

# Country-specific Determinants and Effectiveness Factors of the Adoption of Social Media-based Corporate Disclosures

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## **Abstract**

While it is well known that social media platforms are useful channels for corporate disclosure in the US, the adoption and effectiveness of social media-based corporate disclosure (SMCD) is little scrutinized in the rest of the world. Since cultures, legal systems, and, other country-specific factors can influence financial reporting practice, it is reasonable to assume that these factors can influence SMCD, a most contemporary type of corporate disclosure.

This thesis unveils the country-specific determinants of SMCD adoption and the effectiveness of SMCD using social media data of 2018 and 2019 from 1,420 companies listed in 33 stock exchanges. First, the theory of planned behaviour is adopted to build a model to predict decision making on SMCD adoption. Then, Berlo's Sender-Message-Channel-Receiver (SMCR) communication model is used to build ordinary least squares regression models to predict the effectiveness of SMCD.

The results show that while some firm-specific factors tend to act as determinants of SMCD and have market effects, country-level factors play an important role in the determination of SMCD and its influence on the market. Specifically, it is found that country-specific factors, such as culture, legal systems, and country-level governance are associated with the adoption and effectiveness of SMCD. Therefore, the conclusions from US-based studies may not be generalisable to the rest of the world if the country-specific factors are ignored.

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## **Attestation of Authorship**

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signature:

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Date: 31/12/2019

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## **Dedication**

To all the brave social media users who fought for freedom both online and in reality, and,  
to my love, Monica (Mengqi) Li

# Abbreviations

## General

SMCD: Social media based corporate disclosure

SMA: Social media activity

BAS: Bid-Ask Spreads

## Country-specific factors

IP: Internet penetration. Internet penetration of the country.

SMP: Social media penetration. Social Media penetration of the country.

## Sectors

ComS: Communication Services

ConD: Consumer Discretionary

ConS: Consumer Staples

ENGY: Energy

FNCL: Financials

HeaC: Health Care

INDL: Industrials

IT: Information Technology

MATL: Materials

ReaE: Real Estate

UTLY: Utilities

## **Cultures**

PD: Power distance

IN: Individualism

MS: Masculinity

UA: Uncertainty Avoidance

LO: Long term Orientation

IG: Indulgence

## **Chapter 1 Introduction**

Since the aim of financial reporting is to provide information to the stakeholders (International Accounting Standards Board [IASB], 2019), financial accounting can be seen as a type of communication transferring financial information. Therefore, accompanied by the evolution of communication technologies, the channel of financial reporting evolves, too. Since social media has become more and more popular across the whole population, it has become increasingly attractive to the management of listed companies, as better communication which informs the investors better can reduce the cost of capital (Lambert, Leuz, & Verrecchia, 2012), and, therefore, can help the management to build competitive advantages in the market. Actually, it is found that social media adoption is associated with higher firm performance (Du & Jiang, 2015). However, while listed companies had started to use social media as a tool for corporate disclosure, the research of social media as a communication channel between the management and the investors (Social media-based corporate disclosure, hereafter denoted as “SMCD”) is far from complete.

The current papers on SMCD share many common attributes. They use market variables such as bid-ask spreads, trading volume, and market depth to represent the information available for the market (Blankespoor, Miller, & White, 2014; Prokofieva, 2015). They use linear regressions to test the relationships between social media activities and the market variables (Blankespoor et al., 2014; Prokofieva, 2015). Also, these studies control for traditional channels of corporate reporting (Blankespoor et al., 2014; Prokofieva, 2015). This thesis adopts the same methods to research the relationship between country-specific factors and SMCD because none of the previous papers researches the differences between SMCD in different countries.

Long before the invention of social media, Gray (1988) found that different country-level cultures breed different subcultures in respect of financial reporting. In the era of the Internet, Debreceny, Gray, and Rahman (2002) also find that cultural factors are strongly significant in predicting internet financial reporting. Therefore, since SMCD is a type

of financial reporting, it is reasonable to assume that SMCD can also be influenced by culture. Hence, the conclusions generated from one country may not be generalisable for the SMCD practice in other countries with different cultures. Therefore, this thesis use samples from multiple countries with different cultures to overcome this limitation.

The remaining parts of this thesis are organised in the following manner (Figure 1.1). The second chapter provides the background including the country differences in financial reporting and the differences between corporate disclosure before and after the emergence of social media. The third chapter applies binomial logistic regressions to find the determinants of social media adoption. Also, this chapter uses linear regression to find the determinants of social media activities. The fourth chapter applies linear regressions to find the effectiveness of SMCD. The fifth chapter concludes the thesis. Other auxiliary materials are provided in the appendices.

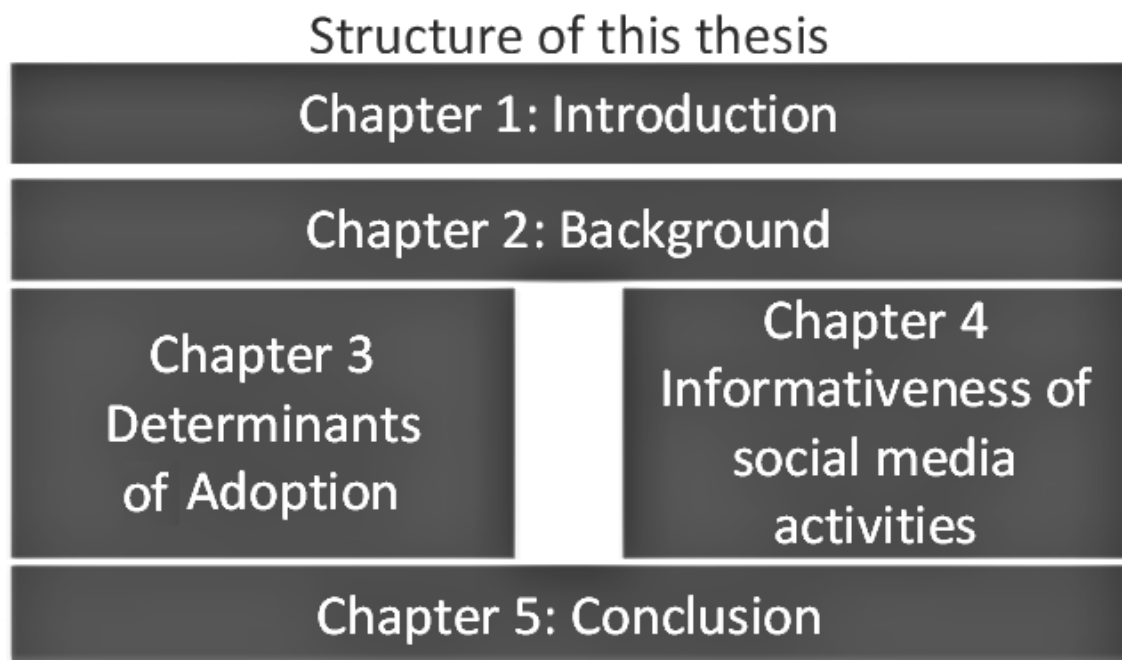


Figure 1.1: The Structure of the Thesis

## **Chapter 2 Background**

This chapter aims to differentiate this thesis from previous research on SMCD. The first section provides a review of the differences between accounting practices among different countries. The second section explains the differences between the disclosure practice before social media and the overall business communication in the social media era.

### **2.1 Country differences with respect to corporate announcements**

Unlike engineering which deals with physical existence that follows the universal physical laws, accounting is a type of communication which not only is bound by laws of communication but also determined by the people involved (Bedford & Baladouni, 1962). Although the fundamental principles of accounting may be universal like economics, accounting practice is never free from its environment (Gray, 1988). According to the theory of planned behaviour, a person, before deciding to adopt an action, considers three aspects: his/her attitude to the action, the social norm and the perceived behavioural control (Ajzen, 1991). Thus, as to corporate disclosure, the attitudes are the management considers the usefulness of such disclosure; the social norm is the legal, cultural, and, customary acceptance to such disclosure; the behavioural control is the control of the disclosure. Therefore, it could be argued that the culture, the law and regulation, and, the generally accepted practice among the industry can influence the decision with respect to SMCD. On the perspective of the investors, since corporate disclosure can be seen as a type of the business communication (Bedford & Baladouni, 1962) and communication is influenced by the contexts (Berlo, 1960), it is reasonable to assume that the information acquired from the business disclosures by the investors is influenced by the culture.

These assumptions are supported by many studies. For example, Gray (1988) finds that the accounting practice is influenced by the subcultures which emerge from the culture

of the country. Also, Cai, Rahman, and Courtenay (2014) suggest the country differences exist because of regulatory differences. Furthermore, since financial reporting is influenced by the balance of power of the parties involved and the balance of power is determined by the legacy of the accounting practice, it is reasonable to assume that different legacies shall generate different styles of financial reporting. For example, the stock market is one of the top influencers in the US and UK while the large corporations dominated financial reporting in Japan, and the tax rules and banks have a great influence in Germany (Ball et al., 1995). Thus, since the environment of financial reporting in each country shapes local financial reporting practice, it is reasonable to assume the behaviours of the market participants, including the management and the investors, are different.

On the empirical aspect, Debreceny et al. (2002) find the level of financial reporting via official websites is different between countries and between groups of countries. Additionally, it is also found that the disclosure environment, including culture, is strongly significant in predicting financial reporting via official websites (Debreceny et al., 2002). Rahman and Debreceny (2014) find that the relationships between the cost of equity and corporate information via stock exchange websites are different among different countries. In conclusion, the adoption of SMCD and the effectiveness of SMCD is expected to be influenced by country-specific factors.

## **2.2 The differences between SMCD and traditional corporate announcements**

### **2.2.1 The definition of SMCD**

The first question about SMCD that need to be discussed is the definition. The definition of traditional corporate disclosure is easy. For example, according to the conceptual framework of financial reporting defines financial reporting to be “the communication between the company and the shareholders or stakeholders” (IASB, 2019) (the lower half of Figure 2.1). Traditional corporate disclosure uses their channels, such as annual reports, conference calls, the “investor relation” page on the official websites or SEC filings. Through these channels, all the contents that are “readily available for the investors” are also “designed for the investors”. The consistency between aim and channel enables the definition to be simple.

However, in the era of social media, financial reports, CSR activities, and advertisements can be provided via the same social media account. Thus, via social media, while all the contents are “available for the shareholders”, not all of them are “designed for shareholders”. Hence, the scope “designed for the shareholders” and the scope “readily available for the shareholders” are no longer identical. Therefore, in the era of social media, the corporate announcements need to be redefined, either to be “designed for the shareholders” or to be “readily available for the shareholders”.

Some scholars exclude some social media contents from corporate announcements with their judgment. They adopt the “designed for shareholders” scope by assuming shareholders will ignore the information not designed for them. However, the assumption is contradictory to previous research which finds even hyper-links can be used by the management to control the perception of the audiences by obscure the scope of disclosure (Hodge, 2001). Thus, based on the findings of Hodge (2001), it is more reasonable to assume that every message received via social media can be read and interpreted by the investors. Hence, it could be argued that the scope of corporate announcements via social media shall cover all the contents, regardless of the contents which are not directly related to financial performance. Still, to support this argument, it shall be illustrated that investors can, actually, acquire information from the posts via social media which are not traditional corporate announcements. This concept is explained in the following sections.

### **2.2.2 A new era of business communication with social media**

Exchanging Information with its environment is an essential part of business along with the exchange of resources, services, and so on. Without information exchanges, enterprises is incapable of entering into new contracts, satisfying its stakeholders and acquiring new information for decision making. Most information exchanges are achieved by business communications, such as inquiries with suppliers (Pardillo, 2019). The traditional business communications are rather straight: based on the aim of communication, the company finds the counter-party, chooses the channel, and, sends the contents, in order to achieve its objectives (Pardillo, 2019). Therefore, in respect of the traditional business communication, it is possible to assume that no third party is involved, and, the companies do not need to assume that the contents of the communication are accessible to the public. However, this assumption is no longer valid in the era of social media.

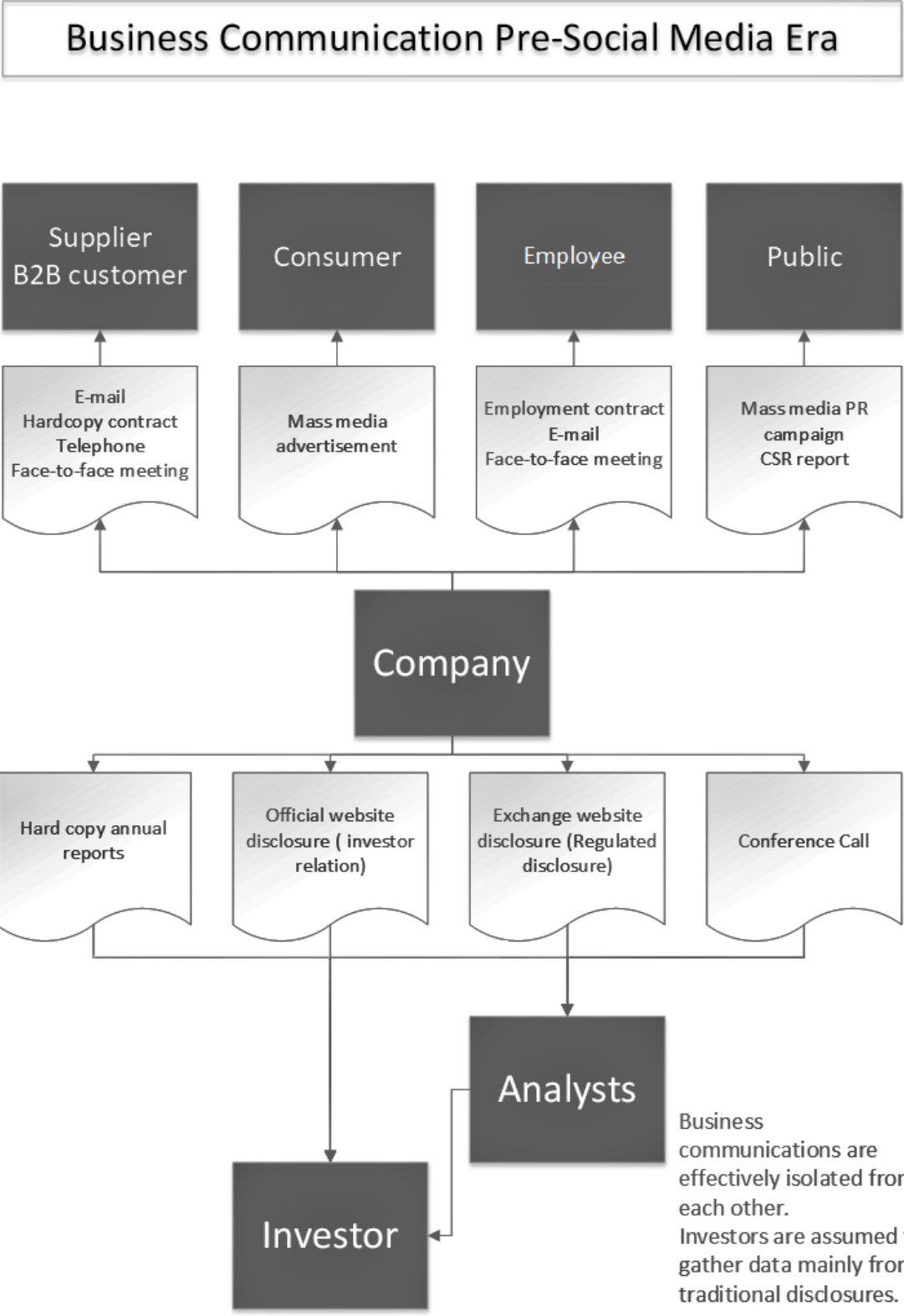


Figure 2.1: Business Communication: Pre-Social Media Era

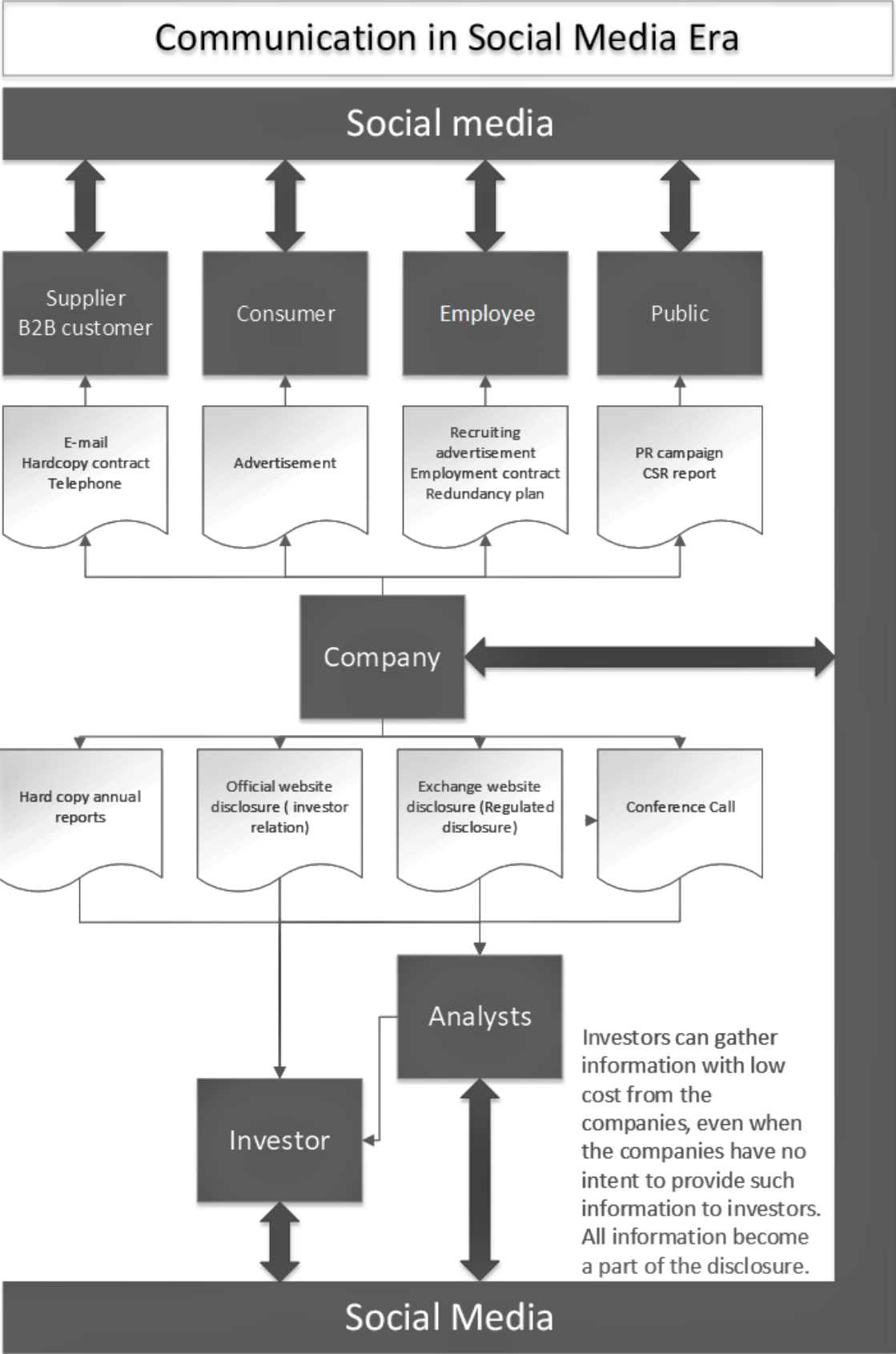


Figure 2.2: Business Communication: Social Media Era

Table 2.1: Social Media Platforms and Traditional Online Disclosure Channels

Platform	Company Initiate	Audience Initiate	Push method †	Mark ‡	Forward §	Forward to other sources ††	Comment
Social media							
Twitter	O	O	O	O	O		O
Facebook	O	O	O	O	O		O
Instagram	O	O	O	O		O	O
YouTube	O	O	O	O		O	O
LinkedIn	O	O	O	O	O		O
Direct-access information technologies before social media							
News Letter	O		O			O	
RSS	O		O				
Traditional channel							
Websites	O						

† Push method: The company can notify the audience. However, it still needs the audience to “subscribe” or “follow” the company in advance.

‡ Mark: In-platform mark showing approval (e.g., Like, Favourite)

§ Forward: Integrated function for forwarding to other users in the same platform

†† Forward to other sources: Integrated function for forwarding to other channels

There are two occasions that the contents of business communication can be obtained by unintended recipients. The first one is when the channel used for communication is open to the public. The second is when the original recipients forward messages, which is not designed to be publicised, to the public. When the channel is open to the public, all the contents can be obtained by anyone who may be an unintended recipient. While the secret channels, such as secured email, telephone and protected extranets, are guarded against unauthorised access, many new channels such as social media are open for everyone. Also, there were some effectively semi-close channels such as advertisement via professional journals. People other than intended audiences are not likely to access these specialised channels and are usually not capable to understand the messages. But, if the journals start to make more social presence via social media, the contents can be made available online and some experts may read and interpret the information for the ordinary people as a part of personal branding. Combined these new efforts, channels become more and more open to the public.

On the “forward” side, every stakeholder can re-disseminate information acquired from the company via social media even the information is acquired via channels which are not open to the public (Table 2.1), even when disseminating insider’s information is illegal (Holmes, 2005). Although before the emergence of social media, the re-dissemination is no more than gossips with acquaintances, with via social media the re-dissemination can make this information effectively open to the public. Furthermore, these stakeholders

can express their personal opinions to influence other stakeholders (Alexander & Gentry, 2014; Hales, Moon, & Swenson, 2018). Therefore, it is not reasonable to rely on secret communications via different parties and to build different images for each stakeholder any more. Instead, companies need to manage one public image shaped by both the company and its stakeholders (Holmes, 2005). Every message influencing public image can be informative to the investors, even when the messages are not for the investors.

### 2.2.3 The assumption, “all social media activities convey information”

This section adopts the SMCR model built by Berlo (1960) to explain that the non-financial messages received by investors can be informative. According to this model (see Figure 2.3), the communication process starts with the sender encoding the information into messages with five attributes: the sender’s communication skill, the sender’s attitude, the sender’s knowledge, the social system that the sender existed in and sender’s culture (Berlo, 1960). Therefore, the decisions with respect to choosing the channel and choosing the content are inevitably influenced by the five attributes. Then, the communication process ended with the receiver decoding the message back to information with the five attributes, the receiver’s communication skill, the receiver’s attitude, the receiver’s knowledge, the social system that the receiver existed in and receiver’s culture (Berlo, 1960). Thus, every message that influences the attitude, contributes to recipients’ knowledge, shaping the perception of cultural context, or, influences the perception of the social system, can influence the way that the recipients interpret the message, even when the message is not traditional corporate disclosure. Out of the five attributes influencing the interpretation, the attitude and knowledge might be easier to be ‘managed” by the companies. Thus, the following paragraphs will discuss knowledge and attitude.

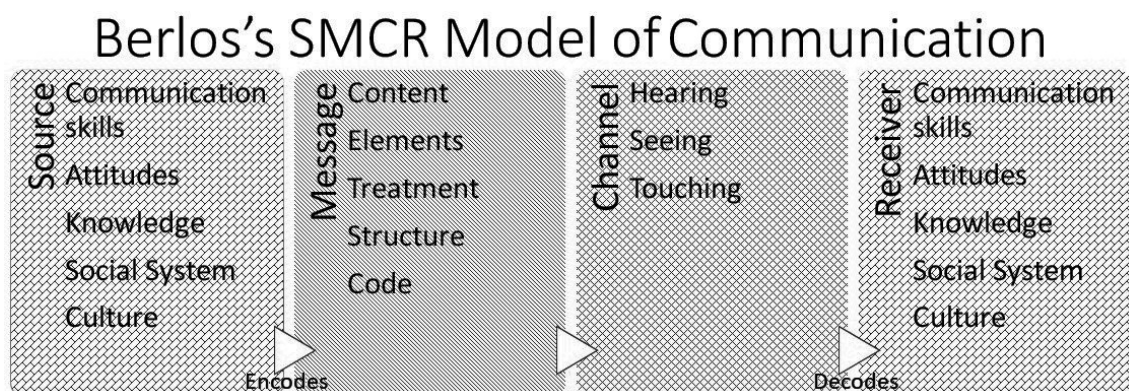


Figure 2.3: Sender-Message-Channel-Receiver Model

Providing information with reliable source can be one way to influence the knowledge of the audience and therefore enhance the communication. For example, a 5% decrease in profit can be passive to the investors on its own, but the investors are aware that the competitors perform worse, the 5% decrease could be comparatively positive. In this case, providing the earnings of the competitors can be a method to improve communication. Yang and Liu (2017) find that the management already manages the financial reporting process with impression management theory.

The attitudes of audiences to the company, according to the impression management theory, can be managed by the company using communication (Parhankangas & Ehrlich, 2014). A positive image can attract sympathetic audiences with positive attitudes. Therefore, if the management posts texts and pictures that contributes to a positive image, the subsequent disclosure can be interpreted with a more friendly attitude. And the interpretation with a better attitude can produce different information for the receiver (Berlo, 1960). Additionally, the contents are not the only influencing factors. If the communication style, such as the tone, is not expected by the users of the channel, the audiences face more expectation violence which can incite negative attitudes (Grant, Hodge, & Sinha, 2018). Therefore, any social media activities including the contents and styles can influence the perception of its stakeholders, and, eventually, the decisions of the investor (Grant et al., 2018).

## **Chapter 3 The Determinants of Using Social Media for Corporate Disclosure (SMCD)**

### **3.1 Introduction**

According to agency theory, the management has the incentives to facilitate proper communication with the investors to reduce information asymmetry in order to secure their interests (Ross, 1973). Since social media is one of the most prominent channels for communication, it is not reasonable to assume that the management will not contemplate the idea of SMCD. However, since many companies in different countries still choose to avoid SMCD (Table 3.2), there may be some factors that deter them from using SMCD. Social media is a seemingly low-cost tool comparing to traditional channels such as mass media advertisements. It also allows the management to reach the stakeholder directly without the effort to squeeze the corporate disclosures through the gatekeepers of the mass media (Holmes, 2005). Also, it allows the management to receive feedback immediately, and even to convert traditional one-way disclosure into a dialogue. However, adopting social media is also risky. Before social media emerges, the management can control public relation campaigns and sales campaigns, while can decide the contents of annual reports, because, the audiences were comparatively weak in expressing their opinions. However, the domination of communication is no longer possible in the era of social media, when social media users are empowered by social media platforms in speaking out. Especially, the reputations of both the company and the management are vulnerable since social media facilitate the dissemination of critiques from any users to the public (Alexander & Gentry, 2014). Without proper handling, social media flaming can damage the public image of companies in no time. As a result, the risk and cost can deter management from adopting SMCD. Moreover, the market authority may formally forbid SMCD, or impose intolerable risk on SMCD to forbid it effectively.

To confirm the potential determinants of adopting and performing SMCD, this chapter

builds a model following the framework of the theory of planned behaviour. According to the theory of planned behaviour, the decision making of a person is influenced by three aspects: the subject norm, the attitude towards the behaviour and the perceived behaviour control (Ajzen, 1991). With regard to SMCD, the three aspects are the perceived usefulness of SMCD, the acceptance by the social norm on SMCD, and the ability to control SMCD to reach the final goal. Although the usefulness of SMCD has been proved by previous studies (Blankespoor et al., 2014), the social norm is not commonly tested by the researchers. Therefore, the data of 1,453 companies listed in 33 stock exchanges are used to unveil the determinants of SMCD considering the influence of culture, legal, and political context, as well as the fundamental figures of the companies.

The remaining parts of this chapter are organised in the following manner. The second section discusses previous related research. The third section provides details about the method of data collection and preparation. The fourth section provides the result of regression tests. And the last section discusses the findings and provide conclusions.

## **3.2 Literature review**

The idea of business reporting via the internet is not new. Many companies have started to provide financial and non-financial information via official websites. In 1999, the International Accounting Standard Committee issued a milestone discussion paper about business reporting on Internet (Lymer, Debreceeny, Gray, & Rahman, 1999). The paper divides Internet financial reporting into three stages: using the Internet as an additional channel to disseminate traditional financial report, providing information designed for web browsers and search engines, and, providing information that could only be accommodated by Internet cost-effectively or even possibly. Especially, the third stage can be partly achieved by social media-based disclosure.

While Lymer et al. (1999) were describing a prospective third stage of the Internet financial reporting, the first social media site, "SixDegrees.com" emerged. However, from the start of social media, many years passed until the social media-based financial reporting was adopted by some companies. Lymer et al. (1999) propose that one of the most important drivers of the adoption of new channels is the cost-effectiveness. While the users were not large enough, using a social media platform can only reach a small group of audience and the cost and risk associated with disseminating information via

social media could not be justified. Hence, the adoption of social media by businesses can be reasonably expected only after the birth of more popular and general social media platforms such as Twitter and Facebook. The early adoption of these social media platform is researched by some descriptive studies, for example, counting the numbers of the adoption in 2013 (Barnes, Lescault, & Wright, 2013). It should be pointed out that the year 2013 is important, because, in April of the year, Securities and Exchange Commission of the United States (US SEC, 2013) issued a report which clarifies the responsibility in respect to disclosure via social media by explicitly allowing disclosure via social media held certain conditions are met. As a result, companies tend to use social media more than they did before 2013 (Dorminey, Dull, & Schaupp, 2015).

Following the increasing adoption of social media by listed companies, scholars have started to research the adoption of SMCD as well. For example, Alexander and Gentry (2014) point out important differences between traditional channels and social media and list the adoption and non-academic studies. One of the earliest study that considered the determinants of social media adoption was by Dorminey et al. (2015). The paper unveils the influence of legal factors, the SEC report on social media, on the adoption of Twitter with adoption figures using companies in the US. For other influencing factors, Smith, Blazovich, and Smith (2015) find what company-specific factors influenced the adoption of social media using Fortune 500 companies. The factors include industry type, firm size and market to book ratio. Although the research is relatively large with 500 samples, the samples are all from one market monitored by SEC in an environment of the common law. Similarly, Zhang (2015) compares traditional internet-based disclosure and social media adoption in two industries finding the adoption is related to industrial differences. In the same year, Zhou, Lei, Wang, Fan, and Wang (2015) publish a more ambitious study using all listed companies in the United States (9,861 companies), and well-designed methods to find out the relationship between company-specific factors and adoption.

However, all of these studies focus on the US companies while no attempts are made to find out how companies adopt social media out of the US and whether social media adoption is influenced by country-specific factors such as culture, the legal system, governance-of-the-country and social development.

# Theory of Planned Behaviour

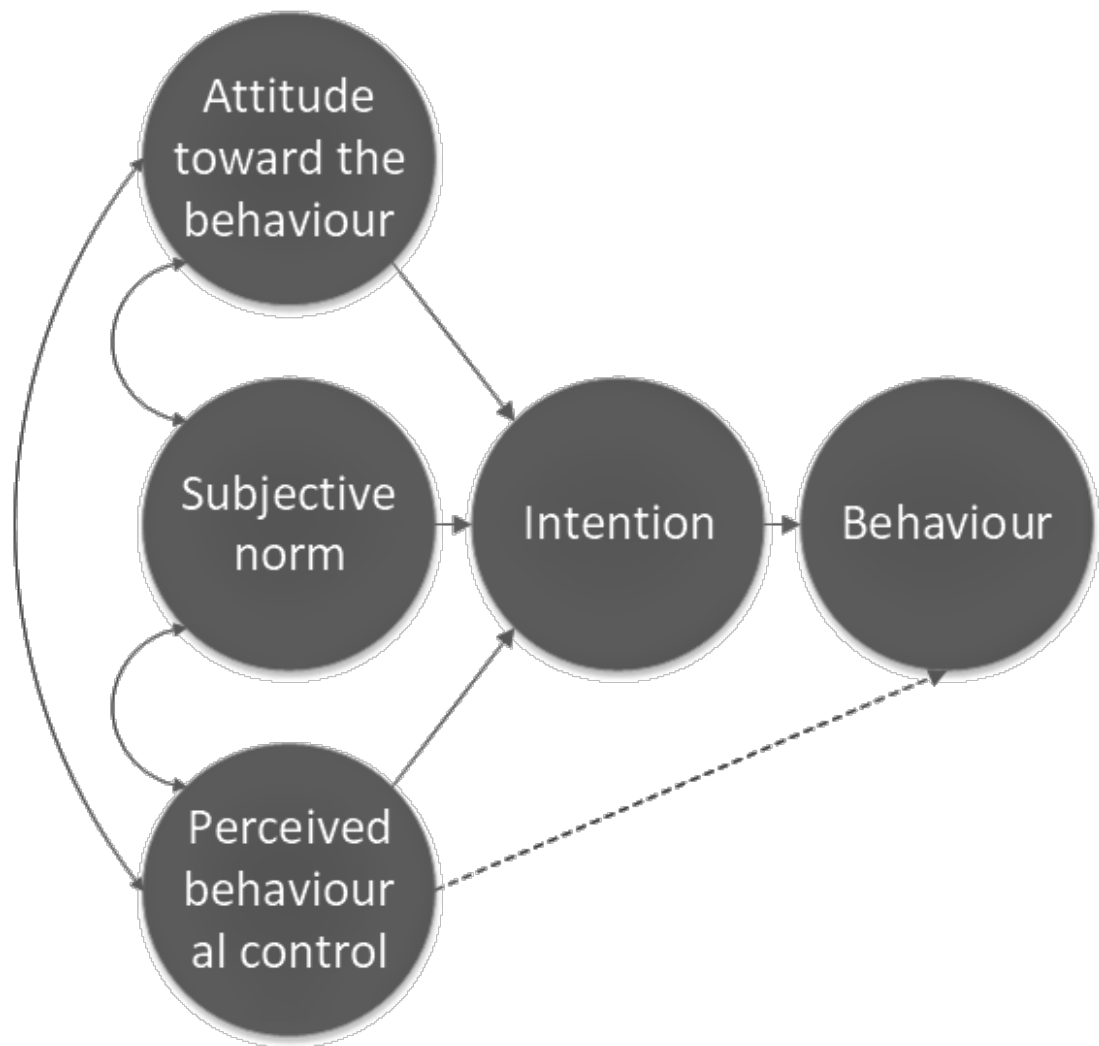


Figure 3.1: Theory of Planned Behaviour

## 3.3 Method

### 3.3.1 Hypothesis development

According to the theory of planned behaviour, the decision of action is influenced by three factors: usefulness of the action, the social norm of the action and the perceived control on the result of the action (Ajzen, 1991). As to the decision about adopting social media as a communication channel and to send messages via social media, the three factors are the usefulness of SMCD, the social norm around SMCD and the confidence of using social media. Furthermore, the usefulness of social media can be divided into the incentives for the management, and the perceived usefulness of social media to

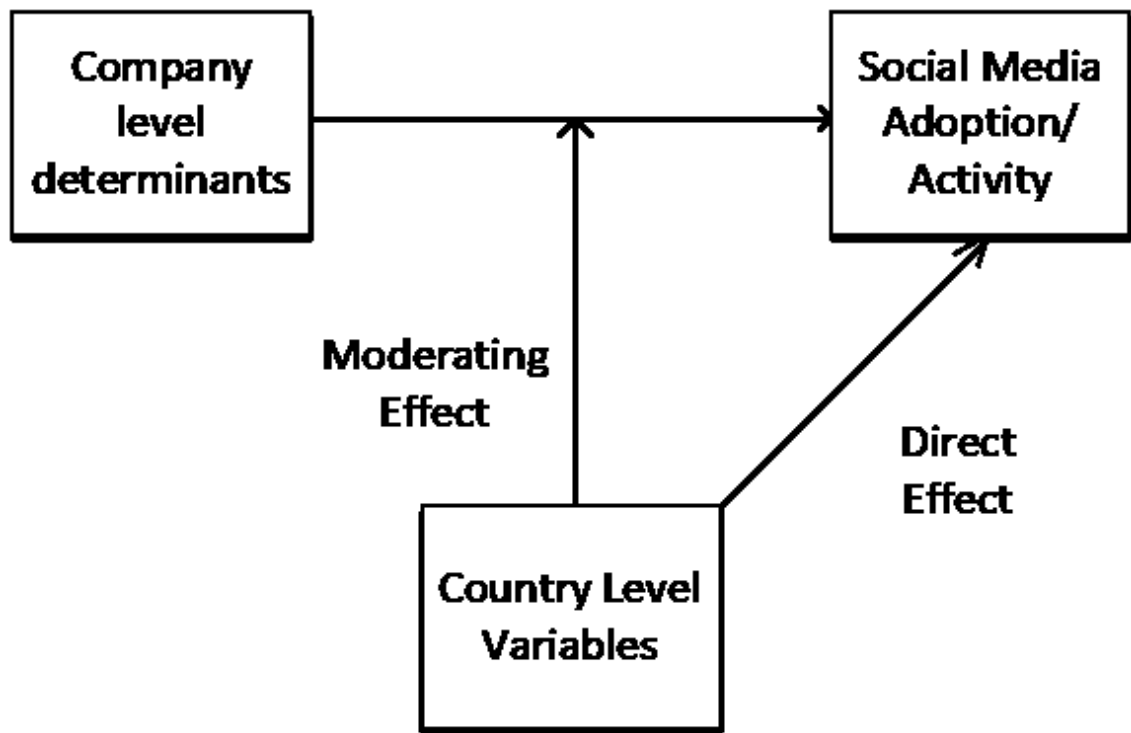


Figure 3.2: Moderating Effect on Adoption of SMCD

obtain such incentives. SMCD is not on its own in facilitating communication between the company and the investors. Therefore, the usefulness of SMCD depends on the additional benefit in communication against its additional costs. Thus, the usefulness of SMCD shall be assumed as the information available for the market deducted the information already provided by mass media against the additional cost of SMCD. The additional information can be explained in many factors. As proposed by Blankespoor et al. (2014) is that SMCD can help the company to reach more audience and “push” the information to them before the audiences pay attention to the new information. Thus, SMCD can inform the audiences who will not know the information in time without SMCD. Thus, if the company is already well covered by analysts and mass media, the perspective usefulness could be comparatively lower. In conclusion, the decision of SMCD adoption is based on the incentive to disclose, the existing channels for disclosure, the cultural, legal and governance-of-the-country environment, and the confidence on adoption. The following paragraphs discuss each factor that can influence the decision of SMCD adoption.

