INSTITUTIONAL QUALITY IMPACTS ON UNDERPRICING OF IPOs IN THE HONG KONG MARKET

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ABSTRACT

This research aims to identify the connection of institutional quality with the underpricing level of IPOs. In Hong Kong, there are large number of IPOs each year. As one of financial market centres in Asia, H-shares attract many investors. Investors have to consider investing environment when searching for the target markets. Hence, this study will offer new insights of determinants of IPO in H-shares. This paper uses cross-sectional analysis and ordinary least squares to find and interpreter the association of institutional quality and the underpricing level of IPO in Hong Kong stock market through information asymmetry, as well as signaling theory. Through theoretical research, it hypothesizes that voice and accountability, political stability, regulatory quality and corruption negatively affect IPO underpricing and also government effectiveness positively related to underpricing. Except for voice and accountability, the expectation of other four independent variables with underpricing are supported by the empirical results of regression. This study is significantly meaningful to investors, companies can governments. The governments and companies should increase the ability of regulatory quality and corruption control which can contribute to rise information transparency, thus attract increasing investors. Also, higher level of government effectiveness is a positive signal to investors.

Key words: IPO underpricing, institutional quality, information asymmetry, cross-sectional analysis

ABSTRAK

Penyelidikan ini bertujuan untuk mengenal pasti hubungan kualiti institusi dengan penawaran awam permulaan yang berada dalam tahap rendah. Di Hong Kong, terdapat banyak tawaran awam permulaan setiap tahun. Sebagai salah satu pusat pasaran kewangan di antara Asia, H-saham telah Berjaya menarik ramai pelabur. Pelabur perlu menimbangkan persekitaran pelaburan apabila mencari pasaran sasaran. Oleh itu, kajian ini akan menawarkan pandangan baru penentu tawaran awam permulaan dalam saham H. Makalah penyedilikan ini menggunakan analisis keratan rentas dan dataran paling tidak biasa untuk mencari dan menafsirkan persatuan kualiti institusi dan tahap harga rendah awal tawaran awam di pasaran saham Hong Kong melalui asimetri maklumat, serta teori isyarat. Melalui penyelidikan teori, dijangkakan bahawa suara dan kebertanggungjawaban, kestabilan politik, kualiti pengawalseliaan dan rasuah memberi kesan negatif terhadap harga tawaran awam tahap rendah dan juga keberkesanan kerajaan yang berkaitan dengan harga rendah secara positive. Kecuali untuk suara dan akauntabiliti, jangkaan empat pembolehubah bebas yang lain dengan tahap penawaran awam permulaa murah disokong oleh hasil regresi empirikal. Kajian ini amat bermakna kepada para pelabur, syarikat dan kerajaan. Kerajaan dan syarikat perlu meningkatkan keupayaan pengawalseliaan kualiti dan kawalan rasuah yang boleh menyumbang untuk meningkatkan ketelusan maklumat mana dapat menarik minat pelabur yang semakin meningkat. Di samping itu, tahap keberkesanan kerajaan yang lebih tinggi adalah isyarat positif kepada para pelabur.

Kata kunci: IPO underpricing, kualiti institusi, asimetri maklumat, analisis keratan rentas

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LIST OF ABBREVIATIONS

The following abbreviations are used in this thesis:

IPO	Initial public offering
HKG	Hong Kong stock market
GDP	Gross Domestic Product
HKGEM	Hong Kong Growth Enterprise Market
WGI	Worldwide Governance Indicators
VOICE	Voice and accountability
GOV	Government effectiveness
POLITICAL	Political stability
REGULATORY	Regulatory quality
CONCORR	Control of corruption
MKTCAP	Market capitalization (firm size)
VIF	Variance inflation factor
DW	Durbin Watson d test
WLS	Weighted Least Squares
OLS	Ordinary least square
NGO	Non-Governmental Organization
CEO	Chief executive officer

CHAPTER ONE

INTRODUCTION

1.1 Research Background

Initial public offering have been a popular topic among scholars in the field of financing. It is of great significance for issuing companies and investors to find the pricing determinants of IPO. IPO represents that a company's shares were converted from private equity into a public company by selling stocks to investors. The value of IPO companies is uncertain because there are no price records before companies listed, and some of investors do not have sufficient professional ability to conduct the assessment of IPO value only through IPO prospectus (Kao and Chen, 2019). There are abundant research papers discussing IPO underpricing in H-shares. Vong and Trigueiros (2010) show that underpricing is the signaling for the companies with good prospects, because they are more willing to underpricing more. Vong and Trigueiros (2017) also show that the "informed demand" hypothesis, as well as the signaling effect of underwriters' reputations, are important elements of initial return of initial public offerings in H-shares.

The findings of some studies suggest that stronger family involvement can promote initial return of initial public offerings and also suggest that it has less IPO underpricing for those firms controlled by family trusts (Yu and Zheng, 2012) . Autore et al. (2014) find that institutional quality strongly associated with underpricing of IPO in developed markets, including H-shares, but nearly absent relation in emerging markets. The results from overall data of developed markets cannot explain the specific characteristic of one market because some developed markets have their

unique regulation, for example, in the secondary prices of some markets (France, Taiwan and Greece), there are regulations of volatility restriction within a short term after the IPO. Chong et al. (2010) find that there are not enough evidences that the interpretations of global IPO underpricing can interpret the initial return of IPO in H-shares. Also, it lack sufficient evidences to interpret the specific relation of dimensions of institutional quality with the level underpricing of in H-shares. Hence, in this paper, we continue to discuss the determinants, including institutional quality, on the level underpricing of IPO in H-shares.

Bookbuilding is vital method for IPO in Hong Kong stock market. Pure Placing and Dual-Tranche are the main mechanisms of IPO in H-shares. (Chang et al., 2014). Pure Placing IPOs, targeting institutional investors, consist of a single tier, while Dual-Tranche IPOs, targeting retail investors, consist of a placing and a public offer tranche. In addition, retail buyers must pay maximum price of the price range of prospectus when they apply for it (Mazouz et al., 2009).

Underpricing implies that on the first listing day the closing price of IPO exceed the offering price on the first listing day, namely positive return. There many papers recording the great level of IPO underpricing in many stock markets and Ritter (2003) has summarized in his papers. Some studies make comparison between practice and theory of IPO and conclude that Chief financial officers of enterprises have a better understanding of expected underpricing level (Brau and Fawcett, 2006) . They prove that underpricing is used to be a compensation for the investment risk that investors face. The chief financial officers said that underwriters are willing to get the preference of institutional investors. The evidence of Chowdhry and Sherman (1996) shows that

investors' demand positively connection with the underpricing level of IPO and suggest that excessive underpriced IPO would attract many investors searching for the short-term profit opportunities. Rajan and Servaes (2002) argue that underpricing of IPOs has positive association with the long-term underperformance caused by investors' irrationality, supporting findings of Aggarwal and Rivoli (1990). Lowry et al.(2017) pointed out that basic IPO underpricing patterns mostly are related to the theory of information asymmetry. Carter and Manaster (1990) suggest that the underpricing is a channel to conduct compensation for the risks faced by uninformed investors due to poor transaction information. Amihud et al. (2003) demonstrate that due to different skill heterogeneity, some investors have more access to get useful messages about target companies than others, and this also support the empirical outcomes of Rock (1986). There is demonstration showing that underpricing is a signal that issuing companies convey their valuable information to the investing public or institutions (Su and Fleisher, 1999). Voice and accountability, one dimension of institutional quality, is negatively related to information asymmetry (Demirgüç-Kunt and Maksimovic, 1999). The empirical results of Beatty and Ritter (1986) also reveal that degree of information asymmetry is positively connection with underpricing level in IPO. Although Autore et al. (2014) suggest that there is strong association between institutional quality with underpricing level of IPO in developed markets, the reasons of IPO underpricing from other markets are inadequate in interpreting the determinants of underpricing in H-shares (Chong et al., 2010). Due to uniqueness of pricing in the H-shares, this study will be expanded in H-shares. Cheung et al. (2017) shows that, in previous researches, underpricing of H-shares has ranged from 10% to 20%. The research of Su and Fleisher (1999) shows that the initial return of IPO positively

associates with market conditions before IPO, and negatively connected with the historical profit growth rate of H-shares.

In summarize, signaling theory and information asymmetry are very essential towards underpricing and meanwhile many determinants can affect underpricing of initial public offerings. In some markets, researchers have new findings that IPO underpricing level related to institutional quality. Boulton, et al. (2010a) find that when a company of a state with high quality of ability to protect investors, its share price is more undervalued, and ownership is more dispersed. Autore et al. (2014) suggest that political stability, government efficiency, regulatory burden and corruption control can positively affect the underpricing. However, there are other researchers arguing that there is unrelated or inversely related association on the quality of institutional and IPO underpricing. If institutions of great quality can decline investors' fear by reducing ex-ante uncertainty, it is likely that institutional quality may associate with IPO underpricing (Engelen and van Essen, 2010). Because of mutually exclusive viewpoints, there are no certain answers in reference to the relationship of governance index and underpricing. Huadu (2011) find that the intervention of the government in A-shares is the important determinants leading to IPO underpricing. However, it lacks demonstration proving whether initial return level of IPO in H-shares is the same (Chan et al., 2004). Hence, this study can offer new empirical evidences on the influence of institutional quality towards underpricing in H-shares.

1.2 The Stock Exchange of Hong Kong

In 2017, H-shares had more than 2,100 listed enterprises listed in the Hong Kong stock exchange with over HK$34 trillion. Real GDP Growth yearly data in Hong Kong is

available from Mar 1991 to Sep 2019, with an average rate of 3.9 %. As shown in figure 1.1, listed companies market value to GDP increases from 131% in 1986 to 1053% in 2018. In a word, there is great achievement with reference to the development of H-shares and economy of Hong Kong in the previous years.

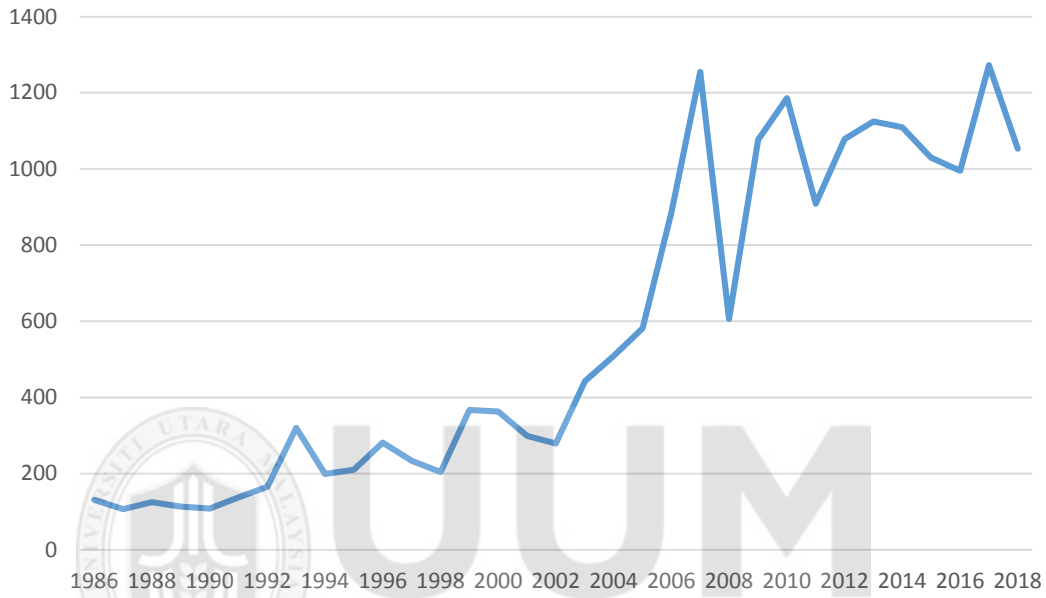

Figure 1.1
Market capitalization of listed domestic companies (% of GDP)

Source: World bank.

Some researchers also offer pieces of evidences on the correlation of capital market performance and the performance of economy. Greenwood and Smith (1997) suggest that development of capital market can make a greater contribution to the long-run economic performance in many ways. Stock market is beneficial to increasing investing activities and thus help economic growth by lower the cost of mobilizing savings. Moreover, stock market development can diversify financial assets, making it easy for companies to obtain funds through stock issuance. This can improve capital allocation and make equity market an important access for developing economy (Arestis et al. 2001). Stock market great performance of capital market can contribute

the growth of economy (Levine and Zervos, 1998). Filer et al. (1999) find the positive causal relationship of capital market development and the activities of economy.

The aggressive development of Hong Kong is because of the listed companies from the mainland of China in recent years. H-shares can offer these companies many benefits, such as easy access to foreign exchange, international reputation, sound legal system et al. (Lee and Chang, 2003). More importantly, these companies can get the connections to other markets of the world, benefiting from the geographical advantages of mainland of China.

1.3 Problem Statement

Because of information asymmetry, underpricing of IPOs were deliberately underestimated to compensate the investors (Rock,1986; Benveniste and Spindt, 1989). Some studies (Loughran et a., 1994; Song and Lee, 2012; Boulton et al., 2011) show that initial return of IPO from less developed or developing markets have the tendency to be much greater than those from developed markets. The evidences of H-shares show that the average abnormal underpricing rate of new offerings in Hong Kong growth enterprise market is below those in developing nations, but approximate to those in the developed nations (Deng et al.,2010). Chong et al. (2010) and Ritter (2003) indicate that IPO initial return of H-shares was smaller than those of some emerging markets in Asia.

