Institutional quality and initial public offering underpricing: Evidence from Hong Kong

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The main objective of this research is to investigate the impact of institutional quality on the underpricing of IPOs in Hong Kong. Besides, ordinary least squares presented in the study used quantile regression as a robust technique to investigate the association of institutional quality and the underpricing level of 986 IPO from January 2000 to December 2017 in the Hong Kong stock market. Through research findings, it is asserted that voice and accountability, regulatory quality, control of corruption and firm size are significantly negatively correlated. Whereas, government effectiveness and rule of law are significantly positively correlated in influencing the underpricing of IPO in Hong Kong. Findings are consistent with the quantile regression analysis. The research is beneficial to the main participants of the market, such as investors, issuers and regulators.

KEYWORDS
Hong Kong, information asymmetry, institutional quality, IPO, underpricing

1 | INTRODUCTION

Underpricing of initial public offerings (IPOs) has been a common phenomenon in global markets. However, there are different level of underpricing within emerging markets and developing markets. The initial performance of new offering from companies from less developed nations or developing nations always surpass those from developed-market companies (Boulton et al., 2011; Loughran et al., 1994; Song & Lee, 2012). In emerging countries, underpricing of newly listed companies in target countries is from 13.6 to 388%, and in developed markets between 4.2% and 54.4% (Ritter, 2003). As one of the most developed markets, H-shares had more than 2100 listed companies with over HK $34 trillion in 2017. As shown in Figure 1, listed companies market value to GDP increased from 131% in 1986 to 1053% in 2018. The development of the equity market has become increasingly important in Hong Kong.

Many equity investors have the preference of underpricing of new offerings because underpricing is a channel as a compensation for the risks faced by uninformed investors due to poor transaction information, and underpricing is a signal that issuing companies convey their valuable information to the public or institutions. The average underpricing rate of IPOs in Hong Kong is over 15%, far below those emerging equity markets, but close to developed equity markets (Chong et al., 2010; Deng et al., 2010; Lowry et al., 2017) highlighted that basic IPO underpricing patterns mostly are related to the theory of information asymmetry. In better-developed markets with lower information asymmetry, the companies have less underpricing (Huang et al., 2019). A good institutional quality probably is the reason for the relatively low underpricing level in Hong Kong stock exchange. The high intensity of voice and accountability, regulatory quality and control of corruption can increase information transparency and lower uncertainties in the equity market (Wang & Jiang, 2019). Autore et al. (2014) found that institutional quality is strongly associated with underpricing of IPO in developed markets, including H-shares, but a nearly absent relationship in emerging markets. Autore et al. (2014) also proposed that political stability, government efficiency, regulatory burden and corruption control can positively affect the underpricing. However, other researchers argue that there is an unrelated or inversely related association on the quality of institutional and IPO underpricing. If institutions of great quality can reduce investors’ alarm by reducing ex-ante uncertainty, institutional quality may likely associate with IPO underpricing (Engelen &
Van Essen, 2010). Based on the mutually exclusive points of view, there is no empirical evidence to support the relationship between the governance index and the underpricing specifically in the Hong Kong market. Similarly, the results of the overall data of the developed markets cannot explain the specific characteristics of the single market due to the unique regulation of certain developed markets. Further, there is insufficient evidence that the interpretations of global IPO underpricing can interpret the underpricing of IPO in H-shares (Chong et al., 2010). Also, it lacks sufficient evidence to interpret the specific relation of dimensions of institutional quality with the level underpricing of H-shares. Hence, in this paper, we continue to discuss the determinants, including institutional quality, on the level underpricing of IPO in H-shares.

In the IPO market, institutional quality information is essential in influencing market sentiment. The government's effectiveness reflects the country’s good performance in regulating policy, the rule of law and better control of corruption, which is beneficial to current research on the impact of IPO investment. Low government efficiency leads to information asymmetry, leading to uncertainty. Investors tend to invest in effective markets with high transparency and low information asymmetry. Weaker information transparency can cause more ex-ante uncertainty, hence pushing up IPO underpricing (Beatty & Ritter, 1986). This would affect the investors' final decision. Therefore, information reflecting investor sentiment is crucial to investors' decision-making. Autore et al. (2014) have suggested the positive association of control of corruption with firm-level IPO underpricing in developed markets. Thus, strong ability to control corruption will help increase the stock market performance and reduce underpricing level, as well as reissuing firms must have suitable tactics to encounter country-level governance quality. Issuing firms can list their companies in countries which have higher and better in institutional quality to affirm their sustainability in the market.

Regulators are government agencies which the statutory bodies and regulatory commissions that are responsible for generating, retaining, and enforcing regulatory and sound policies. The positive association of regulatory quality with IPO underpricing in developed markets has been proven (Autore et al., 2014). Better regulatory quality tends to increase the underpricing. Regulatory authorities should pay more attention and has the policy related to individual, business entity, interest and professional organisation to take the preventive precaution against the impact of institutional quality on underpricing of IPOs. As a result, this study investigates the influence determinants of IPO underpricing on the Hong Kong market. By doing so, this analysis tends to fill the void in IPO research by meeting the following objective:

- Identify the foremost factors such as, voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption that affect IPO underpricing in Hong Kong.