### 3.3.1.1 Size: Incentive

According to the agency theory, the management of a company is the agent of the capital providers, and, both parties have different interests, while, sometimes, the interests of both parties conflict with each other. Moreover, it is difficult for the principal, the capital provider, to monitor or verify the activities of the agent (Eisenhardt, 1989). Also, the principal and agent could have different attitudes toward risk (Eisenhardt, 1989). Therefore, the principal-agent relationship would be so ineffective that no agent-principal pair can be established for the interest of both parties if no effort can be made to reduce the information asymmetry between the principal and the agent. One of the proved solutions is to allow the principal to have more information to verify the behaviour of the agent (Fama & Jensen, 1983). This deliberate release of financial information is corporate disclosure (Gibbins, Richardson, & Waterhouse, 1990). Moreover, as the information asymmetry between the agent and the principles is severer for larger companies than small companies, the management is more motivated to make more effort on disclosures (Firth, 1979; Chow & Wong-Boren, 1987). Thus the information asymmetry can be represented by the size of the company. Hence, the size of a company, represented by the logarithm of the total market capitalisation of a company, as a proxy of information asymmetry between stockholder and the management, is included in the models. Also, it can be argued that large companies are usually covered by mass media, or, are well known by the investors merely due to the social presence, and, thus, do not need social media to attract more investors. While the mass media factor can be controlled for, the social presences are unlikely to be easily controlled for. As a result, both positive and negative relationships between size and SMCD adoption can be expected.

### 3.3.1.2 Leverage: Incentive

Agency problems exist not only between stockholders and the management but also between the creditors and the management. While the management is trying to make profits by taking more risks, the creditor would also bear the risk but not sharing the excessive profit. When the debt-equity ratio is low and the ability to repay the loan is low, the risk for creditors is not very significant. But when the debt-equity ratio increases, the risk in repayment could be high enough so that the creditors have more incentive to obtain information, and the information asymmetry becomes more important (Jensen & Meckling, 1976). Hence, when the debt-equity ratio is high, the management needs to

make more efforts on disclosure to mitigate the problem. Hence, the leverage of a company, represented by the logarithm of debt to equity ratio of a company, as the proxy of information asymmetry between creditors and the management is included in the models.

#### 3.3.1.3 Market-to-book value ratio: Incentive

For traditional businesses which rely on tangible assets and other assets that can be recognised in financial reports, the book value of equity cannot be too far from the market price of the shares. However, when a significant part of the value of the stocks is constituted by growth prospects, intangibles, human resources and other resources not recognisable in financial reports, the investors would have more difficulties to understand the business, and, the information asymmetry is high (Lev & Sougiannis, 1999). Thus, the market-to-book value linking with the non-recognisable part of the company can be used to proxy the information symmetry due to the nature of the business.

#### 3.3.1.4 WACC: Incentive

Even in the same business, the level of risk of companies can be different due to their management, their strategy, their position in the market and so on. Since high firm-specific risk is linked to a higher cost of capital, the management of high-risk companies has more incentive to decrease the cost of capital by reducing the information asymmetry (Diamond & Verrecchia, 1991). Hence, the cost of capital, represented by the weighted average cost of capital (WACC) of a company, as the proxy the urgency of reducing information asymmetry, shall be included in the models.

#### 3.3.1.5 Auditor: Existing channel

Choosing of the auditor can be seen as a part of the disclosure strategy, and, the auditor can influence the disclosure strategy, too (Dunn & Mayhew, 2004). Also, big four auditors are found to be related to a lower cost of capital (El Ghouli, Guedhami, & Pittman, 2016). Thus, the auditor can work in both ways. First, big four auditors can be linked to a positive attitude to more disclosure. Second, when big four auditors already help to decrease the cost of capital, the incentive using SMCD to decrease the cost of capital is lower. Thus, the auditor influence, a dummy variable, is used as a control variable in the model.

### 3.3.1.6 Analysts and NEWS: Existing channel

Apart from the factors inside the company, the route of information dissemination can be influential, too. As the benefit of SMCD is the extra “information available for the investors” sent via social media divided by the extra cost of disclosure via social media. The extra “information available for the investors” can be “more timely information”, “lower cost for obtaining such information” or “more audiences who will never receive the information”. As to “more timely information”, social media can be available as soon as traditional announcements but reach some of the audience sooner due to “push” effect (Blankespoor et al., 2014). The push effect is also capable for “lowering the cost for obtaining such information” since it saves time for the audience (Blankespoor et al., 2014). Also, due to the re-disseminate effect of social media, even not paying attention to a company, an audience can still receive information about the company if someone re-disseminates the information (Blankespoor et al., 2014).

However, the pushing effect and the re-disseminate effect can only contribute to the flow of information held the company is not followed by many investors or not covered by traditional channels such as analysts or mass media. Well established existing channels can reduce the value of “extra” information flow facilitated by social media. For example, Analyst coverage can reduce information asymmetry on its own (Frankel & Li, 2004).

For companies already followed by many analysts, the information asymmetry may be low enough so that SMCD will not decrease the information asymmetry further. Also, if many analysts can raise the awareness of the information of the company, the action of these analysts can serve as the alternative to the “push” effect of SMCD, making SMCD less useful. Still, if these analysts tend to re-disseminate SMCD via social media, the SMCD can be a useful way to feed information to the analysts to accelerate the dissemination of information. Therefore, the quantity of analysts is also inserted into the models as a controlling variable. Also, mass media headlines work in the same way as analysts, helping to reduce information asymmetry by providing information to the public. Therefore, the mass media news are also controlled for. All of the variables above are collected from EIKON platform<sup>1</sup>.

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<sup>1</sup><https://eikon.thomsonreuters.com>

### 3.3.1.7 Country-specific factors: On all three aspects

When the theory of planned behaviour is used in explaining the decision of SMCD across different countries,

All three aspects of the theory of planned behaviour can be influenced by country-specific factors. Firstly, perceived usefulness can be influenced by the quantity of social media users in the country. If the quantity of social media users is low, it is not reasonable to assume SMCD can help the company to reach more audience and push corporate disclosure to them. Hence, it is rather obvious that when the Internet penetration<sup>2</sup> (Internet user/population) and the Social media penetration (Social media penetration / Internet users) of a country are low, the management is not likely to believe SMCD can be used to reach more audience. Thus, social media penetration is also included in the model<sup>3</sup>.

Secondly, the social norm is determined by the countries, too. One of the most important factors is the enforcement and governance of the country. As the government intervention to the market can influence the behaviours of the market participants, and financial reporting is regulated in many countries, it is expected that the regulatory, the enforcement, and, the efficiency of the government can influence SMCD. Both, Ball, Robin, and Wu (2003) and Owusu-Ansah and Yeoh (2005) support that the theory of regulation can explain the relationship between regulation and the disclosure practice. As to voluntary disclosure, Cheng and Courtenay (2006) finds that regulatory quality can enhance the relationship between board composition and the level of voluntary disclosure. With unpredictable regulation, the management may avoid adopting communication channels because of the fear of being punished. In a country with no tradition of accountability, the management may choose not to disclose well because all its competitors have adopted the common practice to provide the minimal disclosure which is merely enough to avoid punishments. Also, under regulations which promote transparency and accountability, companies are more likely to initiate more disclosure to keep their stakeholder informed in order to gain advantage from their competitors. A cross country research finds that the companies listed in the US tend to adopt internet financial reporting, indicating the possibility that extensive disclosure regulation and enforcement can encourage better disclosure (Debreceeny et al., 2002). A US research

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<sup>2</sup>However, internet penetration is highly correlated with GDP, the result from the models with GDP is the same as the models with internet penetration. Thus, internet penetration is not presented separately.

<sup>3</sup>Collected from <https://www.statista.com/statistics/282846/regular-social-networking-usage-penetration-worldwide-by-country/>

also finds that the SMCD adoption changed when the regulation on disclosure was changed by the US SEC (Dorminey et al., 2015). But, poor enforcement and governance may be positively associated with SMCD, too. When mass media is controlled by the authoritarian regimes, the companies may not be able to use mass media to communicate with their investors. Therefore, the companies may choose SMCD as an alternative to mass media. Thus, the enforcement and governance factors of the country (hereafter, mentioned as governance-of-the-country) are inserted into the models, proxied by the Worldwide Governance Indicators (WGI). WGI is from a long-term study performed by the world bank for six dimensions of enforcements: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and, Control of Corruption. It is already a proven proxy for governance-of-the-country with respect to accounting research (Nguyen, 2019). WGI factors are collected from the official website of WGI<sup>4</sup>.

Also, since legal systems are proved to be related to corporate disclosure by many studies (Jaggi & Low, 2000), the legal systems are also inserted into the models. One of the major reasons is the legacy of accounting. In common law countries, financial reporting mainly aims to provide information for the investors (Gray, 1988). But, in civil law countries such as France and Germany, the financial reporting aims to provide information for the banks or tax authorities(Gray, 1988). Similarly, as the Islamic finance system does not allow riba (interest), the nature of stakeholders of financial reporting is different from other countries. Therefore, when making the decision of adopting SMCD and the decision of frequency of SMCD, the managements are likely to follow the aims of financial reporting and consider the stakeholders which are different among countries. The data of legal systems is collected from a research program of the University of Ottawa<sup>5</sup>.

Since culture is a part of the social norm which is one part of the framework of the theory of planned behaviour, cultural factors from Hofstede culture index are also used in this chapter. The culture factors include Power Distance, IN, MS, UA, LO, and IG. Power distance is to measure the acceptance of a system which distributed power unequally. High power distance can be expected to be associated with the acceptance of one-way communication where the management dominate the communication and the investors merely receive information without challenging the management. Therefore, it is not expected that companies pay more efforts to adopt social media to communicate much in High power distance country. IN is to measure the acceptance that people take care

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<sup>4</sup><https://info.worldbank.org/governance/wgi/>

<sup>5</sup><http://www.juriglobe.ca/eng/syst-onu/index-alpha.php>

of themselves and their immediate families instead of taking care of others. Therefore, to mitigate the loose relationship in high individualism countries, companies need to use social media to provide timely information to gain trusts from investors. MS represents a preference in society for achievement and competitiveness, less cooperation, and less modesty. Therefore, MS can work both ways. High masculinity can promote SMCD because SMCD can help companies to show their achievement and competitiveness to the investors. Also, low masculinity encourages the companies to cooperate with the stakeholders and to care for the stakeholders' needs for information. The remaining three cultures are not expected to be directly linked with financial reporting. Still, these factors are inserted into the model, in case the relationships between these dimensions of cultures can influence the decision of the management.

#### 3.3.1.8 The confidence of adopting SMCD

Although it is more likely that the management is more confident in using SMCD in countries with higher social media penetration, the relationship is not confirmed yet. Also, it is difficult to measure the knowledge of the management in using social media. Also, some papers attempt to distinguish high-tech companies from traditional to represent the differences in confidence. However, this chapter decides that confidence is a matter too complex to be caught by simple variables.

### 3.3.2 Measuring SMCD

Two proxies are used to measure the usage of SMCD.

The first proxy is a dummy variable: *1* for having social media account on the official website and *0* for otherwise. Previous studies do not agree on this proxy. For example, a social media account without financial information is not counted as SMCD by Dorminey et al. (2015), while, every account is counted by Zhou et al. (2015). But as justified in Section 2.2.3, this chapter acknowledges all the social media activities as a part of SMCD, and, thus, all social media accounts that are presented to the investor are considered adoption.

Then, using this proxy, one binomial logistic regression is implemented for each of the five platforms. The sample size is 1,420, as some companies are dropped due to a lack of social media penetration data. The hypothesis for this proxy is:

*Hypothesis 1.1 : Country-specific factors are not related to the adoption of social media after moderating for company-specific factors.*

To test the hypothesis, the following model is used.

$$\begin{aligned}
 \text{Adoption} = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
 & + \beta \text{Country-specific variables} \\
 & + \epsilon
 \end{aligned}
 \tag{Model 1.1}$$

The second proxy is the number of tweets sent by a company during the year 2018. The first method ignores the efforts of the company: both frequent user and infrequent users can get the same  $1$  regardless of frequent users are more devoted and may be driven by more and stronger influencing factors. Therefore, the second proxy is designed to represent the efforts spent on social media. This method is also used by Zhang (2015) and Zhou et al. (2015) who use both “all activities” and “finance activities” to represent the adoption. Two reason drives this research to use Twitter as the sole proxy. The first one is that Twitter is the most widely used by listed companies (Table 3.1). The second reason is the cost in collecting tweets from Twitter is lower than Facebook. This chapter chooses the “all activities” method because, as illustrated in Section 2.2.3, all contents are believed to be informative. With this proxy as the dependent variable, the OLS linear regression is implemented. The sample size is much smaller (692 companies) because not all companies sent tweets during 2018. The hypothesis for this proxy is:

*Hypothesis 1.2 : Country-specific factors are not related to the frequency of social media activities of the company after moderating for company-specific factors.*

To test the hypothesis, the following model is used.

$$\begin{aligned}
Tweets = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
& + \beta \text{Country-specific variables} \\
& + \epsilon
\end{aligned}
\tag{Model 1.2}$$

### 3.3.3 Data collection

In order to enable the result to be representative of the global capital market, the companies are selected from the major capital markets in the world. Firstly, a list of exchanges sorted by total capitalisation is downloaded from the World Federation of Exchanges<sup>6</sup>. Then, the exchanges which are not the largest exchanges of each the country are removed. Afterwards, the top 33 exchanges are selected. For each exchange, the top index in the exchange is selected. For the largest markets, the scale of ideal indices is 100. All of the companies are selected as samples except Nikki 225. For Nikki 225, only 100 out of 225 companies are selected randomly. For smaller markets, the scale of ideal indices is between 30 and 50. For those exchanges without an ideal index, the top 30 companies in the market, by capitalisation, are selected. A list of such indices is provided in Appendix A.

After the previous procedures, 1,453 companies are surveyed by manually collecting the links on the homepage of their official websites. Among these companies, the top five adopted social media are Twitter (778, 53.54%), Facebook (748, 51.48%), YouTube (689, 47.42%), LinkedIn (663, 45.63%) and Instagram (429, 29.53%) (Table 3.1). The adoption rates of the remaining social media are less than 5%. According to this result, the top five platforms are used to test hypothesis 1.1, and the top platform is selected to test hypothesis 1.2. The adoption data collected above (1 for adopting, 0 for not adopting) is used as the dependent variable for testing hypothesis 1.1. Then the data of posts (tweets) sent during 2018 by the companies which adopt Twitter are collected with Python programmes adapted from the work of Wolff (2019). The data contains the date and time of each tweet and the number of likes and retweets attracted by each tweet. Then, the tweets are accumulated by the accounts, before being used as the dependent variable for testing Hypothesis 1.2. Also, the tweets, likes and retweets are used in Chapter 4.

Country variables are collected from EIKON with Python API as at 31st May, 2019.

<sup>6</sup><https://www.world-exchanges.org/>

Country variables are collected from World bank (Internet penetration<sup>7</sup>, GDP per capita<sup>8</sup>), statista (Social media penetration<sup>9</sup>), the website of Hofstede (Cultural indices<sup>10</sup>).

Table 3.1: Social Media Overall Adoption Across All Companies Surveyed

Platform	Number of		Platform	Number of	
	Adopters	(%)		Adopter	(%)
Twitter	778	53.54	APP ‡	4	0.28
Facebook	748	51.48	Soundcloud	4	0.28
YouTube	689	47.42	Spotify	3	0.21
LinkedIn	663	45.63	Issuu	3	0.21
Instagram	429	29.53	Tumblr	3	0.21
G+ †	64	4.40	Viber	2	0.14
Pinterest	48	3.30	Kununu	2	0.14
Weibo	26	1.79	Youku	2	0.14
Flickr	25	1.72	Foursquare	2	0.14
Slideshare	17	1.17	Reddit	1	0.07
Xing	12	0.83	Habrahabr	1	0.07
Line	11	0.76	Atom Feed	1	0.07
Snapchat	9	0.62	T.qq	1	0.07
OK	8	0.55	WhatsApp	1	0.07
Vimeo	6	0.41	Kakao	1	0.07
Glassdoor	5	0.34	Me2Day	1	0.07
Naver	5	0.34	Flipboard	1	0.07

n = 1,453

† G+ has been closed when the survey is being performed. However, many companies have not removed the links to G+.

‡ Application for mobile phones built by the company. The applications can act as “push” channel like other social media platforms.

<sup>7</sup><https://databank.worldbank.org/data/reports.aspx?source=2&series=IT.NET.USER.ZS#>

<sup>8</sup><https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

<sup>9</sup><https://www.statista.com/statistics/282846/regular-social-networking-usage-penetration-worldwide-by-country/>

<sup>10</sup><https://www.hofstede-insights.com/>

Table 3.2: Social Media Adoption by Country With Respect to Indices

Country	Number of Adopters										
	Total	Twitter /%		Facebook /%		LinkedIn /%		YouTube /%		Instagram /%	
Australia	50	36	72.0	22	44.0	34	68.0	27	54.0	9	18.0
Brazil	44	22	50.0	26	59.1	25	56.8	23	52.3	18	40.9
Canada	60	40	66.7	39	65.0	40	66.7	29	48.3	17	28.3
Chile	30	17	56.7	16	53.3	12	40.0	17	56.7	9	30.0
China †	50	0	0.0	0	0.0	4	8.0	0	0.0	0	0.0
Denmark	25	18	72.0	15	60.0	21	84.0	15	60.0	14	56.0
Finland	22	22	100.0	16	72.7	19	86.4	21	95.5	12	54.5
Germany	30	24	80.0	22	73.3	20	66.7	21	70.0	12	40.0
Hong Kong	49	4	8.2	5	10.2	5	10.2	5	10.2	5	10.2
Iceland	19	5	26.3	8	42.1	6	31.6	5	26.3	4	21.1
India	50	46	92.0	44	88.0	39	78.0	36	72.0	19	38.0
Indonesia	30	15	50.0	16	53.3	7	23.3	12	40.0	14	46.7
Israel	35	12	34.3	19	54.3	11	31.4	18	51.4	5	14.3
Japan	100	20	20.0	24	24.0	8	8.0	27	27.0	7	7.0
Korea	50	8	16.0	16	32.0	4	8.0	12	24.0	7	14.0
Malaysia	30	7	23.3	10	33.3	8	26.7	8	26.7	6	20.0
Mexico	35	19	54.3	16	45.7	8	22.9	11	31.4	7	20.0
Norway	26	16	61.5	16	61.5	13	50.0	9	34.6	8	30.8
Philippine	30	12	40.0	14	46.7	4	13.3	6	20.0	8	26.7
Russian	48	22	45.8	27	56.3	1	2.1	20	41.7	17	35.4
Saudi Arabia	50	31	62.0	32	64.0	24	48.0	29	58.0	27	54.0
Singapore	30	11	36.7	10	33.3	13	43.3	12	40.0	6	20.0
South Africa	38	20	52.6	17	44.7	16	42.1	16	42.1	8	21.1
Spain	33	26	78.8	20	60.6	25	75.8	21	63.6	12	36.4
Sweden	29	21	72.4	21	72.4	24	82.8	19	65.5	14	48.3
Switzerland	29	24	82.8	21	72.4	25	86.2	21	72.4	16	55.2
Taiwan	50	3	6.0	16	32.0	4	8.0	10	20.0	1	2.0
Thailand	30	8	26.7	16	53.3	3	10.0	10	33.3	6	20.0
Turkey	50	32	64.0	34	68.0	26	52.0	28	56.0	26	52.0
UK	101	72	71.3	50	49.5	61	60.4	58	57.4	29	28.7
US	102	83	81.4	77	75.5	71	69.6	69	67.6	43	42.2
In Euronext 100:											
Belgium	10	8	80.0	7	70.0	7	70.0	5	50.0	3	30.0
France	64	55	85.9	40	62.5	55	85.9	48	75.0	32	50.0
Netherlands	18	16	88.9	14	77.8	14	77.8	15	83.3	4	22.2
Luxembourg	2	2	100.0	1	50.0	2	100.0	2	100.0	1	50.0
Portugal	3	0	0.0	0	0.0	3	100.0	3	100.0	2	66.7
UK	1	1	100.0	1	100.0	1	100.0	1	100.0	1	100.0

The name of each index is provided in Appendix A

† China has established internet censorship which denies access to Twitter, Facebook, and YouTube from China. Therefore, it is reasonable that no company adopts these platforms.

### 3.4 Result

The data from EIKON are not complete. Only the data from 1,420 companies can be retrieved and inserted into the regression following the method described above. The market capitalisations of the companies are from 0.37 billion to 572 trillion US dollars (Table 3.3). The leverage ratios of the companies are from 0 to 12,642%. On average, the companies are followed by 15.46 analysts (Table 3.3) and 33% of the companies are audited by big four accounting firms. The adoption rate of each social media with respect to these 1,420 companies are not significantly different from the adoption of all 1,453 companies before eliminating missing data (Table 3.4). In further descriptive analysis, it can be found the Voice and Accountability, Political Stability No Violence, and, Control of Corruption are rather dispersed with a standard deviation more than 20, while the Government Effectiveness and Regulatory Quality are comparatively better and concentrated (Table 3.6). The result reflects that the government and regulation shall meet certain basic standard to enable the existence of large stock markets. As to culture factors, the countries are rather dispersed on all the dimensions, indicating that the sample countries can fairly represent the world (Table 3.6) on cultural aspects. On the legal system aspect, the sample companies are listed in 36 countries<sup>11</sup>. Most (26) countries mentioned above have one legal system, but ten of the countries have more than one legal system in their territories (Table 3.7 and Appendix C). Since the scope of legal systems are overlapping with each other, each legal system is represented by one dummy independent variable unless specified otherwise. The overlapping is because of the complex situation. For example, criminal and civil branches can be influenced by common law and civil law respectively. It is not reasonable to simplify the situation by assuming civil law is more important because fraudulent reporting and other misconducts can also be governed by criminal law. As a result legal systems are inserted into models on the basis that each legal system is inserted as an independent dummy variable<sup>12</sup>.

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<sup>11</sup>For all companies other than those in Euronext, companies are deemed to be in the country of the stock exchange they are listed in. For Euronext samples, companies are deemed to be in the country where its headquarter resides.

<sup>12</sup>For example, for Saudi Arabi, Common law is 0; Civil law is 0; Muslim law is 1. For Israel, Common law is 1; Civil law is 1; Muslim law is 0.

Table 3.3: Descriptive Statistics of the Sample Companies

	n	mean	std	min	25%	50%	75%	max
Price To Book Value (MV2BV)	1420	4.787	43.431	-18.272	1.031	1.692	3.388	1539.736
Company Market Capitalisation (USD Trillion) (SIZE) §	1420	4.053	31.495	0.000	0.015	0.074	0.317	572.497
Total Debt to Total Equity (%) (LEV)	1420	130.876	447.698	0.000	28.087	63.994	132.489	12642.341
Number of Analysts	1420	15.457	9.413	0.000	9.000	15.000	21.000	53.000
Weighted Average Cost of Capital (%) (WACC)	1420	7.658	3.152	0.000	5.667	7.266	8.918	38.124
EIKON headlines (NEWS)	1420	25.823	40.172	0.000	1.000	9.000	34.250	532.000

All items, except EIKON headlines, are the mean values during the year 2018. EIKON headlines are the number of headlines on the EIKON system of Reuters during 2018.

Table 3.4: Adoption Rate of the Sample Companies

	Twitter	Facebook	LinkedIn	YouTube	Instagram
Adoption (%)	53.4	51.2	45.4	47.2	29.4
n = 1,420					

Table 3.5: Industry of the Sample Companies

Industry	Number of samples	Industry	Number of samples
ComS	51	INDL	103
ConD	69	IT	48
ConS	53	MATL	68
ENGY	42	ReaE	26
FNCL	150	UTLY	33
HeaC	49	Total	692

Table 3.6: Descriptive Statistics of Countries

WGI								
Variable	n	Mean	Std	Min	25%	50%	75%	Max
Voice and Accountability†	36	70.197	28.850	5.911	50.246	80.542	95.197	100.000
Political Stability No Violence†	36	58.188	28.733	7.143	30.833	60.000	82.976	98.571
Government Effectiveness†	36	80.823	17.534	41.827	66.466	87.740	94.591	100.000
Regulatory Quality†	36	79.380	19.517	32.692	61.058	87.981	95.312	100.000
Rule of Law†	36	76.309	23.482	22.115	54.327	86.538	94.111	100.000
Control of Corruption†	36	74.626	24.737	16.346	54.928	84.856	94.832	99.519
WGI Factor‡	36	0.000	1.013	-2.127	-1.084	0.459	0.764	1.073
Culture								
Variable	n	Mean	Std	Min	25%	50%	75%	Max
PD§	36	0.564	0.228	0.130	0.358	0.590	0.702	1.000
IN§	36	0.495	0.243	0.140	0.258	0.495	0.695	0.910
MS§	36	0.465	0.200	0.050	0.355	0.485	0.613	0.950
UA§	36	0.606	0.237	0.080	0.455	0.585	0.828	0.990
LO§	36	0.522	0.226	0.210	0.347	0.470	0.683	1.000
IG§	36	0.511	0.196	0.000	0.415	0.535	0.673	0.970
Other								
Variable	n	Mean	Std	Min	25%	50%	75%	Max
Internet penetration ††	36	79.342	17.214	32.292	72.211	84.423	92.825	98.260
Social media penetration †††	32	65.688	13.663	23.000	60.750	67.000	72.000	89.000
GDP per capita	36	35152	25315	1979	10397	38457	49675	104499

† Worldwide Governance Indicators

‡ Factor generated from WGI factors, see Subsection 3.4.1 for more detail.

§ Culture index from <https://www.hofstede-insights.com/>

†† From <https://databank.worldbank.org/data/reports.aspx?source=2&series=IT.NET.USER.ZS>

††† From <https://www.statista.com/statistics/282846/regular-social-networking-usage-penetration-worldwide-by-country/>. The social media penetration data is missing in four countries.

GDP per capita data is obtained from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.

Table 3.7: Legal systems of the countries of the exchanges

Countries with single system	
Legal system	Number
Civil law	20
Common law	5
Muslim law	1
Subtotal	26
Countries with multiple systems	
Legal system	Number
Civil Common Customary Jewish	1
Civil Common	2
Civil Common Customary	1
Civil Customary	2
Civil Socialist	1
Common Muslim	1
Common Muslim Customary	2
Subtotal	10
Total	36

Law system from <http://www.juriglobe.ca/eng/syst-onu/index-alpha.php>.

The total jurisdictions in this table are larger than the total of countries because some countries have more than one legal system.

Dummy variable for each legal system is used in the regression models.

Details can be found in Appendix C

### 3.4.1 WGI factor generation

Since the WGI factors are correlated with each other, factor analysis is adopted to generate one representing variable from the six WGI indices. Firstly, Bartlett's test is used to test those factors for inter-correlation. As the Chi-square is 349.67 and p-value is 0.00, the inter-correlation is confirmed. Then, the Kaiser-Meyer-Olkin method's model value is 0.89 showing that it is possible to use factor analysis. Afterwards, the factor analysis is implemented, with one factor found to represent 87.15% of the whole variance of the factors.

Table 3.8: Loadings of Factor Analysis on WGI Factors

WGI individual index	Coefficient to generated factor
Voice and Accountability	0.835
Political Stability No Violence	0.870
Government Effectiveness	0.972
Regulatory Quality	0.958
Rule of Law	0.991
Control of Corruption	0.965

### 3.4.2 Correlation between variables

The Spearman's correlation table for the tests on hypothesis 1.1 is provided in Appendix E.1. The decisions with respect to adopting of the top five social media platforms are correlated with each other, showing if a company decides to adopt one platform, it is likely that it adopts more other platforms. Also, the social media adoption of five platforms is found to be significantly correlated with market-to-book value, market capitalisation, leverage and analysts. Country-specific factors such as WGI, social media penetration and GDP are significantly correlated with most of the platforms. But it is not expected that the adoption of social media is negatively associated with social media penetration. Law systems and culture indices are also found to be correlated with the adoption of some platforms. Also, some country-specific factors are correlated with each other. For example, WGI, internet penetration and GDP are highly correlated with each other.

### **3.4.3 Hypothesis 1.1**

#### **3.4.3.1 Company-specific factors only**

The tests start with the control model (Model 1.1.0) which only includes company-specific factors.

The result of Model 1.1.0 shows that the market-to-book value, the size of the company and number of analysts are significantly associated with the adoption of SMCD (Table 3.9). WACC and leverage are not found to be significantly associated with the adoption of most social media platforms. The negative relationship between size and adoption is not as expected, but explainable. Small companies have less overall social presences, and, the management has more incentive to use social media to draw attention from the public. The additional investors can increase the liquidity of the company and, therefore, help to reduce the cost of capital. The mass media headlines (NEWS) is also found to be positively associated with the adoption of social media. The relationship between traditional media and social media can be explained in many ways. One possible explanation is that the motivation for disclosure via social media is not replaced by mass media. Another valid explanation is that the companies attracted more traditional media may be forced to use social media to counter possible unfriendly mass media news. Also, companies with aggressive PR departments may attract more mass media while may be more likely to set up social media accounts.

$$Adoption = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \epsilon \quad (\text{Model 1.1.0})$$

Table 3.9: Results of Regressing Social Media Adoption on Company-Specific Factors

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.255 *	-0.005	-0.274 **	-0.233 *	-0.111
WACC	0.018	0.011	-0.016	-0.017	0.010
MV2BV	0.406 ***	0.468 ***	0.324 ***	0.236 ***	0.196 **
SIZE	-0.191 ***	-0.061 **	-0.318 ***	-0.136 ***	-0.056 *
LEV	-0.000	-0.000	-0.000 **	-0.000	0.000
Analysts	0.265 ***	0.042	0.486 ***	0.197 **	0.098
NEWS	0.397 ***	0.239 ***	0.372 ***	0.274 ***	0.247 ***
ComS	0.376	0.235	-0.283	0.015	-0.120
ConD	0.032	-0.205	-0.394 *	-0.122	0.335 *
ConS	-0.277	-0.504 ***	-0.110	-0.095	-0.155
ENGY	0.301	0.294	0.711 ***	0.070	-0.048
FNCL	0.726 ***	0.363 **	0.850 ***	0.537 ***	0.002
HeaC	0.206	-0.031	0.853 ***	0.294	-0.663 **
INDL	0.367 **	0.170	0.630 ***	0.151	0.294 *
IT	0.345	0.291	0.865 ***	0.451 *	-0.812 ***
MATL	-0.066	-0.173	0.668 ***	0.213	-0.286
ReaE	0.218	-0.342	0.448 *	0.013	0.755 ***
UTLY	0.561 **	0.399 *	1.003 ***	0.515 **	0.208
Intercept	2.790 ***	0.497	5.241 ***	2.043 ***	-0.489
n	1411	1411	1411	1411	1411
$R_{McFadden}^2$	0.021	0.011	0.028	0.011	0.008

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.1 for variable definitions.

#### 3.4.3.2 WGI and Social media penetration

Model 1.1.1 is Model 1.1.0 with WGI added. WGI is positively associated with LinkedIn while negatively associated with Facebook and Instagram (Table 3.10).

When Social media penetration is used instead of WGI (Model 1.1.2), social media penetration is found to be significantly negatively associated with the adoption of social media platforms (Table 3.11).

In Model 1.1.3 which uses both WGI and SMP, the result of SMP is same as Model 1.1.2, but the relationship between WGI and adoption changes (Model 1.1.3 Table 3.12). WGI become significantly positively associated with Twitter, LinkedIn and YouTube, but negatively associated with Instagram.

$$Adoption = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{WGI} + \epsilon \quad (\text{Model 1.1.1})$$

Table 3.10: Results of Regressing Social Media Adoption on Company-Specific Factors and WGI

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.253 *	0.021	-0.314 **	-0.242 *	-0.064
WACC	0.016	-0.011	0.013	-0.010	-0.027
MV2BV	0.406 ***	0.471 ***	0.318 ***	0.235 ***	0.207 ***
SIZE	-0.191 ***	-0.070 ***	-0.303 ***	-0.132 ***	-0.075 **
LEV	-0.000	-0.000	-0.000 **	-0.000	0.000
Analysts	0.268 ***	0.075	0.438 ***	0.186 **	0.168 *
NEWS	0.399 ***	0.254 ***	0.350 ***	0.269 ***	0.274 ***
ComS	0.377	0.237	-0.290	0.015	-0.122
ConD	0.033	-0.190	-0.418 **	-0.127	0.366 *
ConS	-0.276	-0.499 ***	-0.114	-0.096	-0.151
Energy	0.303	0.312	0.675 ***	0.063	-0.013
FNCL	0.726 ***	0.361 **	0.851 ***	0.538 ***	0.002
HeaC	0.210	0.013	0.799 ***	0.280	-0.583 **
INDL	0.371 **	0.217	0.563 ***	0.135	0.378 **
IT	0.352	0.373	0.757 ***	0.425 *	-0.685 **
MATL	-0.064	-0.149	0.638 ***	0.205	-0.250
ReaE	0.222	-0.306	0.385	0.000	0.834 ***
UTLY	0.559 **	0.375	1.034 ***	0.523 **	0.178
WGI	-0.012	-0.149 **	0.198 ***	0.048	-0.255 ***
Intercept	2.811 ***	0.745	4.880 ***	1.963 ***	-0.047
n	1411	1411	1411	1411	1411
$R_{McFadden}^2$	0.021	0.011	0.029	0.011	0.009

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.1 for variable definitions.

$$Adoption = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{Social media penetration} + \epsilon \quad (\text{Model 1.1.2})$$

Table 3.11: Results of Regressing Social Media Adoption on Company-Specific Factors and Social Media Penetration

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.104	0.164	-0.195	-0.112	-0.011
WACC	-0.001	0.003	-0.038 *	-0.033	-0.001
MV2BV	0.355 ***	0.434 ***	0.309 ***	0.223 ***	0.182 **
SIZE	-0.253 ***	-0.085 ***	-0.382 ***	-0.170 ***	-0.084 ***
LEV	-0.000	-0.000	-0.000 **	-0.000	0.000
Analysts	0.285 ***	0.080	0.498 ***	0.217 **	0.026
NEWS	0.369 ***	0.187 ***	0.358 ***	0.249 ***	0.236 ***
ComS	0.798 ***	0.478 **	-0.048	0.214	0.058
ConD	0.259	-0.095	-0.136	-0.002	0.448 **
ConS	0.190	-0.230	0.307	0.199	0.038
Energy	0.772 ***	0.652 **	1.119 ***	0.404	0.194
FNCL	1.180 ***	0.557 ***	1.253 ***	0.823 ***	0.182
HeaC	0.681 ***	0.155	1.189 ***	0.569 **	-0.443
INDL	0.866 ***	0.440 ***	1.069 ***	0.456 ***	0.508 ***
IT	1.114 ***	0.633 **	1.318 ***	0.749 ***	-0.508 *
MATL	0.118	-0.106	0.881 ***	0.317 *	-0.292
ReaE	0.868 ***	-0.088	0.895 ***	0.393	1.112 ***
UTLY	0.621 **	0.518 **	0.988 ***	0.520 **	0.291
SMP	-5.197 ***	-3.046 ***	-3.402 ***	-2.930 ***	-1.989 ***
Intercept	7.468 ***	2.914 ***	8.836 ***	4.642 ***	1.589 **
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.033	0.015	0.036	0.016	0.010

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.1 for variable definitions.

$$Adoption = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{WGI} + \beta_{20} \text{Social\_media\_penetration} + \epsilon$$

(Model 1.1.3)

Table 3.12: Results of Regressing Social Media Adoption on Company-Specific Factors, WGI, and Social Media Penetration

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.118	0.168	-0.234	-0.126	0.009
WACC	0.022	-0.006	0.010	-0.011	-0.028
MV2BV	0.351 ***	0.436 ***	0.290 ***	0.215 ***	0.196 **
SIZE	-0.242 ***	-0.089 ***	-0.356 ***	-0.159 ***	-0.099 ***
LEV	-0.000	-0.000	-0.000 *	-0.000	0.000
Analysts	0.231 **	0.099	0.371 ***	0.164 *	0.098
NEWS	0.347 ***	0.196 ***	0.314 ***	0.228 ***	0.262 ***
ComS	0.830 ***	0.468 **	-0.008	0.241	0.027
ConD	0.254	-0.092	-0.155	-0.009	0.458 **
ConS	0.209	-0.238	0.355	0.220	0.011
Energy	0.793 ***	0.643 **	1.156 ***	0.423 *	0.176
FNCL	1.210 ***	0.548 ***	1.297 ***	0.847 ***	0.164
HeaC	0.646 **	0.169	1.128 ***	0.534 **	-0.399
INDL	0.829 ***	0.453 ***	0.987 ***	0.419 **	0.554 ***
IT	1.050 ***	0.656 **	1.193 ***	0.689 ***	-0.440
MATL	0.096	-0.098	0.844 ***	0.297 *	-0.276
ReaE	0.847 ***	-0.082	0.830 ***	0.370	1.150 ***
UTLY	0.663 **	0.502 *	1.064 ***	0.562 **	0.250
WGI	0.165 **	-0.062	0.358 ***	0.167 **	-0.205 **
Social media penetration	-5.487 ***	-2.935 ***	-3.961 ***	-3.216 ***	-1.653 ***
Intercept	7.426 ***	2.928 ***	8.692 ***	4.593 ***	1.674 **
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.034	0.015	0.037	0.016	0.011

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.1 for variable definitions.