Institutional quality appears to be an essential part of the policy formulation process in emerging markets and plays a pivotal role in stock market development. Asongu (2012), Boulton, et al (2010) and Shaghaghi et al. (2019) find the evidences showing

the significant correlation of institutional quality with share market development. The findings of significant association of institutional quality and IPO underpricing are extremely meaningful (Autore et al., 2014; Engelen and Essen, 2008; Demirgüç-Kunt and Maksimovic, 1999; Beatty and Ritter, 1986). However, other researchers find that IPO initial return is unassociated or contrarily unassociated to quality of institution (Engelen and Essen, 2008). Although Autore et al.(2014) suggest that there is strong association of institutional quality and underpricing of IPO in developed nations, Chong et al. (2010) argue that interpretations for the global underpricing level is insufficient to interpret the underpricing level of H-shares. Hence, this study can offer more evidences on the effects of institutional quality towards underpricing via researching Hong Kong stock market. Institutional quality can be measured by five indicators, voice and accountability (VOICE), government effectiveness (GOV), political stability (POLITICAL), the quality of regulatory (REGULATORY), corruption control (CONCORR). At first, voice and accountability would be discussed in the following.

Voice and accountability can examine the degree of freedom of the public to involve in media, as well as government. Equity market performance measures has significant association with quality of voice and accountability (Bello, 2014; Nistor et al., 2018; Boadi and Amegbe, 2017). However, some researchers argue that it lacks enough evidences to support the relationship (Shaghaghi et al., 2019) . Some studies have proved that greater degree of voice and accountability can reduce information asymmetry in capital markets (Demirgüç-Kunt and Maksimovic, 1999). Meanwhile, Beatty & Ritter (1986) show the positive correlation between information asymmetry level and underpricing degree. However, there are not direct yet study demonstrating

the relationship of voice & accountability and underpricing. Therefore, this paper would extend the study by examining the relationship of voice & accountability and the underpricing of IPO.

The effectiveness of government reflects public perceptions to public services, the formulation and implement of policy and regulation, and the government's commitment to policies, as well as civil services (Kaufmann et al., 2009). Hearn (2014) study the samples in north African stock markets and realize that the government efficiency has negative connection to the board salary. Bedane et al. (2017) find that good government effectiveness can make a large contribution to economic growth. Asongu (2012) proves that strong government effectiveness contributes to improve the performance of stock market while Shaghaghi et al. (2019) prove the negative relationship amongst government effectiveness and total stock price index. Autore et al. (2014) also find that government effectiveness positively associates with IPO initial return in developed nations while they did not realize to analyze regulatory quality effects in the single country because the underpricing of IPO in some countries, such as in China (Chan et al., 2004), is affected by regulation. Hence, in this paper, it will offer more accurate demonstrations pricing the relation between underpricing and regulatory quality for H-shares as the market has unique characteristics.

Political stability of countries is considered to strong related to the narrow nature of political economy and some private benefits. North (1990) argues that these incentivize revolutions and instability. Hillier and Loncan (2019) find that corporate political relations under uncertain political conditions can have a detrimental effect on stock returns. The country with a fair and predictable legal system can make social

systems and transactions more orderly and efficient by law and regulation (Judge et al.,2008). Political factors are very crucial for financial markets development. Better political stability will boost the performance of the stock markets (Shaghi et al., 2019). Satta et al. (2017) and Stulz (2005) show that high degree of political stability is beneficial to the IPO performance. Research by Kim and Mei (2001) shows that political development can significantly affect its market fluctuations and earnings in Hong Kong, which may contribute to first day return of IPO. Therefore, the relation between political stability on IPOs underpricing is needed as yet to be empirically proven.

The quality of regulator reflects the government's ability to conduct the formulation of regulations and policies and to effectively enforce them. There is an evidence showing that the improvement of regulatory quality is related to the improvement of disclosure level at the company level on the length of IPO prospectuses (Hearn, 2013). If the home country of the non-US companies listed in US exchange have more efficient public law enforcement, those firms will have less IPO underpricing (Wang and Jiang, 2019). Gul and Qiu (2002) examine that law enforcement explains low information asymmetry and more developed finical markets. The evidences of Beatty & Ritter (1986) show the positive correlation between information asymmetry level and underpricing degree. This means that higher level of regulatory quality may reduce underpricing of IPO in the listing dates while there are not enough evidence proving the significant relationship of regulatory quality and underpricing in H-shares. This paper can provide more evidences in this aspect.

Corruption control represents the ability of manage and control corruption, as well as measure the grip of political and social elites on the state. Bolgorian (2011) find that level of corruption negatively connected with stock market development. Study findings of Hussain et al. (2017) suggest that corruption control strong connects with stock market development on Stock Markets of South Asia. The research results of Love (2011) also show that political stability and a low propensity to corruption can help improve the capital market. The research results of Chiou et al.(2010) also show that an efficient legal and political environment and low level of corruption can improve stock investment performance and reduce its risk. Empirical findings of Low et al. (2011) argue that absence of corruption control can increases equity return after risk adjustment. Weak ability to control corruption can decline investors' confidence in the stock market and regulators of trading rules, and also increases investors' risk level. So, the greater the risk due to a lack of corruption control , the higher the risk-adjusted return on equity. Wang and Jiang (2019) clarify that high corruption raises ex-ante uncertainty of IPO valuation. Li and Filer (2007) agree that equity investors are more inclined to enter the markets with better investors and a safe, transparent and fair legal system. Moreover, Song and Tang (2015) find that market sentiment negatively connects with IPO initial return. A market of weak ability to manage and control corruption would lower the investors' confidence and then lead to higher underpricing. Therefore, this research will offer new demonstration through examining the relation on control of corruption on IPOs underpricing.

1.4 Research Questions

Study questions of this paper are proposed based on the research objective at former part, as shown in the following.

1. Does the voice and accountability has significant relationship to IPO underpricing?

2. Does the political stability has significant relationship to IPO underpricing?

3. Does the government effectiveness has significant relationship to IPO underpricing?

4. Does the regulatory quality has significant relationship to IPO underpricing?

5. Does the control of corruption has significant relationship to IPO initial return?

1.5 Research Objectives

This paper aims to prove the effects on IPO underpricing of five dimensions of institutional quality. The five goals of this research show clearly in the following.

1. To assess the influence of voice and accountability on initial return for an IPO

2. To assess the effect of political stability on initial return for an IPO

3. To assess the impact of government effectiveness on initial return for an IPO

4. To assess the influence of regulatory quality on initial return for an IPO

5. To assess the influence of corruption control on initial return for an IPO

1.6 Scope of study

IPO samples chosen in this study are from new offerings of H-shares from 2000 to 2017. The IPOs data was extracted from Bloomberg DataStream. The data applied in present are multiple cross-sectional data. It will assess the impact of the five dimensions of institutional quality on underpricing of IPO in H-shares. The final samples of 986 IPOs was chosen from 1092 IPOs over period of 2000 to 2017. This study excluded all types of companies or companies that contained outliers.

1.7 Significant and Contribution of the study

There are numerous studies on determinants for IPO underpricing, but few studies provide more empirical evidences on underpricing of IPO institutional quality. This

paper can benefit to the relationship of institutional quality with underpricing and offer some new viewpoints to investors, issuers, regulators and literature body.

1.7.1 Investors

This study has certain reference value for investors to decision-making of IPO investing. In the IPO market, institutional quality information is essential in influencing market sentiment. The effectiveness of the government reflects the country's good performance in regulating policy, the rule of law and better controlling 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 governments with high transparency and low information asymmetry. Weaker information transparency can cause more ex-ante uncertainty, hence pushing up IPO underpricing (Beatty and Ritter, 1986). This would affect the investors final investing decision. Therefore, information reflecting investor sentiment is crucial to investors' decision-making.

1.7.2 Issuers

This study may benefit to issuer firms as the country level of institutional quality contribute significant result to the IPOs based on literature narrative. Mostly, issuing firm tends to offer the lower price to create the underpricing to gain the return. Thus, the offer prices show the negative relation as lower offer price lead to high demand for IPOs. Issuing firms (IPO firms) must have high market sentiment react to the institutional quality as exist of certain risky in the market. The findings of Hussain el al. (2017) suggest that corruption control positively connects with stock market development on stock markets of South Asia, because the effective institutional environment lowers the risk level and increases the confidence of investors, and thus

investors can put more money into the stock market without fear of losing their wealth. Autore et al. (2014) suggest the positive association of control of corruption with firm-level IPO underpricing in developed markets. Thus, strong ability to control corruption will help increase stock market performance and reduce underpricing level, as well as reissuing firm must has appropriate tactics for encounter to those country level governance quality. Issuing firm can list their company in the country which have higher and better in institutional quality to affirm the sustainability in the market.

1.7.3 Regulators

Regulators are government agencies which the statutory bodies and regulatory commissions that responsible for generating, retain, and enforce the regulatory and sound policies. Hooper et al. (2009) express that regulatory quality positively affect equity return. The positive association of regulatory quality with IPO underpricing in developed markets has been proved (Autore et al., 2014). Better regulatory quality tends to increase the underpricing. Regulatory authorities should pay more concern and has the policy relate to individual, business entity, interest and professional organization take the preventive precaution against the impact of institutional quality on underpricing of IPOs.

1.8 Organization of the study

This paper consist of five parts. The first section includes research background, a brief introduction to H-shares, a statement of issues, study purpose and study questions, and the research's implication and contribution. It contains literature review, which will discuss IPO underpricing in developed nations, emerging nations and Hong Kong in second chapter. Moreover, institutional quality and control variables related to initial public offerings have been emphasized and discussed based on previous empirical

evidence. Chapter 3 will build on chapter 2 to study and develop hypotheses, explain data descriptions, variables measurements, and methodology. Chapter 4 explains outcomes and findings of the methodology obtained through E-views. Chapter five is the last chapter, which discusses the conclusion of chapter four, limitations and implications of this study, and puts forward some proposals for other scholars.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The second parts of this paper primarily debates literature focused on papers and findings from previous researchers concerning institutional quality impacts on IPO underpricing on the H-shares. In the first part, the dependent variable in different countries would be under discussion. In the second section, it illuminates the influence from key institutional quality towards underpricing of IPO. The third section illustrate the related theories on IPO initial return. The fourth part mainly studies association between market capitalization (firm size) and IPO underpricing. Finally, a summary of this chapter is given.

2.2 Underpricing of IPOs in Developed markets

Underpricing reflects that in secondary market, the closing price on the first trading day exceeds offering price. Huang et al. (2019) prove that in better-developed markets with lower information asymmetry, the enterprises have less underpricing. The studies of McGuiness (1993) show that issuer-oriented underpricing costs before listing accounts for approximately 33% through measuring the underpricing cost of Hong Kong. Based on the record of Ritter (2003), average initial return of IPOs in Asia significantly exceed that of IPOs in the USA. For example, his research shows that in emerging countries, initial return of newly listed companies in target countries is from 13.6% and 388%, and in developed markets between 4.2 percent and 54.4 percent. In the stock market of United States, the IPO underpricing level of non-US listed companies can be affected by the home state's legal framework (Wang and Jiang, 2019). In Japan stock market, Sakawa and Watanabel (2019) suggest that underpricing

of IPO cannot be influenced by parent ownership while greater CEO ownership may promote underpricing.

Janice (2000) analyzed the development of 130 new offerings in the initial and long-run period during 1979 until 1990 and found that the average undervaluation for mining companies of Australia was higher than the previous record. The research results of Keloharju (1993) show that, on average, in the IPOs in Finland, unwitting investors get more allocation from overpricing, compared to underpricing. Ljungqvist and Wilhelm (2002) also conclude that investing institutions can get higher returns from "good" products after analyzing the cases of France, German, UK and USA. Lee et al. (1996) find a systematic preference to small investors in IPO allocation of Singapore, supporting evidence of Koh and Walter (1989). They find that few investors possibly get overpriced shares because large investing party is not willing to subscribe them. But when the issuing price is undervalued, retail investors are unlikely to get their hands on the shares.

2.3 Underpricing of IPOs in Developing markets

IPO initial return of equity market in China was as high as 289% (Mok and Hui, 1998). However, Su and Fleisher (1999) got different finding that initial return level was close to 948% by expanding the data set. Because these companies have larger government ownership, the scale of new offering companies with underpricing is smaller (Mok and Hui, 1998). Although institutional factors in China lead to the IPO pricing of a-shares being seriously underpriced (Chan et al., 2004), it lacks demonstration proving that Chinese companies' stocks issued in Hong Kong are underpriced at the same level. Except for information asymmetry and government regulations, over-optimism of

investors is also a vital determinant affecting IPO underpricing in China A-shares (Li, 2018). Song and Lee (2012) find that developing nations have higher IPO initial return than developed nations.

IPO of H-shares is priced at a discount to its mainland counterparts because H-shares has a somewhat distinct organization set-up from mainland of China. For instance, it has a three-year pre-IPO earnings threshold on new shares to refuse a range of underperforming companies in Hong Kong (Cheng et al., 2006). A research with Prasad et. Al. (2006) on Malaysia demonstrates that IPO of Malaysia market was substantially underpriced, making comparison with IPO in other emerging countries after assessing the short-run and long-run development. The initial performance of new offering companies from less developed nations or developing nations always surpass those of developed-market companies (Loughran et al., 1994; Boulton et al., 2011). The research results of Rathnayake et al. (2019) prove that there is greater percentage of underpricing than overpricing in Srilanka. Widarjo et al. (2019) find the Indonesia evidence that intellectual capital disclosure can increase information transparency and lower asymmetry information and also, intellectual capital disclosure has negative relationship with IPO underpricing.