In the following parts, the second section discusses the literature review and hypotheses development. The third section presents the data and methodology. The fourth section exhibits data analysis and findings. In the last section, conclusion, implication, limitation and future study will be interpreted.

2 | LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This section discusses the fundamental theory used in this study namely the information asymmetry theory which proposes that high IPO underpricing are driven by poor information transparency. Information asymmetry occurs between the pre-IPO owners and new investors (Carter & Manaster, 1990; Leland & Pyle, 1977). Company information is mostly held by company insiders including pre-IPO owners. Meanwhile, new external investors have restricted access to company information which only the pre-IPO owners can provide. Although the companies are legally required to disclose relevant information in the form of accessible prospectuses, pre-IPO owners can still potentially provide misrepresented information (Riley, 1979; Spence, 1976). Consequently, investors will reject the presented information and look for other indications of the company's actual value (Downes & Heinkel, 1982; Spence, 1976). Uncertainties and risks will emerge in financial transactions when one party has less information than the other. Information asymmetry is more prevalent with IPOs as the presented prospectuses are the sole source of information for the investors and underwriters. Smaller and newer companies have limited or no trail of public disclosures. Information
asymmetry is also affected by disclosure requirements which are determined by the security laws of a country. As such, poor institutional quality disclosure can lead to market information failures which can ultimately decrease information transparency.

As such the institutional factors are important in the development of economy and finance and require policymakers to establish reforms to deal with uncertainty (Cherif & Gazdar, 2010). In the case of emerging markets, maintaining political stability, regulating and implementing the law, and managing quality of bureaucracy is vital for the performance of the capital market (Yartey, 2010). Papaioannou (2009) applied similar institutional quality indicators to examine the role of an institutional factor in international capital mobilisation, demonstrates that well-functioning institutions are vital and a dynamic force of international bank flows. Shaghaghi et al. (2019) interpreted that government can improve the development of the capital market by strengthening the institutional quality due to the positive relationship of market stock index and institutional quality. Asongu (2012) determined a positive and significant connection of institutional quality and equity market performance on developing countries; the results have proposed that countries with improved institutional quality framework assure high market value, trading volume, optimistic turnover ratio. Greater governance index has positive and negative aspects for companies aiming to obtain external funds through share offerings (Boulton et al., 2010). They also found that when a company is listed in a nation with sound regulations to protect investors, its share price is more undervalued, and ownership is more dispersed. Autore et al. (2014) established that several dimensions of institutional quality are significantly connected with the underpricing of IPO in developed markets, while the relationship is not clear in emerging markets. However, some researchers have different viewpoints that there may be an unrelated or inversely related relationship between institutional quality and underpricing. If strong institutions may reduce the fear of investors by reducing ex-ante uncertainty, the correlation may exist between strong institutional efficiency and underpricing of IPOs (Engelen & Van Essen, 2010). The companies controlled by a family trust in countries with more developed systems get more benefits over the costs, while centralised family ownership enterprises hardly need to under-price of IPO to maintain control (Peng & Jiang, 2010). Country-level institutional quality has six dimensions: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption.

### 2.1 Voice and accountability

Voice and accountability imply the level of involvement of people in governmental elections, as well as freedom of speech and free media (Kaufmann et al., 2009). This indicator examines whether the government can be held accountable for its political actions (Daude & Stein, 2007). Asongu (2012) shows that the performance of the stock market can be significantly associated with the quality of government. These outcomes of empirical evidence indicate that markets with high-quality institutions would have equity markets with greater firm size, higher turnover ratio, larger trading and a higher number of listed companies. However, less evidence shows that voice and accountability significantly affect stock performance (Shaghaghi et al., 2019). Likewise, Hearn (2012) describes negative significant association among voice and accountability and IPO underpricing. In terms of emerging markets, Ajide (2014) found that the voice and accountability negative affect the stock prices in Nigeria market. Boadi and Amegbe (2017) also reveal that voice and accountability significantly affect stock market performance by analysing 23 markets from emerging countries and developed countries. Hence, it hypothesis that;

**Hypothesis H1.** Voice and accountability have a negative influence on IPO underpricing.

### 2.2 Political stability and absence of violence/terrorism

Political stability assesses political instability expectations of politically motivated crime, including terrorism (Kaufmann et al., 2009). Yartey (2010) asserted that the overall performance of capital market depends on the political stability, quality management of bureaucracies, implementation and legal regulation. However, in countries with higher uncertainty and political risks, Stulz (2005) predicted that IPO activities would be weaker because those listed companies could be plundered by the state. Satta et al. (2017) found that IPO development of the host nation with a high degree of political stability was more satisfactory, while the discourse power and accountability of the host country insignificant influence the development of IPO. A study of industrialised countries, Cherif and Gazdar (2010), claimed that political factors are critical for financial markets development. A comparative analysis of the impact of political instability on the equity earnings of developing and developed markets shows that developed markets are more likely to be affected by this risk than emerging markets with higher returns on stocks. Privatisation is an important stimulator of political risk that in turn brings volatility in stock market development, in particular, more explicit effect on local markets, while accelerated return in emerging markets, performing a price function (Perotti & Van Oijen, 2001). Shaghaghi et al. (2019) argue that political stability positively affects total stock price index, meaning that better political stability can improve equity market performance. Countries with greater political risk are more prone to IPO underpricing for their financial markets. In this case, the issuers are more risk-averse than the investors and hence underpricing can be a part of the compensation for the country risks. The hypothesis is proposed:

**Hypothesis H2.** Political stability and the absence of violence have a positive influence on IPO underpricing.

### 2.3 Government effectiveness

The efficiency of the government relates to the legitimacy of the government’s policy commitment. A study of developing countries...
from the African continent signifies the positive role of government effectiveness in superior stock market performance, particularly (Hearn, 2014). Government effectiveness parameters illustrate impressive market capitalisation, high turnover ratio, trading volume and a large number of listed companies (Asongu, 2012). Those countries where effective government policies truly implemented and efficient institutional environment are available to investors guarantee an improvement in stock market performance and the optimistic and effective policies reduce transaction and agency costs, which enhance shareholding. Autore et al. (2014) also found that government effectiveness positively associates with IPO underpricing in developed markets. While Chong et al. (2010) argued that other markets’ evidence of IPO underpricing is inadequate to assess the underpricing in H-shares. Consequently, the connection should be tested. The hypothesis is proposed:

**Hypothesis H3.** There is a positive relationship between government effectiveness and IPO underpricing.

### 2.4 Regulatory quality

Regulatory effectiveness tests whether the government is capable of implementing and enforcing legislation and regulations (Kaufmann et al., 2009). For non-U.S. companies listed in the U.S. exchange, they have less IPO underpricing if the home country of those companies has more effective public law enforcement (Wang & Jiang, 2019). Hearn (2013) found evidence that information disclosure at the company’s positive association with the quality of supervision, from the perspectives of IPO prospectuses length. Especially after the country fixed effect is used to consider the potential heterogeneity among sample countries, the institutional quality index always has a strong correlation. Supporting demonstrations of Smith Jr and Watts (1992), Hearn (2013) also found evidence that the company’s ability of earnings positively connects with the level of corporate information disclosure, which indicated that it was necessary to infer economic growth opportunities and increase disclosure to alleviate litigation problems (Bloomfield, 2008). Pistor et al. (2000) studied the laws protecting shareholders and creditors and find an increasing paradigm of remarkable changes governing such laws in transition economies, suggest strong trends towards convergence of statutory laws through transition economies. The degree of corporate information asymmetry has an inverse correlation with law implement, and corporate information asymmetry in developed countries is also relatively low. The following hypothesis is proposed:

**Hypothesis H4.** Regulatory quality has a negative influence on IPO underpricing.

### 2.5 Rule of law

According to the Kaufmann et al. (2009) who explained the “rule of law capturing perceptions of the extent to which agents have

confidence in and abide by the rules of society, and in particular the quality of contract enforcement, and property rights.” Thus, the rule of law shows investors’ self-assurance on country regulation and rules. Porta et al. (1998) advocated that in countries where weak legal system existed can be turned into strong legal enforcement. When a country has strong legal enforcement can protect the investors’ interest besides managers and potential shareholders. Further, Hope (2003) explained that the quality of the disclosure of firm is influenced by strong enforcement of a legal system that improves the investors’ confidence intensity in return respectively. Thus, due to the effective legal system, it is possible to protect the vulnerability of external investors.

On the other hand, countries where the rules and regulations are stringent limits the chances for an insider to make more profits or to transfer profits from the firm to external investors. Therefore, when rules and regulations are stringent reduces the uncertainty when IPOs are going to the public. According to Engelen and Van Essen (2010), who explained that expropriation risk was higher, ex-ante uncertainty increased; therefore, issuers had to offer an underprice to attract investors. When regulations and rules are implemented in a better way, reduces the ex-ante uncertainty and respectively underpricing. The finding suggested a negative association among the rule of law and underpricing. The hypothesis is proposed:

**Hypothesis H5.** Rule of law has a positive influence on IPO underpricing.

### 2.6 Control of corruption

The control of corruption reflects the public’s perception of the degree of private use of public power and the level of government corruption governance, both on a small scale and a large scale (Kaufmann et al., 2009). Bolgarian (2011) examined the corruption perception index and equity market development of 46 countries throughout 2007–2009, taking firm scale and the trading value as measures of equity market development. The research proves a strong and inverse association of corruption and equity market development. Lalountas et al. (2011) argue that global development is a powerful tool to deal with corruption, particularly in middle and high-income countries, and seem least effective in the case of low-income countries. Love (2011) has shown that political stability and a low tendency to corruption will assist in improving the capital market. Wang and Jiang (2019) provided evidence that those companies from the countries with high level of corruption have greater underpricing of IPO among the non-U.S. companies listed in U.S. exchange. They explained that high corruption increased the ex-ante uncertainty of IPO valuation.

The research results of Chiou et al. (2010) also show that effective legal and political environment and low level of corruption can improve stock investment performance and reduce its risk. Li and Filer (2007) agreed that increasing stock investors prefer markets with better protection of property rights, fair and transparent legal systems, helping increase investors’ confidence. The empirical results of
Low et al. (2011) suggested that the absence of corruption control can increase equity returns after risk adjustment. Corruption can lower investors’ confidence in the stock market and regulators of trading rules. It also increases investors’ risk level. Song and Tang (2015) established that market sentiment is inversely associated with IPO underpricing. The hypothesis is proposed

Hypothesis H6. Control of corruption has a negative influence on IPO underpricing.