#### 3.4.3.3 WGI interacted with auditor

In Model 1.1.0, the auditor variable is not found to be positively related to the adoption. However, when the auditor variable interacts with WGI, it becomes positively associated with the adoption of Twitter, Facebook, and LinkedIn (Model 1.1.4, Table 3.13), showing that the companies audited by big four auditors tend to adopt SMCD only in an environment of good country governance, such as high-quality legislation and effective law enforcement. The result supports that the quality of regulation and enforcement may exert a moderating effect on the relationship between Auditor and social media adoption.

$$\begin{aligned}
Adoption = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
& + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} WGI + \beta_{20} WGI * Auditor \\
& + \beta_{21} \text{Social\_media\_penetration} + \epsilon
\end{aligned}
\tag{Model 1.1.4}$$

Table 3.13: Results of Regressing Social Media Adoption on Company-Specific Factors, WGI, Social Media Penetration, and, Auditor Interacting With WGI

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.154	0.116	-0.327 **	-0.151	-0.019
WACC	0.017	-0.012	0.004	-0.013	-0.030
MV2BV	0.339 ***	0.424 ***	0.281 ***	0.210 ***	0.191 **
SIZE	-0.235 ***	-0.084 ***	-0.349 ***	-0.157 ***	-0.097 ***
LEV	-0.000	-0.000	-0.000 *	-0.000	0.000
Analysts	0.238 **	0.108	0.380 ***	0.166 *	0.101
NEWS	0.339 ***	0.187 ***	0.303 ***	0.224 ***	0.259 ***
ComS	0.829 ***	0.472 **	-0.029	0.238	0.023
ConD	0.235	-0.105	-0.165	-0.013	0.455 **
ConS	0.158	-0.293	0.305	0.202	-0.009
Energy	0.747 ***	0.595 **	1.098 ***	0.403	0.156
FNCL	1.240 ***	0.580 ***	1.325 ***	0.858 ***	0.175
HeaC	0.645 **	0.176	1.123 ***	0.534 **	-0.403
INDL	0.834 ***	0.464 ***	0.983 ***	0.421 **	0.556 ***
IT	1.019 ***	0.634 **	1.150 ***	0.677 ***	-0.454
MATL	0.090	-0.102	0.837 ***	0.295 *	-0.277
ReaE	0.801 ***	-0.129	0.787 ***	0.353	1.131 ***
UTLY	0.673 **	0.520 **	1.066 ***	0.567 **	0.258
WGI	0.058	-0.190 **	0.247 ***	0.123	-0.252 ***
Social media penetration	-5.460 ***	-2.883 ***	-3.865 ***	-3.187 ***	-1.621 ***
Auditor*WGI	0.428 ***	0.505 ***	0.486 ***	0.181	0.194
Intercept	7.270 ***	2.811 ***	8.480 ***	4.535 ***	1.611 **
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.035	0.016	0.038	0.016	0.011

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

#### 3.4.3.4 Legal systems

Model 1.1.5 is Model 1.1.0 with legal system inserted. The common law or civil law is mostly not associated with the adoption, except for a negative relationship between common law and Instagram and a positive relationship between civil law and Facebook (Table 3.14). Muslim law is positively associated with the adoption of all platforms (Table 3.14). One reasonable explanation is that social media may be more convenient than mass media for listed companies in the Muslim world.

$$\begin{aligned}
Adoption = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
& + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{Common Law} + \beta_{20} \text{Civil Law} + \beta_{21} \text{Muslim Law} \\
& + \epsilon
\end{aligned}
\tag{Model 1.1.5}$$

Table 3.14: Results of Regressing Social Media Adoption on Company-Specific Factors and Legal System

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.209	0.083	-0.235 *	-0.166	-0.021
WACC	0.006	-0.000	-0.028	-0.027	-0.000
MV2BV	0.424 ***	0.500 ***	0.344 ***	0.265 ***	0.252 ***
SIZE	-0.230 ***	-0.107 ***	-0.350 ***	-0.173 ***	-0.101 ***
LEV	-0.000	-0.000	-0.000 **	-0.000	0.000
Analysts	0.277 ***	0.063	0.491 ***	0.212 ***	0.114
NEWS	0.496 ***	0.337 ***	0.469 ***	0.364 ***	0.370 ***
ComS	0.373	0.230	-0.330	-0.001	-0.131
ConD	0.022	-0.221	-0.415 **	-0.131	0.357 *
ConS	-0.263	-0.502 ***	-0.117	-0.082	-0.118
Energy	0.320	0.315	0.719 ***	0.095	0.012
FNCL	0.747 ***	0.384 ***	0.837 ***	0.558 ***	0.034
HeaC	0.251	-0.000	0.889 ***	0.335	-0.590 **
INDL	0.405 **	0.195	0.656 ***	0.175	0.353 **
IT	0.431 *	0.359	0.939 ***	0.518 **	-0.751 ***
MATL	-0.090	-0.188	0.649 ***	0.201	-0.324 *
ReaE	0.368	-0.183	0.568 **	0.184	1.094 ***
UTLY	0.642 **	0.479 *	1.070 ***	0.592 **	0.314
Common law	-0.128	-0.058	-0.047	-0.199	-0.662 ***
Civil law	0.422 *	0.615 ***	0.422 *	0.396 *	0.178
Muslim law	1.127 ***	1.114 ***	1.130 ***	0.975 ***	1.150 ***
Intercept	3.206 ***	0.868	5.466 ***	2.445 ***	0.252
n	1411	1411	1411	1411	1411
$R_{McFadden}^2$	0.024	0.013	0.031	0.013	0.012

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Then Model 1.1.6 is constructed based on Model 1.1.5 with WGI and social media penetration controlled for. Muslim law is still positively associated with all social media adoption (Table 3.15). However, the association between civil law and Facebook is no longer significant. It seems that WGI and social media penetration is sufficient to predict the adoption of Facebook. Another difference between Model 1.1.6 and Model 1.1.5 is that Common law is found to be negatively associated with YouTube. The result, with the results of the previous two models, shows that Instagram and YouTube may not be seen as an authentic channel of business communication in Common law countries. Also, the result suggests social media are more accepted by top listed companies in the Muslim world.

$$\begin{aligned}
Adoption = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
& + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{WGI} + \beta_{20} \text{Social media penetration} \\
& + \beta_{21} \text{Common Law} + \beta_{22} \text{Civil Law} + \beta_{23} \text{Muslim Law} \\
& + \epsilon
\end{aligned}
\tag{Model 1.1.6}$$

Table 3.15: Results of Regressing Social Media Adoption on Company-Specific Factors, WGI, Social Media Penetration, and, Legal System

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.128	0.195	-0.228	-0.085	0.049
WACC	0.036	0.006	0.029	0.005	-0.011
MV2BV	0.373 ***	0.469 ***	0.332 ***	0.256 ***	0.241 ***
SIZE	-0.266 ***	-0.115 ***	-0.384 ***	-0.185 ***	-0.122 ***
LEV	-0.000	-0.000	-0.000 *	-0.000	0.000
Analysts	0.231 **	0.099	0.332 ***	0.167 *	0.097
NEWS	0.428 ***	0.265 ***	0.435 ***	0.312 ***	0.358 ***
ComS	0.819 ***	0.459 *	-0.100	0.233	-0.008
ConD	0.243	-0.113	-0.239	-0.025	0.439 **
ConS	0.235	-0.223	0.336	0.266	0.035
Energy	0.827 ***	0.686 ***	1.169 ***	0.483 *	0.205
FNCL	1.239 ***	0.575 ***	1.268 ***	0.898 ***	0.169
HeaC	0.663 **	0.166	1.102 ***	0.547 **	-0.412
INDL	0.828 ***	0.441 ***	0.906 ***	0.403 **	0.537 ***
IT	1.051 ***	0.615 **	1.121 ***	0.648 **	-0.522 *
MATL	0.049	-0.141	0.773 ***	0.250	-0.359 *
ReaE	0.983 ***	0.054	0.939 ***	0.571 **	1.382 ***
UTLY	0.765 ***	0.598 **	1.161 ***	0.693 **	0.343
WGI	0.303 ***	0.053	0.566 ***	0.326 ***	-0.054
SMP	-5.427 ***	-2.679 ***	-3.497 ***	-3.122 ***	-1.332 **
Common law	-0.461 *	-0.416 *	-0.293	-0.705 ***	-0.758 ***
Civil law	0.055	0.144	0.456	0.007	-0.006
Muslim law	0.900 ***	0.748 ***	1.306 ***	0.825 ***	0.954 ***
Intercept	7.702 ***	3.117 ***	8.435 ***	4.967 ***	1.810 **
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.036	0.017	0.041	0.019	0.014

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

### 3.4.3.5 Culture

As found in Spearman's regression, cultural factors are correlated with WGI while some cultural factors are correlated with each other. Therefore, cultural factors are inserted into Model 1.1.2 one by one while WGI is kept out of the model. The resulting model is Model 1.1.7. Almost all the cultural factors are found to be related to social media adoption (Table 3.16, 3.17, 3.18, 3.19, 3.20, 3.21), showing that the cultural factor can influence the decision of SMCD. High PD making only one-way formal communication looks authentic, so it is negatively associated with SMCD while IN acts the opposite. High MS is linked with assertiveness which encourages the management to use traditional and authentic one-way channels, while low MS is linked with cooperation and modesty which lead the management to use more flexible communication channels such as social media. Also, LO, UA, and, IG are found to be associated with SMCD, positively or negatively. Although the communication theory predicted that the culture shall influence the action of communication, the precious mechanism between communication and LO, UA, and, IG are still unclear and need detailed research.

$$\begin{aligned} \text{Adoption} = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\ & + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{Social media penetration} + \beta_{20} \text{Culture} \\ & + \epsilon \end{aligned} \quad (\text{Model 1.1.7})$$

Table 3.16: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, And, PD

	Adoption									
	Twitter		Facebook		LinkedIn		YouTube		Instagram	
Auditor	-0.081		0.171		-0.171		-0.097		-0.016	
WACC	0.020		0.009		-0.009		-0.017		-0.007	
MV2BV	0.330	***	0.425	***	0.264	***	0.199	***	0.194	**
SIZE	-0.234	***	-0.080	***	-0.349	***	-0.155	***	-0.091	***
LEV	-0.000		-0.000		-0.000	*	-0.000		0.000	
Analysts	0.257	***	0.074		0.464	***	0.200	**	0.035	
NEWS	0.324	***	0.173	***	0.287	***	0.213	***	0.252	***
ComS	0.877	***	0.501	**	0.033		0.271		0.033	
ConD	0.282		-0.086		-0.111		0.017		0.440	**
ConS	0.231		-0.216		0.367		0.235		0.023	
Energy	0.819	***	0.669	***	1.185	***	0.442	*	0.178	
FNCL	1.222	***	0.569	***	1.296	***	0.853	***	0.173	
HeaC	0.651	**	0.148		1.150	***	0.548	**	-0.432	
INDL	0.843	***	0.436	***	1.029	***	0.443	***	0.514	***
IT	1.064	***	0.621	**	1.242	***	0.716	***	-0.496	*
MATL	0.108		-0.106		0.869	***	0.312	*	-0.293	
ReaE	0.900	***	-0.079		0.919	***	0.415		1.104	***
UTLY	0.694	**	0.544	**	1.087	***	0.583	**	0.267	
Social media penetration	-5.312	***	-3.093	***	-3.558	***	-3.050	***	-1.934	***
PD	-1.041	***	-0.321		-1.548	***	-0.825	**	0.357	
Intercept	7.691	***	3.002	***	9.065	***	4.834	***	1.510	*
n	1321		1321		1321		1321		1321	
$R_{McFadden}^2$	0.034		0.015		0.037		0.016		0.010	

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Table 3.17: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, and, IN

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.169	0.150	-0.274 *	-0.147	0.000
WACC	0.031	0.010	-0.008	-0.018	-0.005
MV2BV	0.272 ***	0.413 ***	0.220 **	0.177 **	0.196 **
SIZE	-0.179 ***	-0.068 **	-0.307 ***	-0.132 ***	-0.094 ***
LEV	-0.000	-0.000	-0.000 *	-0.000	0.000
Analysts	0.260 ***	0.077	0.474 ***	0.209 **	0.028
NEWS	0.239 ***	0.157 ***	0.227 ***	0.183 ***	0.255 ***
ComS	0.621 **	0.436 *	-0.247	0.123	0.082
ConD	0.040	-0.144	-0.355	-0.110	0.477 **
ConS	-0.040	-0.282	0.103	0.091	0.068
Energy	0.532 *	0.600 **	0.894 ***	0.288	0.226
FNCL	0.940 ***	0.500 ***	1.016 ***	0.704 ***	0.216
HeaC	0.352	0.083	0.893 ***	0.413 *	-0.401
INDL	0.568 ***	0.374 **	0.788 ***	0.312 *	0.547 ***
IT	0.836 ***	0.574 **	1.055 ***	0.617 **	-0.472
MATL	-0.181	-0.171	0.601 ***	0.175	-0.257
ReaE	0.567 **	-0.161	0.593 **	0.239	1.154 ***
UTLY	0.406	0.472 *	0.777 ***	0.419	0.319
Social media penetration	-4.407 ***	-2.892 ***	-2.725 ***	-2.605 ***	-2.062 ***
IN	1.727 ***	0.401	1.654 ***	0.862 ***	-0.242
Intercept	4.640 ***	2.280 **	6.119 ***	3.270 ***	1.958 **
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.036	0.015	0.038	0.016	0.010

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Table 3.18: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, and, MS

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.075	0.207	-0.139	-0.073	0.051
WACC	-0.007	-0.005	-0.041 *	-0.041 *	-0.004
MV2BV	0.309 ***	0.396 ***	0.277 ***	0.192 **	0.160 **
SIZE	-0.229 ***	-0.066 **	-0.357 ***	-0.151 ***	-0.069 **
LEV	-0.000	-0.000	-0.000 *	-0.000	0.000
Analysts	0.328 ***	0.121	0.550 ***	0.252 ***	0.071
NEWS	0.365 ***	0.183 ***	0.365 ***	0.246 ***	0.239 ***
ComS	0.849 ***	0.536 **	-0.017	0.251	0.100
ConD	0.368 *	0.025	-0.025	0.096	0.572 ***
ConS	0.292	-0.119	0.431 *	0.294	0.151
Energy	0.733 ***	0.636 **	1.087 ***	0.382	0.182
FNCL	1.230 ***	0.627 ***	1.339 ***	0.880 ***	0.258
HeaC	0.778 ***	0.271	1.316 ***	0.661 ***	-0.358
INDL	0.957 ***	0.557 ***	1.162 ***	0.535 ***	0.596 ***
IT	1.233 ***	0.760 ***	1.441 ***	0.845 ***	-0.450
MATL	0.178	-0.012	0.979 ***	0.401 **	-0.212
ReaE	0.972 ***	0.035	1.060 ***	0.498 *	1.267 ***
UTLY	0.610 **	0.537 **	1.009 ***	0.528 **	0.325
Social media penetration	-5.801 ***	-3.732 ***	-3.959 ***	-3.446 ***	-2.499 ***
MS	-1.915 ***	-2.016 ***	-2.646 ***	-1.770 ***	-2.045 ***
Intercept	8.201 ***	3.852 ***	9.782 ***	5.369 ***	2.431 ***
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.036	0.018	0.040	0.018	0.013

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Table 3.19: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, and, UA

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.073	0.217	-0.209	-0.068	0.027
WACC	-0.001	0.004	-0.038 *	-0.032	0.001
MV2BV	0.386 ***	0.494 ***	0.295 ***	0.272 ***	0.221 ***
SIZE	-0.259 ***	-0.093 ***	-0.381 ***	-0.178 ***	-0.087 ***
LEV	-0.000	-0.000	-0.000 **	-0.000 *	0.000
Analysts	0.328 ***	0.140	0.473 ***	0.282 ***	0.077
NEWS	0.378 ***	0.202 ***	0.356 ***	0.260 ***	0.243 ***
ComS	0.728 ***	0.364	-0.013	0.111	-0.037
ConD	0.199	-0.194	-0.105	-0.091	0.371 *
ConS	0.133	-0.323	0.335	0.120	-0.035
Energy	0.731 ***	0.600 **	1.141 ***	0.351	0.142
FNCL	1.169 ***	0.547 ***	1.262 ***	0.815 ***	0.163
HeaC	0.634 **	0.080	1.212 ***	0.505 **	-0.497 *
INDL	0.836 ***	0.392 **	1.087 ***	0.407 **	0.459 ***
IT	1.018 ***	0.487 *	1.365 ***	0.622 **	-0.610 **
MATL	0.062	-0.198	0.912 ***	0.232	-0.366 *
ReaE	0.900 ***	-0.032	0.882 ***	0.452 *	1.162 ***
UTLY	0.581 **	0.460 *	1.010 ***	0.466 *	0.232
Social media penetration	-4.927 ***	-2.749 ***	-3.492 ***	-2.682 ***	-1.803 ***
UA	0.564 *	0.955 ***	-0.274	0.864 ***	0.723 **
Intercept	6.991 ***	2.183 ***	9.087 ***	3.990 ***	0.983
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.034	0.016	0.036	0.017	0.011

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Table 3.20: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, and, LO

	Adoption									
	Twitter	Facebook	LinkedIn	YouTube	Instagram					
Auditor	-0.058	0.188	-0.180	-0.100	0.001					
WACC	-0.029	-0.015	-0.062	***	-0.047	**	-0.020			
MV2BV	0.177	**	0.326	***	0.155	*	0.146	*	0.079	
SIZE	-0.160	***	-0.027	-0.308	***	-0.128	***	-0.034		
LEV	-0.000	-0.000	-0.000	*	-0.000	0.000				
Analysts	0.300	***	0.099	0.519	***	0.227	**	0.045		
NEWS	0.337	***	0.163	***	0.328	***	0.230	***	0.213	***
ComS	0.771	***	0.460	*	-0.075	0.202	0.067			
ConD	0.323	-0.062	-0.077	0.025	0.515	***				
ConS	0.141	-0.270	0.285	0.174	0.029					
Energy	0.577	**	0.519	**	0.965	***	0.311	0.095		
FNCL	1.011	***	0.443	***	1.107	***	0.746	***	0.093	
HeaC	0.700	***	0.155	1.216	***	0.567	**	-0.444		
INDL	0.906	***	0.449	***	1.122	***	0.466	***	0.555	***
IT	1.468	***	0.816	***	1.609	***	0.866	***	-0.387	
MATL	0.133	-0.099	0.914	***	0.328	*	-0.249			
ReaE	0.719	**	-0.220	0.775	***	0.308	1.029	***		
UTLY	0.427	0.394	0.826	***	0.432	*	0.206			
Social media penetration	-5.802	***	-3.220	***	-3.742	***	-3.058	***	-2.264	***
LO	-2.366	***	-1.410	***	-2.194	***	-1.047	***	-1.481	***
Intercept	7.176	***	2.585	***	8.667	***	4.426	***	1.508	*
n	1321	1321	1321	1321	1321	1321				
$R_{McFadden}^2$	0.038	0.017	0.040	0.017	0.012					

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Table 3.21: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, and, IG

	Adoption				
	Twitter	Facebook	LinkedIn	YouTube	Instagram
Auditor	-0.087	0.171	-0.201	-0.112	-0.014
WACC	-0.013	-0.004	-0.050 **	-0.040 *	-0.005
MV2BV	0.252 ***	0.372 ***	0.216 **	0.163 **	0.140 *
SIZE	-0.157 ***	-0.030	-0.292 ***	-0.114 ***	-0.046
LEV	-0.000	-0.000	-0.000 *	-0.000	0.000
Analysts	0.287 ***	0.093	0.520 ***	0.230 **	0.037
NEWS	0.307 ***	0.149 ***	0.290 ***	0.210 ***	0.208 ***
ComS	0.551 **	0.334	-0.310	0.068	-0.036
ConD	0.047	-0.217	-0.337	-0.125	0.370 *
ConS	-0.166	-0.434 **	-0.005	0.002	-0.094
ENGY	0.595 **	0.543 **	0.972 ***	0.295	0.124
FNCL	0.840 ***	0.350 **	0.931 ***	0.624 ***	0.040
HeaC	0.387	-0.013	0.925 ***	0.398	-0.563 **
INDL	0.552 ***	0.262	0.783 ***	0.277	0.392 **
IT	0.906 ***	0.508 *	1.116 ***	0.619 **	-0.598 **
MATL	-0.186	-0.281	0.611 ***	0.146	-0.399 *
ReaE	0.742 ***	-0.192	0.762 ***	0.307	1.065 ***
UTLY	0.434	0.420	0.821 ***	0.420	0.224
Social media penetration	-6.036 ***	-3.520 ***	-4.257 ***	-3.434 ***	-2.379 ***
IG	2.841 ***	1.656 ***	2.610 ***	1.630 ***	1.113 ***
Intercept	4.702 ***	1.280	6.268 ***	3.032 ***	0.523
n	1321	1321	1321	1321	1321
$R_{McFadden}^2$	0.038	0.017	0.040	0.017	0.011

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

Also, an additional model with all cultural factors inserted simultaneously (Model 1.1.8) is built to confirm the result of Model 1.1.7. The result is the same as the individual tests.

$$\begin{aligned}
Adoption = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
& + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{Social\_media\_penetration} + \sum_{n=20}^{25} \beta_n \text{Cultures} \\
& + \epsilon
\end{aligned}
\tag{Model 1.1.8}$$

Table 3.22: Results of Regressing Social Media Adoption on Company-Specific Factors, Social Media Penetration, and, All Six Cultural Factors

	Adoption					
	Twitter	Facebook	LinkedIn	YouTube	Instagram	
Auditor	-0.045	0.335 **	-0.145	0.006	0.161	
WACC	-0.030	-0.033	-0.050 *	-0.046 *	-0.051 *	
MV2BV	0.150 *	0.357 ***	0.107	0.151 *	0.122	
SIZE	-0.069 *	0.008	-0.225 ***	-0.074 **	-0.012	
LEV	-0.000	-0.000	-0.000	-0.000	0.000	
Analysts	0.444 ***	0.246 ***	0.597 ***	0.359 ***	0.191 *	
NEWS	0.252 ***	0.173 ***	0.257 ***	0.190 ***	0.277 ***	
ComS	0.289	0.260	-0.297	-0.032	-0.084	
ConD	-0.055	-0.149	-0.232	-0.127	0.528 **	
ConS	-0.326	-0.422 *	0.119	-0.002	-0.044	
Energy	0.135	0.393	0.783 ***	0.133	0.006	
FNCL	0.635 ***	0.388 **	0.949 ***	0.647 ***	0.072	
HeaC	0.245	0.072	1.028 ***	0.389	-0.427	
INDL	0.487 **	0.403 **	0.895 ***	0.298	0.567 ***	
IT	0.938 ***	0.634 **	1.342 ***	0.586 **	-0.451	
MATL	-0.363 *	-0.235	0.696 ***	0.121	-0.284	
ReaE	0.580 *	-0.020	0.795 **	0.440	1.361 ***	
UTLY	0.021	0.305	0.719 **	0.302	0.135	
SMP	-5.548 ***	-4.054 ***	-4.491 ***	-3.613 ***	-3.257 ***	
PD	1.000	-0.079	-0.064	-0.319	0.250	
IN	1.501 **	-0.376	0.555	0.220	-0.882	
MS	-2.360 ***	-2.214 ***	-2.844 ***	-2.009 ***	-2.241 ***	
UA	1.185 ***	1.507 ***	0.267	1.406 ***	1.164 ***	
LO	-1.279 ***	-1.183 ***	-1.181 **	-0.676	-1.549 ***	
IG	1.947 ***	1.492 **	1.756 ***	1.249 **	1.335 **	
Intercept	2.586 *	1.628	6.798 ***	2.756 **	1.380	
n	1321	1321	1321	1321	1321	
$R_{McFadden}^2$	0.045	0.023	0.046	0.022	0.017	

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,420 firms.

See Appendix D.1 for variable definitions.

### 3.4.4 Hypothesis 1.2

#### 3.4.4.1 Descriptives

Among the 1,420 companies, only 758 companies present Twitter accounts on their websites. Removing the companies that sent no tweets during 2018 and the companies with missing data with respect to other variables, only 692 companies are suitable for the regression tests.

Table 3.23: Descriptive Statistics of the Samples for Testing Hypothesis 1.2 (Country-Specific Factors)

Variable	n	Mean	Std	Min	25%	50%	75%	Max
WGI †	692	0.048	1.006	-2.127	-1.090	0.653	0.764	1.051
IP †	692	0.781	0.175	0.323	0.752	0.821	0.927	0.983
PD ‡	692	0.543	0.212	0.180	0.350	0.490	0.690	1.000
IN ‡	692	0.619	0.239	0.140	0.390	0.680	0.890	0.910
MS ‡	692	0.520	0.173	0.050	0.430	0.560	0.630	0.950
UA ‡	692	0.580	0.216	0.080	0.440	0.510	0.820	0.950
LO ‡	692	0.484	0.192	0.210	0.350	0.480	0.630	1.000
IG ‡	692	0.562	0.165	0.170	0.450	0.590	0.680	0.970
SMP §	692	0.618	0.135	0.230	0.580	0.670	0.700	0.890
GDP ††	692	10.119	1.035	7.591	9.264	10.595	10.883	11.294

† Factor generated from WGI factors, see Subsection 3.4.1 for more detail.

‡ Culture index from <https://www.hofstede-insights.com/>

† From <https://databank.worldbank.org/data/reports.aspx?source=2&series=IT.NET.USER.ZS#>

§ From [www.statista.com](http://www.statista.com). The social media penetration data is missing in four countries.

†† Obtained from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.

Table 3.24: Descriptive Statistics of the Samples for Testing Hypothesis 1.2 (Industry)

Industry	Number of samples	Industry	Number of samples
ComS	51	INDL	103
ConD	69	IT	48
ConS	53	MATL	68
ENGY	42	ReaE	26
FNCL	150	UTLY	33
HeaC	49	Total	692

Table 3.25: Descriptive Statistics of the Samples for Testing Hypothesis 1.2 (Company-Specific Factors)

Variable	n	Mean	Std	Min	25%	50%	75%	Max
Tweets †	692	2892.793	6716.625	1.000	294.750	899.500	2556.250	75941.000
Price To Book Value (MV2BV) Company Market Capitalisation (USD Trillion) (SIZE)	692	7.137	62.013	-18.272	1.165	2.028	3.886	1539.736
Total Debt to Total Equity (%) (LEV)	692	152.449	577.761	0.000	33.867	69.999	148.464	12642.341
Weighted Average Cost of Capital (%) (WACC)	692	7.729	2.964	0.823	5.756	7.299	8.936	27.440
Number of Analysts	692	17.480	9.007	0.000	12.000	17.000	23.000	50.000
EIKON headlines (NEWS) ‡	692	36.743	47.909	0.000	5.000	18.000	60.000	532.000

† The number of tweets sent by the company during 2018.

‡ The number of headlines on EIKON system of Reuters during 2018.

Table 3.26: Descriptive Statistics of the Samples for Testing Hypothesis 1.2 (Continued)

	Civil law	Common law	Muslim law	Customary law	Socialist law & Jewish law †	Auditor
Percentage	55.1	45.4	15.5	13.2	0.0	35.3

† No company in China adopts Twitter while China is the only country using Socialist law in this research.

The social media penetration data is missing for Israel, and, therefore all companies in Israel are removed, while Israel is the only country using Jewish law in this research. Therefore, no company in these two legal systems is used in testing hypothesis 1.2.

The Spearman's correlation table for the test of hypothesis 1.2 is provided in Appendix E.2. The relationships between each variable are not significantly different from the description provided in Section 3.4.2, except the tweeting activities (Tweets). Tweets are not highly correlated with any other variables, but the correlation between Tweets and other variables are, mostly, significant.

### 3.4.4.2 Basic Regression

The results show that Tweets (the logarithm of tweets sent by each company in 2018) is associated with Analysts (p-value < 0.01), NEWS (p-value < 0.05), country governance (p-value <= 0.01), MS (p-value < 0.01) and LO (p-value < 0.01) (Table 3.27). This result is consistent with adoption with exceptions. Social media penetration is negatively related to the adoption of SMCD but not associated with SMCD activities. Also, WGI is negatively associated with Tweets. Combining the findings that in high WGI countries, companies tend to adopt social media, WGI may increase the adopters who do not use social media frequently, increasing the adoption while decreasing the average Tweets.

$$Tweets = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \epsilon \quad (\text{Model 1.2.0})$$

$$Tweets = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} WGI + \epsilon \quad (\text{Model 1.2.1})$$

$$Tweets = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} GDP + \epsilon \quad (\text{Model 1.2.2})$$

$$Tweets = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} SMP + \epsilon \quad (\text{Model 1.2.3})$$

$$Tweets = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} WGI + \beta_{20} MS + \beta_{21} UA + \beta_{22} LO + \beta_{23} IG + \epsilon \quad (\text{Model 1.2.4})$$

Table 3.27: Results of Regressing Tweeting Activities on Company-Specific Factors and Country-Specific Factors

	Tweets									
	Model 1.2.0	Model 1.2.1	Model 1.2.2	Model 1.2.3	Model 1.2.4					
Auditor	-0.012	0.062	0.075	0.085	0.039					
WACC	0.037	-0.012	0.007	-0.012	-0.018					
MV2BV	0.170 **	0.196 ***	0.185 **	0.193 ***	0.161 **					
SIZE	0.015	-0.030	-0.032	-0.034	0.002					
LEV	0.000	-0.000	0.000	-0.000	-0.000					
Analysts	0.475 ***	0.635 ***	0.484 ***	0.613 ***	0.599 ***					
NEWS	0.109 **	0.150 ***	0.162 ***	0.147 ***	0.121 **					
ComS	0.888 ***	0.860 ***	1.162 ***	0.916 ***	0.929 ***					
ConD	0.925 ***	1.008 ***	1.228 ***	1.044 ***	1.043 ***					
ConS	0.236	0.269	0.552 **	0.322	0.257					
Energy	-0.262	-0.213	0.017	-0.182	-0.248					
FNCL	1.075 ***	1.094 ***	1.360 ***	1.138 ***	1.033 ***					
HeaC	-0.357	-0.205	0.015	-0.168	-0.224					
INDL	0.280 *	0.414 **	0.644 ***	0.467 ***	0.465 ***					
IT	0.346	0.534 **	0.750 ***	0.580 **	0.573 **					
MATL	-0.408 **	-0.295	-0.080	-0.268	-0.301					
ReaE	0.016	0.110	0.348	0.154	0.047					
UTLY	1.113 ***	1.117 ***	1.364 ***	1.145 ***	1.040 ***					
WGI		-0.367 ***		-0.338 ***	-0.209 **					
GDP			-0.261 ***							
SMP				-0.555	-1.012 *					
MS					0.768 **					
UA					0.645 *					
LO					-1.230 ***					
IG					0.006					
Intercept	3.851 ***	4.693 ***	7.359 ***	5.145 ***	4.614 ***					
n	692	692	692	692	692					
$R^2_{Adj}$	0.154	0.176	0.166	0.177	0.193					
$F$	8.425 ***	9.213 ***	8.614 ***	8.797 ***	8.168 ***					

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 692 firms.

See Appendix D.2 for variable definitions.

#### 3.4.4.3 Culture

Also, cultural factors are tested separately. The result shows that PD, MS and LO are significantly associated with Tweets, with WGI and social media penetration controlled

for (Table 3.28). While PD is found negatively related to SMCD adoption, it is positively related to SMCD activities. The result implies that, although companies in high PD or MS environment tend to not use social media if the companies decide to use social media, they use them frequently. Similar to WGI, the contradictory results may indicate that PD or MS deters the adopters who used social media infrequently, decrease adoption rate while increasing average Tweets sent by the adopters.

$$\begin{aligned}
 \text{Tweets} = \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} \\
 + \sum_{n=8}^{18} \beta_n \text{Industry} + \beta_{19} \text{WGI} + \beta_{20} \text{SMP} + \sum_{n=21}^{26} \beta_n \text{Cultures} + \epsilon
 \end{aligned}$$

(Model 1.2.5)

Table 3.28: Results of Regressing Tweeting Activities on Company-Specific Factors and Each Cultural Factor

	Tweeting activities											
	Model 1.2.5		Model 1.2.5		Model 1.2.5		Model 1.2.5		Model 1.2.5		Model 1.2.5	
	PD		IN		MS		UA		LO		IG	
PD	1.547	***										
IN			-0.358									
MS					0.892	**						
UA							0.242					
LO									-0.980	***		
IG											0.800	
Auditor	0.018		0.099		0.043		0.090		0.068		0.077	
WACC	-0.005		-0.011		-0.015		-0.009		-0.020		-0.022	
MV2BV	0.213	***	0.206	***	0.192	***	0.204	***	0.147	**	0.180	**
SIZE	-0.037		-0.042		-0.035		-0.029		-0.015		-0.020	
LEV	0.000		0.000		-0.000		-0.000		0.000		-0.000	
Analysts	0.555	***	0.602	***	0.613	***	0.618	***	0.590	***	0.620	***
NEWS	0.176	***	0.166	***	0.131	***	0.145	***	0.140	***	0.132	***
ComS	0.821	***	0.943	***	0.889	***	0.887	***	1.005	***	0.883	***
ConD	0.977	***	1.074	***	1.004	***	1.011	***	1.140	***	1.031	***
ConS	0.257		0.361		0.253		0.296		0.372	*	0.254	
Energy	-0.249		-0.141		-0.186		-0.205		-0.184		-0.195	
FNCL	1.083	***	1.173	***	1.081	***	1.121	***	1.130	***	1.076	***
HeaC	-0.185		-0.131		-0.207		-0.196		-0.128		-0.202	
INDL	0.423	**	0.496	***	0.470	***	0.440	**	0.521	***	0.423	**
IT	0.531	**	0.606	**	0.555	**	0.534	**	0.687	***	0.569	**
MATL	-0.298		-0.230		-0.287		-0.293		-0.228		-0.311	
ReaE	0.031		0.202		0.059		0.151		0.139		0.125	
UTLY	1.083	***	1.183	***	1.082	***	1.120	***	1.157	***	1.114	***
WGI	-0.056		-0.284	**	-0.332	***	-0.312	***	-0.295	***	-0.374	***
Social media												
penetration	-0.584		-0.656		-0.376		-0.558		-1.033	**	-0.984	*
Intercept	4.473	***	5.536	***	4.713	***	4.867	***	5.609	***	4.767	***
n	692		692		692		692		692		692	
$R^2_{Adj}$	0.187		0.176		0.183		0.176		0.185		0.179	
$F$	8.923	***	8.386	***	8.740	***	8.382	***	8.850	***	8.514	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 692 firms.

See Appendix D.2 for variable definitions.