2.4 Underpricing of IPOs in Hong Kong

Leung and Menyah (2006) found that Hong Kong follows UK company law, which means investors would be invited to subscribe in the offering date and price regulated in the prospectus. They also realize that the interest on applied funds reduced the undervaluation cost of the issuer and made the issuer indifferent to the widely publicized overall undervaluation. Yu and Zheng (2012) also found that IPO initial

return of enterprises controlled by family trust was less. Mazouz et al. (2017) find that most investors are unlikely to obtain the IPO stock with positive return when subscripting new equity because of greater allocations of overpriced IPOs. However, the mandatory claw back provision strengthens investors' opportunities to gain underpriced new stocks.

McGuinness (1992) conducted the IPO investigation in 1980-1990 and found that most of the accumulated earnings of IPO after listing day were generated from the first-day closing price. During 1996 to 1997, Dewenter and Field (2001) investigated IPO of infrastructure companies after they lowered the listing requirement and found that investment banks choose to protect their reputations and avoid highly speculative investing problems. Cheng et al. (2004) surveyed the intraday movements of 159 initial public offerings listed on H-shares from 1995 to 1998 and pointed out the underpricing at 12.3% for the IPO firms. The average underpricing rate of IPOs in Hong Kong is far below those emerging equity markets, but close to developed equity markets (Deng et al., 2010). Chong et al. (2010) pointed out that the IPO underpricing level of Hong Kong stock exchange was over 15%. The results show that PO underpricing is positively connection with market conditions before IPO, as well as the negative relationship of the range of issuing prices and historical earnings growth rate.

2.5 Impact of key variables on the IPO underpricing

Institutional factors is important in the development of economy and finance and require policymakers to establish stable reforms to deal with uncertainty. (Cherif and Gazdar, 2010). In the case of emerging markets, maintaining political stability,

regulating and implementing law, and managing quality of bureaucracy are vital for the performance of capital market (Yartey, 2010).

Papaioannou (2009) applies the same institutional quality indicators to examine the role of an institutional factor in international capital mobilization, demonstrates that well-functioning institutions are a vital and dynamic force of international bank flows. Shaghaghi et al. (2019) interpreter that government can promote the development of capital market by strengthening institutional quality due to the positive relationship of total stock index and institutional quality. Asongu (2012) determines a positive and significant connection of institutional quality and equity market performance on developing countries; the results suggest 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 get external funds through share offerings (Boulton, et al., 2010). They also find that when a company is listed in a nation with sound regulation to protect investors, its share price is more undervalued, and ownership is more dispersed. Autore et al. (2014) demonstrate that several dimensions of institutional quality are significantly connected with initial return of IPO in developed markets, while the relation is not clear in emerging markets.

However, some researchers have different viewpoints that there may be unrelated or inversely related relationship of 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 and van Essen, 2010). The companies control by family trust in countries

with more developed systems get more benefits over the costs, while centralized family ownership enterprises hardly need underprice of IPO to maintain control (Peng and Jiang, 2010). There are no definite answers in regard to the relationship of institutional efficiency and underpricing, because of the mutually contradictory points of view.

2.5.1 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 check if the public supervise that the government can be held responsible for its political acts (Daude and Stein, 2007). Asongu's (2012) research shows that stock market performance can positively associate with government quality. These outcomes of empirical evidences mean 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, there are few evidences showing that voice and accountability significantly affect stock performance (Shaghaghi et al., 2019).

In terms of emerging markets, Bello (2014) find that the absence of free voice and accountability negative affect the stock prices in Nigeria market. Empirical findings of Nistor et al. (2018) suggest that voice and accountability can positively affect economic the growth of the emerging countries. Boadi and Amegbe (2017) also reveal that Voice and Accountability significantly affect stock market performance by analyzing 23 markets from emerging countries and developed countries. Healthy degree of voice and accountability can promote the transparency and stability of the business environment, establish a secure institutional context, and can also increase

information transparency in the equity market (demirguc-kunt and Maksimovic, 1999).The empirical outcomes of Beatty and Ritter (1986) also prove that greater level of information asymmetry can increase underpricing of IPO (Beatty & Ritter, 1986). Hence, it hypothesize that

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

2.5.2 Government effectiveness

The efficiency of government relates to the legitimacy of the government's policy commitment. Shaghaghi et al. (2019) prove the negative relationship amongst government effectiveness and total stock price index. Hearn (2014) studied the stock markets in north Africa and found evidence that the government efficiency was inversely proportional to the board compensation. A study of developing countries from African continent signifies the positive role of Government Effectiveness in superior stock market performance, particularly. Government Effectiveness parameters illustrate impressive market capitalization, high turnover ratio, trading volume and a large number of listed companies (Asongu, 2012). Those countries where effective government policies are truly implemented and efficient institutional environment available to investors guarantees an improvement in stock market performance and the optimistic and effective policies reduce transaction and agency costs, which enhance shareholding. Conversely, investors with risk-averse attributes are reluctant to initiate investment decision in those countries with ineffective government establishment (Hooper, Sim, & Uppal, 2009). Autore et al. (2014) also find that government effectiveness positively associates with IPO underpricing in developed markets while Chong et al. (2010) argue that other markets' evidences of IPO initial return is inadequate to assess the underpricing in H-shares. Consequently, the connection should be tested. The hypothesis is proposed

H2: there is positive relationship of government effectiveness and IPO underpricing.

2.5.3 Political Stability and Absence of Violence/Terrorism

Political stability assess political instability expectations of politically motivated crime, including terrorism (Kaufmann et al., 2009). In countries with high political risks, Stulz (2005) predicted that IPO activities in these countries would be weaker, because those listed companies might be looted 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 initial public offering. A study of industrialized countries, Cherif and Gazdar (2010), claims that political factors are very crucial for financial markets development. Comparative analysis of the impact of political instability on equity earning of developing and developed markets documents that developed markets are more easily affected by such risk, relative to emerging market in producing rising stock return. Privatization 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 and Van Oijen, 2001). Cherif and Gazdar (2010) observe that political risk insignificantly affect stock market development while Shaghaghi et al.(2019) argue that political stability positively affect total stock price index, meaning that better political stability can improve equity market performance. Also, Hillier and Loncan (2019) find that under unstable political circumstance, corporate political connections may negatively affect stock return. Another study of emerging markets throughout 2000-12 exhibits a negative correlation of political instability and stock market performance, translates higher stock return in case of declining political risk (Lehkonen & Heimonen, 2015). Countries with the greater

political risk are more prone to IPO underpricing for their financial markets (Nguema and Sentis, 2006). In this case, the issuers are more risk-averse than the investors and hence underpricing can be a part of compensate for the country risks. The hypothesis is proposed

H3: Political stability and the absence of violence have a negative influence on IPO underpricing.

2.5.4 Regulatory quality

Regulatory efficiency tests whether the government have the ability to implement and execute laws and regulations. (Kaufmann et al., 2009). For the non-US companies listed in US exchange, they have less IPO underpricing if the home country of those companies have more efficient public law enforcement (Wang and Jiang, 2019). Hearn (2013) found evidence that information disclosure at the company have positively 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 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) study 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. Hooper et al. (2009) prove the strong positive connection of regulatory quality with equity return. Gul and Qiu (2002) found that the degree of corporate information asymmetry has inversely

correlation with law implement, and corporate information asymmetry in developed countries is also relatively low. Information asymmetry may positively affect IPO initial return (Beatty and Ritter, 1986). The following hypothesis is proposed

H4: Regulatory quality has a negative influence on IPO underpricing.

2.5.5 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 on a large scale (Kaufmann et al., 2009). Bolgorian (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 prove 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. Study findings of Hussain et al. (2017) find that corruption control positively relates to stock market performance at a significant level on stock markets of South Asia. Love (2011) shows that political stability and a low tendency to corruption will help improve the capital market. Wang and Jiang (2019) provide the evidence that those companies from the countries with high corruption have greater underpricing of IPO among the non-US companies listed in US exchange. They explain that high corruption increase 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) agree that increasing stock investors have the

preference to markets with better protection of property rights, fair and transparent legal systems, helping increase investors' confidence. The empirical results of Low et al. (2011) suggest that 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) demonstrate that market sentiment inversely associates with IPO initial return. The hypothesis is proposed

H5: Control of corruption has a negative fluence on IPO underpricing.

2.6 Theories Related to Literature

On the basis of literature research, this paper makes an empirical analysis on the initial return of IPO by discussing information asymmetry and signal theory. The illustrations of theories are show as following section.

2.6.1 Information asymmetry

Rock (1986) proposes the view of information asymmetry, namely, the issuing corporation and the informed and uninformed investing party may achieve different information. To compensate uninformed investors, the share price is at a discount. Listed firms own prior information about their anticipation of future performance, which is another explanation for companies to set low prices, thus resulting in underpricing (Allen and Faulhaber, 1989). Studies have shown that the weaker information transparency can be beneficial to increasing IPO initial return (Beatty & Ritter, 1986). Moreover, Lowry et al. (2010) proposed that greater degree of information asymmetry is the disadvantage of valuating IPO corporations, hence leading to higher the volatility of initial returns. The research of Kanagaretnam et al. (2007) shows that if companies have a greater corporate governance, the information

transparency of profit announcement of those companies will be higher. When IPO information is asymmetric, potential investors are likely to lose some information delivered by firms, which is likely to become invalid due to omissions (Riley, 1979; Spencer, 1976). Therefore, investors should be focus on claims or news related to IPOs and to be particularly sensitive to effective value signals (Downes and Heinkel, 1982;Spencer, 1976).

A lower offer will reduce the retained wealth of the original shareholders, so underpricing is crucial for the issuing company (Certo et al., 2001). However, higher information asymmetry implies greater range of underpricing. Therefore, IPO pricing is too low as a compensation for uninformed investors who may face investment risks due to information asymmetry (Carter and Manaster, 1990). For now, this means that issuing firms and investing party can use underpricing as an index of information asymmetry to measure the extent to which investors take advantage of certain signals. Carter and Manaster (1990) found an inverse connection on underwriter credibility and IPO initial return and concluded that the credibility of the underwriter is a signal to the consumer, which can promote information transparency and thus decline the underprice. Also, researchers find that institutional quality can affect information transparency (Gul and Qiu, 2002; Demirgüç-Kunt and Maksimovic, 1999). The markets with good legal system protecting investors have lower moral hazard amongst information transfer, improving the reliability of information disclosure (Huang et al., 2019).

2.6.2 Signaling Theory

The signal mechanism can promote information transparency of issuers and investors and eliminate the fear of public investors. The core of signal theory is information

asymmetry (Spence, 1973). Signal theory can explain why a company with a good reputation can rise information transparency compared to an unknown company. Due to information asymmetry (Cohen and Dean 2005; Pollock and Rindova (2003), during the IPO period, some investors are likely to analyze relatively new companies. However, compared to the existing owners of the company, investors possibly face difficulties in judging the new listed company, and they may have difficulty in obtaining very comprehensive information, and it is difficult to make accurate judgments about the quality and behavior trend of the company (Certo2003;Cohen and dean 2005). External investors are particularly sensitive to effective signals of a company's quality and value due to uncertainty and information asymmetry (Spence1976). There is evidence that signal efficiency is determined by its reliability and observability (Connelly et al. 2011). Firstly, there is high correlation of the signal with the unobservable quality of enterprises. Actually, imitation is tough and expensive for low-level companies (Spence1976). Secondly, signals should be noticed easily by investors, namely high visibility (Connelly et al.2011).

Signal theory can capture the inherent information asymmetry of IPO. In other words, if the IPO company needs to show that it is worth investing, the company needs to deliver a message to latent investors (Xu, Wang & Long, 2017). Under technologically advanced background, news can be more easily and quickly obtained by investors, which also affects the pricing development of IPO (Chhabra, Kiran, & Sah, 2017). IPO companies use information signals to reduce information asymmetry and help investors better evaluate IPO companies (Sahoo, 2017).The change of institutional quality would send a signal to investors and change their expectation to underpricing level of IPO. Wang et al. (2019) suggest that technology companies can deliver

different signals on the basis of distinct contents to investors, for greater number of financing, and because different signals from different contents can improve information transparency and lower information asymmetry.

2.7 Controls Variables

The specific factors have been set as control variables to assess the major explanatory variables, institutional quality on the underpricing of IPOs. Firm specific indicators are firm size. The following part will briefly explain each of the control variables relative to the initial public offerings.

2.7.1 Firm size

Rathnayake et al. (2019) found that market capitalization significantly connected with and IPO earnings, and the results showed that underpricing accounted for a larger proportion of IPO in Sri Lanka than overpricing. Samarakoon (2010) conduct survey of the short-term undervaluation of IPO and conclude that the initial earnings have inverse connection with issuance scale, and positive connection with investor sentiment, as well as privatization problems in Sri Lanka. An offering can determine the ex-ante uncertainty connected to initial public offering issuance. Some researchers have shown negative connection of issuance size with initial return rate (Alanazi and Al-zoubi, 2015; Chi and Padgett, 2005; Yu and Tse, 2006). But some studies have found the opposite connection, that is, the larger the issuance scale, the higher the initial yield (Boonchuaymetta and Chuanrommanee, 2013). Singla (2019) prove that IPO development of construction industry can be directly driven by market returns and company size, while negatively driven by the liquidity of Indian companies. Corhay et al. (2002) found that the lack of market liquidity led to a negative relationship towards issuing size and performance of IPO. Durukan (2002) and Georgen et al.