2.6.1 | IPO setting in the Hong Kong market

A number of regulatory changes have occurred in the Hong Kong IPO market over the last several decades. At the beginning of the 1990s, the majority of IPOs were carried out through fixed-price offerings. After the first H-share listing in July 1993, hybrid equity offerings involving Hong Kong subscriptions for retail investors and international investment for both domestic and foreign institutional investors became widespread. Previously, the issuers and the underwriters decided on subscription and allocations. However, in view of the substantial decline in shares allocated to the subscription tranche in 1994 and 1995 (SEHK, 1997), amendments were made to the SEHK listing requirements on 26 June 1998 to ensure that at least 10% of the IPO shares are allocated to retail investors and that a compulsory claw-back provision is made for oversubscribed issues.1 As far as the claw-back provision is concerned, underwriters must allocate 30 per cent of the issue to retail investors if the subscription demand is about 15 to 50 times the initial allocation, 40% if it is about 50 to 100 times, and 50% if it is N100 times. Hong Kong underwriters still hold the main responsibility in determining the allocation method for oversubscribed issues. Oversubscribed subscription shares are normally allocated by ballot, down-scaling or a mixture of both.2 Under the ballot method, there is a high likelihood that the reception of an allocation is lower than unity as the IPO shares are allotted to fewer applicants via random selection. Under the down-scaling method, all the investors will be allotted shares albeit each will only receive a portion of the overall shares applied.

3 | DATA AND METHODOLOGY

In this section, data source, sample and variables used are explained. This study incorporated 986 listed IPOs in the Hong Kong market from January 2000 to December 2017 to explain underpricing phenomena. The present study chosen data from January 2000 as the beginning specifically to avoid the effect of the Asian Financial crisis period in the Hong Kong market. The data utilised were extracted from Bloomberg,DataStream and worldwide governance indicators. The only dependent variable in the study is underpricing (initial return). Underpricing is the percentage difference between the closing price on the first day of public listing and the offer price (Mehmood et al., 2020a; Mehmood et al., 2020b). When the offer price is below to closing price on the first listing day, the stock is considered underpriced. To analyse IPOs underpricing, this study used formula in the following:

$$\text{Initial return } (R_t) = \frac{P_t - P_{t-1}}{P_{t-1}}$$  \hspace{1cm} (1)

Further, the independent variables are six aspects of institutional quality, including voice and accountability, political stability and violence, government effectiveness, regulatory quality, and control of corruption. While, institutional quality (political stability and violence, regulatory quality, and control of corruption) is measured by the percentile rank that indicates the country’s rank among all countries covered by the aggregate indicator, with 0 corresponds to lowest rank, and 100 to highest rank (Kaufmann et al., 2009). While government effectiveness is measure by the estimate of the country’s score on the aggregate indicator, in units of standard normal distribution, that is, ranging from approximately −2.5 to 2.5 (Kaufmann et al., 2009).

Lastly, firm size is used as control variable in this study. The firm size which is a market capitalization computed as the total number of shares issued multiply be offer price (Ong et al., 2020a). The higher the issue size is, the lower the underpricing, and vice versa (Alanazi & Al-Zoubi, 2015; Chi & Padgett, 2005; Samarakoon, 2010). Mohd-Rashid et al. (2018) and Yung and Zender (2010) asserted that firm size is the most suitable proxy to describe information asymmetry, as such, the large firms shows lower uncertainty as compared to smaller, which there by influence final IPO offer price. Due to the informed investor's participation, the existence of information asymmetry is confirmed, which gives strong signals of the firm’s prospects and growth. Usually, informed investors are institutional investors have detailed firms information that tends to provide quality signals to uninformed investors (Chowdhry & Sherman, 1996). In line, information asymmetry is higher in developing countries as compared to developed. The preceding literature shows a negative relationship among firm size and underpricing of IPO (Jewartowski & Lizińska, 2012; Mariette & Subrahmanym, 2010).

The cross-sectional regression model for analysing the connection of six dimensions on governance indicators and IPO underpricing is as shown in the following.

$$\text{UND} = \alpha + \beta_1 \text{VA}_i + \beta_2 \text{PA}_i + \beta_3 \text{GE}_i + \beta_4 \text{RQ}_i + \beta_5 \text{RL}_i + \beta_6 \text{CC}_i + \beta_7 \text{FS}_i + \epsilon_i$$  \hspace{1cm} (2)

3.1 | Robust equation

The present work proposed to investigate the model efficiency using the quantile regression analysis. As such, the quantile regression
analysis is used to determine the more comprehensive picture of predictor variable effects. Therefore, present work used specific quantile such as 50th, 75th, 90th to explain the predictor variable relationship because specific percentiles parameter estimates the changes by a unit change in the predictor variable.