#### 3.4.4.4 Legal system

Then the legal systems are tested one by one. The result shows that the civil law system is negatively associated with social media activities while Muslim law is positively associated with social media activities (Table 3.29). Thus, another model is constructed with cultural factors controlled for. The new model finds that common law is significantly negatively associated with social media activities, while Muslim law is significantly positively associated with social media activities (Table 3.30).

$$\begin{aligned}
Tweets = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} \\
& + \sum_{n=19}^{21} \beta_n \text{Legal systems} \\
& + \beta_{22} WGI + \beta_{23} \text{Social\_media\_penetration} + \epsilon \quad (\text{Model 1.2.6})
\end{aligned}$$

Table 3.29: Results of Regressing Tweeting Activities on Company-Specific Factors and Each Legal System

	Tweeting activities					
	Model 1.2.6	Model 1.2.6	Model 1.2.6	Model 1.2.6	Model 1.2.6	Model 1.2.6
	Civil law	Common law	Common law	Muslim law	Muslim law	Muslim law
Civil law	-0.313 **					
Common law		0.014				
Muslim law				0.771 ***		
Auditor	0.010	0.083		0.021		
WACC	-0.020	-0.012		-0.014		
MV2BV	0.165 **	0.192 ***		0.180 **		
SIZE	-0.031	-0.034		-0.063 *		
LEV	-0.000	-0.000		0.000		
Analysts	0.599 ***	0.612 ***		0.559 ***		
NEWS	0.132 ***	0.146 ***		0.199 ***		
ComS	0.962 ***	0.917 ***		0.931 ***		
ConD	1.101 ***	1.045 ***		1.089 ***		
ConS	0.339	0.322		0.348		
Energy	-0.202	-0.184		-0.186		
FNCL	1.136 ***	1.137 ***		1.121 ***		
HeaC	-0.119	-0.167		-0.100		
INDL	0.543 ***	0.469 ***		0.511 ***		
IT	0.647 ***	0.582 **		0.665 ***		
MATL	-0.232	-0.267		-0.237		
ReaE	0.108	0.150		0.126		
UTLY	1.146 ***	1.144 ***		1.160 ***		
WGI	-0.358 ***	-0.340 ***		-0.278 ***		
Social media penetration	-0.578	-0.550		-0.001		
Intercept	5.429 ***	5.147 ***		5.428 ***		
n	692	692		692		
$R^2_{Adj}$	0.182	0.175		0.193		
F	8.700 ***	8.346 ***		9.256 ***		

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 692 firms.

See Appendix D.2 for variable definitions.

$$\begin{aligned}
Tweets = & \alpha + \sum_{n=1}^7 \beta_n \text{Company-specific variables} + \sum_{n=8}^{18} \beta_n \text{Industry} \\
& + \sum_{n=19}^{21} \beta_n \text{Legal systems} \\
& + \sum_{n=22}^{27} \beta_n \text{Cultures} + \beta_{28} \text{WGI} + \beta_{29} \text{Social media penetration} + \epsilon
\end{aligned}$$

(Model 1.2.7)

Table 3.30: Results of Regressing Tweeting Activities on Company-Specific Factors and Each Legal System, Controlling for Culture

	Tweeting activities		
	Civil law	Common law	Muslim law
Civil law	-0.194		
Common law		-0.861 **	
Muslim law			0.737 **
PD	1.923 ***	2.850 ***	1.139
IN	-1.529 **	-0.116	-0.748
MS	0.448	1.633 ***	0.614 *
UA	0.664	-0.942	1.028 **
LO	-1.630 ***	-2.371 ***	-1.501 ***
IG	1.523 **	0.350	1.283 **
Auditor	-0.041	-0.010	-0.047
WACC	-0.034	-0.020	-0.028
MV2BV	0.178 **	0.142 *	0.171 **
SIZE	0.002	-0.005	-0.009
LEV	0.000	0.000	0.000
Analysts	0.481 ***	0.481 ***	0.498 ***
NEWS	0.205 ***	0.194 ***	0.208 ***
Industry Controls †			
WGI	0.311 **	0.283 *	0.165
Social media penetration	-2.566 ***	-1.927 ***	-1.567 **
Intercept	5.228 ***	5.179 ***	4.366 ***
n	692	692	692
$R_{Adj}^2$	0.218	0.225	0.224
F	8.429 ***	8.714 ***	8.664 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 692 firms.

See Appendix D.2 for variable definitions.

† See Table F.1 for the details in respect to industries.

### 3.5 Conclusion

This chapter has investigated the potential determinants of the usage of social media of 1,420 corporations in 33 stock exchanges. The result suggests the decision of social media adoption and the frequency of social media activities are associated with both company-specific factors and country-specific factors. In respect of company-specific factors and consistent with other voluntary disclosure studies, this study finds that firm size, market-to-book value ratio, and the number of analysts following the firm are associated with the adoption of SMCD. Also, this study finds that firm size and the number of analysts following the firm are associated with the number of SMCD activities. Also, country governance, legal system and culture are found to be associated with the adoption of SMCD. While previous studies have not compared SMCD adoption and activities in different countries, this paper covered more countries along with the US. This study indicated that country governance, social media penetration, Muslim law and all culture indices defined by Hofstede are important determinants of SMCD. Also, the country governance, GDP, social media penetration, common law, Muslim law and culture indices defined by Hofstede except LO are important determinants of the number of SMCD activities. The result suggests that future social media disclosure studies need to capture these country-specific factors.

On a general social media research perspective, this chapter unveils that firm size and the number of analysts following the firm can be highly effective in predicting tweets sent by the firms. Which means other strategic decisions may not be very important with respect to the number of social media activities.

Still, although the factors incorporated into these models are found to be associated with the adoption of SMCD. The low  $R_{McFadden}^2$  indicates that the decision of adoption is too complex to be predicted with only financial related and country-specific factors. The knowledge of other disciplines may be needed to find out other factors that determine the adoption.

The result indicates that the theory of planned behaviour is a feasible framework for accounting research, although the perceived behavioural control cannot be well proxied in this research. Also, the theory of cultural influence on the development of accounting systems by Gray (1988) is confirmed by the findings. The agency theory is also supported by the findings as the proxies of information asymmetry are found to be associated with the adoption of SMCD, indicating that the management uses SMCD to

solve agency problems. The relationship between SMCD and WGI supports the agency theory that the legal environment set the playground for the management to deal with information asymmetry. Still, for information asymmetry, the relationship between analysts and SMCD frequency supports that when the analysts can help to reduce the information asymmetry, the companies are motivated to make disclosures more frequently.

## **Chapter 4 The Effectiveness of the Use of Social Media for Corporate Disclosure**

### **4.1 Introduction**

As shown in Chapter 3, social media is widely adopted by listed companies all over the world. While some studies have found that SMCD is effective in the US and Australia, few studies have been performed outside of the Anglosphere countries. Since the effectiveness of communication is influenced by the cultural, technological, and social environment (Berlo, 1960), it could be questioned whether SMCD, the communication between companies and its investors, is identically effective in different cultural and social contexts outside of Anglosphere.

To answer this question, two types of tests are performed in this chapter. The first one is to test the relationship between country-specific factors and the effectiveness of SMCD on a static basis. The information available for the market is proxied by three market variables for the year 2018 and the SMCD is proxied by a dummy variable for adoption. In this test, 1,164 companies from 33 stock exchanges are used. The second one is to test the same relationship on a daily basis. The information proxy is the daily changes of market variables and the SMCD proxy is the social media activity during the day. This test used about 240 thousand observations of daily data from 660 companies.

Different from previous social media research, this chapter uses the point of view and proxies commonly adopted by accounting research. This chapter focuses on the communication between the company and the audience while other social media research would select samples of communications on a different basis. For example, research in finance discipline about social media would include all contents available regardless of the senders. Also, this chapter uses the market variables to proxy the effectiveness of communication, and this method is rarely used in social media research out of accounting and finance.

On top of traditional accounting research, this chapter finds that county-level differences can influence the effectiveness of SMCD. Also, while the data support the previous research in the US, the data from the rest of the world provides different findings.

The remaining parts of this chapter are organised in the following manner. The second section discusses previous related research. The third section provides details about the method of data collection and preparation. The fourth section provides the result of linear regression tests. And the last two sections discuss the findings and provide conclusions.

## **4.2 Literature review**

Finding the relationship between social media and the stock market is not a new idea. The relationship between Wikipedia modifications and cumulative abnormal returns is confirmed early in 2013 (Xu & Zhang, 2013). The sentiments via Twitter are found to be linked to the stock market (Li et al., 2014), too. Still, this research is not about accounting because they treat all communication equally and do not focus on business communication between listed companies and investors. But, the research methods, such as using the stock market as a proxy to the information dissemination, are also useful in accounting research.

Waters, Ghosh, Griggs, and Searson (2014) make an early attempt to test the usefulness of blogs maintained by listed companies in communicating with stakeholders. However, classifying self-built blogs to be social media can be very suspicious due to the nature of self-built blogs. The original blogs, before the introduction of Web 2.0, were maintained by the authors with no third parties involved (Jensen, 2003). This type of blogs is effectively the same as the websites of the listed companies. Also, according to Blankespoor et al. (2014), the power of social media for business communication is to save the cost for the audience by “pushing” messages to them. Since traditional blogs cannot “push” messages to the audience, these blogs are effectively different from SMCD. But, new social-media-like blogs emerge with Web 2.0, when the blogs are maintained by service providers (Jensen, 2003). The new type of blog is usually considered as social media because everyone can contribute to the blogosphere and everyone can easily subscribe to blogs authored by others.

When the scope of social media is restricted to the current widely used platforms, the start of measuring the effectiveness of SMCD may be attributed to Blankespoor et al. (2014) who find that tweeting activities are associated with market depth and bid-ask

spreads using 85 companies in the US market. The findings are also confirmed by Prokofieva (2015) using Australian companies. Zhou et al. (2015) also test the effectiveness of SMCD using Facebook posts and Twitter tweets sent by all listed companies in the US following a similar approach. All these papers find SMCD is associated with market variables such as book-to-market ratio and abnormal return, and, hence, support the effectiveness of SMCD. Also, these papers show that the effectiveness of SMCD can be influenced by company-specific factors. Apart from listed companies, Borah, Park, and Pahnke (2015) find tweets sent by companies can influence the relationship between uncertainty and underpricing during the IPO period.

While these studies use companies in the same legal and cultural environment, some scholars attempt to find out the influence of legal settings. For example, Dorminey et al. (2015) find that SMCD usage and effectiveness changed when SEC officially expressed their opinion on using social media for corporate announcements. Hence, it is reasonable to assume that the legal environment can influence the effectiveness of SMCD. However, the window for research is rather rare with respect to the change of the legal environment. Thus, this chapter uses companies from different countries to find the relationship between the environment and the effectiveness of SMCD.

## **4.3 Method**

### **4.3.1 Hypothesis development**

As mentioned in the introduction, this chapter follows a communication theory approach suggested by Bedford and Baladouni (1962). The communication model used in this chapter is the SMCR model built by Berlo (1960). According to SMCR model (Figure 2.3), during the communication process, the sender chooses the channel and encodes the information into messages within the context of the sender before the receiver decodes the messages back to information within the context of the receiver (Berlo, 1960). The context includes the communication skills, the attitudes, the knowledge, the social system and the culture. Therefore, the framework indicates that these aspects can influence communication, which means the effectiveness of communication can vary if the contexts are different. Although not all the aspects can be proxied in this chapter, best efforts are made to find a proper proxy for many of them. Also, the factors influencing the channel are considered. At last, the news via traditional channels and the factors proved to be influential to corporate announcements are included as control variables, too.

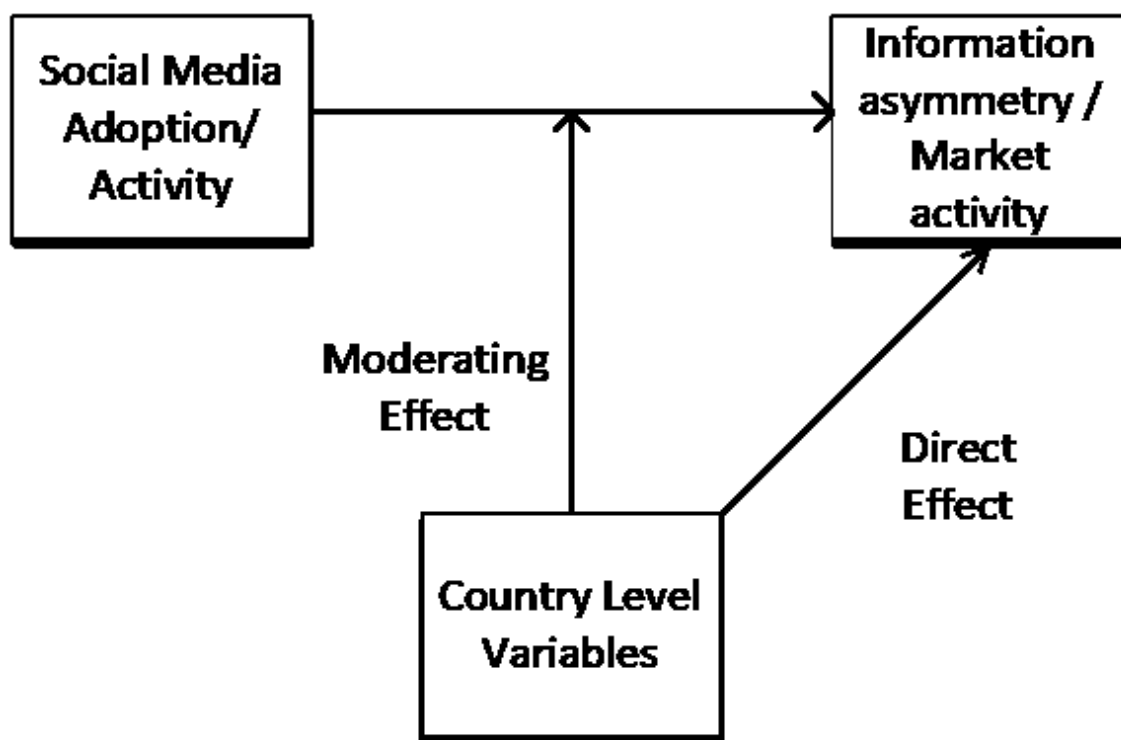


Figure 4.1: Moderating Effect on Effectiveness of SMCD

#### 4.3.1.1 Culture

Cultural factor has already been found to be associated with accounting practice by many scholars, such as Gray (1988), Tsakumis (2007), Jaggi and Low (2000), Gray and Vint (1995). Also, it should be mentioned that cultural factors can influence the market by itself (Fauver & McDonald, 2015), too. Therefore, this factor is inserted into the model along with the interaction with SMCD (Figure 4.1). The culture is proxied by the Hofstede's index<sup>1</sup> (Hofstede, 1984). PD can work in both ways. Firstly, if the announcements via social media are accepted by the investors due to the recognition of power differences in the company-investor relationship, SMCD can be very effective. However, it is possible that in a high PD country, only traditional one-way communication by mass media can be seen as an authentic source of corporate announcements, and, the SMCD can be ignored or undervalued by the investors. IN is expected to be positively associated with the effective SMCD because, in high IN countries, people tend to rely on information available for personal judgment instead of relying on the social relationship between the investors and the company. MS can also influence the effectiveness of SMCD in both ways. In high MS society, people can be more keen for their "personal" achievement, profiting themselves by utilising every channel possible,

<sup>1</sup>From <https://www.hofstede-insights.com/>

but people can also distrust SMCD because the cooperation and communication style embedded in social media is contradictory to their MS belief. Similar to Chapter 3, although other three cultural factors are not expected to be associated with the SMCD, these factors are also researched in case unknown relationships between cultural factors and SMCD exist.

#### 4.3.1.2 Legal and enforcement

The legal system can influence the effectiveness of SMCD. For example, financial reporting in common law countries is deemed to be useful mainly to the investors instead of for other stakeholders and SMCD is consistent with this tradition. But in civil law countries where the financial reporting is for tax authorities or a small number of banks, SMCD is less useful because the limited stakeholders can be well informed without SMCD. Also, the governance of the country, such as “Rule of Law”, “Control of Corruption”, and, “Government Effectiveness”, can influence the effectiveness of SMCD, too. On the positive side, better law enforcement and regulation can increase the credibility of SMCD because the system can punish the falsified information via SMCD, but the investors may distrust SMCD if the law does not cover SMCD. On the negative side, in an environment of poor law enforcement and regulation, SMCD may be the only timely way for the investors to gain information from the company if the company cannot use other communication channels.

The relationships between the legal system or enforcement and financial reporting are found by many previous works (Nguyen, 2019; Jaggi & Low, 2000). Similar to culture, regulation, enforcement and other factors of the social system can also influence the market by their own (Hail & Leuz, 2006). Therefore, these proxies are also inserted into the model along with the interaction with SMCD (Figure 4.1). The legal system is represented by dummy variables for each legal system based on the work of JuriGlobe (n.d.). The governance is proxied by the WGI factor which is generated from the Worldwide Governance Indicators by Daniel Kaufmann and Aart Kraay (n.d.) with factor analysis (Section 3.4.1).

#### 4.3.1.3 Analysts

As the coverage of analysts can reduce the information asymmetry (Frankel & Li, 2004), the number of analysts shall be controlled for. While the analysts can increase the

effectiveness of SMCD by re-disseminating social media contents, analysts can also disseminate information replacing the need for social media activity. Thus, analysts can be an additional channel to social media. Therefore, the logarithm of one plus the number of analysts is inserted into the models and the interaction of analysts and social media adoption is also inserted into the models.

#### 4.3.1.4 Social media penetration

As to the SMCR model, the penetration of social media decides the effectiveness of the channel to reach the audience. It is obvious that if social media is used by few people, SMCD cannot help the company to reach more audience. The number of followers of a company can be influential to the SMCD. However, using the number of followers would ignore the fact that social media users can re-disseminate the information to more audiences who never followed the company before. Therefore, country-level social media penetration collected from Statista (2019) is used to proxy the audience that a company can reach via social media.

#### 4.3.1.5 Mass media news

If the mass media has covered the company well, the investors can acquire sufficient information from mass media without using social media. The number of EIKON headlines (NEWS) of the company is used to proxy traditional mass media. If SMCD activities are not significantly associated with the market variables when controlling mass media, it can be concluded that social media fails to provide additional information to the market.

Since two proxies are used to represent SMCD activities (see Subsection 4.3.2), two sets of dependent variables and mass media proxies are used accordingly. When the SMCD activities are proxied by a dummy variable for SMCD adoption, the mass media controlled for is the logarithm of the quantity of the headlines during the whole year and the dependent variables are the mean value of the market variables for the whole year. When the SMCD activities are proxied by the quantity of SMCD activities during a day, the mass media controlled for is the logarithm of the quantity of the headlines during the same day and the dependent variables are the market variables on the closing of the same day.

#### 4.3.1.6 Auditor

Since the credibility of financial reports can be influenced by the auditor (Francis, Maydew, & Sparks, 1999), the effectiveness during transmitting financial information can be influenced by the auditor. Therefore, the type of auditors is inserted into the model as a control variable. The “Auditor” variable is set to 1 when the auditor is a big-4 auditor and is set to 0 for other auditors.

#### 4.3.1.7 Market to book value

For companies with a higher market to book value ratio, a larger proportion of stock price is not reflected by the financial reports, leading to higher information asymmetry. Therefore, more information on top of traditional financial reports may be needed by the investors. Also, as to the companies with a lower market to book value ratio, their financial reports can provide more information so that the investors do not need to rely on other channels such as social media (More explanations are available in Subsection 3.3.1.2).

#### 4.3.1.8 Leverage

The leverage indicates the financial risk of a company and is a part of the context in interpreting the signals sent by the company (More explanations are available in Subsection 3.3.1.2).

#### 4.3.1.9 Size of the company

As the size of a company can be linked with WACC (Botosan, 1997), it is also controlled in the regression (More explanations are available in Subsection 3.3.1.2).

### **4.3.2 Measuring SMCD and effectiveness of SMCD**

The information transmitted during the communication process via social media can be split into three types. The first type is to show the intention of communication via social media by presenting a link to social media accounts on official websites. This is the most basic commitment to using social media in providing information. Any action which is

less authentic<sup>2</sup> shall not be seen as significant information to the market<sup>3</sup>. The second type is to provide contents which may not be closely linked to intentional disclosure. For example, showing greeting words during holidays to the audience can help the company to build a good image but does not provide information directly. The third type is meaningful disclosure, actually conveying information for the audience to know more about the company directly.

However, it is difficult to distinguish the last two types of information from each other because the meaning of posts is decided by the audience (Berlo, 1960). As discussed in Section 2.2.3, different audiences can construct different meanings from the same content. A post not meaningful to an ill-informed investor can be informative to another investor with sufficient knowledge to extract extra information from the post. Therefore, it is nearly impossible to distinguish “the posts conveying information to investors” from “the posts not conveying information to investors” objectively. To reach an objective proxy, this research does not split messages into meaningful and non-meaningful categories with personal judgment. Two proxies of social media usage are adopted in this chapter.

#### 4.3.2.1 Proxy 1: Adoption

The first type of proxies is a dummy variable for social media adoption of each social media platform. Therefore, there are five proxies for the five platforms, namely, Twitter, Facebook, LinkedIn, YouTube, and Instagram. For this proxy, the independent variables are the mean WACC, the mean Bid-ask spread and the mean trading volume divided by capitalisation for the year 2018. To test Hypothesis 2.1, each company is used as one sample. As all samples with no social media penetration are eliminated, only 1,485 companies are included in this step. Three regression tests are performed with the same independent variables on each dependent variable: the cost of capital, the bid-ask spreads and the trading volume. The cost of capital is a widely used proxy for information asymmetry. When the information about a company is low, the buyers in the capital market tend to value the shares lower to mitigate the risk due to a lack of information, and, therefore, the lower price means higher cost of capital for the company (Barry & Brown, 1985). Thus, the managers can reduce the cost of capital by providing more information via corporate disclosure in order to reduce the information asymmetry (Healy & Palepu, 2001). “The bid-ask spreads are commonly thought to

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<sup>2</sup>For example, setting up an account without official acknowledgement.

<sup>3</sup>For example, companies can set up inactive social media accounts, occupying their brand names to prevent the brand names from being used by unauthorised persons.

measure information asymmetry explicitly” as indicated by Leuz and Verrecchia (2000). Wider bid-ask spreads are linked with lower liquidity because of the information asymmetry. In theory, the market maker shall maximise the return by balancing the profit from liquidity-motivated traders and losses to information-motivated traders (Copeland & Galai, 1983). Thus, when the information-motivated traders are better informed about the company and hence have more advantage in trades, the losses would increase if the market maker does not increase the spread between the bidding price and the asking price to make more profit from liquidity-motivated traders (Copeland & Galai, 1983). Therefore, when companies disclose more and sooner, the information asymmetry between information-motivated traders and market makers is lower and the bid-ask spreads could be lower to attract more liquidity-motivated traders (Copeland & Galai, 1983).

*Hypothesis 2.1 :The country-specific factors do not moderate the relationship between the adoption decision of social media and information asymmetry after moderating for company-specific factors.*

#### 4.3.2.2 Proxy 2: Tweets sent during 2018

The second type of proxies is constituted with three proxies representing the intensity of social media activities. The first one is the number of tweets sent during the day, measuring the effort that the company made via social media. The second one is the number of all “Likes” received by the tweets sent by the company during the day<sup>4</sup>. The third one is the number of all “Retweets” received by the tweets sent by the company during the day<sup>5</sup>. The likes and retweets are used to measure the “informativeness” instead of “interactions”, assuming that, if a tweet receives more retweets or likes after it was posted, the tweets are more informative as social media users decide that the tweet is worth being retweeted or liked. Thus, while the Tweets shows efforts on the companies’ side, the Retweets and Likes indicate informativeness on the audiences’

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<sup>4</sup>The “Like” is usually used by social media users to express agreement or just to save the tweet in order to review the tweet later.

<sup>5</sup>The “Retweet” is usually used by social media users to re-disseminate the tweets to other users, which is much a signal much stronger than merely likes.

side.

*Hypothesis 2.2 :The country-specific factors do not moderate the relationship between the number of social media activities and information asymmetry after moderating for company-specific factors.*

#### 4.3.2.3 The definition of Effectiveness of SMCD

Effectiveness of SMCD is defined as “the relationship between social media usage and the market variables”. For Hypothesis 2.1, it is expected that the adoption of social media platforms is negatively associated with WACC, Bid-ask spreads while positively associated with trading volume. Since adoption can provide more information and decrease the information asymmetry, the WACC shall be decreased for those companies that adopted social media. Also, more information usually leads to a lower level of risk for the investors and thus, adopting social media shall lead to narrower Bid-ask spreads. Social media adoption is expected to draw more attention from the investors and, thus, increase the trading parties in the market and the trading volume. Hence, if such relationships are different between the social media adoption on its own and the social media adoption interacted with country-specific factors, the conclusion can be made that the country-specific factors can influence the effectiveness of SMCD. For hypothesis 2.2, it is expected that more social media activities during a day are associated with decreasing Bid-ask spreads. The assumption is that when companies send tweets during the day, the additional information provided to the market shall decrease the information asymmetry and risk which can decrease Bid-ask spreads. However, it is still possible that a third factor drives both market and social media activities. For example, if a scandal breaks out driving WACC high, the company may need to post more tweets in the day to manage the perception of the market. In this case, the tweeting activities may also be associated with higher Bid-ask spreads. And, the relationship between country-specific factors and effectiveness of SMCD is defined as the moderating effect.

### 4.3.3 Data collection

All the companies in Chapter 3 are used as the start of the data collection of this chapter. The country variables collected in Section 3.3.3 are directly used in this chapter.

For Hypothesis 2.1, each company is a sample. The data collection is similar to the method described in Section 3.3.3 except for the company variables. The company variables for the whole year of 2018 are collected. The mean values of these company variables are used in the regression.

For Hypothesis 2.2, each sample is a daily observation for a company. The social media activities, mass media news and market reflection for each day are prepared in the following way. The WACC, bidding price, asking price and trading volume of each company each day during 2018 are collected. Then, the bid-ask spreads are reached by finding the difference between the bidding price and the asking price. Then, for each day the change of bid-ask spread, WACC, and trading volume from the last trading day is calculated. Afterwards, the changes are divided by the mean value of the previous seven days to reach proportional change. As the mean value of seven days is much stabler than one day, the proportional change based on seven days' mean value is more stable than the proportional change based only on the previous day. However, not every day during the year is a trading day and, therefore, the days without valid data are removed. Also, daily data with negative bid-ask spreads are removed.

With the data of tweets collected in Section 3.3.3, the tweets are aggregated by the day when they are posted for each company and the likes and retweets are also aggregated by the day when the original tweets, liked or retweeted, are posted. Afterwards, the logarithms of the number of tweets, likes and retweets (all plus one before logarithms) are used as the independent variable for testing hypothesis 2.2. The mass media news is collected from EIKON "headline" for each company. The headlines are aggregated by the day when they are published. Then the logarithm of "the number of news during the day plus one" is used as the independent variable in representing mass media. Company variables are also collected from EIKON for each day. Due to the missing data or incorrect data, some samples are removed.

Section 3.3.3

## 4.4 Result

### 4.4.1 Hypothesis 2.1

#### 4.4.1.1 Descriptives

The Spearman's correlation table for the test of hypothesis 2.1 is provided in Appendix E.3.

Out of all 1,453 firms surveyed, only 1,164 companies are valid for testing Hypothesis 2.1. The rest of the companies are invalid mainly because of the lack of social media penetration data. Then using OLS, independent variables are inserted step by step as follows.

Table 4.1: Descriptive Statistics of the Samples for Testing Hypothesis 2.1 (Company-Specific Factors)

Variable	n	Mean	Std	Min	25%	50%	75%	Max
WACC	1164	0.077	0.031	0.004	0.056	0.073	0.090	0.384
BAS	1164	0.004	0.023	-0.018	0.001	0.001	0.002	0.523
Volume	1164	0.000	0.001	0.000	0.000	0.000	0.000	0.037
Analysts	1164	2.724	0.660	0.000	2.485	2.833	3.135	3.989
MV2BV	1164	1.162	0.695	0.000	0.692	0.997	1.475	7.340
Auditor	1164	0.332	0.471	0.000	0.000	0.000	1.000	1.000
NEWS	1164	2.596	1.442	0.000	1.386	2.639	3.829	6.277
LEV	1164	1.354	4.841	0.000	0.294	0.642	1.326	126.423
SIZE	1164	25.419	2.273	19.728	23.641	25.097	26.887	33.981

See Appendix D.3 for variable definitions.

Table 4.2: Descriptive Statistics of the Samples for Testing Hypothesis 2.1 (Industry)

Industry	Number of samples
ComS	82
ConD	124
ConS	100
ENGY	71
FNCL	233
HeaC	75
INDL	176
IT	76
MATL	133
ReaE	38
UTLY	56
Total	1164

Table 4.3: Descriptive Statistics of the Samples for Testing Hypothesis 2.1 (Country-Specific Factors)

Variable	n	Mean	Std	Min	25%	50%	75%	Max
IP †	1164	0.794	0.166	0.323	0.752	0.846	0.909	0.983
WGI ‡	1164	0.000	0.010	-0.021	-0.011	0.006	0.007	0.011
SMP§	1164	0.640	0.129	0.230	0.610	0.670	0.710	0.890
GDP ††	1164	10.117	0.943	7.591	9.264	10.557	10.741	11.294
PD‡‡	1164	0.570	0.202	0.180	0.390	0.540	0.690	1.000
IN‡‡	1164	0.547	0.255	0.140	0.315	0.480	0.800	0.910
MS ‡‡	1164	0.565	0.199	0.050	0.450	0.570	0.660	0.950
UA‡‡	1164	0.597	0.241	0.080	0.400	0.510	0.850	0.990
LO ‡‡	1164	0.560	0.235	0.210	0.360	0.510	0.810	1.000
IG ‡‡	1164	0.515	0.186	0.170	0.420	0.490	0.680	0.970

See Appendix D.3 for variable definitions.

† From <https://databank.worldbank.org/data/reports.aspx?source=2&series=IT.NET.USER.ZS#>

‡ Factor generated from WGI factors, see Subsection 3.4.1 for more detail.

§ From <https://www.statista.com/statistics/282846/regular-social-networking-usage-penetration-worldwide-by-country/>

†† Obtained from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.

‡‡ Culture index from <https://www.hofstede-insights.com/>

Table 4.4: Descriptive Statistics of the Samples for Testing Hypothesis 2.1 (Continued)

	Twitter	Facebook	LinkedIn	YouTube	Instagram	Auditor
Percentage	57.732	53.522	48.883	49.570	31.357	33.162
	Civil law	Common law	Muslim law	Customary law	Socialist law	Jewish law
Percentage	60.309	40.893	12.199	22.423	3.694	0.000

\* The social media penetration data is missing for Israel, and, therefore all companies in Israel are removed, while Israel is the only country using Jewish law in this research. Therefore, no companies in Jewish law environment is used in testing hypothesis 2.1

#### 4.4.1.2 Basic model

Model 2.1.0 includes company-specific variables only (Table 4.5, and, Table 4.6). The F-statistics are large enough (p-value < 0.01) for all tests, showing that the models are stable. However, no social media adoption variable is found to be significantly related to the dependent variables which are WACC (Table 4.5) and Trading volume (Table 4.6).

$$\begin{aligned}
 INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} \\
 & + \beta_6 \text{Social Media Adoption} + \beta_7 \text{NEWS} + \epsilon \quad (\text{Model 2.1.0})
 \end{aligned}$$

Table 4.5: Results of Regressing Weighted Average Cost of Capital on Social Media Adoption and Company-Specific Factors

Model	Weighted Average Cost of Capital									
	Test 1	Test 2	Test 3	Test 4	Test 5					
Twitter	0.001									
Facebook		0.001								
LinkedIn			-0.001							
YouTube				-0.002						
Instagram									-0.000	
Auditor	-0.004 **	-0.004 **	-0.004 **	-0.004 **	-0.004 **	-0.004 **	-0.004 **	-0.004 **	-0.004 **	-0.004 **
MV2BV	0.012 ***	0.011 ***	0.012 ***	0.012 ***	0.012 ***	0.012 ***	0.012 ***	0.012 ***	0.012 ***	0.012 ***
NEWS	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *
LEV	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***
SIZE	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***
ComS	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
ConD	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **
ConS	-0.007 **	-0.007 **	-0.007 **	-0.007 **	-0.007 **	-0.007 **	-0.007 **	-0.007 **	-0.007 **	-0.007 **
ENGY	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***
FNCL	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
HeaC	-0.005	-0.005	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.005	-0.005
INDL	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002
IT	-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MATL	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***	0.014 ***
ReaE	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
UTLY	-0.010 ***	-0.010 ***	-0.010 ***	-0.010 **	-0.009 **	-0.009 **	-0.010 **	-0.010 **	-0.010 **	-0.010 **
Intercept	0.011	0.011	0.013	0.014	0.014	0.014	0.014	0.014	0.012	0.012
n	1164	1164	1164	1164	1164	1164	1164	1164	1164	1164
$R^2_{Adj}$	0.110	0.110	0.110	0.110	0.111	0.111	0.111	0.111	0.110	0.110
$F$	9.960 ***	9.995 ***	9.959 ***	10.076 ***	10.076 ***	10.076 ***	10.076 ***	10.076 ***	9.949 ***	9.949 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

Table 4.6: Results of Regressing Trading Volume on Social Media Adoption and Company-Specific Factors

Model	Trading volume									
	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9	Test 10
Twitter	0.000									
Facebook		0.000								
LinkedIn			-0.000							
YouTube				0.000						
Instagram					0.000					
Auditor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MV2BV	-0.000	***	-0.000	***	-0.000	***	-0.000	***	-0.000	***
NEWS	0.000		0.000		0.000		0.000		0.000	
LEV	0.000		0.000		0.000		0.000		0.000	
SIZE	-0.000	***	-0.000	***	-0.000	***	-0.000	***	-0.000	***
ComS	0.000		0.000		0.000	*	0.000		0.000	
ConD	0.000		0.000		0.000		0.000		0.000	
ConS	0.000		0.000		0.000		0.000		0.000	
ENGY	0.000		0.000		0.000		0.000		0.000	
FNCL	0.000	***	0.000	***	0.000	***	0.000	***	0.000	***
HeaC	0.000		0.000		0.000		0.000		0.000	
INDL	0.000	**	0.000	**	0.000	***	0.000	**	0.000	**
IT	0.000		0.000		0.000		0.000		0.000	
MATL	0.000		0.000		0.000		0.000		0.000	
ReaE	0.000		0.000		0.000		0.000		0.000	
UTLY	0.000		0.000		0.000		0.000		0.000	
Intercept	0.002	***	0.002	***	0.002	***	0.002	***	0.002	***
n	1164		1164		1164		1164		1164	
$R^2_{Adj}$	0.017		0.017		0.019		0.017		0.017	
$F$	2.279	***	2.264	***	2.389	***	2.280	***	2.281	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively. This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

#### 4.4.1.3 Additional tests

With WGI and social media penetration inserted, respectively or simultaneously, into the basic Model 2.1.0, no steady relationship between adoption and market variables can be found (Table F.2, Table F.4, Table F.5). Even interacted with WGI, SMCD is not found to be related to market variables on a cross-platform basis although some isolated relationship can be found (Table F.7). Besides, no positive result is found with culture influences (Table F.8, and, Table F.9).

$$\begin{aligned}
 INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\
 & + \beta_6 \textit{Social Media Adoption} + \beta_7 \textit{NEWS} + \beta_8 \textit{WGI} + \epsilon
 \end{aligned}
 \tag{Model 2.1.1}$$

$$\begin{aligned}
 INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\
 & + \beta_6 \textit{Social Media Adoption} + \beta_7 \textit{NEWS} + \beta_8 \textit{WGI} \\
 & + \beta_9 \textit{Social media penetration} + \epsilon
 \end{aligned}
 \tag{Model 2.1.2}$$

$$\begin{aligned}
 INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\
 & + \beta_6 \textit{Social Media Adoption} + \beta_7 \textit{NEWS} \\
 & + \beta_8 \textit{WGI} + \beta_9 \textit{Social Media Adoption} * \textit{WGI} \\
 & + \epsilon
 \end{aligned}
 \tag{Model 2.1.3}$$

$$\begin{aligned}
INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\
& + \beta_6 \textit{Social Media Adoption} + \beta_7 \textit{NEWS} + \beta_8 \textit{WGI} \\
& + \beta_9 \textit{MS} + \beta_{10} \textit{Uncertainty Avoidance} \\
& + \beta_{11} \textit{Long term Orientation} + \beta_{12} \textit{IG} \\
& + \epsilon
\end{aligned}
\tag{Model 2.1.4}$$

In conclusion, the Null hypothesis is not rejected. This result shows merely adopting social media is far from a signal strong enough to influence the market.

## 4.4.2 Hypothesis 2.2

### 4.4.2.1 Descriptives

Table 4.7: Descriptive statistics of the samples for testing Hypothesis 2.2 using Bid-ask spreads

Variable	n	Mean	Std	Min	25%	50%	75%	Max
Delta Bid-ask spreads	240,469	0.036	0.602	-4.454	-0.129	0.000	0.117	44.960
Analysts	240,469	2.815	0.606	0.000	2.565	2.944	3.178	3.912
MV2BV	240,469	1.247	0.716	0.000	0.765	1.089	1.583	5.358
Auditor	240,469	0.364	0.481	0.000	0.000	0.000	1.000	1.000
NEWS	240,469	0.103	0.642	0.000	0.000	0.000	0.000	30.000
LEV	240,469	1.375	3.279	0.000	0.339	0.678	1.469	64.107
SIZE	240,469	24.865	2.151	20.611	23.299	24.522	25.963	33.642
IP †	240,469	0.778	0.178	0.323	0.675	0.844	0.927	0.983
WGI ‡	240,469	0.001	0.010	-0.021	-0.011	0.007	0.008	0.011
SMP§	240,469	0.612	0.137	0.230	0.580	0.670	0.700	0.890
GDP ††	240,469	10.117	1.058	7.591	9.264	10.595	10.883	11.294
PD ††	240,469	0.531	0.202	0.180	0.350	0.400	0.680	1.000
IN ††	240,469	0.630	0.232	0.140	0.460	0.680	0.890	0.910
MS ††	240,469	0.520	0.175	0.050	0.430	0.560	0.630	0.950
UA ††	240,469	0.576	0.218	0.080	0.400	0.510	0.820	0.950
LO ††	240,469	0.493	0.196	0.210	0.340	0.480	0.630	1.000
IG ††	240,469	0.560	0.172	0.170	0.440	0.590	0.680	0.970

† From <https://databank.worldbank.org/data/reports.aspx?source=2&series=IT.NET.USER.ZS#>

‡ Factor generated from WGI factors, see Subsection 3.4.1 for more detail.