(2007) found a direct correlation of IPO development and market capitalization. Jaitly (2004) analyzed quality of IPOs in India and claimed that relative scale of problem and the gap of the expected and actual book value is vital on the quality of the IPO.

2.8 Chapter Summary

In short, this part studies all empirical studies of variables, and hypotheses are given. Based on the review of past studies, firm size has been importantly related to underpricing of IPO. Researchers proved the significant relation of institutional quality with IPO underpricing empirically.

Plenty of studies related to determine the association of the microeconomic variables and underpricing in H-shares, while no empirically study yet in conducting the institutional quality on underpricing. The theories of this research also has been introduced and developed. The next part will discuss methodology.

CHAPTER THREE

DATA AND METHODOLOGY

3.1 Introduction

This section summarizes the research methods, data sources, measurements of variables and research structure. The researchers discussed how to collect, present, and evaluate the data and information needed to answer research goals and questions. The objective of the methodology is to offer new empirical demonstrations for the connection of institutional quality and the underpricing degree of IPO in Hong Kong.

3.2 Sample Selection

The data gathered are secondary data from January 2000 to December 2017, mainly consist of two types of data. The dependent variable is underpricing level of all the new IPO companies listed on the H-shares from 2000 to 2017, a total of 986 companies. The independent variables are five aspects of institutional quality, including voice and accountability, political stability and violence, government effectiveness, regulatory quality, and control of corruption. The only control variable is the firm size (Market Cap). The control variable (firm size) and first-day return (dependent variable) are extracted from Bloomberg DataStream while the data of institutional quality (independent variables) is gathered from World Bank Group.

3.3 Descriptive Statistics

Table 3.1 is the descriptive statistics of variables in the period 2000 until 2017. The dependent variables measure IPO initial return of H-shares during a certain period. The sample, amount to 986 companies, contains all types of companies and exclude the outliers. With reference to independent variable, government effectiveness is the

only variable presented by using estimate value while the other five variables use percentile rank (referring panel B of Table 3.1).

Across all periods the average level of underpricing is found to be 65%. The gap of underpricing in the three periods is not very big, closing to the average in all periods. The average underpricing in the period 2006 until 2010 is 74%, and after only seven years, the level dropped to 40% (referring panel A of Table 3.1). These results show strong empirical demonstration that the underpricing of IPO varies greatly within different periods. Hence, the findings of searching what lead to the change of underpricing are meaningful. The researches of La Porta et al.(1998) and Kaufman(2009) offer starting point of the analysis in this study.

Table 3.1
Summary statistics of dependent variables
Panel A. Dependent variable

Variable	Obs	Mean	Std Dev	Min	Max
Level of Underpricing, 2000-2005	358	0.68	2.29	-0.57	20.05
Level of Underpricing, 2006-2010	417	0.74	2.72	-0.95	21.00
Level of Underpricing, 2011-2017	211	0.40	1.11	-0.38	7.20
Level of Underpricing, all periods	986	0.65	2.30	-0.95	21.00

Panel B. Independent variables

Variables	Obs	Mean	Std Dev	Min	Max
Political stability	986	82.46	6.65	72.38	95.63
Regulatory Quality	986	98.68	1.66	95.92	100.00
Government Effectiveness	986	1.68	0.22	1.33	1.91
Control of Corruption	986	91.87	2.64	86.29	94.76
Voice and Accountability	986	60.36	5.44	51.74	69.95

3.4 Measurement of Variables

3.4.1 Dependent Variable

Offering price is below closing price on the first listing day, that is, initial return on stock is high, meaning that the stock is considered underpriced. Initial return is the gap of closing price on the first listing day and the issue price. The initial return of the first listing day for IPO share is collected in Bloomberg DataStream database. To analyze IPOs underpricing, this study used formula in the following:

$$Initial\ return\ (R_{it}) = \frac{P_{it} - P_{it-1}}{P_{it-1}}$$

Where:

R_{it} = initial return of stock i at period t

P_{it} = closing price in the first listing day for a new stock i; and

P_{it-1} = issuing price of new stock i

Higher the initial return represents high underpricing. Dawson and Hiraki (1985), Dawson(1987), and McGuinness(1992) prove that undervaluation of IPO disappears on first day of trading. Ibbotson et al. (1994), Booth and Chua (1996) and Cheng et al. (2005) argue that IPO can be used as an ex-ante risk agent, as a greater offering price led to a weaker underpricing level (Ibbotson et al., 1994;Booth and Chua, 1996;Cheng et al., 2005).

3.5 Independent Variables

Worldwide Governance Indicators (WGI) is applied to interpret the governance index. Global governance indicators include comprehensive indicators covering a wide range of governance dimensions: voice and accountability, political stability, government effectiveness, regulatory quality and corruption control. Such metrics are based on

hundreds of variables from 31 separate data sources, collecting perceptions of governance identified by Interviewees, NGOs, business intelligence suppliers, and multinational public sector organizations. Government effectiveness is the only variable presented by using estimate value while the other five variables use percentile rank. The definition and description of each institutional quality indicators are showed in Table 3.2.

Table 3.2
Definition of Institutional Quality

Voice and Accountability: Percentile Rank	Voice and accountability can examine the degree of freedom of the public to involve in media, as well as government. The percentile ranking refers to the ranking of a country among all countries covered by the composite index. 0 is the lowest and 100 is the highest.
Government Effectiveness: Estimate	Government effectiveness reflects the public's perception of the quality of public services, the quality of policy formulation and implementation, and the government's commitment to these policies, as well as civil services. Estimate gives the country's score on the aggregate metric, in regular normal distribution units, from about -2.5 to 2.5.
Political Stability and Absence of Violence/Terrorism: Percentile Rank	Political stability and the absence of violence / terrorism assess political instability expectations of politically motivated crime, including terrorism. The percentile ranking refers to the ranking of a country among all countries covered by the composite index. 0 is the lowest and 100 is the highest.

Regulatory quality: Percentile Rank	The quality of regulator reflects the government's ability to conduct the formulation of regulations and policies and to effectively enforce them. The percentile ranking refers to the ranking of a country among all countries covered by the composite index. 0 is the lowest and 100 is the highest.
Control of corruption: Percentile Rank	Corruption control represents the ability of manage and control corruption, as well as measure the grip of political and social elites on the state. The percentile ranking refers to the ranking of a country among all countries covered by the composite index. 0 is the lowest and 100 is the highest.

3.6 Control Variables

3.6.1 Firm size

Market capitalization (firm size) on the listing day, is total value of a company's share within stock market. Rathnayake et al. (2019) find that firm size significantly connects with IPO returns. Previous studies have shown that issuance size negatively associated with initial return rate (Samarakoon, 2010; Alanazi and Al-Zoubi, 2015; Chi and Padgett, 2005; Yu and Tse, 2006). But some studies have found the opposite connection, that is, the larger the issuance scale, the higher the initial yield (Boonchuaymetta and Chuanrommanee, 2013). The firm size of each company in the study is using the secondary data that extracted from Bloomberg DataStream.

3.7 Research Framework

This study mainly focuses on demonstrating the correlation between five variables of institutional quality and the degree of IPO underpricing in hypothesis 1 to hypothesis

6, as shown in figure 3.1. This study also acknowledges firm size that may influence the initial return as a control variable.

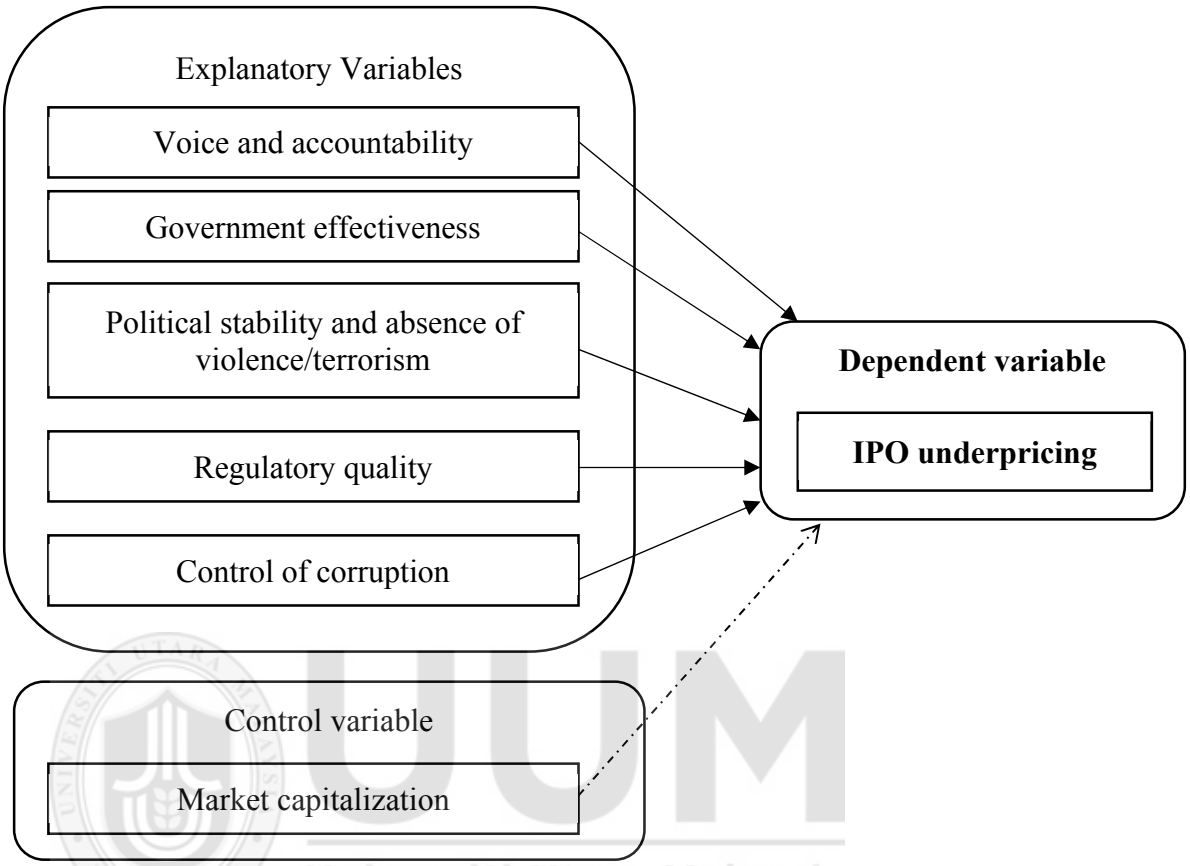

Figure 3.1.
Research Framework

3.8 Model Specification

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

$$\text{Underpricing of IPO}_i = \alpha + \beta_1 \text{VOICE}_i + \beta_2 \text{GOV}_i + \beta_3 \text{POLITICAL}_i + \beta_4 \text{REGULATORY}_i + \beta_5 \text{CONCORR}_i + \beta_6 \text{MKTCAPi} + \varepsilon_i$$

Where:

α = the regression intercept

β	= the regression model coefficients
VOICE	= Voice and accountability
GOV	= Government effectiveness
POLITICAL	= Political stability
REGULATORY	= Regulatory quality
CONCORR	= Control of corruption
MKTCAP	= Market capitalization (firm size)
ε	= error term of the regression

3.9 Econometric Estimation

3.9.1 Data Normality Test

In statistics, the normality test examines normal distribution of target data and calculate the probability that the random variables within the data collection conform to normal distribution. This test is likely to be identified through histogram and residual on descriptive statics as well as Jarque-Bera statistics.

For checking normal distribution of sample, it compare the p-value with the significance degree.

H_0: The data of model is normally distribution

P-value $\leq \alpha$: Data is not normally distributed (Reject H_0)

Under p-value does not exceed significant degree, it rejects null hypothesis, implying not normally distributed data.

P-value $> \alpha$: Data is normally distributed (Not reject H_0)

Under p-value exceed significant degree, it does not reject null hypothesis, implying normally distributed data.

3.9.2 Multicollinearity Test

In statistics, multicollinearity implies strongly correlates two or more predictive variables. Change in the standard error means that any or all of the independent variable's coefficients will vary significantly from 0. If the expected variables do not have a linear relation, they are said to be orthogonal (Jensen and Ramirez, 2012). If there is a correlation between the predictors the standard error of the coefficient of the predictor will increase, thus increasing the variance of the coefficient of the predictor. The variance inflation factors (VIF) is a method for calculating and quantifying inflation of variances. VIF is typically measured as part of the regression analysis by the algorithm and appears as part of the output in the VIF column. To explain the value of VIF, the rules is shown in the following table.

Table 3.3
Variance inflation factors (VIF) interpretation

VIF-value	conclusion
VIF = 1	Not correlated
1<VIF≤5	Moderately correlated
VIF>5	Highly correlated

There are criteria for assessing if VIF is within reasonable limits. VIF surpassing 10 means high multicollinearity. If the value is below 10, it is in good shape and can begin the regression.

3.9.3 Autocorrelation Test

For regression analysis, the Durbin-Watson test can examine autocorrelation of residuals. Autocorrelation is a similitude of the time series in a continuous time frame. Durbin Watson reported test statistics ranging from 0 to 4. A value of means no

autocorrelation. A value of 0 to 2 means positive autocorrelation, implying that it is common in time series data. A value of 2 to 4 means negative autocorrelation, implying that it is less common in time series data. A thumb rule is to test statistical values within 1.5 to 2.5 are fairly common. Values beyond the range might be troubling.