\[ y_i = x_i \beta_0 + \epsilon_i \] with\ Quant(y_i, x_i) = x_i \beta_0 \]  

\[ Q_{0.50} \text{UND}_i = \beta_{0.50.1} \text{VA}_i + \beta_{0.50.2} \text{PS}_i + \beta_{0.50.3} \text{GE}_i + \beta_{0.50.4} \text{RQ}_i + \beta_{0.50.5} \text{RL}_i + \beta_{0.50.6} \text{CC}_i + \beta_{0.50.7} \text{FS}_i + \epsilon_i \]  

\[ Q_{0.75} \text{UND}_i = \beta_{0.75.1} \text{VA}_i + \beta_{0.75.2} \text{PS}_i + \beta_{0.75.3} \text{GE}_i + \beta_{0.75.4} \text{RQ}_i + \beta_{0.75.5} \text{RL}_i + \beta_{0.75.6} \text{CC}_i + \beta_{0.75.7} \text{FS}_i + \epsilon_i \]  

\[ Q_{0.90} \text{UND}_i = \beta_{0.90.1} \text{VA}_i + \beta_{0.90.2} \text{PS}_i + \beta_{0.90.3} \text{GE}_i + \beta_{0.90.4} \text{RQ}_i + \beta_{0.90.5} \text{RL}_i + \beta_{0.90.6} \text{CC}_i + \beta_{0.90.7} \text{FS}_i + \epsilon_i \]  

4 | DATA ANALYSIS AND FINDINGS

4.1 | Descriptive statistic

Table 1 demonstrates the descriptive statistic that concludes the entire data of samples. As shown in Table 1, the average underpricing level is 64.82% and the median is 0.0566. The maximum and minimum underpricing are from −0.95 to 21 with a standard deviation of 2.3011 during 2000 and 2017. This indicates the existing of the huge gap of underpricing of newly listed firms of Hong Kong stock exchange.

The statistical description of voice and accountability, political stability, regulatory quality, rule of law and control of corruption computed by percentile rank, while government effectiveness is computed by estimates. The highest value of voice and accountability is 69.9531 and the lowest value is 51.7413 that show relatively lower percentile rank level; while the mean value is 60.364. The mean (median) of political stability is 82.4607 (79.8942) and a maximum of 95.6311 and minimum of 72.3810, meaning the relatively high fluctuation. Government effectiveness is the only independent variable using an estimate. The average mean value is 1.6777 and the median is 1.7459. The maximum level of government effectiveness is 1.9146 while the minimum is 1.3263. The mean of regulatory quality is 98.6815 and the median is 99.5192. The highest and lowest degree of control of corruption is 94.7619 and 86.2944, respectively. The rule of law mean value is 88.89 with the maximum and minimum range of 95.19, 74.75 respectively. The control of corruption’s mean of 91.8737 and median of 92.3077 is relatively close. Compared with the percentile rank of the other four institutional quality index, regulatory quality keeps comparatively stable and has a small gap of the largest value of 100 and the lowest value of 95.9184. Further, Table 1 also offers a statistical description of the control variable, namely the firm size. The mean value of market capitalization in Hong Kong stock exchange is HK$700.7583 million and its median value is HK$100 million. During 2000 until 2017, the firm size of offerings fluctuated at the range from the highest value of HK$24126.6 million to the lowest value of HK$0.0019 million.

4.2 | Pearson correlation

The coefficients of correlation on the variables are shown in Table 2. Correlation coefficients are used in statistics to test the connection of two variables and their range is from +1 to −1. The result stated that voice and accountability, government effectiveness, regulatory quality, rule of law and control of corruption are positively correlated whereas, political stability and firm size is negatively correlated with underpricing of IPO. Maddala and Lahiri (1992) explained that

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Max</th>
<th>Min</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>UND (percentage)</td>
<td>0.6482</td>
<td>0.0566</td>
<td>21.0000</td>
<td>−0.9500</td>
<td>2.3011</td>
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<tr>
<td>VA (percentage)</td>
<td>60.3640</td>
<td>60.5911</td>
<td>69.9531</td>
<td>51.7413</td>
<td>5.4430</td>
</tr>
<tr>
<td>PS (percentile)</td>
<td>82.4607</td>
<td>79.8942</td>
<td>95.6311</td>
<td>72.3810</td>
<td>6.6546</td>
</tr>
<tr>
<td>GE (estimate)</td>
<td>1.6777</td>
<td>1.7459</td>
<td>1.9146</td>
<td>1.3263</td>
<td>0.2163</td>
</tr>
<tr>
<td>RQ (percentile)</td>
<td>98.6815</td>
<td>99.5192</td>
<td>100.0000</td>
<td>95.9184</td>
<td>1.6584</td>
</tr>
<tr>
<td>RL (percentile)</td>
<td>88.8940</td>
<td>90.9953</td>
<td>95.1923</td>
<td>74.7525</td>
<td>6.6519</td>
</tr>
<tr>
<td>CC (percentile)</td>
<td>91.8737</td>
<td>92.3077</td>
<td>94.7619</td>
<td>86.2944</td>
<td>2.6447</td>
</tr>
<tr>
<td>FS</td>
<td>700</td>
<td>100</td>
<td>24.126</td>
<td>0.0019</td>
<td>2175</td>
</tr>
</tbody>
</table>

Note: Underpricing refers to the percentage change between the closing price on the first day of public listing and the offer price. Voice and accountability, (VA) percentile rank that shows 0 lowest to 100 highest. Political stability, (PS) percentile rank that shows 0 lowest to 100 highest. Government effectiveness, (GE) shows estimate value between −2.5 and 2.5. Regulatory quality, (RQ) percentile rank that shows 0 lowest to 100 highest. Rule of law, (RL) percentile rank that shows 0 lowest to 100 highest. Control of corruption, (CC) percentile rank that shows 0 lowest to 100 highest. Firm size, (FS) refers to the total value of a company’s stock within the stock market.
independent and dependent variable effects can change where a strong correlation exists.