§ From <https://www.statista.com/statistics/282846/regular-social-networking-usage-penetration-worldwide-by-country/>

†† Obtained from <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.

‡‡ Culture index from <https://www.hofstede-insights.com/>

Table 4.8: Descriptive Statistics of the Samples for Testing Hypothesis 2.2

	Civil law	Common law	Muslim law
Percentage	57.256	46.698	12.409

\* The SMP data is missing for Israel, and, therefore all companies in Israel are removed, while Israel is the only country using Jewish law in this research. Therefore, no companies in Jewish law environment is used in testing hypothesis 2.1

Table 4.9: Descriptive Statistics of the Samples for Testing Hypothesis 2.2 (Industry)

Industry	Number of samples	Industry	Number of samples
ComS	47	INDL	104
ConD	65	IT	48
ConS	47	MATL	67
ENGY	42	ReaE	22
FNCL	136	UTLY	32
HeaC	50	Total	660

The Spearman's correlation table for the test of hypothesis 2.1 is provided in Appendix E.3.

Out of 778 companies which have Twitter accounts, 118 companies are removed because of a lack of data such as SMP. During the year 2018, there shall be 240,900 observations of daily data (660 companies \* 365 days), however, due to the lack of valid data, only 240,478 observations are available for bid-ask spread. These samples are analysed in seven steps.

#### 4.4.2.2 Basic model

Model 2.2.0 uses daily social media activities and daily traditional media headlines as independent variables to test their relationships with the daily changes in market variables. While the  $R^2$  is not higher than 0.0005, the F-statistics are rather large (p-value < 0.01). Controlled for mass media and moderated for company-specific factors, all SMA proxy is found to be significantly associated with the market variables (p-value < 0.01, Table 4.10). However, the result is expected to be negative if SMA can convert information to the market to reduce bid-ask spreads. The current result shows that, with no other control, SMA can increase the division of the market participants.

$$\begin{aligned}
 \Delta INFO ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} \\
 & + \beta_6 \text{Tweets} + \beta_7 \text{NEWS} \\
 & + \epsilon
 \end{aligned}
 \tag{Model 2.2.0}$$

Table 4.10: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.012	***				
Likes					0.005	***		
Retweets							0.007	***
NEWS	0.012		0.008		0.008		0.008	
Auditor	-0.010	**	-0.011	***	-0.012	***	-0.012	***
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	0.000		-0.000		-0.000		-0.000	
MV2BV	0.008	**	0.006	*	0.008	**	0.008	**
ComS	0.005		0.001		0.003		0.002	
ConD	0.007		0.002		0.004		0.006	
ConS	0.018	**	0.018	**	0.019	**	0.020	**
ENGY	-0.007		-0.003		-0.005		-0.005	
FNCL	-0.001		-0.006		-0.001		-0.000	
HeaC	-0.015	*	-0.011		-0.014	*	-0.014	*
INDL	-0.009	*	-0.008		-0.009	*	-0.009	*
IT	-0.014	*	-0.015	*	-0.017	**	-0.018	**
MATL	-0.002		0.003		0.001		0.001	
ReaE	0.006		0.011		0.011		0.012	
UTLY	0.003		-0.000		0.002		0.001	
Intercept	-0.009		-0.009		-0.007		-0.004	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	2.205	***	4.885	***	3.691	***	4.134	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

#### 4.4.2.3 Analysts

Model 2.2.1 tests the interaction between the number of analysts following the company and SMA. Although reply and retweets are not found to be related to the market, the number of tweets sent by the company during the day, when interacting with analysts, is negatively associated with the change of bid-ask spread (Table 4.11). The result indicates that, with a high number of analysts, SMA efforts can decrease the market asymmetry.

$$\begin{aligned}\Delta INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\ & + \beta_6 \textit{Tweets} + \beta_7 \textit{NEWS} + \beta_8 \textit{Analysts} \\ & + \beta_9 \textit{Tweets} * \textit{Analysts} + \beta_{10} \textit{NEWS} * \textit{Analysts} \\ & + \epsilon\end{aligned}\tag{Model 2.2.1}$$

Table 4.11: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Analysts

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.043	***				
Likes					0.007			
Retweets							0.013	*
Analysts	-0.003		0.003		-0.005		-0.005	
SMA * Analysts			-0.011	***	-0.001		-0.002	
NEWS	0.026		0.016		0.027		0.026	
Auditor	-0.010	**	-0.010	**	-0.010	**	-0.011	**
LEV	-0.000		-0.000		-0.001		-0.000	
SIZE	0.000		0.000		0.000		-0.000	
MV2BV	0.009	***	0.007	**	0.008	**	0.009	***
ComS	0.005		-0.002		0.004		0.003	
ConD	0.008		0.001		0.005		0.007	
ConS	0.018	**	0.017	**	0.020	**	0.020	**
ENGY	-0.007		-0.005		-0.005		-0.005	
FNCL	-0.001		-0.009		-0.001		-0.000	
HeaC	-0.014	*	-0.012		-0.012		-0.012	
INDL	-0.009	*	-0.011	*	-0.009	*	-0.010	*
IT	-0.012		-0.013	*	-0.014	*	-0.015	*
MATL	-0.001		0.001		0.001		0.001	
ReaE	0.006		0.009		0.010		0.011	
UTLY	0.003		-0.002		0.002		0.000	
NEWS*Analysts	-0.004		-0.002		-0.006		-0.006	
Intercept	-0.005		-0.025		-0.001		-0.000	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	1.984	***	4.943	***	3.267	***	3.721	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

#### 4.4.2.4 Social media penetration

Model 2.2.2 tests the interaction between SMCD and SMP. As dissemination can only be effective when there is a large population of audiences, SMP is deemed to be related to the effectiveness of social media-based disclosure. Also in the era of social media, mass media news can be re-disseminated by social media users, too. Therefore, both mass media and SMCD are inserted interacting with SMP. The model does not find social media penetration as a moderating factor (Table F.10).

$$\begin{aligned}\Delta INFO ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} \\ & + \beta_6 \text{Tweets} + \beta_7 \text{NEWS} \\ & + \beta_8 \text{SMP} \\ & + \beta_9 \text{Tweets} * \text{SMP} \\ & + \beta_{10} \text{NEWS} * \text{SMP} \\ & + \epsilon\end{aligned}\quad (\text{Model 2.2.2})$$

Also, Model 2.2.3 is built with both SMP and analysts interacted with traditional news and social media activities. The result is not different from the previous models (Table F.11).

$$\begin{aligned}\Delta INFO ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} \\ & + \beta_6 \text{Tweets} + \beta_7 \text{NEWS} \\ & + \beta_8 \text{Social media penetration} + \beta_9 \text{Analysts} \\ & + \beta_{10} \text{Tweets} * \text{Social media penetration} \\ & + \beta_{11} \text{NEWS} * \text{Social media penetration} \\ & + \beta_{12} \text{Tweets} * \text{Analysts} + \beta_{13} \text{NEWS} * \text{Analysts} \\ & + \epsilon\end{aligned}\quad (\text{Model 2.2.3})$$

#### 4.4.2.5 Culture

Model 2.2.4 tests the interaction between SMCD and cultural factors.

The product of SMA and PD is significantly positively associated with the bid-ask spreads (p-value < 0.01) (Table 4.12). This result shows that PD can moderate the relationship between social media activities and the change of bid-ask spreads. The result is expected because power distance is expected to reduce the efficiency of non-hierarchical communication. Meanwhile, Individualism just works in the opposite way, decreases te bid-ask spreads (Table 4.13). However, the moderating effect only works for the number of tweets sent by the company(Table 4.13). Masculinity is different from both PD and IN. While in high MS country, companies is less likely to adopt social media, but for the adopters, MS helps both the number of tweets and the attractiveness of the tweets to reduce bid-ask spreads(Table 4.14). While LO shows no moderating effect, UA and IG shows some degree of moderating effect (p-value > 0.1. Table 4.17 4.15, 4.16). Although communication theory can predict the relationship between those cultural factors and the effectiveness of communication, the underlying mechanism still need more research.

$$\begin{aligned}
\Delta INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} \\
& + \beta_6 \text{Tweets} + \beta_7 \text{NEWS} + \beta_8 \text{Culture} \\
& + \beta_9 \text{Tweets} * \text{Culture} + \beta_{10} \text{NEWS} * \text{Culture} \\
& + \epsilon
\end{aligned}
\tag{Model 2.2.4}$$

Table 4.12: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With PD

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			-0.006					
Likes					-0.005 *			
Retweets							-0.004	
PD	0.114	***	0.075	***	0.086	***	0.092	***
SMA * PD			0.032	***	0.019	***	0.021	***
NEWS	0.040		0.036		0.040		0.040	
Auditor	-0.002		-0.003		-0.002		-0.003	
LEV	-0.001		-0.000		-0.000		-0.000	
SIZE	-0.003	***	-0.004	***	-0.004	***	-0.004	***
MV2BV	0.011	***	0.009	**	0.011	***	0.011	***
ComS	0.000		-0.004		-0.003		-0.003	
ConD	0.011		0.008		0.009		0.011	
ConS	0.019	**	0.023	***	0.023	***	0.023	***
ENGY	-0.009		-0.003		-0.006		-0.006	
FNCL	0.001		-0.003		0.001		0.002	
HeaC	-0.003		0.001		-0.000		-0.000	
INDL	-0.006		-0.004		-0.005		-0.005	
IT	-0.005		-0.005		-0.007		-0.008	
MATL	0.002		0.007		0.006		0.006	
ReaE	-0.002		0.006		0.005		0.005	
UTLY	0.003		0.002		0.003		0.002	
NEWS*PD	-0.048		-0.046		-0.053		-0.054	
Intercept	0.010		0.027		0.025		0.027	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.001		0.001		0.001	
$F$	7.746	***	9.790	***	9.062	***	9.504	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.13: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With IN

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.029	***				
Likes					0.010	***		
Retweets							0.009	***
IN	-0.003		0.025	*	0.006		-0.005	
SMA * IN			-0.026	***	-0.008	*	-0.003	
NEWS	0.009		0.005		0.006		0.007	
Auditor	-0.010	**	-0.010	**	-0.010	**	-0.011	**
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	0.000		-0.000		-0.000		-0.001	
MV2BV	0.009	**	0.006	*	0.008	**	0.009	**
ComS	0.005		-0.002		0.002		0.003	
ConD	0.007		0.002		0.004		0.007	
ConS	0.018	**	0.019	**	0.019	**	0.021	***
ENGY	-0.006		-0.003		-0.005		-0.004	
FNCL	-0.001		-0.008		-0.001		0.001	
HeaC	-0.014	*	-0.012		-0.013		-0.012	
INDL	-0.009		-0.009	*	-0.009	*	-0.008	
IT	-0.013		-0.016	*	-0.017	**	-0.016	**
MATL	-0.001		0.002		0.001		0.002	
ReaE	0.006		0.011		0.011		0.012	
UTLY	0.003		-0.001		0.001		0.002	
NEWS*IN	0.005		0.007		0.006		0.002	
Intercept	-0.004		-0.018		-0.007		0.006	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	1.951	**	4.863	***	3.296	***	3.541	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.14: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With MS

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.026	***				
Likes					0.013	***		
Retweets							0.018	***
MS	0.019		0.032	**	0.035	**	0.038	***
SMA * MS			-0.026	**	-0.015	***	-0.022	***
NEWS	0.053	*	0.045		0.045		0.043	
Auditor	-0.012	***	-0.012	***	-0.012	***	-0.012	***
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.000		-0.000		-0.000		-0.000	
MV2BV	0.009	**	0.007	**	0.008	**	0.008	**
ComS	0.004		-0.000		0.001		0.001	
ConD	0.006		0.001		0.003		0.005	
ConS	0.017	**	0.018	**	0.018	**	0.018	**
ENGY	-0.007		-0.003		-0.006		-0.006	
FNCL	-0.002		-0.007		-0.003		-0.003	
HeaC	-0.015	**	-0.012		-0.015	**	-0.015	**
INDL	-0.009		-0.009	*	-0.010	*	-0.011	*
IT	-0.014	*	-0.017	**	-0.020	**	-0.021	***
MATL	-0.002		0.002		-0.000		-0.000	
ReaE	0.005		0.009		0.008		0.009	
UTLY	0.002		-0.001		-0.000		-0.002	
NEWS*MS	-0.074		-0.067		-0.067		-0.063	
Intercept	-0.013		-0.020		-0.025		-0.024	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	2.159	***	4.516	***	3.631	***	4.182	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.15: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With UA

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.001					
Likes					0.004			
Retweets							0.005	
UA	0.031	***	0.013		0.026	**	0.026	**
SMA * UA			0.020	**	0.002		0.002	
NEWS	0.034		0.030		0.028		0.027	
Auditor	-0.008	*	-0.008	*	-0.009	**	-0.010	**
LEV	-0.001		-0.001		-0.001		-0.001	
SIZE	0.000		0.000		0.000		-0.000	
MV2BV	0.011	***	0.009	***	0.010	***	0.010	***
ComS	0.001		-0.002		-0.000		-0.001	
ConD	0.004		0.000		0.001		0.003	
ConS	0.015	*	0.017	**	0.017	**	0.017	**
ENGY	-0.009		-0.004		-0.007		-0.007	
FNCL	-0.002		-0.006		-0.002		-0.001	
HeaC	-0.016	**	-0.012		-0.015	**	-0.015	*
INDL	-0.011	**	-0.010	*	-0.011	**	-0.011	**
IT	-0.017	**	-0.018	**	-0.020	**	-0.021	***
MATL	-0.004		0.002		-0.001		-0.001	
ReaE	0.006		0.011		0.010		0.011	
UTLY	-0.000		-0.003		-0.001		-0.002	
NEWS*UA	-0.037		-0.040		-0.035		-0.034	
Intercept	-0.033		-0.027		-0.029		-0.027	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	2.505	***	4.946	***	3.566	***	3.940	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.16: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With LO

	Bid-ask spreads			
	Moderate	Test 1	Test 2	Test 3
Tweets		0.009 *		
Likes			0.005 *	
Retweets				0.007 **
LO	0.009	0.010	0.012	0.014
SMA * LO		0.008	0.001	-0.001
NEWS	0.012	0.009	0.008	0.006
Auditor	-0.010 **	-0.011 **	-0.011 ***	-0.012 ***
LEV	-0.000	-0.000	-0.000	-0.000
SIZE	-0.000	-0.000	-0.000	-0.001
MV2BV	0.009 ***	0.008 **	0.009 **	0.009 **
ComS	0.004	-0.000	0.002	0.002
ConD	0.006	0.001	0.003	0.005
ConS	0.017 **	0.018 **	0.019 **	0.019 **
ENGY	-0.006	-0.002	-0.004	-0.004
FNCL	-0.001	-0.005	-0.000	0.000
HeaC	-0.015 *	-0.011	-0.014 *	-0.014 *
INDL	-0.009 *	-0.009	-0.009 *	-0.009 *
IT	-0.014 *	-0.016 **	-0.017 **	-0.019 **
MATL	-0.002	0.002	0.000	0.001
ReaE	0.006	0.012	0.011	0.012
UTLY	0.003	-0.000	0.002	0.001
NEWS*LO	0.001	-0.004	0.001	0.003
Intercept	-0.010	-0.009	-0.008	-0.007
n	240478	240478	240478	240478
$R_{Adj}^2$	0.000	0.000	0.000	0.000
$F$	1.985 ***	4.277 ***	3.186 ***	3.549 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.17: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With IG

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.028	***				
Likes					0.013	***		
Retweets							0.013	***
IG	-0.051	***	-0.024		-0.030	*	-0.038	**
SMA * IG			-0.027	***	-0.014	**	-0.012	*
NEWS	0.012		0.005		0.006		0.007	
Auditor	-0.007	*	-0.008	*	-0.008	*	-0.009	*
LEV	-0.000		-0.001		-0.001		-0.001	
SIZE	-0.001		-0.002	*	-0.002	*	-0.002	*
MV2BV	0.010	***	0.008	**	0.010	***	0.010	***
ComS	0.009		0.004		0.006		0.006	
ConD	0.011	*	0.005		0.007		0.009	
ConS	0.025	***	0.025	***	0.026	***	0.027	***
ENGY	-0.003		0.000		-0.002		-0.002	
FNCL	0.006		0.000		0.005		0.006	
HeaC	-0.008		-0.006		-0.008		-0.007	
INDL	-0.002		-0.003		-0.004		-0.003	
IT	-0.008		-0.012		-0.013		-0.014	*
MATL	0.004		0.007		0.006		0.007	
ReaE	0.009		0.014		0.013		0.014	
UTLY	0.006		0.001		0.003		0.003	
NEWS*IG	0.003		0.008		0.007		0.005	
Intercept	0.049	*	0.037		0.040		0.047	*
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	2.792	***	5.401	***	4.198	***	4.438	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

#### 4.4.2.6 WGI

Model 2.2.5 tests the interaction between regulatory factors and SMA. The negative coefficient between SMA\* WGI and bid-ask spreads indicates that, in a high WGI country, increasing daily social media activities can help to reduce the information asymmetry (p-value < 0.01, Table 4.18). The result is consistent with the expectation, confirming that the regulatory factors of the country are associated with the effectiveness of SMCD.

$$\begin{aligned} \Delta INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} + \beta_6 \text{Tweets} \\ & + \beta_7 \text{NEWS} + \beta_8 \text{WGI} + \beta_9 \text{Tweets} * \text{WGI} \\ & + \beta_{10} \text{NEWS} * \text{WGI} + \epsilon \end{aligned} \quad (\text{Model 2.2.5})$$

Table 4.18: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With WGI

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.012	***				
Likes					0.005	***		
Retweets							0.008	***
WGI	-1.780	***	-1.101	***	-1.533	***	-1.645	***
SMA * WGI			-0.687	***	-0.197	*	-0.241	*
NEWS	0.014		0.011		0.011		0.010	
Auditor	0.000		-0.001		-0.000		-0.000	
LEV	-0.001		-0.001		-0.001		-0.001	
SIZE	-0.003	**	-0.003	***	-0.003	***	-0.004	***
MV2BV	0.009	***	0.007	**	0.009	**	0.009	***
ComS	0.008		0.003		0.005		0.005	
ConD	0.014	**	0.009		0.011		0.013	*
ConS	0.023	***	0.025	***	0.025	***	0.026	***
ENGY	-0.007		-0.001		-0.005		-0.004	
FNCL	0.004		-0.002		0.003		0.004	
HeaC	-0.003		0.001		-0.002		-0.001	
INDL	-0.003		-0.001		-0.003		-0.002	
IT	-0.001		-0.002		-0.004		-0.004	
MATL	0.003		0.008		0.006		0.006	
ReaE	0.009		0.014		0.014		0.015	
UTLY	0.008		0.005		0.006		0.006	
NEWS*WGI	0.689		0.611		0.636		0.613	
Intercept	0.053	**	0.059	**	0.056	**	0.064	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.001		0.000		0.000	
$F$	5.248	***	7.857	***	6.384	***	7.003	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

#### 4.4.2.7 Legal system

Model 2.2.6 tests the interaction between legal systems and SMA. The tests shows that the number of tweets interacted with Common law is negatively associated with bid-ask spread (Table 4.19), but, when interacted with Civil law, is positively associated with bid-ask spread (Table 4.20), and, when interacted with Muslim law, is not significantly associated with bid-ask spread (Table 4.21). And, the attractiveness (like) interacted with Muslim law is positively associated with bid-ask spread (Table 4.21). This result shows that the effectiveness of SMCD is different in different legal systems.

$$\begin{aligned}\Delta INFO ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \text{Company-specific variables} \\ & + \beta_6 \text{Tweets} + \beta_7 \text{NEWS} + \beta_8 \text{WGI} \\ & + \beta_9 \text{Tweets} * \text{Legal system} \\ & + \beta_{10} \text{NEWS} * \text{Legal system} + \epsilon\end{aligned}\quad (\text{Model 2.2.6})$$

Table 4.19: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Common Law

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.015	***				
Likes					0.006	***		
Retweets							0.007	***
Common law	0.016	***	0.021	***	0.018	***	0.016	***
SMA * Common law			-0.007	**	-0.001		-0.000	
NEWS	0.015		0.010		0.011		0.011	
Auditor	-0.015	***	-0.015	***	-0.016	***	-0.017	***
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	0.000		-0.000		-0.000		-0.000	
MV2BV	0.006	*	0.005		0.006	*	0.006	*
ComS	0.005		0.001		0.003		0.003	
ConD	0.007		0.002		0.004		0.006	
ConS	0.018	**	0.019	**	0.019	**	0.020	***
ENGY	-0.008		-0.005		-0.006		-0.006	
FNCL	-0.002		-0.007		-0.002		-0.002	
HeaC	-0.015	*	-0.012		-0.014	*	-0.013	*
INDL	-0.006		-0.006		-0.007		-0.006	
IT	-0.012		-0.014	*	-0.015	*	-0.016	**
MATL	-0.002		0.002		0.001		0.001	
ReaE	0.003		0.006		0.007		0.008	
UTLY	0.003		0.000		0.002		0.001	
NEWS*Common law	-0.006		-0.005		-0.006		-0.007	
Intercept	-0.009		-0.013		-0.009		-0.005	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	2.702	***	4.828	***	3.754	***	4.113	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.20: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Civil Law

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.006	**				
Likes					0.005	***		
Retweets							0.006	***
Civil law	-0.001		-0.011	*	-0.002		-0.001	
SMA * Civil law			0.011	***	0.001		0.000	
NEWS	0.009		0.006		0.005		0.004	
Auditor	-0.011	**	-0.011	**	-0.011	**	-0.012	**
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	0.000		-0.000		-0.000		-0.000	
MV2BV	0.008	**	0.007	**	0.008	**	0.008	**
ComS	0.005		0.000		0.002		0.002	
ConD	0.007		0.003		0.004		0.006	
ConS	0.018	**	0.019	**	0.019	**	0.020	**
ENGY	-0.007		-0.002		-0.005		-0.005	
FNCL	-0.001		-0.005		-0.001		-0.000	
HeaC	-0.015	*	-0.011		-0.014	*	-0.014	*
INDL	-0.009		-0.008		-0.009	*	-0.009	*
IT	-0.014	*	-0.015	*	-0.017	**	-0.018	**
MATL	-0.002		0.003		0.001		0.001	
ReaE	0.006		0.011		0.011		0.011	
UTLY	0.003		-0.000		0.002		0.001	
NEWS*Civil law	0.009		0.006		0.009		0.009	
Intercept	-0.008		-0.004		-0.007		-0.005	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	1.962	**	4.704	***	3.136	***	3.500	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.21: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Muslim Law

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.011	***				
Likes					0.004	***		
Retweets							0.006	***
Muslim law	0.024	***	0.015		0.011		0.015	*
SMA * Muslim law			0.005		0.007	**	0.006	*
NEWS	0.013		0.008		0.010		0.009	
Auditor	-0.010	**	-0.010	**	-0.010	**	-0.011	**
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.001		-0.002		-0.002	*	-0.002	*
MV2BV	0.007	**	0.005		0.007	**	0.007	**
ComS	0.008		0.004		0.006		0.006	
ConD	0.010		0.005		0.008		0.010	
ConS	0.022	***	0.022	***	0.024	***	0.025	***
ENGY	-0.005		-0.001		-0.003		-0.003	
FNCL	0.001		-0.004		0.001		0.002	
HeaC	-0.010		-0.007		-0.008		-0.008	
INDL	-0.005		-0.005		-0.005		-0.005	
IT	-0.008		-0.010		-0.012		-0.013	
MATL	0.001		0.005		0.004		0.004	
ReaE	0.007		0.012		0.012		0.013	
UTLY	0.006		0.003		0.005		0.004	
NEWS*Muslim law	0.022		0.020		0.015		0.015	
Intercept	0.026		0.023		0.030		0.033	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	2.659	***	4.682	***	4.003	***	4.263	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Three new variables are created by using WGI to multiple each of the three legal systems. With the new variables inserted into the model once at a time, it can be found that in a both common law and civil in a well governed country, are associated with effective SMCD (Table 4.22, Table 4.23) while Muslim law is still not found to be associated with effective SMCD (Table 4.24).

$$\begin{aligned}
 \Delta INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\
 & + \beta_6 \textit{Tweets} + \beta_7 \textit{NEWS} + \beta_8 \textit{WGI} \\
 & + \beta_9 \textit{Tweets} * \textit{Legal system} * \textit{WGI} \\
 & + \beta_{10} \textit{NEWS} * \textit{Legal system} * \textit{WGI} + \beta_{11} \textit{Legal system} + \epsilon
 \end{aligned}$$

(Model 2.2.7)

Table 4.22: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Common Law \* WGI

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.013	***				
Likes					0.006	***		
Retweets							0.008	***
WGI*Common law	-3.648	***	-2.175	***	-2.872	***	-2.749	***
SMA * WGI*Common law			-1.166	***	-0.392	**	-0.543	**
NEWS	0.023	**	0.019	*	0.019	*	0.018	
Auditor	0.003		0.003		0.003		0.003	
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.005	***	-0.005	***	-0.006	***	-0.006	***
MV2BV	0.006	*	0.004		0.006		0.006	*
ComS	0.020	**	0.014		0.017	**	0.017	**
ConD	0.027	***	0.022	***	0.024	***	0.026	***
ConS	0.038	***	0.040	***	0.039	***	0.040	***
ENGY	0.007		0.009		0.008		0.007	
FNCL	0.012	**	0.007		0.012	**	0.013	**
HeaC	0.007		0.010		0.009		0.009	
INDL	0.010	*	0.011	*	0.010	*	0.011	*
IT	0.011		0.008		0.007		0.006	
MATL	0.015	**	0.018	***	0.017	**	0.018	**
ReaE	0.012		0.018		0.017		0.019	
UTLY	0.016		0.011		0.014		0.013	
NEWS*WGI*Common law	-1.391		-1.112		-1.114		-0.938	
WGI	-1.131	***	-1.103	***	-1.193	***	-1.299	***
Common law	0.025	***	0.021	***	0.024	***	0.024	***
Intercept	0.175	***	0.168	***	0.174	***	0.179	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.001		0.001		0.001		0.001	
$F$	8.401	***	10.151	***	9.046	***	9.619	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.23: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Civil Law \* WGI

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.012	***				
Likes					0.005	***		
Retweets							0.008	***
WGI*Civil law	2.154	***	2.656	***	2.029	***	1.887	***
SMA * WGI*Civil law			-0.570	**	-0.012		0.021	
NEWS	0.018	*	0.014		0.014		0.013	
Auditor	0.002		0.001		0.001		0.000	
LEV	-0.000		-0.000		-0.001		-0.001	
SIZE	-0.004	***	-0.005	***	-0.004	***	-0.005	***
MV2BV	0.008	**	0.006		0.007	**	0.008	**
ComS	0.019	**	0.014	*	0.016	**	0.016	*
ConD	0.024	***	0.018	**	0.021	***	0.023	***
ConS	0.036	***	0.037	***	0.037	***	0.038	***
ENGY	0.002		0.009		0.004		0.004	
FNCL	0.012	**	0.006		0.011	**	0.012	**
HeaC	0.006		0.009		0.007		0.008	
INDL	0.008		0.008		0.007		0.007	
IT	0.008		0.008		0.005		0.004	
MATL	0.012	*	0.017	**	0.014	**	0.015	**
ReaE	0.020	*	0.026	**	0.025	**	0.026	**
UTLY	0.016		0.013		0.014		0.014	
NEWS*WGI*Civil law	1.231		1.151		1.100		1.042	
WGI	-3.778	***	-3.739	***	-3.689	***	-3.680	***
Civil law	-0.013	**	-0.010	**	-0.011	**	-0.011	**
Intercept	0.163	***	0.166	***	0.163	***	0.167	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.001		0.000		0.001	
$F$	5.632	***	7.358	***	6.320	***	6.818	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table 4.24: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With Muslim Law \* WGI

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.012	***				
Likes					0.005	***		
Retweets							0.008	***
WGI*Muslim law	-4.377	***	-4.183	***	-3.709	***	-3.874	***
SMA * WGI*Muslim law			0.019		-0.235		-0.009	
NEWS	0.019	**	0.013		0.015		0.014	
Auditor	0.003		0.002		0.002		0.001	
LEV	-0.000		-0.001		-0.001		-0.001	
SIZE	-0.005	***	-0.006	***	-0.006	***	-0.006	***
MV2BV	0.008	**	0.006		0.007	**	0.007	**
ComS	0.021	**	0.017	**	0.019	**	0.018	**
ConD	0.025	***	0.019	***	0.022	***	0.023	***
ConS	0.039	***	0.039	***	0.040	***	0.041	***
ENGY	0.002		0.005		0.004		0.004	
FNCL	0.014	**	0.008		0.013	**	0.014	**
HeaC	0.008		0.011		0.009		0.009	
INDL	0.009		0.009		0.008		0.008	
IT	0.011		0.009		0.007		0.006	
MATL	0.012	*	0.016	**	0.015	**	0.015	**
ReaE	0.026	**	0.031	***	0.030	***	0.032	***
UTLY	0.017	*	0.013		0.016		0.015	
NEWS*WGI*Muslim								
law	-0.199		-0.249		0.196		0.154	
WGI	-1.670	***	-1.676	***	-1.723	***	-1.812	***
Muslim law	-0.016		-0.018		-0.016		-0.014	
Intercept	0.184	***	0.178	***	0.183	***	0.187	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.001		0.000		0.001	
$F$	5.674	***	7.098	***	6.404	***	6.860	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

After the three regression on each law system, a combined regression is performed to include all three systems. The result shows only Common law countries with good governance can moderate highly effective SMCD.

$$\begin{aligned}
 \Delta INFO\ ASYM_{it} = & \alpha + \sum_{n=1}^5 \beta_n \textit{Company-specific variables} \\
 & + \beta_6 \textit{Tweets} + \beta_7 \textit{NEWS} + \beta_8 \textit{WGI} \\
 & + \sum_{n=9}^{11} \textit{Legal system} \\
 & + \sum_{n=12}^{14} \beta_n \textit{Legal system} * \textit{Tweets} * \textit{WGI} \\
 & + \sum_{n=15}^{17} \beta_n \textit{Legal system} * \textit{NEWS} * \textit{WGI} + \epsilon \quad (\text{Model 2.2.7})
 \end{aligned}$$

Table 4.25: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With three legal systems \* WGI

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.014	***				
Likes					0.006	***		
Retweets							0.010	***
WGI*Common law	-3.409		0.249		-1.922		-2.437	
WGI*Civil law	-0.944		1.431		-0.817		-1.789	
WGI*Muslim law	-4.464	***	-5.155	***	-4.809	***	-5.153	***
SMA * WGI*Common law			-1.383	***	-0.596	***	-0.981	***
SMA * WGI*Civil law			-0.238		0.049		0.052	
SMA * WGI*Muslim law			0.835		0.318		0.788	**
NEWS	0.028	**	0.024	*	0.024	*	0.022	*
Auditor	0.005		0.005		0.005		0.005	
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.007	***	-0.007	***	-0.007	***	-0.007	***
MV2BV	0.006		0.004		0.006		0.006	*
Industry controls †								
NEWS*WGI*Common law	-2.646		-2.329		-2.269		-2.013	
NEWS*WGI*Civil law	0.901		0.729		0.714		0.647	
NEWS*WGI*Muslim law	4.229		4.147		4.241		4.073	
WGI	-0.180		-2.343		-0.447		0.406	
Common law	0.045		0.062	*	0.052		0.045	
Civil law	0.026		0.045		0.036		0.029	
Muslim law	-0.029	**	-0.031	**	-0.027	**	-0.024	*
Intercept	0.183	***	0.153	***	0.167	***	0.175	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.001		0.001		0.001		0.001	
$F$	7.126	***	8.129	***	7.277	***	7.841	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

† The details are provided in Table F.13.

#### 4.4.2.8 Standardised Coefficient

To assess the influence between the social media activities and the market as well as the moderating factors, all variables are converted to normal distribution to reach standardised Coefficients in the regressions. It is found that when the product of SMA and WGI changed for one standard deviation, the bid-ask spreads decrease 0.7% for number of tweets, 4.1% for likes received and 1.9% for Retweets received (Model 2.2.5, Table 4.26). Similar result on moderating can also be found using Model 2.2.6. Thus, the moderating factor is not only statistically significant but also influential in the real world.

Table 4.26: Results of Model 2.2.5 with All Factors Standardised

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.003					
Likes					0.026	***		
Retweets							0.011	***
WGI	-0.017	***	-0.017	***	-0.018	***	-0.018	***
SMA * WGI			-0.007	***	-0.041	***	-0.019	***
NEWS	0.001		0.001		0.001		0.001	
Auditor	0.000		0.000		0.000		0.000	
LEV	-0.002		-0.002		-0.002		-0.002	
SIZE	-0.006	**	-0.006	***	-0.006	**	-0.006	***
MV2BV	0.006	***	0.006	**	0.007	***	0.006	***
Industry controls								
NEWS*WGI	0.003		0.003		0.003		0.003	
Intercept	-0.000		-0.000		0.000		-0.000	
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.000		0.000		0.000	
$F$	4.828	***	5.119	***	5.716	***	4.917	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions. All variables have been standardised before inserted into the model.

## 4.5 Conclusion

Using 1,164 listed companies from 33 stock exchanges, this chapter finds that SMCD adoption of most platforms cannot be linked with the cost of capital, or, trading volume on its own, showing adopting a social media platform is not effective communication. Using about 240 thousand daily records of market data and social media data from 660 firms around the world, it is found that a higher number of daily social media activities are associated with a higher bid-ask spread, with mass media headlines controlled for. The result shows that without further variables, the effectiveness of SMCD seems to be negative. However, when interacted with the number of analysts, governance-of-the-country, Individualism, Masculinity, and, common law, social media activities are significantly associated with narrower bid-ask spreads. And, when interacted with other factors such as power distance, social media activities are still associated with wider bid-ask spreads. The result suggests that these country-specific factors influences the effectiveness of SMCD.

This research can confirms the validity of previous theories in SMCD. First, the findings are consistent with agency theory, showing that more information provided by social media adoption and social media activities can reduce the information asymmetry. Second, the theory of cultural influence on the development of accounting systems by Gray (1988) is supported, especially for the PD dimension of the culture. In addition, The agency theory predicting the effect that the legal system and governance-of-the-country influence the environment of information asymmetry are also supported. This research also provide some suggestions to future research. First, since country-specific factors are essential in deciding the effectiveness of SMCD, future research shall be prudent in generalising findings from the Anglosphere to the rest of the world considering the influence of country-specific factors. Second, the findings suggests that the framework of SMCR can be used in accounting research.

However, it must be pointed out that no model for the effectiveness of SMCD produces a high  $R^2_{Adj}$ , showing that the model cannot explain most of the changes of the market variables. With more mass media news and social media news captured or better represented, the model might be improved by future research.

## **Chapter 5 Conclusion**

### **5.1 Conclusions and Implications**

This thesis has investigated two questions about SMCD: the potential determinants of the decision of adoption of SMCD and the factors influencing the effectiveness of SMCD. The findings can be categorised into three dimensions: country-specific factors, social media platforms, and proxies.

#### **5.1.1 Country-specific factors**

The result suggests that both the decision of adopting SMCD and the effectiveness of SMCD are influenced by country-specific factors such as legal systems, regulatory factors, cultures and social media penetration. While other studies have addressed the determinants of SMCD and effectiveness of SMCD in Anglosphere, this thesis extended the scope of samples to the rest of the world. Firstly, WGI is found to be positively associated with adoption and negatively associated with the number of social media activities and moderating the relationship between social media activities and the bid-ask spreads. The adoption side shows that the country governance that shaping the legal environment encourages companies to adopt a flexible method in disclosure, also high WGI may lead to better corporate governance which in turn promote the use of timely methods in disclosure. The negative association between the number of social media activities and WGI suggests high WGI encourages more companies regardless of the intensity of their motivations, and the less motivated companies decrease the mean activities. The result is consistent with previous theories that the better regulations determine the mandatory disclosure directly and can help to improve the voluntary disclosure indirectly. The moderating side indicates that in a better-regulated country, the SMCD is more effective in conveying information to the investors. This finding indicates that SMCD can benefit from a well maintained legal and enforcement environment as the traditional corporate disclosure does.