3.9.4 Heteroscedasticity Test

In statistics, in particular in the sense of linear regression and time series analysis, the concept of heteroskedasticity as opposed to homoskedasticity is used to characterize situations where variance errors or errors are not the same for all observed models, although sometimes one of the basic premises in modeling is errors in models with homogeneous and similar variance distributions. Since in linear regression analysis, the errors of the model (also known as residuals) are not homo-variances, the model coefficients calculated with ordinary least squares (OLS) are neither unbiased nor least variance.

If it is suspected that the variance is not homogeneous, it is necessary to conduct heteroscedasticity test. Weighted Least Squares (WLS) can remove the problem of Heteroscedasticity. The use of Weighted Least Squares would also resolve the bias problem in standard errors and will also provide more reliable estimates. This research will use Weighted Least Squares (WLS) to correct the problem of homoscedasticity. The hypothesis are shown in the following.

H_0 : The residuals are homoscedastic

The p-value below 0.05 means that null hypothesis can be rejected. The residuals in regression is said to have constant variance if it does not reject null hypothesis and the residuals are homoscedastic.

3.9 Chapter Summary

This part establishes the study framework and model based on the hypothesis of chapter two. All available variable data are clearly stated in the data collection and sample descriptions. The next part will further explore the empirical outcomes and results of methods. This study will use E-views software for data analysis.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

The discussion of the empirical result would be explained in this chapter. This chapter would discuss descriptive statistic and Pearson correlation matrix of all variables and then the diagnostic test has been performed through normality test, multicollinearity test, autocorrelation and heteroscedasticity. At last, the regression results of ordinary least square (OLS) would check the consistence of hypotheses and empirical findings.

4.2 Descriptive Statistic

Descriptive Statistic is to conclude the entire data of samples, including measuring the mean, median and the variability. As showed in the Appendix A, the average of underpricing level is 0.6482 and the median is 0.0566. The underpricing is from -0.95 to 21 with a standard deviation of 2.3011 during 2000 and 2017, meaning the existing of the huge gap of underpricing degree in the offering's firms of Hong Kong stock exchange.

The statistical description of control of corruption, political stability, regulatory quality and voice and accountability would be presented by percentile rank. As measure of position in statistical description, a percentile is to measure how a score compares to other scores. The highest and lowest degree of control of corruption is 94.7619 and 86.2944, respectively. The control of corruption's mean of 91.8737 and median of 92.3077 is relatively close while the standard deviation is 2.6447. The mean (median) of political stability is 82.4607 (79.8942) , with a standard error of 6.6546, maximum of 95.6311 and minimum of 72.3810, meaning the relatively high fluctuation.

Compared with the percentile rank of other four institutional quality index, regulatory quality keeps comparatively stable and has small gap of the largest value of 100 and lowest value of 95.9184, with standard deviation of 1.6584. And the mean of regulatory quality is 98.6815 and the median is 99.5192. The mean of 60.3640, median of 60.5911, the highest value of 69.9531 and lowest value of 51.7413 on voice and accountability show relatively lower percentile rank level and its standard error is 5.4430.

Government effectiveness (GOV) is the only independent variable using an estimate. And its average level is 1.6777 and the median is 1.7459. The maximum level of government effectiveness is 1.9146 while the minimum is 1.3263 with a standard deviation of 1.3263.

Appendix A also offers statistical description of control variable, namely firm size (MKTCAP). The mean degree 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, 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 and its standard error is 2175.997.

4.3 Pearson Correlation Matrix

The coefficients of correlation on the variables is shown as Appendix B. Correlation coefficients are used in statistics to test the connection of two variables and their range is from +1 to –1.

The five institutional quality indexes have positive correlation with IPO underpricing level while firm size, political stability having negative relationship with underpricing of IPO. Based on the perspectives of statistical significance, the four variables are statistically significantly correlated with underpricing level of IPO: government effectiveness, regulatory quality, firm size, political stability. The strong correlation between independent variables and underpricing level of IPO implies that greater government effectiveness, greater regulatory quality and a lower level of political stability, as well as lower market capitalization, seems to be beneficial to rise underpricing level of offerings firms. However, it should be noted that the results of the correlation coefficient only provide a preliminary conclusion and require further theory-based regression analysis.

4.4 Diagnostic Results

In this part, the diagnosis analysis outcomes would be discussed to assess the diagnostic performance of the five tests (Normality Test, Multicollinearity, Autocorrelation, Heteroscedasticity). Diagnosis of regression can be used to test model hypothesis and examine the existence of observations which have a significant and inappropriate effect on the study. These testing tools evaluate if a model appropriately represents the data of the study. The diagnostic results are showed as below.

4.4.1 Normality Test

For checking whether the dependent variable follows normality assumption or not, this study plotted the histogram and conducted the Jarque Bera test. If p-value is below 5%, and the data sample is not normal distribution, implying to reject null hypothesis. As the outcomes presented in the figure, p-value also less than 5% and for a normal curve, the values of skewness and kurtosis are greater than the accepted values of 0 and 3,

respectively, meaning that it can reject the null hypothesis thus the data is not normally distributed

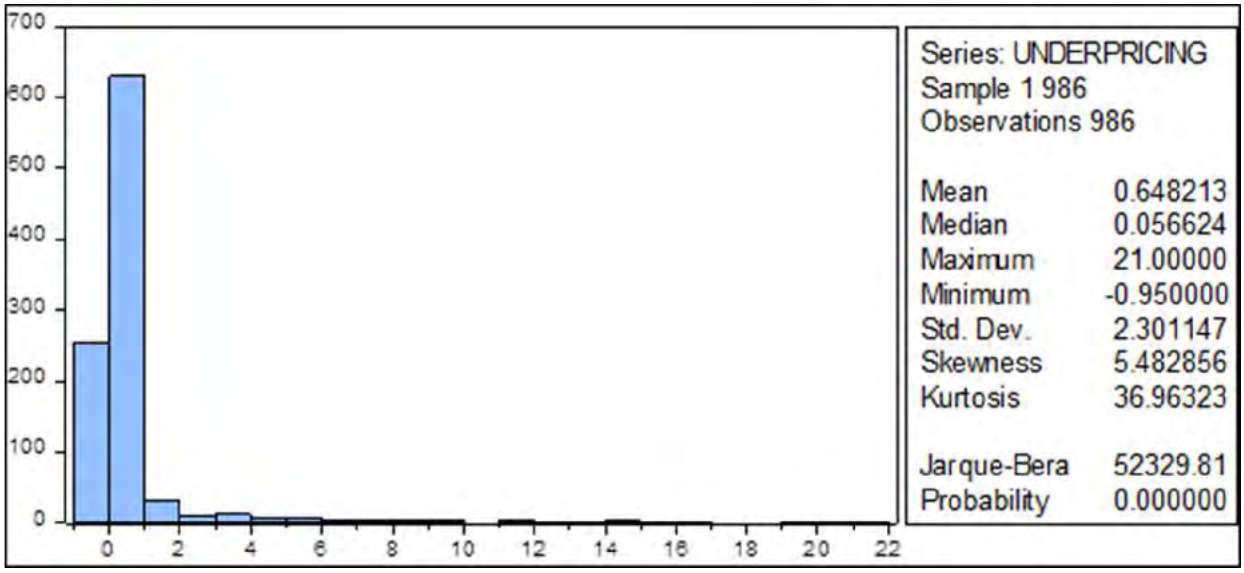

Figure 4.1
Testing for the Normality assumption of underpricing level of IPO

4.4.2 Multicollinearity

Multicollinearity test is meaningful because multicollinearity makes some variables Multicollinearity can be evaluated based on the outcomes of Pearson correlation matrix at first and then it would conduct further collinearity detecting by using variance inflation factor (VIF). Correlation value exceeding 0.8 indicates that the level of multicollinearity may be problematic (Hutcheson and Sofroniou, 1999). The results of Pearson correlation matrix in the Appendix B shows that the absolute value of the highest correlation coefficient is over 0.8 which suggests that multicollinearity is a serious problem. In table 4.1, the outcomes of VIF detecting show absence of high multicollinearity problems because their VIFs are less than 10. The more details of Multicollinearity is showed in the Appendix C.

Table 4.1

Variance inflation factors (VIF) methods for detecting collinearity

Variables	Centered VIF
VOICE	2.8942
REGULATORY	4.7534
POLITICAL	1.2909
GOV	5.1416
MKTCAP	1.0328
CONCORR	2.9124

4.4.3 Autocorrelation

A common method of autocorrelation testing is the Durbin-Watson test. The Durbin-Watson test generates test statistics ranging from 0 to 4. Values near 2 represent a small autocorrelation, while values near 0 or 4 represent a large positive autocorrelation or a large negative autocorrelation, respectively. The results of autocorrelation test in the Appendix F reveals Durbin-Watson value of 2.1107, close to 2. This indicate that there is no autocorrelation in the regression model.

4.4.4 Heteroscedasticity

Breusch-Pagan Godfrey test is used to check Heteroscedasticity problem. P-value below 0.05 suggests the rejection of null hypothesis. The residuals in regression are said to have constant variance if it rejects the null hypothesis and the residuals are homoscedastic. In the table 4.2, the p-value of three statistics does not exceed 0.05, and it rejects the null hypothesis; implying that the residuals of the model are heteroscedastic. Thus, this study uses the Weighted Least Squares to correct heteroscedasticity problems. The results of test are shown in Appendix D and Appendix E.

Table 4.2
Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	7.3869	Prob. F(6,979)	0.0000
Obs*R-squared	42.7051	Prob. Chi-Square(6)	0.0000
Scaled explained SS	711.7218	Prob. Chi-Square(6)	0.0000

4.5 Result of Regression Analysis

To verify the hypotheses towards the connection of institutional quality with underpricing level of IPO, the cross-sectional multiple regression analysis and ordinary least square (OLS) would be discussed in this part. The multiple regressions model of this study is developed in the following:

$$\text{Underpricing of IPO}_i = 35.3058 + 0.0179\text{VOICE}_i + 5.2015\text{GOV}_i - 0.0146\text{POLITICAL}_i - 0.2488\text{REGULATORY}_i - 0.2031\text{CONCORR}_i - 0.0001\text{MKTCAP}_i + \varepsilon_i$$

Table 4.3
Results of regression of IPO underpricing on selected variables, 2000 – 2017.

Variables	Dependent Variable: IPO underpricing			
	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
Main Independent Variables				
VOICE	0.0179	0.0221	0.8099	0.4182
REGULATORY	-0.2488	0.0929	-2.6770***	0.0076
POLITICAL	-0.0146	0.0121	-1.2067	0.2278
GOV	5.2015	0.7410	7.0196***	0.0000
CONCORR	-0.2031	0.0456	-4.4529***	0.0000
Control Variables				
MKTCAP	-0.0001	0.0000	-2.3262**	0.0202
C	35.3058	8.8780	3.9768	0.0001
R^2	0.0762			
Adjusted R^2	0.0705			
F-statistics	13.4607***			
Durbin–Watson	1.2833			

Notes: CONCORR represents corruption control, GOV represents government effectiveness, POLITICAL represents political stability and absence of violence/terrorism, REGULATORY represents regulatory quality, VOICE represents voice and accountability and MKTCAP represents Firm size. Asterisks ***, ** and * indicate significant at 1%, 5%, and 10%, respectively.

As regression outcomes shown in table 4.3, the model produces R^2 of 7.62% and adjusted R^2 of 7.05%. The adjust R^2 of 7.05% indicates that variation of all independent variables tested in this study can interpret the 7.05% of the variations in IPO initial returns.

The main outcomes of regression are presented in Table 4.3 and Appendix G. Regulatory quality tests whether the government have the ability to implement and execute laws and regulations. Regulatory quality have negative connection with IPO initial return at 1% of significant degree, implying that stronger degree of regulatory quality, lower underpricing. Gul and Qiu (2002) find that stronger level of law enforcement can lead to information asymmetry and Beatty and Ritter (1986) prove that greater ex-ante uncertainty can promote underpricing of initial public offerings. The efficiency of government relates to the legitimacy of the Government's policy commitment. The results also show the significant positive relationship of 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, Sim, & Uppal, 2009). Autore et al. (2014) also have the same findings with this study on the association of government effectiveness and IPO underpricing. Corruption control 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) show 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 lack of corruption seems to make information untransparent and unreliable. Because of the positive correlation of information asymmetry level and IPO underpricing, absence of corruption control would lead to higher underpricing of IPO.

The table 4.3 shows that voice and accountability and political stability has positive and negative correlation with IPO underpricing respectively while both of the two findings are statistically insignificant. Demirgüç-Kunt and Maksimovic (1999) prove that greater degree of voice and accountability positively influences the transparency, and Beatty and Ritter (1986) demonstrate that greater level of information asymmetry can rise IPO initial return. It seems that voice and accountability negatively associate with IPO underpricing, adverse with the finding of this study. The political risk would bring volatility in equity market performance. Another study finds a inverse correlation of political instability and equity market performance, translates higher stock return in case of declining political risk (Lehkonen & Heimonen, 2015). Nguema and Sentis (2006) argue that in the stronger political risk, issuers are more willing to avoid risk than the investors and underpricing can compensate for the political risk, meaning the negative relationship of political risk and underpricing.