4.3 | Regression analysis

To verify the hypotheses towards the connection of institutional quality with an underpricing level of IPO, the cross-sectional ordinary least square (OLS) is discussed in this section. As regression outcomes are shown in Table 3, the model produces $R^2$ of 11.57% and adjusted $R^2$ of 10.93%. The adjusted $R^2$ of 10.93% indicates that all independent variables tested in this study can interpret the 10.93% of the variations in IPO underpricing, which is consistent with (Ong et al., 2020b).

Voice and accountability have a negative significant relationship with IPO underpricing. This result is consistent with the findings of (Hearn, 2012). The result indicates that lower development in voice and accountability are tied to raise higher information asymmetric level, which thereby increases IPO underpricing. This result is also tied with information asymmetry theory that asserted that lower development in voice and accountability presents lower information transparency, results in higher underpricing. This result is also tied with information asymmetry theory that asserted that lower development in voice and accountability presents lower information transparency, results in higher underpricing. The results also show the significant positive relationship between government effectiveness and IPO underpricing at 1% of significant degree. The stock market would have better performance and lower transaction and agency cost in those markets with stronger government effectiveness (Asongu, 2012; Hooper et al., 2009). Result indicates that economic growth of Hong Kong depends on the solidity and stability of government effectiveness. This argument is confirmed by Alam et al. (2017) who asserted significant positive relationship among government effectiveness and economic growth. Autore et al. (2014) also have the

### Table 2: Correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA</td>
<td>0.0512</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS</td>
<td>−0.0614</td>
<td>0.3798</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>0.1798</td>
<td>0.6827</td>
<td>0.2306</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RQ</td>
<td>0.1039</td>
<td>0.7028</td>
<td>0.3657</td>
<td>0.7107</td>
<td>1</td>
<td></td>
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<tr>
<td>RL</td>
<td>0.1489</td>
<td>0.5848</td>
<td>0.2149</td>
<td>0.6825</td>
<td>0.6544</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td>0.0138</td>
<td>0.6488</td>
<td>0.3170</td>
<td>0.6214</td>
<td>0.6367</td>
<td>0.6993</td>
<td>1</td>
</tr>
<tr>
<td>FS</td>
<td>−0.0743</td>
<td>0.1118</td>
<td>0.1173</td>
<td>0.0777</td>
<td>0.0461</td>
<td>0.0780</td>
<td>0.1338</td>
</tr>
</tbody>
</table>

Note: Underpricing refers to the percentage change between the closing price on the first day of public listing and the offer price. Voice and accountability, (VA) percentile rank that shows 0 lowest to 100 highest. Political stability, (PS) percentile rank that shows 0 lowest to 100 highest. Government effectiveness, (GE) shows estimate value between −2.5 and 2.5. Regulatory quality, (RQ) percentile rank that shows 0 lowest to 100 highest. Rule of law, (RL) percentile rank that shows 0 lowest to 100 highest. Control of corruption, (CC) percentile rank that shows 0 lowest to 100 highest. Firm size, (FS) refers to the total value of a company’s stock within the stock market.

### Table 3: Results of regression of IPO underpricing on selected variables, 2000–2017

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected sign</th>
<th>Coefficient</th>
<th>SE</th>
<th>t-statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Negative</td>
<td>−0.0265</td>
<td>0.0159</td>
<td>−1.6623</td>
<td>0.0968*</td>
</tr>
<tr>
<td>VA</td>
<td>Negative</td>
<td>−0.0218</td>
<td>0.0159</td>
<td>−1.3813</td>
<td>0.1704</td>
</tr>
<tr>
<td>PS</td>
<td>Positive</td>
<td>0.0108</td>
<td>0.0152</td>
<td>0.7119</td>
<td>0.4767</td>
</tr>
<tr>
<td>GE</td>
<td>Positive</td>
<td>0.27723</td>
<td>0.5442</td>
<td>5.094</td>
<td>0.0000***</td>
</tr>
<tr>
<td>RQ</td>
<td>Negative</td>
<td>−0.2909</td>
<td>0.0881</td>
<td>−3.301</td>
<td>0.0010***</td>
</tr>
<tr>
<td>RL</td>
<td>Positive</td>
<td>0.2323</td>
<td>0.0348</td>
<td>6.6713</td>
<td>0.0000***</td>
</tr>
<tr>
<td>CC</td>
<td>Negative</td>
<td>−0.5225</td>
<td>0.0755</td>
<td>−6.9192</td>
<td>0.0000***</td>
</tr>
<tr>
<td>FS</td>
<td>Negative</td>
<td>−0.0001</td>
<td>0.0002</td>
<td>−3.894</td>
<td>0.0001***</td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td>0.1157</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td></td>
<td>0.1093</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Asterisks ***, **, * indicate significance at 1%, 5%, and 10%. Underpricing refers to the percentage change between the closing price on the first day of public listing and the offer price. Voice and accountability, (VA) percentile rank that shows 0 lowest to 100 highest. Political stability, (PS) percentile rank that shows 0 lowest to 100 highest. Government effectiveness, (GE) shows estimate value between −2.5 and 2.5. Regulatory quality, (RQ) percentile rank that shows 0 lowest to 100 highest. Rule of law, (RL) percentile rank that shows 0 lowest to 100 highest. Control of corruption, (CC) percentile rank that shows 0 lowest to 100 highest. Firm size, (FS) refers to the total value of a company’s stock within the stock market.
same findings with this study on the association of government effectiveness and IPO underpricing.