Secondly, some legal systems and cultural factors are found to be associated with adoption and the number of social media activities and moderating the relationship between social media activities and the bid-ask spreads. For example, Muslim law is found to be positively associated with adoption and the number of social media activities. The findings of adoption support the theory of planned behaviour. The legal system and the culture shape the acceptance of different disclosure methods, and the management makes decisions within these contextual factors. The findings of moderating support the SMCR theory that the effectiveness of communication is influenced by the context of the communication.

Thirdly, social media penetration is negatively associated with social media adoption but is neither associated with social media activities for moderating the relationship between social media activities and the bid-ask spreads. The result is far from expected. Future research may be designed to find the reason for this finding.

### **5.1.2 Social media platforms**

Not all the models generate the same result with respect to different social media platforms. For example, with respect to WGI, only the adoption of LinkedIn and YouTube is found to be positively related to WGI while the adoption of Instagram is found to be negatively related to WGI. Also, while Muslim law is positively associated with all platforms, civil law is only positively associated with Facebook and common law is negatively associated with the adoption of Instagram or YouTube. The cultural factors are the same. Power distance is found to be associated with the adoption of Twitter, LinkedIn, and YouTube, while individualism acts contradictorily to the same three platforms. The differences between social media platforms support the theory of planned behaviour, indicating that the perceptions of the acceptance or usefulness of social media are decided by the cultural, legal system and the governance context.

### **5.1.3 Proxies**

Several proxies to social media in this thesis are used: the adoption of social media as a dummy variable, the tweets sent by a company during 2018, the likes attracted by these tweets, and, the retweets attracted by these tweets. The findings using the first proxy and the other three are largely different. For example, adoption and tweets are associated with WGI in the opposite way. But the last three proxies are largely the same. The finding

indicates that it is useful for the company to send tweets no matter how many investors retweet or like these tweets. However, more effective proxies might be developed in future studies to capture the meanings of the tweets or the interactions between companies and the audiences.

#### **5.1.4 Conclusion**

These findings propose that the traditional findings on the relationships between culture or the quality of regulatory and financial reporting are still applicable to the SMCD even the contents transmitting via social media is more than traditional financial reporting. Also, the findings indicate that current findings on SMCD in Anglosphere shall be carefully scrutinised before being generalised to the rest of the world because the markets with different cultures, levels of social media penetration or legal systems react on SMCD differently. Furthermore, this thesis shows the possibility to incorporate communication theories and behaviour theories into accounting research.

## **5.2 Limitations**

Many limitations are tolerated to make this research possible. There are three major categories. The first category is the quality of the proxies. First, although it is argued that all tweets convey information, it is not deniable that some tweets may carry more information to investors. Second, the quantity of the Reuters headline may not be a good indicator of how traditional media serves the market, because the news from other newsagents is not considered. Also, the meaning of the news is not captured. Third, only Twitter-related data is used as the proxy of the frequency of social media activities. Other platforms are not researched due to the cost of data collection.

The second category is the representativeness of the samples. First, this research only uses the data in 2018 and 2019. It cannot be denied that a study using data from a longer period may reach different findings. Second, the samples are all the largest listed companies in each stock exchange, instead of SMEs. As SMEs may be comparatively poorly covered by traditional media and analysts, social media may be more useful for SMEs. Third, as the stock markets used in this research are the top stock exchanges by their total market capitalisation, small stock exchanges are not covered in this research. Thus, the result may not be generalisable to small stock markets.

The third category is the mechanism of the communication. First, since this thesis focuses on the initial disclosure of the companies, the re-dissemination process is not captured. Although Chapter 4 used the quantity of “likes” acquired and the quantity of “Retweet” acquired by the company’s tweet in one day, these two variables are far from sufficient to represent the complex re-disseminate process via social media platforms. Second, social media not only provided a new channel for the listed companies, but also provided an opportunity for the listed companies to attract comments from the public and to reply to those comments. The “dialogue” side of communication is not considered in this paper.

### **5.3 Future research opportunities**

During the communication process, the attitudes, knowledge, and communication skills of both the companies and the audience are not captured in this thesis. Some proxies can be found to research the whole process of business communication. Also, since the Hofstede’s index has been criticised by Baskerville (2003), better proxies may be used in future research. Moreover, in this thesis, the SMCD activities are proxied by activities via Twitter. But the findings of this thesis show that the adoption of each platform is not identical, and, the effectiveness of each platform is not identical. Therefore, a further study on the effectiveness of SMCD via the other social media platforms may reach different findings. Furthermore, the meaning of social media contents is not researched in this thesis. Since the meaning of social media posts can be interpreted differently in different cultural and legal environments, the meaning of social media posts might be decisive in predicting the effectiveness of SMCD. Currently, with contemporary technologies in natural language processing, it is possible to extract the meaning from social media posts. Thus, future research can extract the relationship between market variables and each dimension of meanings of social media posts.

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## Appendix A List of Indices Surveyed

No.	Index	Jurisdiction	No.	Index	Jurisdiction
1	S&P 100	US	18	FTSE/JSE Top 40	South Africa
2	FTSE100	UK	19	BRAZIL IBRX 50	Brazil
3	Euronext 100	EU	20	DAX	Germany
4	HS50 †	Hong Kong	21	IBEX 35	Spain
5	Nikkei 225 ‡	Japan	22	STI	Singapore
6	SSE 50	China	23	RTSI	Russia
7	FTSE Taiwan 50	Taiwan	24	SET50 §	Thailand
8	FTSE TSX 60	Canada	25	IDX 30	Indonesia
9	NIFTY 50	India	26	FTSE KLCI	Malaysia
10	KOSPI 50	Korea	27	TASI Market Cap top 50	Saudi Arabia
11	OMXC25	Denmark	28	S&P/BMV IPC	Mexico
12	OMXS30	Sweden	29	S&P CLX IPSA	Chile
13	OMXH25	Finland	30	PSEi	Philippines
14	OMXIGI	Iceland	31	OBX	Norway
15	SMI	Switzerland	32	TA-35	Israel
16	SLI	Switzerland	33	BIST 50	Turkey
17	S&P/ASX 50	Australia			

† The major part of the companies trading in Hong Kong Stock Exchanges are operating in China, and, naturally, a significant part of HS50 are companies which are operating in China, too. Therefore, the samples are “companies listed in Hong Kong Stock Exchanges” which shall not be confused with “Hong Kong-based companies”.

‡ Only 100 companies are selected randomly.

§ First 30 stocks are selected.

## Appendix B Samples by Country and Sector

	Cmm	CD	Con	EN	Fin	HL	IND	IT	Mat	RE	Ut	N/A
Australia	1	2	3	5	11	4	5	1	8	8	2	0
Belgium	2	0	2	0	3	1	0	0	2	0	0	0
Brazil	2	8	6	2	6	2	6	1	8	1	2	0
Canada	4	5	5	11	10	2	6	5	9	0	3	0
Chile	1	2	4	1	7	0	3	1	3	1	7	0
China	1	4	2	2	19	3	8	3	5	3	0	0
Denmark	0	1	2	0	4	7	7	1	2	0	1	0
Finland	2	1	1	1	1	1	8	1	5	0	1	0
France	6	12	4	1	8	5	13	3	3	5	4	0
Germany	1	5	2	0	4	4	3	3	5	1	2	0
Hong Kong	3	4	4	4	9	3	4	2	0	12	4	0
Iceland	2	2	2	0	5	0	3	1	0	4	0	0
India	3	7	3	5	11	3	2	5	8	0	3	0
Indonesia	1	3	6	5	5	1	3	0	5	0	1	0
Israel	1	1	2	6	7	3	2	3	3	6	1	0
Japan	4	12	7	0	9	5	30	10	18	3	2	0
Korea	6	8	5	2	8	3	7	5	5	0	1	0
Luxembourg	1	0	0	0	0	0	0	0	1	0	0	0
Malaysia	3	2	5	2	7	3	4	0	2	0	2	0
Mexico	3	2	8	0	8	1	6	0	6	0	1	0
Netherlands	1	0	3	0	4	1	3	3	3	0	0	0
Norway	3	0	6	8	4	0	3	0	2	0	0	0
Philippine	2	2	3	1	7	0	8	0	0	4	3	0
Portugal	0	0	1	1	0	0	0	0	0	0	1	0
Russian	5	3	2	10	6	0	3	0	12	1	6	0
Saudi Arabia	4	5	3	2	15	1	1	0	13	4	1	1
Singapore	2	2	4	0	4	0	10	1	0	7	0	0
South Africa	2	6	5	0	13	3	1	0	4	4	0	0
Spain	3	3	1	3	7	1	4	2	2	2	5	0
Sweden	2	3	2	0	6	1	10	2	3	0	0	0
Switzerland	1	2	1	0	7	6	5	3	4	0	0	0
Taiwan	3	2	2	1	16	0	2	18	6	0	0	0
Thailand	3	2	3	4	4	2	3	0	3	2	4	0
Turkey	3	6	6	2	10	0	10	0	9	1	3	0
UK	8	16	10	4	19	5	15	3	13	3	5	1
US	11	10	11	6	14	16	13	13	2	1	4	1

Cmm: Communication Services CD: Consumer Discretionary

Con: Consumer Staples EN: Energy Fin:Financials HL: Health Care

IND: Industrials IT: Information Technology Mat: Materials RE: Real Estate Ut: Utilities

## Appendix C Legal systems of the countries

Countries	Civil	Common	Muslim	Customary	Socialist	Jewish	Pluralistic
Belgium	o						N
Brazil	o						N
Chile	o						N
Denmark	o						N
Finland	o						N
France	o						N
Germany	o						N
Iceland	o						N
Luxembourg	o						N
Mexico	o						N
Netherlands	o						N
Norway	o						N
Portugal	o						N
Russia	o						N
Spain	o						N
Sweden	o						N
Switzerland	o						N
Taiwan	o						N
Thailand	o						N
Turkey	o						N
Australia		o					N
Canada		o					N
Hong Kong		o					N
UK		o					N
US		o					N
Saudi Arabia			o				N
Israel	o	o		o		o	Y
Philippines	o	o					Y
South Africa	o	o					Y
Indonesia	o		o	o			Y
Japan	o			o			Y
South Korea	o			o			Y
China	o				o		Y
India		o	o	o			Y
Malaysia		o	o	o			Y
Singapore		o	o				Y

Data is collected from <http://www.juriglobe.ca/eng/syst-onu/index-alpha.php>.

## **Appendix D Variable Definitions for Regression Tables**

### **D.1 Hypothesis 1.1**

Auditor: Dummy variable. Companies audited by big four auditors are given 1, while others are given 0.

WACC: Weighted Average Cost of Capital.

MV2BV: Natural logarithm of Natural logarithm of the market value to book value ratio plus one.

SIZE: Natural logarithm of debt to Market capitalisation of the company plus one.

LEV: Natural logarithm of debt to Equity ratio plus one.

Analysts: Natural logarithm of one plus the number of analysts following the company.

Social media penetration: the share of internet users visiting social networking sites.

WGI: Regulatory factors generated from factor analysis based on six WGI factors.

GDP: Natural logarithm of GDP per capita, PPP.

Muslim law, Civil law, Common law: Dummy variables. 1 for the adoption of such law, 0 for no adoption of such law. Mixed law systems have 1 on both variables.

Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long term Orientation, Indulgence: from Hofstede culture index.

NEWS: Natural logarithm of the numbers of EIKON headlines plus one during the year.

### **D.2 Hypothesis 1.2**

Tweets: Natural logarithm of Tweets sent during 2018.

Auditor: Dummy variable. Companies audited by big four auditors are given 1, while others are given 0.

WACC: Weighted Average Cost of Capital.

MV2BV: Natural logarithm of Natural logarithm of the market value to book value ratio plus one.

SIZE: Natural logarithm of debt to Market capitalisation of the company plus one.

LEV: Natural logarithm of debt to Equity ratio plus one.

Analysts: Natural logarithm of one plus the number of analysts following the company.

Social media penetration: the share of internet users visiting social networking sites.

NEWS: Natural logarithm of the numbers of EIKON headlines plus one during the year.

WGI: Regulatory factors generated from factor analysis based on six WGI factors.

GDP: Natural logarithm of GDP per capita, PPP.

Customary law, Muslim law, Civil law, Common law: Dummy variables. 1 for the adoption of such law, 0 for no adoption of such law. Mixed law systems have 1 on both variables.

Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long term Orientation, Indulgence: from Hofstede culture index.

### **D.3 Hypothesis 2.1**

Adoption: five dummy variables for the adoption of Twitter, Facebook, LinkedIn, YouTube, and, Instagram, respectively.

WACC: Weighted Average Cost of Capital, the mean value for the year of 2018

BAS: Bid-ask spreads, the mean value for the year of 2018

Volume: The mean value of trading volume during 2018, divided by market capitalisation.

Auditor: Dummy variable. Companies audited by big four auditors are given 1, while others are given 0.

MV2BV: Natural logarithm of the market value to book value ratio.

NEWS: Natural logarithm of one plus the quantity of headline news of the company via EIKON during the year.

LEV: Debt to Equity ratio.

SIZE: Natural logarithm of the market capitalisation of the company.

Analysts: Natural logarithm of one plus quantity of Analysts following the company.

WGI: Regulatory factors generated from factor analysis based on six WGI factors.

Social media penetration(SMP): the share of internet users visiting social networking sites.

Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long term Orientation, Indulgence: from Hofstede culture index.

#### **D.4 Hypothesis 2.2**

Social media activities: three variables: Tweets: Natural logarithm of one plus the number of tweets sent by the company via Twitter during the day.

Likes: Natural logarithm of one plus the number of likes on the tweets sent by the company via Twitter during the day.

Retweets: Natural logarithm of one plus the number of retweets on the tweets sent by the company via Twitter during the day.

NEWS: Natural logarithm of one plus the quantity of headline news of the company via EIKON during the day.

WACC: The change of weighted average cost of capital from the previous day, divided by the mean value of previous seven days.

BAS: The change of bid-ask spreads from the previous day, divided by the mean value of previous seven days.

Volume: The change of Volume from the previous day, divided by the mean value of previous seven days.

Social media penetration: the share of internet users visiting social networking sites.

Analysts: Natural logarithm of one plus quantity of Analysts following the company.

Social Media Activity \* "Another variable": The underlying social media activity multiplied with the "Another variable" following the company. For "Tweets" column, it is "Tweets \* 'Another variable' "; for "Likes column" it is "Like \* 'Anther variable' "; for "Retweets" column it is "Retweets \* 'Anther variable' ".

Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long term Orientation, Indulgence: from Hofstede culture index.

## Appendix E Spearman's Correlation Test for the Regressions

### E.1 Hypothesis 1.1

	Twitter	Facebook	LinkedIn	YouTube	Instagram
Twitter	1.000	0.692 ***	0.614 ***	0.671 ***	0.504 ***
Facebook	0.692 ***	1.000	0.486 ***	0.615 ***	0.522 ***
LinkedIn	0.614 ***	0.486 ***	1.000	0.566 ***	0.360 ***
YouTube	0.671 ***	0.615 ***	0.566 ***	1.000	0.495 ***
Instagram	0.504 ***	0.522 ***	0.360 ***	0.495 ***	1.000

	Auditor	MV2BV	SIZE	LEV	WACC	Analysts
Twitter	0.052 *	0.158 ***	-0.190 ***	0.097 ***	0.004	0.186 ***
Facebook	0.058 **	0.174 ***	-0.075 ***	0.089 ***	0.036	0.131 ***
LinkedIn	0.070 ***	0.140 ***	-0.261 ***	0.084 ***	-0.035	0.208 ***
YouTube	0.028	0.094 ***	-0.137 ***	0.057 **	-0.021	0.146 ***
Instagram	0.011	0.054 **	-0.084 ***	0.055 **	0.017	0.081 ***

	WGI	Civil law	Common law	Muslim law
Twitter	0.171 ***	-0.145 ***	0.100 ***	0.038
Facebook	0.053 **	-0.060 **	0.031	0.063 **
LinkedIn	0.270 ***	-0.165 ***	0.113 ***	0.021
YouTube	0.139 ***	-0.076 ***	0.033	0.032
Instagram	0.020	-0.030	-0.038	0.074 ***

	IP	SMP	GDP
Twitter	-0.013	-0.235 ***	0.163 ***
Facebook	-0.055 **	-0.167 ***	0.070 ***
LinkedIn	0.058 **	-0.144 ***	0.242 ***
YouTube	0.009	-0.176 ***	0.137 ***
Instagram	-0.045 *	-0.113 ***	0.053 **

	PD		IN		MS		UA		LO		IG	
Twitter	-0.173	***	0.396	***	-0.046	*	-0.028		-0.233	***	0.277	***
Facebook	-0.093	***	0.214	***	-0.109	***	0.021		-0.167	***	0.147	***
LinkedIn	-0.240	***	0.408	***	-0.075	***	-0.112	***	-0.211	***	0.304	***
YouTube	-0.156	***	0.269	***	-0.079	***	0.025		-0.132	***	0.179	***
Instagram	-0.020		0.129	***	-0.095	***	0.006		-0.119	***	0.108	***

	ComS		ConD		ConS		ENGY		FNCL	
Twitter	0.047	*	-0.001		-0.063	**	0.015		0.054	**
Facebook	0.047	*	-0.015		-0.058	**	0.032		0.029	
LinkedIn	-0.057	**	-0.078	***	-0.065	**	0.027		0.029	
YouTube	0.001		-0.027		-0.038		-0.012		0.047	*
Instagram	0.006		0.072	***	-0.017		0.005		-0.012	

	Twitter		Facebook		LinkedIn		YouTube		Instagram	
Auditor	0.052	*	0.058	**	0.070	***	0.028		0.011	
MV2BV	0.158	***	0.174	***	0.140	***	0.094	***	0.054	**
SIZE	-0.190	***	-0.075	***	-0.261	***	-0.137	***	-0.084	***
LEV	0.097	***	0.089	***	0.084	***	0.057	**	0.055	**
WACC	0.004		0.036		-0.035		-0.021		0.017	
Analysts	0.186	***	0.131	***	0.208	***	0.146	***	0.081	***

	Auditor		MV2BV		SIZE		LEV		WACC		Analysts	
Auditor	1.000		0.060	**	-0.094	***	-0.016		-0.089	***	0.201	***
MV2BV	0.060	**	1.000		-0.072	***	-0.058	**	0.162	***	0.139	***
SIZE	-0.094	***	-0.072	***	1.000		-0.081	***	0.146	***	0.196	***
LEV	-0.016		-0.058	**	-0.081	***	1.000		-0.302	***	-0.051	*
WACC	-0.089	***	0.162	***	0.146	***	-0.302	***	1.000		0.011	
Analysts	0.201	***	0.139	***	0.196	***	-0.051	*	0.011		1.000	

	WGI		Civil law		Common law		Muslim law	
Auditor	0.209	***	-0.285	***	0.203	***	0.003	
MV2BV	0.072	***	-0.165	***	0.159	***	0.063	**
SIZE	-0.281	***	0.197	***	-0.158	***	0.062	**
LEV	-0.049	*	0.023		0.024		-0.076	***
WACC	-0.390	***	-0.034		0.032		0.205	***
Analysts	0.279	***	-0.246	***	0.175	***	0.001	

	IP		SMP		GDP	
Auditor	0.100	***	0.158	***	0.238	***
MV2BV	-0.094	***	-0.011		0.058	**
SIZE	-0.158	***	0.061	**	-0.326	***
LEV	-0.108	***	-0.094	***	-0.005	
WACC	-0.354	***	-0.031		-0.370	***
Analysts	0.057	**	0.181	***	0.205	***

	PD		IN		MS		UA		LO		IG	
Auditor	-0.085	***	0.181	***	0.036		-0.198	***	-0.048	*	0.175	***
MV2BV	-0.070	***	0.208	***	0.001		-0.189	***	-0.254	***	0.208	***
SIZE	0.284	***	-0.415	***	0.056	**	0.068	**	0.267	***	-0.358	***
LEV	-0.027		0.113	***	-0.018		0.043		-0.125	***	0.063	**
WACC	0.331	***	-0.212	***	0.005		-0.094	***	-0.117	***	-0.072	***
Analysts	-0.100	***	0.195	***	0.085	***	-0.308	***	0.122	***	0.005	

	ComS		ConD		ConS		ENGY		FNCL	
Auditor	0.010		-0.006		-0.025		0.054	**	0.039	
MV2BV	0.110	***	0.068	**	0.205	***	-0.086	***	-0.253	***
SIZE	0.015		-0.029		0.015		0.028		0.071	***
LEV	0.040		-0.031		-0.070	***	-0.057	**	0.146	***
WACC	-0.053	**	0.080	***	-0.031		0.118	***	-0.097	***
Analysts	0.099	***	0.049	*	-0.008		0.012		-0.015	

	Twitter		Facebook		LinkedIn		YouTube		Instagram	
WGI	0.171	***	0.053	**	0.270	***	0.139	***	0.020	
Civil law	-0.145	***	-0.060	**	-0.165	***	-0.076	***	-0.030	
Common law	0.100	***	0.031		0.113	***	0.033		-0.038	
Muslim law	0.038		0.063	**	0.021		0.032		0.074	***

	Auditor		MV2BV		SIZE		LEV		WACC		Analysts	
WGI	0.209	***	0.072	***	-0.281	***	-0.049	*	-0.390	***	0.279	***
Civil law	-0.285	***	-0.165	***	0.197	***	0.023		-0.034		-0.246	***
Common law	0.203	***	0.159	***	-0.158	***	0.024		0.032		0.175	***
Muslim law	0.003		0.063	**	0.062	**	-0.076	***	0.205	***	0.001	

	WGI		Civil law		Common law		Muslim law	
WGI	1.000		-0.311	***	0.261	***	-0.265	***
Civil law	-0.311	***	1.000		-0.778	***	-0.395	***
Common law	0.261	***	-0.778	***	1.000		0.150	***
Muslim law	-0.265	***	-0.395	***	0.150	***	1.000	

	IP		SMP		GDP	
WGI	0.747	***	0.146	***	0.864	
Civil law	-0.075	***	-0.291	***	-0.313	***
Common law	-0.050	*	0.143	***	0.228	***
Muslim law	-0.311	***	-0.009		-0.302	***

	PD		IN		MS		UA		LO		IG	
WGI	-0.809		0.618	***	0.014		-0.351	***	-0.038		0.433	***
Civil law	0.024		-0.375	***	-0.304	***	0.558	***	0.341	***	-0.297	***
Common law	-0.176	***	0.441	***	0.334	***	-0.606	***	-0.416	***	0.197	***
Muslim law	0.500	***	-0.329	***	-0.020		-0.232	***	0.009		-0.189	***

	ComS	ConD	ConS	ENGY	FNCL	
WGI	-0.005	-0.029	-0.026	-0.006	-0.045	*
Civil law	-0.017	0.001	0.003	-0.043	-0.005	
Common law	0.003	-0.005	0.007	0.053	0.005	**
Muslim law	0.003	0.005	0.023	0.018	0.028	

	Twitter		Facebook		LinkedIn		YouTube		Instagram	
IP	-0.013		-0.055	**	0.058	**	0.009		-0.045	*
SMP	-0.235	***	-0.167	***	-0.144	***	-0.176	***	-0.113	***
GDP	0.163	***	0.070	***	0.242	***	0.137	***	0.053	**

	Auditor		MV2BV		SIZE		LEV		WACC		Analysts	
IP	0.100	***	-0.094	***	-0.158	***	-0.108	***	-0.354	***	0.057	**
SMP	0.158	***	-0.011		0.061	**	-0.094	***	-0.031		0.181	***
GDP	0.238	***	0.058	**	-0.326	***	-0.005		-0.370	***	0.205	***

	WGI		Civil law		Common law		Muslim law	
IP	0.747	***	-0.075	***	-0.050	*	-0.311	***
SMP	0.146	***	-0.291	***	0.143	***	-0.009	
GDP	0.864		-0.313	***	0.228	***	-0.302	***

	IP		SMP		GDP	
IP	1.000		0.220	***	0.655	***
SMP	0.220	***	1.000		0.200	***
GDP	0.655	***	0.200	***	1.000	

	PD		IN		MS		UA		LO		IG	
IP	-0.634	***	0.283	***	-0.103	***	-0.040		0.250	***	0.293	***
SMP	0.070	***	-0.214	***	-0.049	*	-0.427	***	-0.027		0.177	***
GDP	-0.706	***	0.613	***	-0.041		-0.225	***	-0.134	***	0.386	***

	ComS		ConD		ConS		ENGY		FNCL	
IP	0.015		-0.013		-0.026		-0.025		-0.036	
SMP	0.020		-0.029		-0.013		-0.071	***	0.036	
GDP	0.012		-0.046	*	-0.019		0.005		-0.056	**

	Twitter		Facebook		LinkedIn		YouTube		Instagram	
PD	-0.173	***	-0.093	***	-0.240	***	-0.156	***	-0.020	
IN	0.396	***	0.214	***	0.408	***	0.269	***	0.129	***
MS	-0.046	*	-0.109	***	-0.075	***	-0.079	***	-0.095	***
UA	-0.028		0.021		-0.112	***	0.025		0.006	
LO	-0.233	***	-0.167	***	-0.211	***	-0.132	***	-0.119	***
IG	0.277	***	0.147	***	0.304	***	0.179	***	0.108	***

	Auditor		MV2BV		SIZE		LEV		WACC		Analysts	
PD	-0.085	***	-0.070	***	0.284	***	-0.027		0.331	***	-0.100	***
IN	0.181	***	0.208	***	-0.415	***	0.113	***	-0.212	***	0.195	***
MS	0.036		0.001		0.056	**	-0.018		0.005		0.085	***
UA	-0.198	***	-0.189	***	0.068	**	0.043		-0.094	***	-0.308	***
LO	-0.048	*	-0.254	***	0.267	***	-0.125	***	-0.117	***	0.122	***
IG	0.175	***	0.208	***	-0.358	***	0.063	**	-0.072	***	0.005	

	WGI		Civil law		Common law		Muslim law	
PD	-0.809		0.024		-0.176	***	0.500	***
IN	0.618	***	-0.375	***	0.441	***	-0.329	***
MS	0.014		-0.304	***	0.334	***	-0.020	
UA	-0.351	***	0.558	***	-0.606	***	-0.232	***
LO	-0.038		0.341	***	-0.416	***	0.009	
IG	0.433	***	-0.297	***	0.197	***	-0.189	***

	IP		SMP		GDP	
PD	-0.634	***	0.070	***	-0.706	***
IN	0.283	***	-0.214	***	0.613	***
MS	-0.103	***	-0.049	*	-0.041	
UA	-0.040		-0.427	***	-0.225	***
LO	0.250	***	-0.027		-0.134	***
IG	0.293	***	0.177	***	0.386	***

	PD	IN	MS	UA	LO	IG
PD	1.000	-0.662 ***	0.017	0.152 ***	0.146 ***	-0.442 ***
IN	-0.662 ***	1.000	0.186 ***	-0.180 ***	-0.403 ***	0.580 ***
MS	0.017	0.186 ***	1.000	-0.139 ***	0.038	0.064 **
UA	0.152 ***	-0.180 ***	-0.139 ***	1.000	0.222 ***	-0.238 ***
LO	0.146 ***	-0.403 ***	0.038	0.222 ***	1.000	-0.573 ***
IG	-0.442 ***	0.580 ***	0.064 **	-0.238 ***	-0.573 ***	1.000

	ComS	ConD	ConS	ENGY	FNCL
PD	0.017	0.018	0.023	-0.004	0.039
IN	0.008	0.010	-0.016	0.017	-0.044 *
MS	-0.031	0.036	-0.005	-0.096 ***	0.023
UA	0.015	0.016	-0.008	0.005	-0.051 *
LO	-0.001	0.044 *	-0.059 **	-0.064 **	-0.012
IG	0.006	-0.013	0.045 *	-0.061 **	0.018

	Twitter	Facebook	LinkedIn	YouTube	Instagram
ComS	0.047 *	0.047 *	-0.057 **	0.001	0.006
ConD	-0.001	-0.015	-0.078 ***	-0.027	0.072 ***
ConS	-0.063 **	-0.058 **	-0.065 **	-0.038	-0.017
ENGY	0.015	0.032	0.027	-0.012	0.005
FNCL	0.054 **	0.029	0.029	0.047 *	-0.012

	Auditor	MV2BV	SIZE	LEV	WACC	Analysts
ComS	0.010	0.110 ***	0.015	0.040	-0.053 **	0.099 ***
ConD	-0.006	0.068 **	-0.029	-0.031	0.080 ***	0.049 *
ConS	-0.025	0.205 ***	0.015	-0.070 ***	-0.031	-0.008
ENGY	0.054 **	-0.086 ***	0.028	-0.057 **	0.118 ***	0.012
FNCL	0.039	-0.253 ***	0.071 ***	0.146 ***	-0.097 ***	-0.015

	WGI	Civil law	Common law	Muslim law
ComS	-0.005	-0.017	0.003	0.003
ConD	-0.029	0.001	-0.005	0.005
ConS	-0.026	0.003	0.007	0.023
ENGY	-0.006	-0.043	0.053 **	0.018
FNCL	-0.045 *	-0.005	0.005	0.028

	IP	SMP	GDP	
ComS	0.015	0.020	0.012	
ConD	-0.013	-0.029	-0.046	*
ConS	-0.026	-0.013	-0.019	
ENGY	-0.025	-0.071	0.005	***
FNCL	-0.036	0.036	-0.056	**

	PD	IN	MS	UA	LO	IG		
ComS	0.017	0.008	-0.031	0.015	-0.001	0.006		
ConD	0.018	0.010	0.036	0.016	0.044	-0.013	*	
ConS	0.023	-0.016	-0.005	-0.008	-0.059	0.045	**	*
ENGY	-0.004	0.017	-0.096	0.005	-0.064	-0.061	**	**
FNCL	0.039	-0.044	0.023	-0.051	-0.012	0.018	*	

	ComS	ConD	ConS	ENGY	FNCL			
ComS	1.000	-0.087	-0.086	-0.069	-0.131	***	***	***
ConD	-0.087	1.000	-0.105	-0.084	-0.160	***	***	***
ConS	-0.086	-0.105	1.000	-0.083	-0.158	***	***	***
ENGY	-0.069	-0.084	-0.083	1.000	-0.127	***	***	***
FNCL	-0.131	-0.160	-0.158	-0.127	1.000	***	***	***

## E.2 Hypothesis 1.2

	Tweets	Auditor	MV2BV	SIZE	LEV
Tweets	1.000	0.047	0.098 **	0.141 ***	0.089 **
Auditor	0.047	1.000	0.061	-0.080 **	-0.037
MV2BV	0.098 **	0.061	1.000	0.092 **	-0.084 **
SIZE	0.141 ***	-0.080 **	0.092 **	1.000	0.037
LEV	0.089 **	-0.037	-0.084 **	0.037	1.000

	WACC	Analysts	WGI	Civil law	Common law
Tweets	0.002	0.256 ***	-0.109 ***	-0.121 ***	0.074 *
Auditor	-0.138 ***	0.175 ***	0.206 ***	-0.306 ***	0.245 ***
MV2BV	0.177 ***	0.141 ***	0.094 **	-0.135 ***	0.125 ***
SIZE	0.284 ***	0.234 ***	-0.292 ***	-0.002	0.103 ***
LEV	-0.311 ***	0.022	-0.094 **	0.006	0.021

	Muslim law	IP	SMP	GDP
Tweets	0.163 ***	-0.173 ***	-0.067 *	-0.075 *
Auditor	-0.081 **	0.168 ***	0.201 ***	0.314 ***
MV2BV	0.040	-0.014	0.079 **	0.117 ***
SIZE	0.267 ***	-0.376 ***	-0.065 *	-0.234 ***
LEV	-0.068 *	-0.127 ***	-0.057	0.003

	PD	IN	MS	UA	LO	IG
Tweets	0.143 ***	0.007	0.146 ***	-0.014	-0.080 **	-0.069 *
Auditor	-0.116 ***	0.351 ***	0.110 ***	-0.151 ***	-0.083 **	0.219 ***
MV2BV	-0.082 **	0.160 ***	0.036	-0.215 ***	-0.147 ***	0.131 ***
SIZE	0.286 ***	-0.190 ***	0.085 **	-0.146 ***	-0.007	-0.255 ***
LEV	0.055	0.058	0.027	0.061	-0.044	-0.018

	ComS	ConD	ConS	ENGY	FNCL	HeaC
Tweets	0.086 **	0.119 ***	-0.034	-0.102 ***	0.168 ***	-0.082 **
Auditor	0.023	0.007	-0.042	0.091 **	-0.007	0.091 **
MV2BV	0.062	0.047	0.158 ***	-0.106 ***	-0.279 ***	0.212 ***
SIZE	-0.034	-0.036	0.067 *	0.055	0.073 *	0.035
LEV	0.070 *	-0.061	-0.020	-0.066 *	0.158 ***	-0.085 **

	INDL	IT	MATL	ReaE	UTLY
Tweets	-0.062	0.055	-0.179 ***	-0.121 ***	0.055
Auditor	-0.037	0.072 *	-0.081 **	-0.019	-0.080 **
MV2BV	0.117 ***	0.196 ***	-0.079 **	-0.180 ***	-0.096 **
SIZE	-0.084 **	0.069 *	-0.025	-0.125 ***	-0.030
LEV	0.028	-0.163 ***	-0.036	-0.031	0.119 ***

	Tweets	Auditor	MV2BV	SIZE	LEV
WACC	0.002	-0.138 ***	0.177 ***	0.284 ***	-0.311 ***
Analysts	0.256 ***	0.175 ***	0.141 ***	0.234 ***	0.022
WGI	-0.109 ***	0.206 ***	0.094 **	-0.292 ***	-0.094 **
Civil law	-0.121 ***	-0.306 ***	-0.135 ***	-0.002	0.006
Common law	0.074 *	0.245 ***	0.125 ***	0.103 ***	0.021

	WACC	Analysts	WGI	Civil law	Common law
WACC	1.000	-0.119 ***	-0.385 ***	-0.067 *	0.074 *
Analysts	-0.119 ***	1.000	0.295 ***	-0.193 ***	0.204 ***
WGI	-0.385 ***	0.295 ***	1.000	-0.171 ***	0.169 ***
Civil law	-0.067 *	-0.193 ***	-0.171 ***	1.000	-0.822 ***
Common law	0.074 *	0.204 ***	0.169 ***	-0.822 ***	1.000

	Muslim law	IP	SMP	GDP
WACC	0.317 ***	-0.375 ***	-0.104 ***	-0.403 ***
Analysts	-0.010	0.067 *	-0.007	0.294 ***
WGI	-0.361 ***	0.761 ***	0.299 ***	0.803 ***
Civil law	-0.353 ***	-0.047	-0.344 ***	-0.239 ***
Common law	0.116 ***	-0.071 *	0.245 ***	0.168 ***

	PD	IN	MS	UA	LO	IG
WACC	0.336 ***	-0.318 ***	0.056	-0.088 **	-0.130 ***	-0.109 ***
Analysts	-0.229 ***	0.364 ***	0.081 **	-0.258 ***	0.121 ***	-0.013
WGI	-0.891 ***	0.625 ***	0.035	-0.398 ***	0.031	0.525 ***
Civil law	0.033	-0.449 ***	-0.384 ***	0.578 ***	0.406 ***	-0.300 ***
Common law	-0.116 ***	0.516 ***	0.451 ***	-0.679 ***	-0.445 ***	0.293 ***

	ComS	ConD	ConS	ENGY	FNCL	HeaC
WACC	-0.072 *	0.076 **	-0.062	0.098 ***	-0.074 *	0.015
Analysts	0.041	0.049	-0.001	-0.038	-0.060	0.072 *
WGI	-0.050	-0.014	-0.031	-0.037	-0.083 **	0.099 ***
Civil law	0.021	0.019	-0.024	-0.099 ***	-0.039	-0.045
Common law	-0.024	-0.003	0.021	0.084 **	0.021	0.054

	INDL		IT		MATL		ReaE		UTLY	
WACC	-0.039		0.087	**	0.165	***	-0.043		-0.158	***
Analysts	-0.052		0.180	***	-0.016		-0.112	***	-0.052	
WGI	0.094	**	0.074	*	0.029		-0.044		-0.044	
Civil law	0.117	***	-0.016		0.025		-0.020		0.025	
Common law	-0.112	***	0.014		-0.028		0.049		-0.027	

	Tweets		Auditor		MV2BV		SIZE		LEV	
Muslim law	0.163	***	-0.081	**	0.040		0.267	***	-0.068	*
IP	-0.173	***	0.168	***	-0.014		-0.376	***	-0.127	***
SMP	-0.067	*	0.201	***	0.079	**	-0.065	*	-0.057	
GDP	-0.075	*	0.314	***	0.117	***	-0.234	***	0.003	

	WACC		Analysts		WGI		Civil law		Common law	
Muslim law	0.317	***	-0.010		-0.361	***	-0.353	***	0.116	***
IP	-0.375	***	0.067	*	0.761	***	-0.047		-0.071	*
SMP	-0.104	***	-0.007		0.299	***	-0.344	***	0.245	***
GDP	-0.403	***	0.294	***	0.803	***	-0.239	***	0.168	***