With respect to control variable, the finding is that market capitalization has connection with IPO initial return at 5% of significant degree while the coefficient of firm size is -0.0001, very close to zero. This implies that firm size has no meaningful

relationship with IPO underpricing and market capitalization of firms would not have an obvious impact on initial return of offerings.

4.6 Chapter Summary

In this chapter, it mainly discusses the regression outcomes on the association of institutional quality and IPO underpricing. Diagnosis analysis can increase accuracy of the regression model and results.

In the section of descriptive statistic during 2000 until 2017, there is huge gap of underpricing degree in the offering's firms of Hong Kong stock exchange. Voice and accountability and political stability both have high degree of volatility than other institutional quality index. While regulatory quality keeps relatively high and stable percentile rank.

Table 4.4
Summary of regression findings

Variables	Expected sign	Estimated sign	Theory	Decision
VOICE	-	+	Information asymmetry	Inconsistent
GOV* **	+	+	Signaling	Consistent
POLITICAL	-	-	Signaling	Consistent
REGULATORY * **	-	-	Information asymmetry	Consistent
CONCORR * **	-	-	Information asymmetry	Consistent

Note: * Significant at 10% confidence level; ** significant at 5% confidence level; *** significant at 1%.

Table 4.4 summarizes the main outcomes on studying association between governance index and IPO underpricing. The outcomes of ordinary least square (OLS) imply that government effectiveness, political stability, regulatory quality and control of corruption have same sign with expectation. The correlation of government effectiveness, regulatory quality and control of corruption and IPO underpricing is significant with 1% while correlation of political stability and IPO underpricing is insignificant. On the other hand, voice and accountability has adverse outcomes with expectation and the regression results show insignificant level. Firm size is significant at 5% while its coefficients close to zero, meaning the absence of relationship about firm size and IPO underpricing.

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATIONS

5.1 Introduction

The chapter five is conclusion of this research. This part concludes the research findings. The next section focuses on the limits of this paper that may provide recommendations for other scholars. Most importantly, the effect will be illustrated in the light of investors, issuers, regulators and relevant literature. Finally, this section will offer some advices for other scholars.

5.2 Summary and Conclusion

This paper mainly explores 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. Our findings suggest a strong correlation between government effectiveness, regulatory quality, control of corruption and underpricing of IPOs with high statistical significance.

Table 5.1
The hypothesis of the relationship between institutional quality and IPO underpricing

Hypothesis 1	Voice and accountability has a negative impact on IPO underpricing
Hypothesis 2	Government effectiveness has a positive impact on IPO underpricing
Hypothesis 3	Political stability and the absence of violence has a negative impact on IPO underpricing
Hypothesis 4	Regulatory quality has a negative impact on IPO underpricing
Hypothesis 5	Control of corruption has a negative impact on IPO underpricing

Outcomes of regression in chapter 4 show that there is significantly positive Outcomes of regression in chapter 4 show the significantly positive association of government effectiveness and underpricing of IPO, the same with expected results and the findings of Autore et al. (2014). This implies that stronger government effectiveness can push up the underpricing level of IPO. As the same with hypothesis 4, regulatory quality shows a significantly negative association with underpricing of IPO. Gul and Qiu (2002) prove that countries with strong law enforcement have higher information transparency. Beatty and Ritter (1986) suggest positive association of information asymmetry with IPO underpricing. Thus, stronger regulatory quality can decrease underpricing of IPO. As the study of Rock (1986), he thinks that the rise in IPO prices compensates for the risk to ill-informed investors of inaccurate trading information. Therefore, the negative relationship means that a weaker level of regulator quality can rise underpricing of new offerings on the first listing day. Control of corruption related negatively to with IPO underpricing with high statistical significance, implying that absence of corruption control cause greater IPO initial return. Considering asymmetry information theory, lack of information transparency arising from weaker ability to control corruption in government can lead to rise of IPO initial return.

Regression result reveals that IPO initial return has insignificantly positive association about voice and accountability while there are studies (Demirgüç-Kunt & Maksimovic, 1999; Beatty & Ritter, 1986) showing that strong voice and accountability may increase information transparency and thus affect negatively underpricing. The positive association of political stability with IPO underpricing is insignificant as well while the findings of Autore et al. (2014) support the insignificant relationship.

In terms of control variable, the relationship about market capitalization and IPO initial return is no meaningful for the coefficient of the two variables closing to zero. In this issue, some studies show different arguments. Alanazi and Al-Zoubi (2015), Chi and Padgett (2005) and Yu and Tse (2006) support the inverse connection between issue size and underpricing of new offerings while Boonchuaymetta and Chuanrommanee (2013) support the positive relationship about the two variables.

5.3 Limitation of Study

In this study, there are important findings on the correlation between the five dimensions of institutional quality and IPO underpricing performance. However, for enriching the forthcoming research, this is necessary to realize the limits of this research. The first limit of this study is that it does not consider firm age and industry characteristics. Because the difference of firm age industry characteristics would have different financial situation as well as firm size, and further affect investors evaluation and decision-investing on target IPO firms. Additionally, the period of this study is from 2000 to 2017 while the study was started in 2019, because the data of institutional quality in 2018 is not available to be collected. The absence of data in 2018 may have different empirical results. On the other hand, this study does not make 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.

5.4 Implication of Study

These outcomes of this paper is beneficial to the main participants of the market, such as investors, issuers, regulators and listed firms. The implications are shown in the following.

5.4.1 Investors

The results of this study can offer new viewpoints in terms to the relationship between institutional quality of Hong Kong stock market and thus offer more empirical evidence to make adequate investing decisions for investors.

This study represents that control of corruption has significantly inverse connection with initial return level of IPO. The absence of effective corruption control would cause market information fails and hence further lower the transparency of information, for example, investors were worried about the reality and accuracy of market information, thus lower level of corruption can increase IPO underpricing. Therefore, the investors should notice the ability of the Hong Kong government or regulators to manage corruption.

5.4.2 Issuers

From the insights of issuers, the new findings of governance indicators and the level of IPO underpricing need to be concerned in preparing for offerings. The Hong Kong Securities and Futures Commission is crucial in promoting good corporate governance and accountability, as the independent regulatory body tasked with controlling the securities markets and requiring companies listed on their exchanges to fulfil environmental, social, and governance requirements. The results of regression show that regulator quality related negatively to underpricing level of IPO. Stronger

information asymmetry on account of reducing of regulator quality level would bring in 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 initial return of IPO can help issuers increase the demand of investors because investors have the preference to new offerings with the lower issued price and high return.

5.4.3 Regulator

This study offers Securities and Futures Commission of Hong Kong more empirical important evidence and implications for the regulators in making and implementing policy for increasing information transparency and effectiveness of stock market. The results of ordinary least square show negative relationship of IPO underpricing and regulatory quality in statistically significant level, implying that strong regulatory quality weakens underpricing level of IPO by reducing information asymmetry. Therefore, the regulators should focus on building or perfecting an effective and efficient legal system for ensuring the regulation is efficient in lowering information asymmetry and promoting a higher level of decision-making for all the markets participants. The regulators and other relevant government departments must realize that all the disclosed information or change of regulation may affect degree of IPO initial return and decision of investors and issuers.

5.4.4 Body of literature

Previous researches primarily concentrated on the influence of underwriters' reputation, investors sentiment and some macro-economic factors (such as GDP, interest rate,

exchange rate) on IPO underpricing. This study provides empirical evidences for explaining the relationship of governance index and initial return of IPO, for example, government effectiveness, regulatory quality and control of corruption-related significantly to IPO initial return, combining the theory of information asymmetry and signaling. As the empirical results showed, government effectiveness and rule of law positively associated with IPO underpricing while regulatory quality and control of corruption reveal the negative correlation on it. Most importantly, this researcher can provide new insights and direction to interpret the relationship of institutional quality and IPO underpricing in other markets for future researchers.

5.5 Recommendation for Future Study

The recommendation of this study would make great contributions for the future researchers about with respect to interpreting the correlation of institutional quality and the degree of IPO underpricing. The five dimensions of institutional quality is essential in affecting stocks performance and initial returns of new stocks. Market participants also are affected by the change of institutional quality when make investing decision, for example, the change of institutional quality leads to the change of information transparency and investor sentiment as shown in the previous chapters. While there are different level of institutional quality in different markets, leading to different IPO underpricing level, as the evidence from A-shares and Hong Kong stock markets shows(Chan et al., 2004). Hence, this is meaningful to conduct the research about institutional quality and underpricing of IPO in other markets. In addition, the future study should include the Hang Seng Index because the performance of Hang Sang Index may affect investors sentiment on initial return of IPO.

Although the core part of our analysis is the underpricing performance of IPO firms in the whole market, t does not take account of 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, enterprise and industry characteristics on underpricing.

REFERENCES

Aggarwal, R. and Rivoli, P. (1990). Fads in the initial public offering market. *Financial Management*, 19(4), 45–57.

Alanazi, A.S. and Al-Zoubi, H.A. (2015). Extreme IPO underpricing and the legal environment in wealthy emerging economies, *Journal of Multinational Financial Management.* 31, 83–103.

Allen, F., and Faulhaber, G. R. (1989). Signalling by underpricing in the IPO market. *Journal of Financial Economics*, 23(2), 303-323.

Amihud, Y., Hauser, S., Kirsh, A. (2003). Allocations, adverse selection, and cascades in IPOs: Evidence from the Tel Aviv Stock Exchange. *Journal of Financial Economics,* 68(1), 137-158.

Arestis, P., Demetriades, P.O. and Luintel, K.B. (2001). Financial Development and Economic Growth: The Role of Stock Markets. *Journal of Money, Credit and Banking*, 33(1), 16–41.

Asongu, S. A. (2012). Government quality determinants of stock market performance in African countries. *Journal of African Business,* 13(3), 183-199.

Autore, D.M., Boulton, T.J., Smart, S.B. and Zutter C.J. (2014). The impact of institutional quality on initial public offerings. *Journal of Economics and Business,* 73, 65-96.

Beatty, R. P., and Ritter, J. R. (1986). Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics,* 15(1-2), 213-232.

Bedane, G. B., Alam, M. R. and Kitenge, E. (2017). Government Effectiveness and Economic Growth. *Economics Bulletin,* 37(1), 222-227.

Bello, A. K. (2014). Quality of Governance and Stock Market Performance: The Nigerian Experience. *Journal of Economics and Development Studies,* 2(2), 501-522.

Benveniste, L.M., Spindt, P. (1989). How investment bankers determine the offer price and allocation of new issues. *Journal of Financial Economics*, 24, 343–361.

Bloomfield, R. (2008). Discussion of annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics,* 45, 248–252.

Boadi, I. and Amegbe, H. (2017). The link between quality of governance and stock market performance: International level evidence. *European Journal of Government and Economics,* 6(1), 78-101.

Bolgorian, M. (2011). Corruption and stock market development: A quantitative approach. *Physica A: Statistical Mechanics and its Applications,* 390(23), 4514-4521.

Boonchuaymetta, E. and Chuanrommanee, W. (2013). Management of the IPO performance in Thailand. *Journal of Multinational Financial Management,* 23 (4), 272–284.

Booth, J. R., & Chua, L. (1996). Ownership dispersion, costly information, and IPO. *Journal of Financial Economics,* 41, 291−310.

Boulton, T. J., Smart, S. B., and Zutter, C. J. (2011). Earnings quality and international IPO underpricing. *Accounting Review,* 86, 483–505.

Boulton, T., Smart, S., and Zutter, C. (2010). IPO underpricing and international corporate governance. *Journal of International Business Studies,* 41, 206–222.

Brau, J.C. and Fawcett, S.E. (2006). Initial Public Offerings: An Analysis of Theory and Practice. *The Journal of Finance,* 61(1), 399-436.

Carter R. and Manaster S. (1990). Initial public offerings and underwriter reputation. *Journal of Finance,* 45(4), 1045-1067.

Certo S., Covin J., Daily C. and Dalton D. (2001). Wealth and the effects of founder management among IPO-stage new ventures. *Strategic Management Journal,* 22(6-7), 641-658.

Certo, S. T. (2003). Influencing initial public offering investors with prestige: Signaling with board structures. *Academy of Management Review,* 28 (3), 432-46.

Chan, K, Wang,J. and Wei, K. C. J. (2004). Underpricing and long-term performance of IPOs in China. *Journal of Corporate Finance,* 10, 409–430.

Chang, H. H., Chen, A. L., Kao, L. F. and Wu, C. S. (2014). IPO price discovery efficiency under alternative regulatory constraints: Taiwan, Hong Kong and the U.S. *International Review of Economics and Finance,* 29, 83–96.

Cheng, L. T . W., Chan, K. C., & Mak, B. S. C. (2005). Strategic share allocation and underpricing of IPOs in Hong Kong. *International Business Review*, 14,41−59.

Cheng, W. Y, Cheung, Y. L. and Tse, Y. C. (2006). The impact on IPO performance of more stringent listing rules with a pre-listing earnings requirement: Evidence from Hong Kong. J*ournal of Business Finance and Accounting*, 33(5-6), 868–884.

Cheng, W. Y., Cheung, Y. L. and Po, K. K. (2004). A note on the intraday patterns of initial public offerings: evidence from Hong Kong. J*ournal of Business Finance & Accounting,* 31(5-6), 837-860.

Cherif, M., and Gazdar, K. (2010). Macroeconomic and institutional determinants of stock market development in MENA region: new results from a panel data analysis. *International Journal of Banking and Finance,* 7(1), 139-159.