Regulatory quality tests whether the government have the ability to implement and execute laws and regulations. Regulatory quality has a negative connection with IPO underpricing at 1% of significant degree, implying that a stronger degree of regulatory quality, lower underpricing. It is argued that a stronger level of law enforcement can lead to higher information asymmetry and Beatty and Ritter (1986) prove that greater ex-ante uncertainty can promote higher underpricing of IPO. The efficiency of the government relates to the legitimacy of the Government's policy commitment. The rule of law is positively significant with IPO underpricing. Porta et al. (1998) advocated that in countries where the existing weak legal system can be converted into strong legal enforcement. When a country has strict legal enforcement, it can protect the investors' interest besides managers and potential shareholders. In line, Autore et al. (2014) have shown a positive relationship between the rule of law and underpricing.

The control of corruption measures the ability of the government to manage corruption. The regression results indicate that it has a significantly negative association at 1% between corruption control with underpricing. Countries with stronger corruption control have lower underpricing. The empirical results of Low et al. (2011) have shown that weak control corruption will increase equity returns after risk adjustment. The absence of corruption control can reduce investors' confidence in the transaction regulation of the stock market and raise their doubts towards reality and effectiveness of market information or news. Song and Tang (2015) prove that investors sentiment can negatively affect IPO underpricing. Also, the market information failure arising from corruption issues seemed to make the information not transparent and unreliable. Due to the positive correlation of information asymmetry level and IPO underpricing, absence of corruption control would lead to higher underpricing of IPO. With respect to the control variable, the finding is that market capitalisation has a negative association with the underpricing of IPO significant at 1%. This implied that firm size has a meaningful relationship with IPO underpricing, and market capitalisation of firms have a visible impact on underpricing of offerings while political stability is insignificant to explain underpricing in Hong Kong.

4.4 Robustness regression

The result of quantile regression analysis is presented in Table 4 to explain the association of underpricing. Angrist and Pischke (2008), advocated that due to quantile regression, dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>50th Quantile Coefficient</th>
<th>50th Quantile Prob.</th>
<th>75th Quantile Coefficient</th>
<th>75th Quantile Prob.</th>
<th>90th Quantile Coefficient</th>
<th>90th Quantile Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>3.2426</td>
<td>0.0002</td>
<td>15.9117</td>
<td>0.0000</td>
<td>67.1747</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>3.7429</td>
<td></td>
<td>5.9658</td>
<td></td>
<td>9.5408</td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td>0.0002</td>
<td>0.9205</td>
<td>-0.0011</td>
<td>0.8886</td>
<td>-0.0579</td>
<td>0.0001***</td>
</tr>
<tr>
<td></td>
<td>0.0999</td>
<td></td>
<td>-0.1401</td>
<td></td>
<td>-3.8643</td>
<td></td>
</tr>
<tr>
<td>PS</td>
<td>-0.0010</td>
<td>0.4517</td>
<td>-0.0126</td>
<td>0.0315**</td>
<td>-0.1435</td>
<td>0.0000***</td>
</tr>
<tr>
<td></td>
<td>-0.7529</td>
<td></td>
<td>-2.1539</td>
<td></td>
<td>-5.7746</td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>0.1331</td>
<td>0.0418**</td>
<td>1.0350</td>
<td>0.0000***</td>
<td>4.6786</td>
<td>0.0000***</td>
</tr>
<tr>
<td></td>
<td>2.0386</td>
<td></td>
<td>5.2082</td>
<td></td>
<td>6.6714</td>
<td></td>
</tr>
<tr>
<td>RG</td>
<td>-0.0195</td>
<td>0.0180***</td>
<td>-0.0550</td>
<td>0.0170***</td>
<td>0.0637</td>
<td>0.2054</td>
</tr>
<tr>
<td></td>
<td>-2.3699</td>
<td></td>
<td>-2.3910</td>
<td></td>
<td>1.2671</td>
<td></td>
</tr>
<tr>
<td>RL</td>
<td>0.0106</td>
<td>0.0033***</td>
<td>0.0658</td>
<td>0.0005***</td>
<td>0.5090</td>
<td>0.0000***</td>
</tr>
<tr>
<td></td>
<td>2.9450</td>
<td></td>
<td>3.4823</td>
<td></td>
<td>7.8774</td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td>-0.0256</td>
<td>0.0003***</td>
<td>-0.1798</td>
<td>0.0000***</td>
<td>-1.1860</td>
<td>0.0000***</td>
</tr>
<tr>
<td></td>
<td>-3.6213</td>
<td></td>
<td>-4.5568</td>
<td></td>
<td>-7.7949</td>
<td></td>
</tr>
<tr>
<td>FS</td>
<td>0.0000</td>
<td>0.0059***</td>
<td>0.0000</td>
<td>0.0345**</td>
<td>0.0000</td>
<td>0.4017</td>
</tr>
<tr>
<td></td>
<td>-2.7621</td>
<td></td>
<td>-2.1173</td>
<td></td>
<td>-0.8390</td>
<td></td>
</tr>
<tr>
<td>Pseudo R-square</td>
<td>0.0063</td>
<td>0.0293</td>
<td>0.1940</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Asterisks ***, **, * indicate significance at 1%, 5%, and 10%. Underpricing refers to the percentage change between the closing price on the first day of public listing and the offer price. Voice and accountability, (VA) percentile rank that shows 0 lowest to 100 highest. Political stability, (PS) percentile rank that shows 0 lowest to 100 highest. Government effectiveness, (GE) shows estimate value between −2.5 and 2.5. Regulatory quality, (RQ) percentile rank that shows 0 lowest to 100 highest. Rule of law, (RL) percentile rank that shows 0 lowest to 100 highest. Control of corruption, (CC) percentile rank that shows 0 lowest to 100 highest. Firm size, (FS) refers to the total value of a company's stock within the stock market.
distributinal characteristics become easier and this is the reason it is considered as a powerful tool to examine on cross-section IPO underpricing (Andriansyah & Messinis, 2016; Mehmood et al., 2020a). Besides, a quantile regression analysis has exclusive benefits to demonstrate the association of the independent and dependent variable with outside mean. Therefore, due to the quantile regression, it is possible to generate useful details understanding of dependent and independent variables which have normally non-linear relationship among variables. Thus, it is useful to explain; how median values influence dependent variable percentile on independent variable besides using minimum, maximum and mean value. Wherein, voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption are the main variables and firm size is the only control variable in this study. Accordingly, at 90th quantile voice and accountability, political stability, control of corruption are negatively significant. Government effectiveness, regulatory quality, and the rule of law are positively significant and firm size is not significant to explain underpricing. At 75th quantile, political stability regulatory quality and control of corruption is negatively significant. While, government effectiveness, rule of law and firm size are positively significant to explain IPO underpricing. Further, at 50th quantile government effectiveness, rule of law and firm size is positively significant. Regulatory quality and control of corruption are negatively significant to influence underpricing. These results are similar to the findings of ordinary least square. Thus, based on prior model quantile regression is used to determine key influencing factors of underpricing. The Pseudo R-squared of 50th, 75th, and 90th is 0.06%, 2.9%, and 19.40%.

