yearbook