Cheung, Y. L., Dai, Y. H., Ouyang, Z. W. and T, W. Q. (2017). Who leaves money on the table? The role of founder identity in Hong Kong. *Applied Economics,* 50(7), 774-788.

Chhabra, S., Kiran, R., and Sah, A. N. (2017). Information asymmetry leads to underpricing: validation through SEM for Indian IPOs. *Program electronic library and information systems,* 51(2), 116-131.

Chi, J. and Padgett, C. (2005). The performance and long‐run characteristics of the Chinese IPO market. *Pacific Economic Review,* 10 (4), 451-469.

Chiou, W. J. P., Lee, A. C. and Lee, C. F. (2010). Stock return, risk, and legal environment around the world. *International Review of Economics and Finance,* 19(1), 95-105.

Chong, T. T. L, Yuan, S. and Yan, I. K. M. (2010). An Examination of the Underpricing of H-Share IPOs in Hong Kong. *Review of Pacific Basin Financial Markets and Policies,* 13(4), 559-582.

Chowdhry, B., Sherman, A., 1996. International differences in oversubscription and underpricing of IPOs. *Journal of Corporate Finance*, 2, 359–381.

Cohen, B. D., and T. J. Dean. (2005). Information asymmetry and investor valuation of IPOs: Top management team legitimacy as a capital market signal. *Strategic Management Journal,* 26, 683-90.

Cohen, B. D., and T. J. Dean. (2005). Information asymmetry and investor valuation of IPOs: Top management team legitimacy as a capital market signal. *Strategic Management Journal,* 26, 683-90.

Connelly, B. L., Certo, S. T., Ireland, R. D. and Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management,* 37 (1), 39-67.

Corhay, A., Teo, S. and Rad, A.T. (2002). The long run performance of Malaysian initial public offerings (IPO): value and growth effects. *Managerial Finance,* 28(2), 52-65.

Daude, C. and Stein, E. (2007). The quality of institutions and foreign direct investment. *Economics and Politics,* 19 (3), 317–344.

Dawson, S. M. (1987). Secondary stock market performance of initial public offers, Hong Kong, Singapore and Malaysia: 1978–1984. *Journal of Business Finance and Accounting,* 14, 65–76.

Dawson, S. M. and Hiraki, T. (1985). Selling unseasoned new shares in Hong Kong and Japan, a test of primary market efficiency and underpricing. *Hong Kong Journal of Business Management,* 3, 125–34.

Demirgüç-Kunt, A. and Maksimovic, V. (1999). Institutions, financial markets, and firm debt maturity. *Journal of Financial Economics,* 54 (3), 295–336.

Deng, C., Bai, B., Zeng, L.S. and Hölscher, J. (2010). Research on the IPO underpricing of the Hong Kong growth enterprise market. *Investment Management and Financial Innovations,* 7(3), 105-114.

Dewenter, K. L. and Field, C. F (2001). Investment bank reputation and relaxed listing requirements: evidence from infrastructure firm IPOs in Hong Kong. *Pacific-Basin Finance Journal,* 9(2), 101-117.

Doidge, C., Karolyi, G. A., and Stulz, R. M. (2007). Why Do Countries Matter So Much for Corporate Governance? *Journal of Financial Economics,* 86(1), 1-39.

Downes, D. H. and Heinkel, R. (1982). Signaling and the valuation of unseasoned new issues. *Journal of finance,* 37(1), 1-10.

Durukan, M. B. (2002). The relationship between IPO returns and factors influencing ipo performance: case of Istanbul stock exchange. *Managerial Finance,* 28(2), 18-38.

Engelen, P. J. and Essen, M. C. (2008). Underpricing of IPOs and Legal Frameworks Around the World. *Review of Law & Economics,* 4(1), 419-441.

Engelen, P., and van Essen, M. (2010). Underpricing of IPOs: Firm-, issue- and country-specific characteristics. *Journal of Banking and Finance,* 34, 1958–1969.

Filer, R.K., Hanousek, J. and Nauro, N. F. (1999). Do Stock Markets Promote Economic Growth? CERGE-EI Working Papers wp151, The Center for Economic Research and Graduate Education - Economics Institute, Prague.

Georgen, M., Khurshed, A. and Mudambi, R. (2007). The long run performance of UK IPOs: can it be predicted?. *Managerial Finance,* 33(6), 401-419.

Greenwood, J. and Smith, B. (1997). Financial Markets in Development and the Development of Financial Markets. *Journal of Economic Dynamics and Control,* 21, 145–82.

Hearn, B. (2013). The institutional determinants of IPO firm prospectus length in a developing context: A research note. *Research in International Business and Finance,* 27, 52-65.

Hearn, B. (2014). Institutional impact on the expropriation of private benefits of control in North Africa. *Research in International Business and Finance,* 30, 1-23.

Hillier, D. and Loncan, T. (2019). Political uncertainty and Stock returns: Evidence from the Brazilian Political Crisis. *Pacific-Basin Finance Journal*, 54, 1-12.

Hooper, V., Sim, A. B., & Uppal, A. (2009). Governance and stock market performance. *Economic Systems,* 33(2), 93-116.

Huadu, N. (2011). Regulatory underpricing: Determinants of Chinese extreme IPO returns. *Journal of Empirical Finance,* 18, 78–90.

Huang, W., Li, J. X. and Zhang, Q. (2019). Information asymmetry, legal environment, and family firm governance: Evidence from IPO underpricing in China. *Pacific-Basin Finance Journal*, 57.

Huang, Y. S., Li, M., and Chen, C. R. (2019). Financial market development, market transparency, and IPO performance. *Pacific-Basin Finance Journal*, 55, 63-81.

Hussain, S. S., Sabir, S. A. and Meo, M. S. A. (2017). Impact of Political Stability, Government Effectiveness and Corruption on Stock Markets of South Asia. *JPUHS,* 30(1), 1-16.

Hutcheson, G. and Sofroniou, N. (1999). The Multivariate Social Scientist: Introductory Statistics Using Generalized Linear Models. Sage Publication, Thousand Oaks, CA.

Ibbotson, R. G., Sindelar, J., & Ritter, J. (1994). The market's problem with the pricing of initial public offerings. *Journal of Applied Corporate Finance,* 6,66−74.

Ibbotson, R., and Jaffe, j. (1975). Hot Issue Markets. *Journal of Finance*, 30, 1027–1042.

Jaitly, S. (2004). Pricing of IPOs and their after-issue performance in the Indian equity market. *Managerial Finance*, 30(1), 29-45.

Janice, C. Y. (2000). Initial and Long-Run Performance of Mining IPOs in Australia. *Australian Journal of Management,* 25(1), 95-118.

Jensen, D. R. and Ramirez, D.E. (2013). Variance Inflation in Regression. *Advances in Decision Sciences,* 2013, 1-15.

Judge, W.Q., Douglas, T.J. and Kutan, A.M. (2008).Institutional antecedents of corporate governance legitimacy. *Journal of Management,* 34(4), 765-784.

Kanagaretnam, K., Lobo, G. J., and Whalen, D. J. (2007). Does good corporate governance reduce. information asymmetry around quarterly earnings announcements?. *Journal of Accounting and Public Policy,* 26(4), 497-522.

Kao, L. and Chen, A. (2020). How a Pre-IPO Audit Committee Improves IPO Pricing Efficiency in an Economy with Little Value Uncertainty and Information Asymmetry. *Journal of Banking and Finance,* 110, 1-64.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2009). The worldwide governance indicators (WGI) project. The World Bank.

Keloharju, M. (1993). Winner's Curse, Legal Liability, and the Long-Run Performance of Initial Public Offerings in Finland. *Journal of Financial Economics,* 34(2), 251–277.

Kim, H. Y. and Mei, J. P. P. (2001). What Makes the Stock Market Jump? An Analysis of Political Risk on Hong Kong Stock Returns. *Journal of International Money and Finance,* 20(7), 1003-1016

Koh, F., and T. Walter. (1989). A Direct Test of Rock's Model of the Pricing of Unseasoned Issues. *Journal of Financial Economics,* 23(2), 251–272.

La Porta, R., Lopez-De-Silane, F., Shleifer, A. and Vishny, R. (1997). Legal Determinants of External Finance. *The Journal of Finance,* 52(3), 1131- 1150.

La Porta, R., Lopez-De-Silane, F., Shleifer, A. and Vishny, R. (1998). Law and Finance. *Journal of Political Economy,* 106(6), 1113-1150.

Lalountas, D. A., Manolas, G. A., and Vavouras, I. S. (2011). Corruption, globalization and development: How are these three phenomena related? *Journal of Policy Modeling,* 33(4), 636-648.

Lee, J. and Chang, V. (2003). IPO activities in Hong Kong, Securities and Futures Commission Research Paper No. 10, Hong Kong.

Lee, P. J., S. L. Taylor, and T. S. Walter. (1996). Expected and Realized Returns for Singaporean IPOs: Initial and Long Run Analysis. *Pacific Basin Finance Journal,* 4(2), 153–180.

Leung, J. and Menyah, K. (2006). Issuer-oriented underpricing costs in initial public offers: Evidence from Hong Kong. *Journal of Corporate Finance,* 12(5), 897 – 905.

Levine, Ross and Zervos, Sarah (1998). Stock Markets, Banks, and Economic Growth. *American Economic Review*, 88, 537-558.

Li, L. (2018). The Influence of Government Regulation on IPO Underpricing. *Technology and Investment*, 9, 109-116.

Li, S. and Filer, L. (2007). The effects of the governance environment on the choice of investment mode and the strategic implications. *Journal of World Business,* 42(1), 80-98.

Ljungqvist, A. P., and Wilhelm, W. J. (2002). IPO Allocations: Discriminatory or Discretionary? *Journal of Financial Economics,* 65(2), 167–201.

Loughran, T., Ritter, J. R., and Rydqvist, K. (1994). Initial public offerings: International insights. *Pacific-Basin Finance Journal,* 2, 165–199.

Love, I. (2011). Corporate Governance and Performance around the World: What We Know and What We Don't. *The World Bank Research Observer,* 26(1), 42-70.

Low, S. W., Kew, S. R. and Tee, L. T. (2011). International Evidence on the Link between Quality of Governance and Stock Market Performance. *Global Economic Review,* 40(3), 361- 384.

Lowry, M., Michaely, R., Volkova, E. (2017). Initial public offerings: A synthesis of the literature and directions for future research. *Foundations and Trends in Finance,* 11, 154-320.

Lowry, M., Officer, M. S., and Schwert, G. W. (2010). The variability of IPO initial returns. *The Journal of Finance*, 65(2), 425-465.

Mazouz, K., Mohamed, A., Saadouni, B. and Yin, S. X. (2017). Underwriters' allocation with and without discretionary power: Evidence from the Hong Kong IPO market. *International Review of Financial Analysis*, 49, 128-137.

Mazouz, K., Saadouni, B. and Yin, S.X. (2009). Offering methods and issuer-oriented underpricing costs: Evidence from the Hong Kong IPO market. *Journal of International Financial Markets, Institutions & Money,* 19, 937–949.

McGuiness, P. (1993). Investor and issuer-related perspectives of IPO underpricing. *Omega,* 21 (3), 377 – 392.

McGuinness, P. (1992) An examination of the underpricing of initial public offerings in Hong Kong: 1980–1990. *Journal of Business Finance and Accounting,* 19, 165–86.

Mok, M. K. and Hui, Y.V. (1998). Underpricing and aftermarket performance of IPOs in Shanghai, China. *Pacific-Basin Finance Journal,* 6, 453–474.

Nguema, J. F. and Sentis. P. (2006). IPO Underpricing Across the World: Does the Country Risk Matter?, 1-23.

Nistor, S., Mera, V. L. and Silaghi, M. L. P. (2018). Is education important in assessing the impact of institutions on economic growth in emerging economies?. *Applied Economics,* 50(34-35), 3840-3854.

North, D. (1990). A transaction cost theory of politics. *Journal of Theoretical Politics,* 2(4), 355–367.

Papaioannou, E. (2009). What drives international financial flows? Politics, institutions and other determinants. *Journal of Development Economics,* 88(2), 269-281.

Peng, M., and Jiang, Y. (2010). Institutions behind family ownership and control in large firms. *Journal of Management Studies,* 47, 253–273.

Perotti, E. C., and Van Oijen, P. (2001). Privatization, political risk and stock market development in emerging economies. *Journal of International Money and Finance,* 20(1), 43-69.

Pistor, K., Raiser, M., and Gelfer, S. (2000). Law and finance in transition economies. *Economics of transition*, 8(2), 325-368.

Pollock, T. G., and V. P. Rindova. (2003). Media legitimation effects in the market for initial public offerings. *Academy of Management Journal,* 46, 631-42.

Prasad, D., Vozikis, G. S., and Ariff, M. (2006). Government Public Policy, Regulatory Intervention, and Their Impact on IPO Underpricing: The Case of Malaysian IPOs. *Journal of Small Business Management*, 44(1), 81–98.

Qiu, H. and Gul, F. A. A. (2002). Legal Protection, Corporate Governance and Information Asymmetry in Emerging Financial Markets. Working paper. City university of Hong Kong.

Rajan, R., Servaes, H., 2002. The effect of market conditions on initial public offerings. Working paper, University of Chicago.

Rathnayake, D. N., Louembé, P. A., Kassi, D. F., Sun, G. and Ning, D. (2019). Are IPOs underpriced or overpriced? Evidence from an emerging market. *Research in International Business and Finance,* 50, 171-190.