5 | CONCLUSION

This paper mainly investigated the relationship between governance indicators and underpricing of IPOs through using ordinary least square for the H-shares. A sample of 986 listed companies of Hong Kong from 2000 until 2017 is used for this study. The preliminary findings suggested 64.82% underpricing. While, results from OLS advocated that voice and accountability, regulatory quality, control of corruption and firm size is negatively significant. Wherein, government effectiveness, rule of law, are positively significant and political stability is not significant to explain IPO underpricing in Hong Kong. The result suggested that institutional quality increases information asymmetry among issuers and investors due to poor country-level efficiency, thereby reducing transparency and increasing the IPOs’ underpricing vice versa.

The outcomes of this paper are beneficial to the main participants of the market, such as investors, issuers and regulators. For instance, the absence of effective institutional quality would cause market information failures and hence further lower the transparency of information. For example, investors were worried about the reality and accuracy of market information, thus a lower level of institutional quality can increase IPO underpricing. Therefore, the investors should observe the ability of the Hong Kong government or regulators to manage improvement at the country-level institutional quality. Stronger information asymmetry on account of reducing regulator quality level would bring more uncertainties and higher risk, further affecting underpricing level. Therefore, issuers should implement appropriate strategies to follow the change of regulator quality. Likewise, lack of high level of government effectiveness and corruption control may reduce information transparency and affect the underpricing level at different degree. Higher underpricing of IPO can help issuers increase the demand of investors because investors have the preference for new offerings with the lower issued price and high return. The regulators should focus on building or improving an effective and efficient legal system in ensuring the regulation is efficient in lowering information asymmetry and promoting a higher level of decision-making for all markets participants. Regulators and other relevant government departments must realise that all disclosed information or change of regulation may affect the degree of IPO underpricing and decision of investors and issuers.

This study did not consider the characteristics of firm age and industry, because the difference in the characteristics of the company age and size will have a specific effect on the financial condition of the firm, and thus affect the assessment and decision-making of investors on target IPO companies. On the other hand, this study did not make a comparison for underpricing of those companies simultaneously listed in A-share and H-shares and hence find the difference and offer further suggestions for investors. This study’s suggestion will provide important contributions to future researchers in understanding the relation of institutional quality and the degree of underpricing of IPOs due to distinct uniqueness in different markets, including across companies’ information asymmetry as per issuance year. In addition, the future study should include the Hang Seng Index because the performance of the Hang Seng Index may affect investors sentiment on the underpricing of IPO. As such, the study sample size is from January 2000 to December 2017, the future studies may extend the time frame onward to 2017 to investigate the relationship between country level institutional quality and IPO underpricing in Hong Kong market. This study did not take into account firm-specific attributes, such as business age or the nature of its industry. This kind of firm age and industry characteristic may be important to determine the level of underpricing. Future researches can examine in more detail the effects and interactions of issues, companies and industry characteristics on underpricing.

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DATA AVAILABILITY STATEMENT

The data set is available on request.


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