	Muslim law		IP		SMP		GDP	
Muslim law	1.000		-0.389	***	-0.164	***	-0.431	***
IP	-0.389	***	1.000		0.358	***	0.581	***
SMP	-0.164	***	0.358	***	1.000		0.499	***
GDP	-0.431	***	0.581	***	0.499	***	1.000	

	PD		IN		MS		UA		LO		IG	
Muslim law	0.558	***	-0.484	***	-0.041		-0.213	***	0.087	**	-0.424	***
IP	-0.728	***	0.379	***	-0.035		-0.206	***	0.242	***	0.481	***
SMP	-0.251	***	0.244	***	-0.065	*	-0.385	***	-0.522	***	0.576	***
GDP	-0.713	***	0.709	***	0.082	**	-0.278	***	-0.162	***	0.554	***

	ComS		ConD		ConS		ENGY		FNCL		HeaC	
Muslim law	0.017		-0.036		0.012		0.042		0.085	**	-0.056	
IP	0.012		0.007		-0.025		-0.037		-0.065	*	0.023	
SMP	0.008		-0.067	*	0.017		-0.040		0.002		0.048	
GDP	-0.041		-0.043		-0.003		-0.031		-0.073	*	0.141	***

	INDL	IT	MATL	ReaE	UTLY
Muslim law	-0.078 **	-0.038	0.007	0.042	-0.002
IP	0.073 *	0.045	0.014	-0.035	-0.015
SMP	0.078 **	0.037	-0.084 **	0.064 *	-0.067 *
GDP	0.084 **	0.089 **	-0.031	-0.032	-0.052

	Tweets	Auditor	MV2BV	SIZE	LEV
PD	0.143 ***	-0.116 ***	-0.082 **	0.286 ***	0.055
IN	0.007	0.351 ***	0.160 ***	-0.190 ***	0.058
MS	0.146 ***	0.110 ***	0.036	0.085 **	0.027
UA	-0.014	-0.151 ***	-0.215 ***	-0.146 ***	0.061
LO	-0.080 **	-0.083 **	-0.147 ***	-0.007	-0.044
IG	-0.069 *	0.219 ***	0.131 ***	-0.255 ***	-0.018

	WACC	Analysts	WGI	Civil law	Common law
PD	0.336 ***	-0.229 ***	-0.891 ***	0.033	-0.116 ***
IN	-0.318 ***	0.364 ***	0.625 ***	-0.449 ***	0.516 ***
MS	0.056	0.081 **	0.035	-0.384 ***	0.451 ***
UA	-0.088 **	-0.258 ***	-0.398 ***	0.578 ***	-0.679 ***
LO	-0.130 ***	0.121 ***	0.031	0.406 ***	-0.445 ***
IG	-0.109 ***	-0.013	0.525 ***	-0.300 ***	0.293 ***

	Muslim law	IP	SMP	GDP
PD	0.558 ***	-0.728 ***	-0.251 ***	-0.713 ***
IN	-0.484 ***	0.379 ***	0.244 ***	0.709 ***
MS	-0.041	-0.035	-0.065 *	0.082 **
UA	-0.213 ***	-0.206 ***	-0.385 ***	-0.278 ***
LO	0.087 **	0.242 ***	-0.522 ***	-0.162 ***
IG	-0.424 ***	0.481 ***	0.576 ***	0.554 ***

	PD	IN	MS	UA	LO	IG
PD	1.000	-0.642 ***	-0.097 **	0.385 ***	0.032	-0.594 ***
IN	-0.642 ***	1.000	0.242 ***	-0.364 ***	-0.300 ***	0.629 ***
MS	-0.097 **	0.242 ***	1.000	-0.199 ***	-0.127 ***	0.219 ***
UA	0.385 ***	-0.364 ***	-0.199 ***	1.000	0.250 ***	-0.422 ***
LO	0.032	-0.300 ***	-0.127 ***	0.250 ***	1.000	-0.529 ***
IG	-0.594 ***	0.629 ***	0.219 ***	-0.422 ***	-0.529 ***	1.000

	ComS	ConD	ConS	ENGY	FNCL	HeaC
PD	0.052	-0.016	0.031	0.061	0.094 **	-0.107 ***
IN	-0.047	0.032	0.010	0.024	-0.089 **	0.132 ***
MS	-0.018	0.026	0.059	-0.055	0.070 *	0.054
UA	0.020	-0.001	-0.021	0.013	0.022	-0.082 **
LO	0.041	0.094 **	-0.013	-0.035	-0.073 *	-0.047
IG	-0.023	-0.037	0.039	-0.045	-0.003	0.057

	INDL	IT	MATL	ReaE	UTLY
PD	-0.102 ***	-0.067 *	-0.032	0.084 **	0.020
IN	0.003	0.063 *	-0.017	-0.060	-0.016
MS	-0.113 ***	-0.009	-0.014	0.001	-0.006
UA	-0.009	-0.020	0.022	0.004	0.048
LO	-0.003	0.043	0.017	-0.034	0.031
IG	0.078 **	-0.011	0.006	-0.033	-0.078 **

	Tweets	Auditor	MV2BV	SIZE	LEV
ComS	0.086 **	0.023	0.062	-0.034	0.070 *
ConD	0.119 ***	0.007	0.047	-0.036	-0.061
ConS	-0.034	-0.042	0.158 ***	0.067 *	-0.020
ENGY	-0.102 ***	0.091 **	-0.106 ***	0.055	-0.066 *
FNCL	0.168 ***	-0.007	-0.279 ***	0.073 *	0.158 ***
HeaC	-0.082 **	0.091 **	0.212 ***	0.035	-0.085 **

	WACC	Analysts	WGI	Civil law	Common law
ComS	-0.072 *	0.041	-0.050	0.021	-0.024
ConD	0.076 **	0.049	-0.014	0.019	-0.003
ConS	-0.062	-0.001	-0.031	-0.024	0.021
ENGY	0.098 ***	-0.038	-0.037	-0.099 ***	0.084 **
FNCL	-0.074 *	-0.060	-0.083 **	-0.039	0.021
HeaC	0.015	0.072 *	0.099 ***	-0.045	0.054

	Muslim law	IP	SMP	GDP
ComS	0.017	0.012	0.008	-0.041
ConD	-0.036	0.007	-0.067 *	-0.043
ConS	0.012	-0.025	0.017	-0.003
ENGY	0.042	-0.037	-0.040	-0.031
FNCL	0.085 **	-0.065 *	0.002	-0.073 *
HeaC	-0.056	0.023	0.048	0.141 ***

	PD	IN	MS	UA	LO	IG		
ComS	0.052	-0.047	-0.018	0.020	0.041	-0.023		
ConD	-0.016	0.032	0.026	-0.001	0.094	**	-0.037	
ConS	0.031	0.010	0.059	-0.021	-0.013		0.039	
ENGY	0.061	0.024	-0.055	0.013	-0.035		-0.045	
FNCL	0.094	**	-0.089	**	0.070	*	0.022	-0.073 * -0.003
HeaC	-0.107	***	0.132	***	0.054	-0.082	**	-0.047 0.057

	ComS	ConD	ConS	ENGY	FNCL	HeaC		
ComS	1.000	-0.094	**	-0.081	**	-0.072	*	-0.148 *** -0.078 **
ConD	-0.094	**	1.000	-0.096	**	-0.085	**	-0.175 *** -0.092 **
ConS	-0.081	**	-0.096	**	1.000	-0.073	*	-0.152 *** -0.080 **
ENGY	-0.072	*	-0.085	**	-0.073	*	1.000	-0.134 *** -0.070 *
FNCL	-0.148	***	-0.175	***	-0.152	***	-0.134	*** 1.000 -0.145 ***
HeaC	-0.078	**	-0.092	**	-0.080	**	-0.070	* -0.145 *** 1.000

	INDL	IT	MATL	ReaE	UTLY		
ComS	-0.118	***	-0.077	**	-0.093	**	-0.056 -0.063 *
ConD	-0.139	***	-0.091	**	-0.110	***	-0.066 * -0.074 *
ConS	-0.120	***	-0.079	**	-0.095	**	-0.057 -0.064 *
ENGY	-0.106	***	-0.069	*	-0.084	**	-0.050 -0.057
FNCL	-0.220	***	-0.144	***	-0.174	***	-0.104 *** -0.118 ***
HeaC	-0.115	***	-0.075	**	-0.091	**	-0.055 -0.062

	Tweets	Auditor	MV2BV	SIZE	LEV		
INDL	-0.062	-0.037	0.117	***	-0.084	**	0.028
IT	0.055	0.072	*	0.196	***	0.069	* -0.163 ***
MATL	-0.179	***	-0.081	**	-0.079	**	-0.025 -0.036
ReaE	-0.121	***	-0.019		-0.180	***	-0.125 *** -0.031
UTLY	0.055	-0.080	**	-0.096	**	-0.030	0.119 ***

	WACC	Analysts	WGI	Civil law	Common law		
INDL	-0.039	-0.052	0.094	**	0.117	***	-0.112 ***
IT	0.087	**	0.180	***	0.074	*	-0.016 0.014
MATL	0.165	***	-0.016		0.029		0.025 -0.028
ReaE	-0.043	-0.112	***	-0.044	-0.020		0.049
UTLY	-0.158	***	-0.052	-0.044	0.025		-0.027

	Muslim law	IP	SMP	GDP
INDL	-0.078 **	0.073 *	0.078 **	0.084 **
IT	-0.038	0.045	0.037	0.089 **
MATL	0.007	0.014	-0.084 **	-0.031
ReaE	0.042	-0.035	0.064 *	-0.032
UTLY	-0.002	-0.015	-0.067 *	-0.052

	PD	IN	MS	UA	LO	IG
INDL	-0.102 ***	0.003	-0.113 ***	-0.009	-0.003	0.078 **
IT	-0.067 *	0.063 *	-0.009	-0.020	0.043	-0.011
MATL	-0.032	-0.017	-0.014	0.022	0.017	0.006
ReaE	0.084 **	-0.060	0.001	0.004	-0.034	-0.033
UTLY	0.020	-0.016	-0.006	0.048	0.031	-0.078 **

	ComS	ConD	ConS	ENGY	FNCL	HeaC
INDL	-0.118 ***	-0.139 ***	-0.120 ***	-0.106 ***	-0.220 ***	-0.115 ***
IT	-0.077 **	-0.091 **	-0.079 **	-0.069 *	-0.144 ***	-0.075 **
MATL	-0.093 **	-0.110 ***	-0.095 **	-0.084 **	-0.174 ***	-0.091 **
ReaE	-0.056	-0.066 *	-0.057	-0.050	-0.104 ***	-0.055
UTLY	-0.063 *	-0.074 *	-0.064 *	-0.057	-0.118 ***	-0.062

	INDL	IT	MATL	ReaE	UTLY
INDL	1.000	-0.114 ***	-0.138 ***	-0.083 **	-0.094 **
IT	-0.114 ***	1.000	-0.090 **	-0.054	-0.061
MATL	-0.138 ***	-0.090 **	1.000	-0.065 *	-0.074 *
ReaE	-0.083 **	-0.054	-0.065 *	1.000	-0.044
UTLY	-0.094 **	-0.061	-0.074 *	-0.044	1.000

### E.3 Hypothesis 2.1

	WACC		BAS		Volume
WACC	1.000		0.080	***	-0.023
BAS	0.080	***	1.000		-0.083
Volume	-0.023		-0.083	***	1.000

	Twitter		Facebook		LinkedIn		YouTube		Instagram
WACC	-0.011		0.039		-0.023		-0.040		0.001
BAS	-0.208	***	-0.161	***	-0.177	***	-0.187	***	-0.122
Volume	0.115	***	0.030		0.194	***	0.081	***	0.030

	Analysts		MV2BV		Auditor		NEWS		LEV		SIZE
WACC	-0.003		0.214	***	-0.058	**	-0.065	**	-0.303	***	0.129
BAS	-0.433	***	-0.108	***	-0.160	***	-0.439	***	-0.057	*	-0.031
Volume	0.048	*	-0.060	**	0.204	***	0.208	***	0.150	***	-0.697

	Civil law		Common law		Muslim law		IP		WGI		SMP		GDP
WACC	-0.071	**	0.086	***	0.240	***	-0.344	***	-0.365	***	-0.000		-0.355
BAS	0.130	***	-0.100	***	0.129	***	-0.094	***	-0.247	***	0.175	***	-0.308
Volume	-0.293	***	0.249	***	-0.108	***	-0.081	***	0.150	***	0.193	***	0.209

	PD		IN		MS		UA		LO		IG
WACC	0.322	***	-0.234	***	-0.125	***	-0.144	***	-0.186	***	-0.062
BAS	0.329	***	-0.402	***	-0.151	***	0.195	***	-0.058	**	-0.062
Volume	-0.129	***	0.234	***	-0.057	*	-0.308	***	-0.338	***	0.323

	ComS		ConD		ConS		ENGY		FNCL		HeaC
WACC	-0.040		0.088	***	-0.059	**	0.096	***	-0.073	**	-0.011
BAS	-0.009		0.013		0.037		0.020		-0.041		-0.084
Volume	0.026		-0.031		-0.068	**	-0.001		0.046		-0.031

	WACC		BAS		Volume
Twitter	-0.011		-0.208	***	0.115
Facebook	0.039		-0.161	***	0.030
LinkedIn	-0.023		-0.177	***	0.194
YouTube	-0.040		-0.187	***	0.081
Instagram	0.001		-0.122	***	0.030

	Twitter	Facebook	LinkedIn	YouTube	Instagram
Twitter	1.000	0.699 ***	0.614 ***	0.657 ***	0.477 ***
Facebook	0.699 ***	1.000	0.484 ***	0.607 ***	0.507 ***
LinkedIn	0.614 ***	0.484 ***	1.000	0.560 ***	0.354 ***
YouTube	0.657 ***	0.607 ***	0.560 ***	1.000	0.478 ***
Instagram	0.477 ***	0.507 ***	0.354 ***	0.478 ***	1.000

	Analysts	MV2BV	Auditor	NEWS	LEV	SIZE
Twitter	0.147 ***	0.180 ***	0.078 ***	0.254 ***	0.099 ***	-0.242 ***
Facebook	0.133 ***	0.184 ***	0.104 ***	0.167 ***	0.083 ***	-0.094 ***
LinkedIn	0.175 ***	0.201 ***	0.096 ***	0.213 ***	0.078 ***	-0.337 ***
YouTube	0.124 ***	0.104 ***	0.064 **	0.207 ***	0.060 **	-0.169 ***
Instagram	0.072 **	0.066 **	0.043	0.131 ***	0.058 **	-0.094 ***

	Civil law	Common law	Muslim law	IP	WGI	SMP	GDP
Twitter	-0.133 ***	0.100 ***	0.080 ***	-0.029	0.166 ***	-0.217 ***	0.175 ***
Facebook	-0.069 **	0.032	0.111 ***	-0.071 **	0.051 *	-0.163 ***	0.078 ***
LinkedIn	-0.180 ***	0.134 ***	0.082 ***	0.015	0.256 ***	-0.098 ***	0.250 ***
YouTube	-0.081 ***	0.028	0.077 ***	0.007	0.149 ***	-0.167 ***	0.156 ***
Instagram	-0.027	-0.031	0.099 ***	-0.043	0.028	-0.097 ***	0.071 **

	PD	IN	MS	UA	LO	IG
Twitter	-0.208 ***	0.376 ***	-0.113 ***	-0.024	-0.266 ***	0.281 ***
Facebook	-0.093 ***	0.210 ***	-0.134 ***	0.021	-0.184 ***	0.157 ***
LinkedIn	-0.253 ***	0.388 ***	-0.165 ***	-0.154 ***	-0.297 ***	0.339 ***
YouTube	-0.171 ***	0.269 ***	-0.101 ***	0.009	-0.156 ***	0.198 ***
Instagram	-0.046	0.112 ***	-0.131 ***	-0.007	-0.148 ***	0.113 ***

	ComS	ConD	ConS	ENGY	FNCL	HeaC
Twitter	0.032	-0.003	-0.048	0.007	0.046	0.047
Facebook	0.028	-0.024	-0.046	0.029	0.006	0.034
LinkedIn	-0.061 **	-0.087 ***	-0.036	0.024	0.026	0.107 ***
YouTube	-0.018	-0.042	-0.028	-0.016	0.067 **	0.055 *
Instagram	0.017	0.079 ***	-0.016	0.006	-0.019	-0.049 *

	WACC		BAS		Volume	
Analysts	-0.003		-0.433	***	0.048	*
MV2BV	0.214	***	-0.108	***	-0.060	**
Auditor	-0.058	**	-0.160	***	0.204	***
NEWS	-0.065	**	-0.439	***	0.208	***
LEV	-0.303	***	-0.057	*	0.150	***
SIZE	0.129	***	-0.031		-0.697	***

	Twitter		Facebook		LinkedIn		YouTube		Instagram	
Analysts	0.147	***	0.133	***	0.175	***	0.124	***	0.072	**
MV2BV	0.180	***	0.184	***	0.201	***	0.104	***	0.066	**
Auditor	0.078	***	0.104	***	0.096	***	0.064	**	0.043	
NEWS	0.254	***	0.167	***	0.213	***	0.207	***	0.131	***
LEV	0.099	***	0.083	***	0.078	***	0.060	**	0.058	**
SIZE	-0.242	***	-0.094	***	-0.337	***	-0.169	***	-0.094	***

	Analysts		MV2BV		Auditor		NEWS		LEV		SIZE	
Analysts	1.000		0.141	***	0.180	***	0.397	***	-0.023		0.150	***
MV2BV	0.141	***	1.000		0.090	***	0.009		-0.055	*	-0.145	***
Auditor	0.180	***	0.090	***	1.000		0.174	***	0.005		-0.161	***
NEWS	0.397	***	0.009		0.174	***	1.000		0.136	***	-0.023	
LEV	-0.023		-0.055	*	0.005		0.136	***	1.000		-0.082	***
SIZE	0.150	***	-0.145	***	-0.161	***	-0.023		-0.082	***	1.000	

	Civil law		Common law		Muslim law		IP		WGI		SMP		GDP	
Analysts	-0.206	***	0.193	***	0.002		0.065	**	0.272	***	0.146	***	0.271	***
MV2BV	-0.181	***	0.201	***	0.049	*	-0.101	***	0.104	***	-0.019		0.112	***
Auditor	-0.290	***	0.242	***	-0.028		0.093	***	0.197	***	0.181	***	0.270	***
NEWS	-0.205	***	0.201	***	-0.236	***	0.094	***	0.265	***	-0.065	**	0.361	***
LEV	0.004		0.013		-0.052	*	-0.119	***	-0.063	**	-0.066	**	-0.006	
SIZE	0.237	***	-0.172	***	0.094	***	-0.133	***	-0.314	***	-0.004		-0.319	***

	PD		IN		MS		UA		LO		IG	
Analysts	-0.200	***	0.201	***	-0.038		-0.284	***	0.043		-0.037	
MV2BV	-0.124	***	0.261	***	-0.068	**	-0.215	***	-0.328	***	0.248	***
Auditor	-0.131	***	0.240	***	-0.005		-0.198	***	-0.110	***	0.196	***
NEWS	-0.309	***	0.452	***	0.040		-0.092	***	-0.116	***	0.197	***
LEV	0.011		0.107	***	0.008		0.031		-0.114	***	0.070	**
SIZE	0.291	***	-0.419	***	0.150	***	0.153	***	0.386	***	-0.516	***

	ComS	ConD	ConS	ENGY	FNCL	HeaC
Analysts	0.092 ***	0.059 **	-0.003	-0.008	-0.022	0.028
MV2BV	0.104 ***	0.056 *	0.182 ***	-0.102 ***	-0.269 ***	0.204 ***
Auditor	0.020	-0.036	-0.014	0.057 *	0.035	0.031
NEWS	0.041	0.068 **	-0.050 *	0.139 ***	0.013	0.035
LEV	0.041	-0.034	-0.035	-0.068 **	0.124 ***	-0.078 ***
SIZE	0.005	-0.021	0.011	0.067 **	0.056 *	-0.024

	WACC	BAS	Volume
Civil law	-0.071 **	0.130 ***	-0.293 ***
Common law	0.086 ***	-0.100 ***	0.249 ***
Muslim law	0.240 ***	0.129 ***	-0.108 ***
IP	-0.344 ***	-0.094 ***	-0.081 ***
WGI	-0.365 ***	-0.247 ***	0.150 ***
SMP	-0.000	0.175 ***	0.193 ***
GDP	-0.355 ***	-0.308 ***	0.209 ***

	Twitter	Facebook	LinkedIn	YouTube	Instagram
Civil law	-0.133 ***	-0.069 **	-0.180 ***	-0.081 ***	-0.027
Common law	0.100 ***	0.032	0.134 ***	0.028	-0.031
Muslim law	0.080 ***	0.111 ***	0.082 ***	0.077 ***	0.099 ***
IP	-0.029	-0.071 **	0.015	0.007	-0.043
WGI	0.166 ***	0.051 *	0.256 ***	0.149 ***	0.028
SMP	-0.217 ***	-0.163 ***	-0.098 ***	-0.167 ***	-0.097 ***
GDP	0.175 ***	0.078 ***	0.250 ***	0.156 ***	0.071 **

	Analysts	MV2BV	Auditor	NEWS	LEV	SIZE
Civil law	-0.206 ***	-0.181 ***	-0.290 ***	-0.205 ***	0.004	0.237 ***
Common law	0.193 ***	0.201 ***	0.242 ***	0.201 ***	0.013	-0.172 ***
Muslim law	0.002	0.049 *	-0.028	-0.236 ***	-0.052 *	0.094 ***
IP	0.065 **	-0.101 ***	0.093 ***	0.094 ***	-0.119 ***	-0.133 ***
WGI	0.272 ***	0.104 ***	0.197 ***	0.265 ***	-0.063 **	-0.314 ***
SMP	0.146 ***	-0.019	0.181 ***	-0.065 **	-0.066 **	-0.004
GDP	0.271 ***	0.112 ***	0.270 ***	0.361 ***	-0.006	-0.319 ***

	Civil law	Common law	Muslim law	IP	WGI	SMP	GDP
Civil law	1.000	-0.850	-0.358 ***	-0.067 **	-0.346 ***	-0.323 ***	-0.379 ***
Common law	-0.850	1.000	0.160 ***	-0.030	0.323 ***	0.230 ***	0.292 ***
Muslim law	-0.358 ***	0.160 ***	1.000	-0.338 ***	-0.277 ***	-0.082 ***	-0.329 ***
IP	-0.067 **	-0.030	-0.338 ***	1.000	0.708 ***	0.260 ***	0.562 ***
WGI	-0.346 ***	0.323 ***	-0.277 ***	0.708 ***	1.000	0.233 ***	0.854
SMP	-0.323 ***	0.230 ***	-0.082 ***	0.260 ***	0.233 ***	1.000	0.336 ***
GDP	-0.379 ***	0.292 ***	-0.329 ***	0.562 ***	0.854	0.336 ***	1.000

	PD	IN	MS	UA	LO	IG
Civil law	0.134 ***	-0.414 ***	-0.138 ***	0.566 ***	0.476 ***	-0.294 ***
Common law	-0.212 ***	0.472 ***	0.185 ***	-0.628 ***	-0.519 ***	0.293 ***
Muslim law	0.478 ***	-0.314 ***	-0.119 ***	-0.206 ***	-0.057 *	-0.212 ***
IP	-0.644 ***	0.267 ***	0.027	-0.043	0.306 ***	0.291 ***
WGI	-0.868	0.626 ***	0.079 ***	-0.381 ***	-0.087 ***	0.475 ***
SMP	-0.064 **	-0.145 ***	-0.174 ***	-0.479 ***	-0.201 ***	0.227 ***
GDP	-0.699 ***	0.638 ***	0.020	-0.279 ***	-0.173 ***	0.462 ***

	ComS	ConD	ConS	ENGY	FNCL	HeaC
Civil law	-0.010	0.024	-0.014	-0.072 **	-0.015	-0.016
Common law	0.010	0.002	0.032	0.051 *	0.003	0.031
Muslim law	0.010	-0.010	0.017	0.037	0.056 *	-0.055 *
IP	-0.007	-0.010	-0.014	-0.045	-0.051 *	0.028
WGI	-0.025	-0.033	-0.029	-0.036	-0.045	0.103 ***
SMP	-0.008	-0.064 **	-0.000	-0.020	0.031	-0.002
GDP	-0.008	-0.052 *	-0.018	-0.030	-0.054 *	0.127 ***

	WACC	BAS	Volume
PD	0.322 ***	0.329 ***	-0.129 ***
IN	-0.234 ***	-0.402 ***	0.234 ***
MS	-0.125 ***	-0.151 ***	-0.057 *
UA	-0.144 ***	0.195 ***	-0.308 ***
LO	-0.186 ***	-0.058 **	-0.338 ***
IG	-0.062 **	-0.062 **	0.323 ***

	Twitter	Facebook	LinkedIn	YouTube	Instagram
PD	-0.208 ***	-0.093 ***	-0.253 ***	-0.171 ***	-0.046
IN	0.376 ***	0.210 ***	0.388 ***	0.269 ***	0.112 ***
MS	-0.113 ***	-0.134 ***	-0.165 ***	-0.101 ***	-0.131 ***
UA	-0.024	0.021	-0.154 ***	0.009	-0.007
LO	-0.266 ***	-0.184 ***	-0.297 ***	-0.156 ***	-0.148 ***
IG	0.281 ***	0.157 ***	0.339 ***	0.198 ***	0.113 ***

	Analysts	MV2BV	Auditor	NEWS	LEV	SIZE
PD	-0.200 ***	-0.124 ***	-0.131 ***	-0.309 ***	0.011	0.291 ***
IN	0.201 ***	0.261 ***	0.240 ***	0.452 ***	0.107 ***	-0.419 ***
MS	-0.038	-0.068 **	-0.005	0.040	0.008	0.150 ***
UA	-0.284 ***	-0.215 ***	-0.198 ***	-0.092 ***	0.031	0.153 ***
LO	0.043	-0.328 ***	-0.110 ***	-0.116 ***	-0.114 ***	0.386 ***
IG	-0.037	0.248 ***	0.196 ***	0.197 ***	0.070 **	-0.516 ***

	Civil law	Common law	Muslim law	IP	WGI	SMP	GDP
PD	0.134 ***	-0.212 ***	0.478 ***	-0.644 ***	-0.868	-0.064 **	-0.699 ***
IN	-0.414 ***	0.472 ***	-0.314 ***	0.267 ***	0.626 ***	-0.145 ***	0.638 ***
MS	-0.138 ***	0.185 ***	-0.119 ***	0.027	0.079	-0.174 ***	0.020
UA	0.566 ***	-0.628 ***	-0.206 ***	-0.043	-0.381 ***	-0.479 ***	-0.279 ***
LO	0.476 ***	-0.519 ***	-0.057 *	0.306 ***	-0.087 ***	-0.201 ***	-0.173 ***
IG	-0.294 ***	0.293 ***	-0.212 ***	0.291 ***	0.475 ***	0.227 ***	0.462 ***

	PD	IN	MS	UA	LO	IG
PD	1.000	-0.719 ***	-0.135 ***	0.236 ***	0.141 ***	-0.592 ***
IN	-0.719 ***	1.000	0.140 ***	-0.186 ***	-0.451 ***	0.661 ***
MS	-0.135 ***	0.140 ***	1.000	0.032	0.111 ***	0.035
UA	0.236 ***	-0.186 ***	0.032	1.000	0.346 ***	-0.268 ***
LO	0.141 ***	-0.451 ***	0.111 ***	0.346 ***	1.000	-0.642 ***
IG	-0.592 ***	0.661 ***	0.035	-0.268 ***	-0.642 ***	1.000

	ComS	ConD	ConS	ENGY	FNCL	HeaC
PD	0.029	0.003	0.026	0.053 *	0.043	-0.113 ***
IN	0.002	0.006	-0.003	-0.007	-0.047	0.126 ***
MS	-0.031	0.028	0.035	-0.088 ***	0.017	0.030
UA	0.024	0.021	-0.002	0.020	-0.047	-0.048 *
LO	-0.006	0.034	-0.034	-0.042	-0.032	-0.052 *
IG	-0.011	-0.021	0.048	-0.055 *	0.009	0.066 **

	WACC	BAS	Volume
ComS	-0.040	-0.009	0.026
ConD	0.088 ***	0.013	-0.031
ConS	-0.059 **	0.037	-0.068 **
ENGY	0.096 ***	0.020	-0.001
FNCL	-0.073 **	-0.041	0.046
HeaC	-0.011	-0.084 ***	-0.031

	Twitter	Facebook	LinkedIn	YouTube	Instagram
ComS	0.032	0.028	-0.061 **	-0.018	0.017
ConD	-0.003	-0.024	-0.087 ***	-0.042	0.079 ***
ConS	-0.048	-0.046	-0.036	-0.028	-0.016
ENGY	0.007	0.029	0.024	-0.016	0.006
FNCL	0.046	0.006	0.026	0.067 **	-0.019
HeaC	0.047	0.034	0.107 ***	0.055 *	-0.049 *

	Analysts	MV2BV	Auditor	NEWS	LEV	SIZE
ComS	0.092 ***	0.104 ***	0.020	0.041	0.041	0.005
ConD	0.059 **	0.056 *	-0.036	0.068 **	-0.034	-0.021
ConS	-0.003	0.182 ***	-0.014	-0.050 *	-0.035	0.011
ENGY	-0.008	-0.102 ***	0.057 *	0.139 ***	-0.068 **	0.067 **
FNCL	-0.022	-0.269 ***	0.035	0.013	0.124 ***	0.056 *
HeaC	0.028	0.204 ***	0.031	0.035	-0.078 ***	-0.024

	Civil law	Common law	Muslim law	IP	WGI	SMP	GDP
ComS	-0.010	0.010	0.010	-0.007	-0.025	-0.008	-0.008
ConD	0.024	0.002	-0.010	-0.010	-0.033	-0.064 **	-0.052 *
ConS	-0.014	0.032	0.017	-0.014	-0.029	-0.000	-0.018
ENGY	-0.072 **	0.051 *	0.037	-0.045	-0.036	-0.020	-0.030
FNCL	-0.015	0.003	0.056 *	-0.051 *	-0.045	0.031	-0.054 *
HeaC	-0.016	0.031	-0.055 *	0.028	0.103 ***	-0.002	0.127 ***

	PD	IN	MS	UA	LO	IG
ComS	0.029	0.002	-0.031	0.024	-0.006	-0.011
ConD	0.003	0.006	0.028	0.021	0.034	-0.021
ConS	0.026	-0.003	0.035	-0.002	-0.034	0.048
ENGY	0.053 *	-0.007	-0.088 ***	0.020	-0.042	-0.055 *
FNCL	0.043	-0.047	0.017	-0.047	-0.032	0.009
HeaC	-0.113 ***	0.126 ***	0.030	-0.048 *	-0.052 *	0.066 **

	ComS	ConD	ConS	ENGY	FNCL	HeaC
ComS	1.000	-0.095 ***	-0.084 ***	-0.070 **	-0.138 ***	-0.072 **
ConD	-0.095 ***	1.000	-0.106 ***	-0.088 ***	-0.173 ***	-0.091 ***
ConS	-0.084 ***	-0.106 ***	1.000	-0.078 ***	-0.153 ***	-0.080 ***
ENGY	-0.070 **	-0.088 ***	-0.078 ***	1.000	-0.128 ***	-0.067 **
FNCL	-0.138 ***	-0.173 ***	-0.153 ***	-0.128 ***	1.000	-0.131 ***
HeaC	-0.072 **	-0.091 ***	-0.080 ***	-0.067 **	-0.131 ***	1.000

## E.4 Hypothesis 2.2

	BAS	Tweets	Likes	Retweets
BAS	1.000	0.001	0.001	0.002
Tweets	0.001	1.000	0.812	0.760
Likes	0.001	0.812	1.000	0.876
Retweets	0.002	0.760	0.876	1.000

	WGI	Customary law	IP	SMP	GDP
BAS	0.000	-0.001	0.001	0.001	0.001
Tweets	-0.043 ***	0.032 ***	-0.100	-0.016 ***	-0.017 ***
Likes	-0.026 ***	0.034 ***	-0.087	-0.044 ***	0.014 ***
Retweets	0.009 ***	0.031 ***	-0.057 ***	-0.066 ***	0.032 ***

	PD	IN	MS	UA	LO	IG
BAS	-0.001	0.001	-0.000	0.002	-0.001	0.001
Tweets	0.057 ***	0.039 ***	0.094	-0.029 ***	-0.083	-0.013 ***
Likes	0.022 ***	0.066 ***	0.091	-0.004 *	-0.049 ***	-0.019 ***
Retweets	-0.010 ***	0.101	0.093	-0.010 ***	-0.023 ***	-0.011 ***

	NEWS	Auditor	LEV	SIZE	Analysts	MV2BV
BAS	-0.002	0.000	-0.000	-0.001	-0.001	-0.001
Tweets	0.084	0.028 ***	0.064 ***	0.084	0.187	0.075 ***
Likes	0.089	0.040 ***	0.054 ***	0.082	0.219	0.055 ***
Retweets	0.094	0.057 ***	0.035 ***	0.080	0.248	0.048 ***

	Civil law	Common law	Muslim law
BAS	0.001	-0.001	-0.002
Tweets	-0.089	0.081	0.079
Likes	-0.064 ***	0.044 ***	0.033 ***
Retweets	-0.066 ***	0.041 ***	0.025 ***

	ComS	ConD	ConS	ENGY	FNCL	HeaC
BAS	0.000	-0.001	0.000	0.001	0.000	-0.000
Tweets	0.059 ***	0.095	-0.020 ***	-0.077	0.114	-0.054 ***
Likes	0.039 ***	0.083	-0.028 ***	-0.044 ***	0.017 ***	-0.020 ***
Retweets	0.040 ***	0.041 ***	-0.035 ***	-0.033 ***	-0.002	-0.008 ***

	BAS	Tweets	Likes	Retweets
WGI	0.000	-0.043 ***	-0.026 ***	0.009 ***
Customary law	-0.001	0.032 ***	0.034 ***	0.031 ***
IP	0.001	-0.100	-0.087	-0.057 ***
SMP	0.001	-0.016 ***	-0.044 ***	-0.066 ***
GDP	0.001	-0.017 ***	0.014 ***	0.032 ***

	WGI	Customary law	IP	SMP	GDP
WGI	1.000	-0.317	0.769	0.342	0.795
Customary law	-0.317	1.000	-0.308	-0.316	-0.491
IP	0.769	-0.308	1.000	0.358	0.563
SMP	0.342	-0.316	0.358	1.000	0.512
GDP	0.795	-0.491	0.563	0.512	1.000

	PD	IN	MS	UA	LO	IG
WGI	-0.900	0.600	0.054 ***	-0.376	0.009 ***	0.525
Customary law	0.401	-0.408	0.069 ***	-0.082	0.286	-0.509
IP	-0.750	0.392	-0.034 ***	-0.193	0.267	0.468
SMP	-0.311	0.304	-0.085	-0.412	-0.514	0.604
GDP	-0.708	0.713	0.097	-0.265	-0.171	0.547

	NEWS	Auditor	LEV	SIZE	Analysts	MV2BV
WGI	0.041 ***	0.217	-0.124	-0.334	0.241	0.072 ***
Customary law	-0.040 ***	-0.128	-0.087	0.545	0.161	0.017 ***
IP	0.033 ***	0.196	-0.136	-0.384	0.038 ***	-0.029 ***
SMP	0.007 ***	0.227	-0.012 ***	-0.089	0.025 ***	0.050 ***
GDP	0.061 ***	0.328	0.001	-0.251	0.261	0.093

	Civil law	Common law	Muslim law
WGI	-0.210	0.127	-0.307
Customary law	-0.113	0.080	0.727
IP	-0.031 ***	-0.087	-0.437
SMP	-0.328	0.272	-0.258
GDP	-0.276	0.157	-0.416

	ComS	ConD	ConS	ENGY	FNCL	HeaC
WGI	-0.062 ***	-0.021 ***	-0.035 ***	-0.065 ***	-0.044 ***	0.105
Customary law	0.022 ***	0.054 ***	-0.012 ***	0.036 ***	0.007 ***	-0.051 ***
IP	0.007 ***	0.004 *	-0.025 ***	-0.054 ***	-0.049 ***	0.018 ***
SMP	0.008 ***	-0.066 ***	0.007 ***	-0.036 ***	0.002	0.053 ***
GDP	-0.060 ***	-0.047 ***	-0.013 ***	-0.052 ***	-0.048 ***	0.165

	BAS	Tweets		Likes		Retweets	
PD	-0.001	0.057 ***		0.022 ***		-0.010 ***	
IN	0.001	0.039 ***		0.066 ***		0.101	
MS	-0.000	0.094		0.091		0.093	
UA	0.002	-0.029 ***		-0.004 *		-0.010 ***	
LO	-0.001	-0.083		-0.049 ***		-0.023 ***	
IG	0.001	-0.013 ***		-0.019 ***		-0.011 ***	