Rathnayake, D. N., Louembé, P. A., Kassi, D. F., Sun, Gang. And Ning, D. (2019). Are IPOs underpriced or overpriced? Evidence from an emerging market. *Research in International Business and Finance*, 50, 171-190.

Riley J. (1979). Noncooperative equilibrium and market signaling. *American Economic Review,* 69(2), 303-307.

Ritter, J. R. (2003). Differences between European and American IPO markets. *European Financial Management,* 9 (4), 421 – 434

Ritter, J., and Welch, I. (2002). A Review of IPO Activity, Pricing, and Allocations. *The Journal of Finance,* 57, 1795–1828.

Rock, K. (1986). Why new issues are underpriced. *Journal of Financial Economics,* 15(1-2), 187-212.

Sahoo, S. (2017). Do anchor investors create value for initial public offerings? An empirical investigation. *IIMB Management Review,* 29(4), 259-275.

Sakawa, H. and Watanabel, N. (2019). IPO underpricing and ownership monitoring in Japan. *Asian Business & Management*.

Samarakoon, L.P.(2010). The short-run underpricing of initial public offerings in the Sri Lankan stock market. *Journal of Multinational Financial Management,* 20 (4-5), 197–213.

Satta, G., Notteboom, T., Parola, F. and Luca Persico, L. (2017). Determinants of the long-term performance of initial public offerings (IPOs) in the port industry. *Transportation Research Part A: Policy and Practice,* 103, 135-153.

Shaghaghi, F., PakMaram, A. and Badavarnahandi, Y. (2019). The Role of Institutional Quality in Forecasting the Total Stock Price Index: Case Study of Developing and Developed Countries. *International Journal of Finance and Managerial Accounting*, 4(14), 73-89.

Shleifer, A. and Vishny, R.W. (1997). A survey of corporate governance. *Journal of Finance,* 52(2), 737–783.

Shleifer, A., and Wolfenzon, D. (2002). Investor Protection and Equity Markets. *Journal of Financial Economics,* 66, 3-27.

Singla, H. K. (2019). A comparative analysis of long-term performance of construction and non-construction IPOs in India. Engineering. *Construction and Architectural Management*, 26(10), 2447-2473.

Smith, C. W. and Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics,* 32, 263–292.

Song, K. R. and Lee, Y. (2012). Long-term effects of a financial crisis: Evidence from cash holdings of East Asian firms. *Journal of Financial and Quantitative Analysis*, 47(3), 617–641.

Song, S. L. and Tang, S. Y. (2015). Investor sentiment, underwriters' behaviour and IPO pricing: Empirical analysis from off-line institutional investors' bids. *China Journal of Accounting Studies,* 3(4), 348 - 373.

Spence M. (1976). Informational aspects of market structure: an introduction. *Quarterly Journal of Economics,* 90(4), 591-597.

Spence, A. (1973). Job market signaling. *Quarterly Journal of Economics,* 87(3), 355-379.

Stulz, R. M. (2005). The Limits of Financial Globalization. *Journal of Finance,* 60, 1595-1638.

Su, D and Fleisher, B.M. (1999). An empirical investigation of underpricing in Chinese IPOs. *Pacific-Basin Finance Journal,* 7, 173–202

Vong, A.P.I. and Trigueiros, D. (2010). The short-run price performance of initial public offerings in Hong Kong: New evidence. *Global Finance Journal,* 21, 253–261.

Vong, A.P.I. and Trigueiros, D. (2017). Evidence on the effect of'Claw-Back' provisions on IPO share allocation and underpricing in Hong Kong. *Applied Economics,* 49(51), 5231–5244.

Wang, S. K. and Jiang, J. (2019). Does the legal system affect the cost of external financing? Evidence from IPO underpricing of foreign firms listed in US stock markets. *Int. J. Economics and Business Research*, 18(2), 186-214.

Wang, T. Y., Qureshi, I., Deeds, D. and Ren, Y. (2019). How do technology ventures signal IPO quality? A configurational approach. *Journal of Business Research*, 99, 105-114.

Widarjo, W., Rahmawati, Bandi and Widagdo, A. K. (2019). Underpricing and Intellectual Capital Disclosure: Evidence from Indonesia. *Global Business Review*, 1-13.

Xin, Y., and Zheng, Y. (2012). IPO Underpricing to Retain Family Control under Concentrated Ownership: Evidence from Hong Kong. *Journal of Business Finance & Accounting,* 39(5), 700-729.

Xu, Z. J., Wang, L., and Long, J. (2017). The impact of director's heterogeneity on IPO underpricing. *Chinese Management Studies,* 11(2), 230-247.

Yartey, C. A. (2010). The institutional and macroeconomic determinants of stock market development in emerging economies. *Applied Financial Economics,* 20(21), 1615-1625.

Yu, X. and Zheng, Y. (2012). IPO Underpricing to Retain Family Control under Concentrated Ownership: Evidence from Hong Kong. *Journal of Business Finance & Accounting,* 39(5), 700-729.

Yu, X. and Zheng, Y. (2012). IPO Underpricing to Retain Family Control under Concentrated Ownership: Evidence from Hong Kong. *Journal of Business Finance & Accounting,* 39(5-6), 700 – 729.

APPENDIX

APPENDIX A

DESCRIPTIVE STATETISTICS OF VARIABLES

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
Dependent variable								
UNDERPRICING	0.6482	0.0566	21.0000	-0.9500	2.3011	5.4829	36.9632	52329.8100
Independent variables								
VOICE	60.3640	60.5911	69.9531	51.7413	5.4430	-0.2668	1.9543	56.6214
REGULATORY	98.6815	99.5192	100.0000	95.9184	1.6584	-0.7765	1.7240	165.9673
POLITICAL	82.4607	79.8942	95.6311	72.3810	6.6546	0.3977	1.9423	71.9532
GOV	1.6777	1.7459	1.9146	1.3263	0.2163	-0.6065	1.8266	117.0138
CONCORR	91.8737	92.3077	94.7619	86.2944	2.6447	-1.3651	3.5033	316.6610
VOICE	60.3640	60.5911	69.9531	51.7413	5.4430	-0.2668	1.9543	56.6214
Control variable								
MKTCAP	700.7583	100.0000	24126.6000	0.0019	2175.9970	6.5977	54.6115	116589.1000

Notes: This table shows the descriptive statistics in the form of mean, median, maximum, minimum, standard deviation, Skewness Kurtosis and Jarque-Bera for underpricing level of IPO firms and independent variables and control variable from 2000 to 2017. The independent variables includes corruption control (CONCORR), government effectiveness (GOV), political stability and absence of violence/terrorism (POLITICAL), regulatory quality (REGULATORY) and voice and accountability (VOICE). Firm size (MKTCAP) is the only control variable.

APPENDIX B

PEARSON CORRELATION MATRIX

Correlation Probability	UNDERPRICING	VOICE	REGULATORY	POLITICAL	GOV	MKTCAP	CONCORR
UNDERPRICING	1.0000						

VOICE	0.0512	1.0000					
	0.1082	-----					
REGULATORY	0.1039***	0.7028***	1.0000				
	0.0011	0.0000	-----				
POLITICAL	-0.0614*	0.3798***	0.3657***	1.0000			
	0.0540	0.0000	0.0000	-----			
GOV	0.1798***	0.6827***	0.8607***	0.2306***	1.0000		
	0.0000	0.0000	0.0000	0.0000	-----		
MKTCAP	-0.0743**	0.1118***	0.0461	0.1173***	0.0777**	1.0000	
	0.0196	0.0004	0.1479	0.0002	0.0147	-----	
CONCORR	0.0138	0.7488***	0.6367***	0.3170***	0.7214***	0.1338***	1.0000
	0.6662	0.0000	0.0000	0.0000	0.0000	0.0000	-----

Notes: * Significant at 10% confidence level; ** significant at 5% confidence level; *** significant at 1% confidence level.

APPENDIX C

MULTICOLLINEARITY TEST - VARIANCE INFLATION FACTORS

Variance Inflation Factors
Sample: 1 986
Included observations: 986

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
VOICE	0.0005	359.2271	2.8942
REGULATORY	0.0086	16851.7200	4.7534
POLITICAL	0.0001	199.7141	1.2909
GOV	0.5491	314.7511	5.1416
MKTCAP	0.0000	1.1400	1.0328
CONCORR	0.0021	3521.0290	2.9124

APPENDIX D

HETEROSKEDASTICITY TEST: BREUSCH-PAGAN-GODFREY

F-statistic	7.3869	Prob. F(6,979)	0.0000
Obs*R-squared	42.7051	Prob. Chi-Square(6)	0.0000
Scaled explained SS	711.7218	Prob. Chi-Square(6)	0.0000

Dependent Variable: RESID^2
Method: Least Squares
Sample: 1 986
Included observations: 986

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	308.8750	111.6187	2.7672	0.0058
VOICE	0.0428	0.2778	0.1540	0.8777
REGULATORY	-2.3773	1.1683	-2.0348	0.0421
POLITICAL	-0.1120	0.1517	-0.7378	0.4608
GOV	49.8113	9.3162	5.3467	0.0000
MKTCAP	-0.0006	0.0004	-1.3828	0.1671
CONCORR	-1.5882	0.5735	-2.7694	0.0057

R-squared	0.0433	Mean dependent var	4.8868
Adjusted R-squared	0.0374	S.D. dependent var	28.4293
S.E. of regression	27.8919	Akaike info criterion	9.5016
Sum squared resid	761622.2000	Schwarz criterion	9.5364
Log likelihood	-4677.3010	Hannan-Quinn criter.	9.5148
F-statistic	7.3869	Durbin-Watson stat	1.7735
Prob(F-statistic)	0.0000		

APPENDIX E
HETEROSKEDASTICITY TEST: BREUSCH PAGAN-GODFREY (WEIGHTED LEAST SQUARES)

F-statistic	1.2965	Prob. F(6,979)	0.2559
Obs*R-squared	7.7730	Prob. Chi-Square(6)	0.2552
Scaled explained SS	142.2557	Prob. Chi-Square(6)	0.0000

Test Equation:
Dependent Variable:
WGT_RESID^2
Method: Least Squares
Sample: 1 986

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.8576	0.1856	4.6217	0.0000
VOICE*WGT	-0.0086	0.0336	-0.2576	0.7967
REGULATORY*WGT	0.0616	0.0646	0.9536	0.3405
POLITICAL*WGT	-0.0270	0.0215	-1.2560	0.2094
GOV*WGT	1.7293	0.9011	1.9191	0.0553
MKTCAP*WGT	0.0000	0.0000	1.7324	0.0835
CONCORR*WGT	-0.0732	0.0681	-1.0747	0.2828

R-squared	0.0079	Mean dependent var	0.5902
Adjusted R-squared	0.0018	S.D. dependent var	3.5981
S.E. of regression	3.5948	Akaike info criterion	5.4039
Sum squared resid	12651.4900	Schwarz criterion	5.4387
Log likelihood	-2657.1470	Hannan-Quinn criter.	5.4172
F-statistic	1.2965	Durbin-Watson stat	1.7230
Prob(F-statistic)	0.2559		

APPENDIX F

AUTOCORRELATION TEST

Dependent Variable: UNDERPRICING
Method: Least Squares
Sample: 1 986
Included observations: 986
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VOICE	-0.0018	0.0199	-0.0897	0.9286
REGULATORY	0.0075	0.0838	0.0894	0.9288
POLITICAL	-0.0011	0.0109	-0.1027	0.9182
GOV	-0.0307	0.6685	-0.0459	0.9634
MKTCAP	0.0000	0.0000	0.2717	0.7859
CONCORR	0.0015	0.0412	0.0362	0.9711
C	-0.6301	8.0100	-0.0787	0.9373
RESID(-1)	0.2649	0.0309	8.5707	0.0000
RESID(-2)	0.2609	0.0309	8.4424	0.0000

R-squared	0.1877	Mean dependent var	
Adjusted R-squared	0.1810	S.D. dependent var	2.2117
S.E. of regression	2.0016	Akaike info criterion	4.2348
Sum squared resid	3914.0930	Schwarz criterion	4.2795
Log likelihood	-2078.7640	Hannan-Quinn criter.	
F-statistic	28.2141	Durbin-Watson stat	2.1107
Prob(F-statistic)	0.0000		

APPENDIX G

OLS RESULTS FOR THE RELATIONSHIP BETWEEN UNDERPRICING OF IPOS AND INSTITUTIONAL QUALITY

Dependent Variable: UNDERPRICING
Method: Least Squares
Sample: 1 986
Included observations: 986

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VOICE	0.0179	0.0221	0.8099	0.4182
REGULATORY	-0.2488	0.0929	-2.6770	0.0076
POLITICAL	-0.0146	0.0121	-1.2067	0.2278
GOV	5.2015	0.7410	7.0196	0.0000
MKTCAP	-0.0001	0.0000	-2.3262	0.0202
CONCORR	-0.2031	0.0456	-4.4529	0.0000
C	35.3058	8.8780	3.9768	0.0001

R-squared	0.1157	Mean dependent var	0.6482
Adjusted R-squared	0.1093	S.D. dependent var	2.3011
S.E. of regression	2.1717	Akaike info criterion	4.3970
Sum squared resid	4612.5390	Schwarz criterion	4.4367
Log likelihood	-2159.7120	Hannan-Quinn criter.	4.4121
F-statistic	18.2743	Durbin-Watson stat	1.3373
Prob(F-statistic)	0.0000		