	WGI		Customary law	IP		SMP		GDP
PD	-0.900		0.401	-0.750		-0.311		-0.708
IN	0.600		-0.408	0.392		0.304		0.713
MS	0.054 ***		0.069 ***	-0.034 ***		-0.085		0.097
UA	-0.376		-0.082	-0.193		-0.412		-0.265
LO	0.009 ***		0.286	0.267		-0.514		-0.171
IG	0.525		-0.509	0.468		0.604		0.547

	PD		IN		MS		UA		LO		IG
PD	1.000		-0.615		-0.119		0.359		0.067 ***		-0.602
IN	-0.615		1.000		0.238		-0.355		-0.342		0.629
MS	-0.119		0.238		1.000		-0.189		-0.095		0.210
UA	0.359		-0.355		-0.189		1.000		0.283		-0.425
LO	0.067 ***		-0.342		-0.095		0.283		1.000		-0.545
IG	-0.602		0.629		0.210		-0.425		-0.545		1.000

	NEWS		Auditor		LEV		SIZE		Analysts		MV2BV
PD	-0.049 ***		-0.158		0.085		0.338		-0.174		-0.078
IN	0.092		0.378		0.055 ***		-0.219		0.322		0.146
MS	0.046 ***		0.198		0.031 ***		0.093		0.095		0.035 ***
UA	-0.029 ***		-0.198		0.074 ***		-0.119		-0.277		-0.226
LO	0.001		-0.069 ***		-0.095		0.012 ***		0.061 ***		-0.138
IG	0.037 ***		0.213		0.010 ***		-0.284		-0.043 ***		0.115

	Civil law		Common law		Muslim law
PD	0.110		-0.071 ***		0.482
IN	-0.544		0.500		-0.404
MS	-0.365		0.438		-0.052 ***
UA	0.640		-0.675		-0.329
LO	0.405		-0.480		0.143
IG	-0.310		0.281		-0.442

	ComS		ConD		ConS		ENGY		FNCL		HeaC	
PD	0.062	***	-0.011	***	0.027	***	0.086		0.053	***	-0.115	
IN	-0.059	***	0.024	***	0.003		-0.005	***	-0.055	***	0.149	
MS	-0.017	***	0.026	***	0.053	***	-0.070	***	0.073	***	0.056	***
UA	0.014	***	-0.012	***	-0.027	***	0.024	***	-0.006	***	-0.075	***
LO	0.051	***	0.085		0.008	***	-0.032	***	-0.071	***	-0.061	***
IG	-0.038	***	-0.036	***	0.033	***	-0.061	***	0.020	***	0.065	***

	BAS		Tweets		Likes		Retweets	
NEWS	-0.002		0.084		0.089		0.094	
Auditor	0.000		0.028	***	0.040	***	0.057	***
LEV	-0.000		0.064	***	0.054	***	0.035	***
SIZE	-0.001		0.084		0.082		0.080	
Analysts	-0.001		0.187		0.219		0.248	
MV2BV	-0.001		0.075	***	0.055	***	0.048	***

	WGI		Customary law		IP		SMP		GDP	
NEWS	0.041	***	-0.040	***	0.033	***	0.007	***	0.061	***
Auditor	0.217		-0.128		0.196		0.227		0.328	
LEV	-0.124		-0.087		-0.136		-0.012	***	0.001	
SIZE	-0.334		0.545		-0.384		-0.089		-0.251	
Analysts	0.241		0.161		0.038	***	0.025	***	0.261	
MV2BV	0.072	***	0.017	***	-0.029	***	0.050	***	0.093	

	PD		IN		MS		UA		LO		IG	
NEWS	-0.049	***	0.092		0.046	***	-0.029	***	0.001		0.037	***
Auditor	-0.158		0.378		0.198		-0.198		-0.069	***	0.213	
LEV	0.085		0.055	***	0.031	***	0.074	***	-0.095		0.010	***
SIZE	0.338		-0.219		0.093		-0.119		0.012	***	-0.284	
Analysts	-0.174		0.322		0.095		-0.277		0.061	***	-0.043	***
MV2BV	-0.078		0.146		0.035	***	-0.226		-0.138		0.115	

	NEWS		Auditor		LEV		SIZE		Analysts		MV2BV	
NEWS	1.000		0.036	***	0.031	***	0.034	***	0.087		-0.024	***
Auditor	0.036	***	1.000		0.015	***	-0.054	***	0.144		0.002	
LEV	0.031	***	0.015	***	1.000		0.004	**	-0.002		-0.108	
SIZE	0.034	***	-0.054	***	0.004	**	1.000		0.251		0.104	
Analysts	0.087		0.144		-0.002		0.251		1.000		0.138	
MV2BV	-0.024	***	0.002		-0.108		0.104		0.138		1.000	

	Civil law	Common law	Muslim law
NEWS	-0.056 ***	0.047 ***	-0.041 ***
Auditor	-0.360	0.310	-0.094
LEV	-0.018 ***	0.016 ***	-0.070 ***
SIZE	-0.022 ***	0.097	0.338
Analysts	-0.299	0.216	0.161
MV2BV	-0.123	0.123	0.064 ***

	ComS	ConD	ConS	ENGY	FNCL	HeaC
NEWS	-0.008 ***	0.006 ***	0.006 ***	0.034 ***	0.005 **	0.007 ***
Auditor	-0.026 ***	-0.039 ***	-0.001	0.074 ***	-0.003	0.071 ***
LEV	0.046 ***	-0.067 ***	-0.011 ***	-0.086	0.180	-0.090
SIZE	-0.005 **	-0.029 ***	0.075 ***	0.078	0.052 ***	0.033 ***
Analysts	0.059 ***	0.079	0.020 ***	-0.034 ***	-0.064 ***	0.082
MV2BV	0.084	0.082	0.125	-0.112	-0.301	0.202

	BAS	Tweets	Likes	Retweets
Civil law	0.001	-0.089	-0.064 ***	-0.066 ***
Common law	-0.001	0.081	0.044 ***	0.041 ***
Muslim law	-0.002	0.079	0.033 ***	0.025 ***

	WGI	Customary law	IP	SMP	GDP
Civil law	-0.210	-0.113	-0.031 ***	-0.328	-0.276
Common law	0.127	0.080	-0.087	0.272	0.157
Muslim law	-0.307	0.727	-0.437	-0.258	-0.416

	PD	IN	MS	UA	LO	IG
Civil law	0.110	-0.544	-0.365	0.640	0.405	-0.310
Common law	-0.071 ***	0.500	0.438	-0.675	-0.480	0.281
Muslim law	0.482	-0.404	-0.052 ***	-0.329	0.143	-0.442

	NEWS	Auditor	LEV	SIZE	Analysts	MV2BV
Civil law	-0.056 ***	-0.360	-0.018 ***	-0.022 ***	-0.299	-0.123
Common law	0.047 ***	0.310	0.016 ***	0.097	0.216	0.123
Muslim law	-0.041 ***	-0.094	-0.070 ***	0.338	0.161	0.064 ***

	Civil law	Common law	Muslim law
Civil law	1.000	-0.899	-0.307
Common law	-0.899	1.000	0.238
Muslim law	-0.307	0.238	1.000

	ComS	ConD	ConS	ENGY	FNCL	HeaC
Civil law	0.025 ***	-0.002	0.001	-0.089	-0.046 ***	-0.052 ***
Common law	-0.011 ***	-0.003 *	0.013 ***	0.067 ***	0.051 ***	0.052 ***
Muslim law	0.003	-0.001	0.003	0.052 ***	0.069 ***	-0.055 ***

	BAS	Tweets	Likes	Retweets
ComS	0.000	0.059 ***	0.039 ***	0.040 ***
ConD	-0.001	0.095	0.083	0.041 ***
ConS	0.000	-0.020 ***	-0.028 ***	-0.035 ***
ENGY	0.001	-0.077	-0.044 ***	-0.033 ***
FNCL	0.000	0.114	0.017 ***	-0.002
HeaC	-0.000	-0.054 ***	-0.020 ***	-0.008 ***

	WGI	Customary law	IP	SMP	GDP
ComS	-0.062 ***	0.022 ***	0.007 ***	0.008 ***	-0.060 ***
ConD	-0.021 ***	0.054 ***	0.004 *	-0.066 ***	-0.047 ***
ConS	-0.035 ***	-0.012 ***	-0.025 ***	0.007 ***	-0.013 ***
ENGY	-0.065 ***	0.036 ***	-0.054 ***	-0.036 ***	-0.052 ***
FNCL	-0.044 ***	0.007 ***	-0.049 ***	0.002	-0.048 ***
HeaC	0.105	-0.051 ***	0.018 ***	0.053 ***	0.165

	PD	IN	MS	UA	LO	IG
ComS	0.062 ***	-0.059 ***	-0.017 ***	0.014 ***	0.051 ***	-0.038 ***
ConD	-0.011 ***	0.024 ***	0.026 ***	-0.012 ***	0.085	-0.036 ***
ConS	0.027 ***	0.003	0.053 ***	-0.027 ***	0.008 ***	0.033 ***
ENGY	0.086	-0.005 ***	-0.070 ***	0.024 ***	-0.032 ***	-0.061 ***
FNCL	0.053 ***	-0.055 ***	0.073 ***	-0.006 ***	-0.071 ***	0.020 ***
HeaC	-0.115	0.149	0.056 ***	-0.075 ***	-0.061 ***	0.065 ***

	NEWS	Auditor	LEV	SIZE	Analysts	MV2BV
ComS	-0.008 ***	-0.026 ***	0.046 ***	-0.005 **	0.059 ***	0.084
ConD	0.006 ***	-0.039 ***	-0.067 ***	-0.029 ***	0.079	0.082
ConS	0.006 ***	-0.001	-0.011 ***	0.075 ***	0.020 ***	0.125
ENGY	0.034 ***	0.074 ***	-0.086	0.078	-0.034 ***	-0.112
FNCL	0.005 **	-0.003	0.180	0.052 ***	-0.064 ***	-0.301
HeaC	0.007 ***	0.071 ***	-0.090	0.033 ***	0.082	0.202

	Civil law		Common law		Muslim law	
ComS	0.025	***	-0.011	***	0.003	
ConD	-0.002		-0.003	*	-0.001	
ConS	0.001		0.013	***	0.003	
ENGY	-0.089		0.067	***	0.052	***
FNCL	-0.046	***	0.051	***	0.069	***
HeaC	-0.052	***	0.052	***	-0.055	***

	ComS		ConD		ConS		ENGY		FNCL		HeaC	
ComS	1.000		-0.092		-0.077		-0.072	***	-0.141		-0.079	
ConD	-0.092		1.000		-0.092		-0.086		-0.168		-0.094	
ConS	-0.077		-0.092		1.000		-0.072	***	-0.141		-0.079	
ENGY	-0.072	***	-0.086		-0.072	***	1.000		-0.133		-0.074	***
FNCL	-0.141		-0.168		-0.141		-0.133		1.000		-0.145	
HeaC	-0.079		-0.094		-0.079		-0.074	***	-0.145		1.000	

## Appendix F Additional tables

Table F.1: Results of Regressing Tweeting Activities on Company-Specific Factors and Each Legal System, Controlling for Culture

	Tweeting activities				
	Civil law		Common law		Muslim law
Civil law	-0.194				
Common law			-0.861	**	
Muslim law					0.737 **
PD	1.923 ***		2.850 ***		1.139
IN	-1.529 **		-0.116		-0.748
MS	0.448		1.633 ***		0.614 *
UA	0.664		-0.942		1.028 **
LO	-1.630 ***		-2.371 ***		-1.501 ***
IG	1.523 **		0.350		1.283 **
Auditor	-0.041		-0.010		-0.047
WACC	-0.034		-0.020		-0.028
MV2BV	0.178 **		0.142 *		0.171 **
SIZE	0.002		-0.005		-0.009
LEV	0.000		0.000		0.000
Analysts	0.481 ***		0.481 ***		0.498 ***
NEWS	0.205 ***		0.194 ***		0.208 ***
ComS	0.938 ***		0.951 ***		0.863 ***
ConD	1.152 ***		1.131 ***		1.062 ***
ConS	0.271		0.287		0.195
Energy	-0.192		-0.135		-0.270
FNCL	1.011 ***		1.007 ***		0.931 ***
HeaC	-0.088		-0.128		-0.171
INDL	0.521 ***		0.483 ***		0.440 **
IT	0.697 ***		0.747 ***		0.620 **
MATL	-0.218		-0.228		-0.311
ReaE	0.044		-0.007		-0.008
UTLY	1.093 ***		1.071 ***		1.014 ***
WGI	0.311 **		0.283 *		0.165
SMP	-2.566 ***		-1.927 ***		-1.567 **
Intercept	5.228 ***		5.179 ***		4.366 ***
n	692		692		692
$R^2_{Adj}$	0.218		0.225		0.224
$F$	8.429 ***		8.714 ***		8.664 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 692 firms.

See Appendix D.2 for variable definitions.

Table F.2: Results of Regressing Weighted Average Cost of Capital on Social Media Adoption, Company-Specific Factors, and, WGI

Model	Weighted Average Cost of Capital									
	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9	Test 10
Twitter	0.001									
Facebook		-0.000								
LinkedIn			0.002							
YouTube				-0.001						
Instagram									-0.002	
Auditor	0.001	0.001	0.001	0.000	0.001	0.000	0.001	0.001	0.001	0.001
MV2BV	0.011 ***	0.011 ***	0.011 ***	0.011 ***	0.011 ***	0.011 ***	0.011 ***	0.011 ***	0.011 ***	0.011 ***
NEWS	0.001 **	0.001 ***	0.001 ***	0.001 **	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***
LEV	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***
SIZE	0.001 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***	0.001 ***
ComS	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
ConD	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.006 **	0.007 ***	0.007 ***
ConS	-0.006 **	-0.006 **	-0.006 **	-0.006 **	-0.006 **	-0.006 **	-0.006 **	-0.006 **	-0.006 **	-0.006 **
ENGY	0.010 ***	0.010 ***	0.010 ***	0.009 ***	0.010 ***	0.010 ***	0.010 ***	0.010 ***	0.010 ***	0.010 ***
FNCL	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
HeaC	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
INDL	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
IT	0.008 **	0.008 **	0.007 **	0.008 **	0.007 **	0.008 **	0.007 **	0.008 **	0.007 **	0.007 **
MATL	0.013 ***	0.013 ***	0.012 ***	0.013 ***	0.012 ***	0.013 ***	0.013 ***	0.013 ***	0.013 ***	0.013 ***
ReaE	0.007 *	0.007 *	0.007 *	0.007 *	0.007 *	0.007 *	0.007 *	0.007 *	0.008 **	0.008 **
UTLY	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***	-0.011 ***
WGI	-1.557 ***	-1.559 ***	-1.566 ***	-1.555 ***	-1.564 ***	-1.566 ***	-1.555 ***	-1.564 ***	-1.564 ***	-1.564 ***
Intercept	0.029 ***	0.031 ***	0.027 ***	0.032 ***	0.031 ***	0.032 ***	0.031 ***	0.031 ***	0.031 ***	0.031 ***
n	1164	1164	1164	1164	1164	1164	1164	1164	1164	1164
$R^2_{Adj}$	0.317	0.317	0.318	0.317	0.318	0.317	0.318	0.317	0.318	0.318
$F$	32.739 ***	32.726 ***	32.846 ***	32.779 ***	32.858 ***	32.779 ***	32.858 ***	32.779 ***	32.858 ***	32.858 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1164 firms.

See Appendix D.3 for variable definitions.

Table F.3: Results of Regressing Trading Volume of Capital on Social Media Adoption, Company-Specific Factors, And, WGI

Model	Trading volume									
	Test 1	Test 2	Test 3	Test 4	Test 5					
Twitter	0.000									
Facebook		0.000								
LinkedIn			-0.000							
YouTube				0.000						
Instagram								0.000		
Auditor	0.000 *	0.000 *	0.000	0.000	0.000 *	0.000 *	0.000 *	0.000	0.000	0.000 *
MV2BV	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***
NEWS	0.000	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000	0.000	0.000 *	0.000 *
LEV	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SIZE	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***
ComS	0.000	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
ConD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ConS	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000	0.000	0.000 *	0.000 *
ENGY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
FNCL	0.000 **	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 **	0.000 **	0.000 ***	0.000 ***
HeaC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
INDL	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
IT	0.000	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000	0.000	0.000 *	0.000 *
MATL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ReaE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
UTLY	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WGI	-0.020 ***	-0.020 ***	-0.019 ***	-0.019 ***	-0.019 ***	-0.020 ***	-0.020 ***	-0.020 ***	-0.020 ***	-0.020 ***
Intercept	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***
n	1164	1164	1164	1164	1164	1164	1164	1164	1164	1164
$R^2_{Adj}$	0.036	0.036	0.037	0.037	0.036	0.036	0.036	0.036	0.036	0.036
$F$	3.559 ***	3.536 ***	3.601 ***	3.601 ***	3.577 ***	3.577 ***	3.543 ***	3.543 ***	3.543 ***	3.543 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively. This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

Table F.4: Results of Regressing Weighted Average Cost of Capital on Company-Specific Factors, WGI, and, SMP

Model	Weighted Average Cost of Capital									
	Test 1		Test 2		Test 3		Test 4		Test 5	
Twitter	0.001									
Facebook			-0.000							
LinkedIn					0.003					
YouTube							-0.001			
Instagram									-0.002	
Auditor	0.000		0.000		0.000		0.000		0.000	
MV2BV	0.011	***	0.011	***	0.011	***	0.011	***	0.011	***
NEWS	0.001	**	0.002	***	0.001	**	0.002	***	0.002	***
LEV	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***
SIZE	0.001	***	0.001	***	0.001	***	0.001	***	0.001	***
ComS	-0.004		-0.003		-0.004		-0.003		-0.003	
ConD	0.006	**	0.006	**	0.006	**	0.006	**	0.006	**
ConS	-0.007	**	-0.007	**	-0.007	**	-0.006	**	-0.007	**
ENGY	0.009	***	0.009	***	0.009	***	0.009	***	0.009	***
FNCL	-0.000		0.000		-0.000		0.001		0.000	
HeaC	0.002		0.002		0.001		0.002		0.002	
INDL	0.002		0.003		0.002		0.003		0.003	
IT	0.007	**	0.007	**	0.007	**	0.007	**	0.007	**
MATL	0.012	***	0.013	***	0.012	***	0.013	***	0.013	***
ReaE	0.006		0.007	*	0.006		0.007	*	0.007	*
UTLY	-0.011	***	-0.011	***	-0.012	***	-0.011	***	-0.011	***
WGI	-1.593	***	-1.588	***	-1.606	***	-1.583	***	-1.591	***
SMP	0.009		0.008		0.010		0.007		0.007	
Intercept	0.023	**	0.025	***	0.020	*	0.027	***	0.027	***
n	1164		1164		1164		1164		1164	
$R^2_{Adj}$	0.318		0.317		0.318		0.317		0.318	
$F$	31.058	***	31.003	***	31.180	***	31.032	***	31.113	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

Table F.5: Results of Regressing Trading volume on Company-Specific Factors, WGI, and, SMP

Model	Trading volume									
	Test 1		Test 2		Test 3		Test 4		Test 5	
Twitter	0.000									
Facebook			0.000							
LinkedIn					-0.000					
YouTube							0.000			
Instagram									0.000	
Auditor	0.000		0.000		0.000		0.000		0.000	
MV2BV	-0.000	***	-0.000	***	-0.000	***	-0.000	***	-0.000	***
NEWS	0.000		0.000	*	0.000	**	0.000	*	0.000	*
LEV	0.000		0.000		0.000		0.000		0.000	
SIZE	-0.000	***	-0.000	***	-0.000	***	-0.000	***	-0.000	***
ComS	0.000		0.000		0.000		0.000		0.000	
ConD	0.000		0.000		0.000		0.000		0.000	
ConS	0.000		0.000		0.000		0.000		0.000	
ENGY	-0.000		-0.000		-0.000		-0.000		-0.000	
FNCL	0.000	**	0.000	**	0.000	***	0.000	**	0.000	**
HeaC	0.000		0.000		0.000		0.000		0.000	
INDL	0.000	***	0.000	***	0.000	***	0.000	***	0.000	***
IT	0.000		0.000		0.000	*	0.000		0.000	
MATL	0.000		0.000		0.000		0.000		0.000	
ReaE	0.000		0.000		0.000		0.000		0.000	
UTLY	0.000		0.000		0.000		0.000		0.000	
WGI	-0.021	***	-0.020	***	-0.020	***	-0.021	***	-0.020	***
SMP	0.000		0.000		0.000		0.000		0.000	
Intercept	0.002	***	0.002	***	0.002	***	0.002	***	0.002	***
n	1164		1164		1164		1164		1164	
$R_{Adj}^2$	0.036		0.035		0.036		0.036		0.035	
$F$	3.391	***	3.356	***	3.406	***	3.406	***	3.364	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively. This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

Table F.6: Results of Regressing Weighted Average Cost of Capital on Company-Specific Factors Interacting With WGI

Model	Weighted Average Cost of Capital									
	Test 1		Test 2		Test 3		Test 4		Test 5	
Twitter	0.001									
Facebook			-0.000							
LinkedIn					0.002					
YouTube							-0.001			
Instagram									-0.002	
Auditor	0.001		0.001		0.000		0.000		0.001	
MV2BV	0.011	***	0.011	***	0.010	***	0.011	***	0.011	***
NEWS	0.001	**	0.002	***	0.001	**	0.002	***	0.002	***
LEV	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***
SIZE	0.001	***	0.001	***	0.001	***	0.001	***	0.001	***
ComS	-0.003		-0.003		-0.003		-0.003		-0.003	
ConD	0.006	***	0.006	***	0.006	**	0.006	***	0.007	***
ConS	-0.006	**	-0.006	**	-0.006	**	-0.006	**	-0.006	**
ENGY	0.009	***	0.010	***	0.009	***	0.010	***	0.010	***
FNCL	0.001		0.001		0.000		0.001		0.001	
HeaC	0.002		0.002		0.002		0.002		0.002	
INDL	0.003		0.003		0.003		0.003		0.004	*
IT	0.008	**	0.008	**	0.007	**	0.008	**	0.007	**
MATL	0.013	***	0.013	***	0.012	***	0.013	***	0.013	***
ReaE	0.007	*	0.007	*	0.007	*	0.007	*	0.008	**
UTLY	-0.010	***	-0.011	***	-0.011	***	-0.011	***	-0.011	***
WGI	-1.443	***	-1.466	***	-1.625	***	-1.542	***	-1.540	***
Adoption*WGI	-0.217		-0.178		0.154		-0.029		-0.074	
Intercept	0.031	***	0.031	***	0.026	***	0.032	***	0.031	***
n	1164		1164		1164		1164		1164	
$R^2_{Adj}$	0.317		0.317		0.318		0.317		0.317	
$F$	31.044	***	30.986	***	31.068	***	30.934	***	31.022	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1164 firms.

See Appendix D.3 for variable definitions.

Table F.7: Results of Regressing Trading volume on Company-Specific Factors Interacting With WGI

Model	Trading volume									
	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9	Test 10
Twitter	0.000									
Facebook		0.000								
LinkedIn			-0.000							
YouTube				0.000						
Instagram								0.000		
Auditor	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
MV2BV	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***
NEWS	0.000 *	0.000 *	0.000 *	0.000 **	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
LEV	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SIZE	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***	-0.000 ***
ComS	0.000	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
ConD	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
ConS	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
ENGY	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
FNCL	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 **	0.000 **	0.000 **	0.000 **
HeaC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
INDL	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
IT	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *	0.000 *
MATL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ReaE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
UTLY	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WGI	-0.008	-0.013 **	-0.018 ***	-0.010 *	-0.013 ***	-0.010 *	-0.013 ***	-0.010 *	-0.013 ***	-0.010 *
Adoption*WGI	-0.022 ***	-0.014 *	-0.003	-0.022 ***	-0.020 **	-0.022 ***	-0.020 **	-0.022 ***	-0.020 **	-0.022 ***
Intercept	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***	0.002 ***
n	1164	1164	1164	1164	1164	1164	1164	1164	1164	1164
$R^2_{Adj}$	0.042	0.038	0.036	0.042	0.040	0.042	0.040	0.042	0.040	0.042
$F$	3.813 ***	3.518 ***	3.409 ***	3.850 ***	3.706 ***	3.813 ***	3.706 ***	3.813 ***	3.706 ***	3.813 ***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively. This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

Table F.8: Results of Regressing Weighted Average Cost of Capital on Company-Specific Factors, WGI, SMP, and, Culture

Model	Weighted Average Cost of Capital									
	Test 1	Test 2	Test 3	Test 4	Test 5					
Twitter	-0.001									
Facebook		-0.001								
LinkedIn			-0.001							
YouTube				-0.002						
Instagram								-0.003	**	
Auditor	-0.001	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000		
MV2BV	0.008	***	0.008	***	0.008	***	0.008	***	0.008	***
NEWS	0.001		0.001		0.001		0.001		0.001	*
LEV	-0.001	***	-0.001	***	-0.001	***	-0.001	***	-0.001	***
SIZE	0.003	***	0.003	***	0.002	***	0.002	***	0.003	***
ComS	-0.004		-0.004		-0.004		-0.004		-0.004	
ConD	0.005	**	0.005	**	0.005	**	0.005	**	0.005	**
ConS	-0.009	***	-0.009	***	-0.008	***	-0.008	***	-0.009	***
ENGY	0.007	**	0.007	**	0.007	**	0.007	**	0.007	**
FNCL	-0.003		-0.003		-0.003		-0.003		-0.003	*
HeaC	0.000		0.000		0.000		0.000		-0.000	
INDL	0.001		0.001		0.001		0.001		0.001	
IT	0.007	**	0.007	**	0.007	**	0.007	**	0.007	**
MATL	0.010	***	0.010	***	0.011	***	0.011	***	0.010	***
ReaE	0.006		0.005		0.006		0.006		0.006	
UTLY	-0.012	***	-0.012	***	-0.012	***	-0.012	***	-0.012	***
WGI	-1.665	***	-1.668	***	-1.666	***	-1.656	***	-1.668	***
SMP	-0.006		-0.007		-0.006		-0.007		-0.007	
MS	-0.011	***	-0.011	***	-0.011	**	-0.011	***	-0.012	***
UA	-0.016	***	-0.016	***	-0.016	***	-0.015	***	-0.015	***
LO	-0.000		-0.000		-0.000		-0.000		-0.001	
IG	0.030	***	0.030	***	0.029	***	0.030	***	0.030	***
Intercept	0.008		0.008		0.008		0.009		0.008	
n	1164		1164		1164		1164		1164	
$R^2_{Adj}$	0.353		0.353		0.353		0.354		0.355	
$F$	29.851	***	29.885	***	29.835	***	29.949	***	30.120	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

This table provides the result of the regressions for the sample of 1164 firms.

See Appendix D.3 for variable definitions.

Table F.9: Results of Regressing Trading volume on Company-Specific Factors, WGI, SMP, And, Culture

Model	Trading volume									
	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9	Test 10
Twitter	0.000									
Facebook		0.000								
LinkedIn			-0.000							
YouTube				0.000						
Instagram								0.000		
Auditor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MV2BV	-0.000	***	-0.000	***	-0.000	***	-0.000	***	-0.000	***
NEWS	0.000	*	0.000	**	0.000	**	0.000	*	0.000	**
LEV	0.000		0.000		0.000		0.000		0.000	
SIZE	-0.000	***	-0.000	***	-0.000	***	-0.000	***	-0.000	***
ComS	0.000	*	0.000	*	0.000	*	0.000	*	0.000	*
ConD	0.000	*	0.000	*	0.000	*	0.000	*	0.000	*
ConS	0.000	*	0.000	*	0.000	*	0.000	*	0.000	*
ENGY	0.000		0.000		0.000		0.000		0.000	
FNCL	0.000	***	0.000	***	0.000	***	0.000	***	0.000	***
HeaC	0.000		0.000		0.000		0.000		0.000	
INDL	0.000	***	0.000	***	0.000	***	0.000	***	0.000	***
IT	0.000		0.000		0.000	*	0.000		0.000	*
MATL	0.000		0.000		0.000		0.000		0.000	
ReaE	0.000		0.000		0.000		0.000		0.000	
UTLY	0.000		0.000		0.000	*	0.000		0.000	
WGI	-0.022	***	-0.021	***	-0.020	***	-0.021	***	-0.021	***
SMP	0.000		0.000		0.000		0.000		0.000	
MS	-0.000		-0.000		-0.000		-0.000		-0.000	
UA	-0.000		-0.000		-0.000		-0.000		-0.000	
LO	0.000		0.000		0.000		0.000		0.000	
IG	-0.000		-0.000		-0.000		-0.000		-0.000	
Intercept	0.002	***	0.003	***	0.003	***	0.002	***	0.003	***
n	1164		1164		1164		1164		1164	
$R^2_{Adj}$	0.039		0.038		0.038		0.039		0.038	
F	3.149	***	3.077	***	3.083	***	3.134	***	3.085	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively. This table provides the result of the regressions for the sample of 1,164 firms.

See Appendix D.3 for variable definitions.

Table F.10: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interact With SMP

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.024	***				
Likes					0.009	**		
Retweets							0.013	***
SMP	-0.138	***	-0.114	***	-0.121	***	-0.114	***
SMA * SMP			-0.019		-0.007		-0.012	
NEWS	0.034		0.026		0.027		0.025	
Auditor	-0.002		-0.003		-0.003		-0.004	
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.002	**	-0.003	**	-0.002	**	-0.003	**
MV2BV	0.007	**	0.006		0.007	**	0.007	**
ComS	0.019	**	0.014	*	0.016	**	0.016	**
ConD	0.017	**	0.010		0.013	*	0.015	**
ConS	0.032	***	0.031	***	0.032	***	0.032	***
ENGY	0.002		0.004		0.002		0.002	
FNCL	0.010	*	0.004		0.009		0.009	*
HeaC	-0.002		-0.000		-0.002		-0.003	
INDL	0.007		0.006		0.006		0.005	
IT	-0.001		-0.004		-0.005		-0.006	
MATL	0.006		0.009		0.008		0.008	
ReaE	0.021	**	0.024	**	0.024	**	0.024	**
UTLY	0.010		0.006		0.008		0.007	
NEWS*SMP	-0.032		-0.027		-0.028		-0.024	
Intercept	0.120	***	0.106	***	0.110	***	0.108	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.001		0.000		0.000	
$F$	6.319	***	8.059	***	6.875	***	7.182	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table F.11: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interact With Analysts and SMP

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.062	***				
Likes					0.017	**		
Retweets							0.026	***
Analysts	-0.005		0.002		-0.006		-0.006	
SMP	-0.139	***	-0.113	***	-0.120	***	-0.114	***
SMA * Analysts			-0.012	***	-0.002		-0.004	
SMA * SMP			-0.024	*	-0.010		-0.015	*
NEWS	0.041		0.024		0.034		0.032	
Auditor	-0.001		-0.002		-0.001		-0.002	
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.002	*	-0.002	**	-0.002	**	-0.002	**
MV2BV	0.008	**	0.006	*	0.008	**	0.008	**
ComS	0.020	**	0.012		0.017	**	0.017	**
ConD	0.018	***	0.010		0.014	**	0.016	**
ConS	0.032	***	0.030	***	0.032	***	0.032	***
ENGY	0.002		0.003		0.002		0.001	
FNCL	0.010	*	0.001		0.009		0.009	
HeaC	-0.001		-0.001		-0.001		-0.002	
INDL	0.007		0.004		0.005		0.004	
IT	0.001		-0.002		-0.002		-0.003	
MATL	0.007		0.008		0.008		0.007	
ReaE	0.021	**	0.022	**	0.023	**	0.023	**
UTLY	0.010		0.004		0.008		0.006	
NEWS*Analysts	-0.002		0.000		-0.002		-0.003	
NEWS*SMP	-0.032		-0.023		-0.025		-0.021	
Intercept	0.127	***	0.090	***	0.113	***	0.111	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.000		0.001		0.000		0.001	
$F$	5.740	***	7.929	***	6.225	***	6.596	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.

Table F.12: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads with Standardised Coefficient

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.014	***				
Likes					0.025	***		
Retweets							0.023	***
Analysts	-0.001		-0.003		-0.001		-0.002	
SMP	-0.015	***	-0.016	***	-0.015	***	-0.015	***
Common law	0.033	***	0.031	***	0.033	***	0.036	***
Civil law	0.031	***	0.029	***	0.031	***	0.033	***
Muslim law	0.004		0.004		0.004		0.004	
SMA * Analysts			-0.013	***	-0.003		-0.015	**
SMA * SMP			-0.004		0.004		0.012	*
SMA * Common law			0.001		-0.010		0.118	***
SMA * Civil law			0.007	*	0.006		0.114	***
SMA * Muslim law			-0.001		0.008		0.004	
NEWS	0.003		0.003		0.003		0.003	
Auditor	-0.001		-0.001		-0.001		-0.001	
LEV	-0.000		-0.000		-0.001		-0.001	
SIZE	-0.007	***	-0.007	***	-0.007	***	-0.007	***
MV2BV	0.005	**	0.004	*	0.005	**	0.005	**
ComS	8.829E+09		-9.323E+09		2.137E+10		9.777E+09	
ConD	1.023E+10		-1.080E+10		2.476E+10		1.133E+10	
ConS	8.829E+09		-9.323E+09		2.137E+10		9.777E+09	
ENGY	8.379E+09		-8.848E+09		2.028E+10		9.278E+09	
FNCL	1.386E+10		-1.464E+10		3.356E+10		1.535E+10	
HeaC	9.057E+09		-9.564E+09		2.192E+10		1.003E+10	
INDL	1.251E+10		-1.321E+10		3.027E+10		1.385E+10	
IT	8.916E+09		-9.415E+09		2.158E+10		9.873E+09	
MATL	1.037E+10		-1.095E+10		2.509E+10		1.148E+10	
ReaE	6.164E+09		-6.508E+09		1.492E+10		6.825E+09	
UTLY	7.363E+09		-7.775E+09		1.782E+10		8.154E+09	
NEWS*Analysts	0.001		0.001		0.001		0.001	
NEWS*SMP	0.001		0.002		0.001		0.001	
NEWS*Common law	0.018		0.018		0.018		0.017	
NEWS*Civil law	0.019		0.019		0.018		0.017	
NEWS*Muslim law	0.002		0.002		0.002		0.002	
Intercept	0.000		0.002		0.001		0.001	
n	240478		240478		240478		240478	
$R_{Adj}^2$	0.001		0.001		0.001		0.001	
F	5.712	***	6.042	***	5.245	***	5.447	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

Table F.13: Results of Regressing Daily Proportionate Change of Bid-Ask Spreads on NEWS and Social Media Activities Interacted With three legal systems \* WGI

	Bid-ask spreads							
	Moderate		Test 1		Test 2		Test 3	
Tweets			0.014	***				
Likes					0.006	***		
Retweets							0.010	***
WGI*Common law	-3.409		0.249		-1.922		-2.437	
WGI*Civil law	-0.944		1.431		-0.817		-1.789	
WGI*Muslim law	-4.464	***	-5.155	***	-4.809	***	-5.153	***
SMA * WGI*Common law			-1.383	***	-0.596	***	-0.981	***
SMA * WGI*Civil law			-0.238		0.049		0.052	
SMA * WGI*Muslim law			0.835		0.318		0.788	**
NEWS	0.028	**	0.024	*	0.024	*	0.022	*
Auditor	0.005		0.005		0.005		0.005	
LEV	-0.000		-0.000		-0.000		-0.000	
SIZE	-0.007	***	-0.007	***	-0.007	***	-0.007	***
MV2BV	0.006		0.004		0.006		0.006	*
ComS	0.021	**	0.013		0.016	*	0.016	*
ConD	0.026	***	0.019	**	0.022	***	0.024	***
ConS	0.040	***	0.040	***	0.040	***	0.041	***
ENGY	0.007		0.007		0.006		0.006	
FNCL	0.013	*	0.005		0.011	*	0.013	**
HeaC	0.007		0.008		0.007		0.008	
INDL	0.011		0.010		0.010		0.010	
IT	0.013		0.007		0.007		0.007	
MATL	0.014	*	0.016	**	0.015	*	0.016	**
ReaE	0.016		0.022	*	0.020		0.021	*
UTLY	0.015		0.008		0.012		0.012	
NEWS*WGI*Common law	-2.646		-2.329		-2.269		-2.013	
NEWS*WGI*Civil law	0.901		0.729		0.714		0.647	
NEWS*WGI*Muslim law	4.229		4.147		4.241		4.073	
WGI	-0.180		-2.343		-0.447		0.406	
Common law	0.045		0.062	*	0.052		0.045	
Civil law	0.026		0.045		0.036		0.029	
Muslim law	-0.029	**	-0.031	**	-0.027	**	-0.024	*
Intercept	0.183	***	0.153	***	0.167	***	0.175	***
n	240478		240478		240478		240478	
$R^2_{Adj}$	0.001		0.001		0.001		0.001	
$F$	7.126	***	8.129	***	7.277	***	7.841	***

\*, \*\*, \*\*\* Indicate difference from zero, significant at the 10 percent, 5 percent, and 1 percent or lower levels, respectively.

See Appendix D.4 for variable definitions.