Culture and the Regulation of Insider Trading Across Countries

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Abstract

This paper explores the association between culture and the cross-country financial regulation. Specifically, we examine how individualism influences the regulation of insider trading. We find that more individualistic countries regulate insider trading activities more heavily. This result is robust to the use of different instrumental variables. We further find that the positive relation between individualism and insider trading regulation is independent of particular political institution, suggesting that individualistic values directly shape people's preferences over the regulation on insider trading activities. More importantly, we study the economic consequences of both individualism and insider trading regulation. We show that individualism leads to a better economy, and it chooses the regulation that has a positive impact on market outcomes.

Keywords: Culture, Individualism, Insider trading regulation, Democracy

1. Introduction

The regulation of insider trading varies tremendously across countries. For example, the *Securities and Merchandise Market Law* of Guatemala stipulates that "any person who has access to privileged information should refrain from making operations with any type of securities…persons who contravene the provisions will be sanctioned with fines of five thousand to fifty thousand units." While in the U.S. the situation is way different. According to the *Insider Trading Sanctions Act of 1984*, communicating or purchasing or selling a security while in possession of material nonpublic information would violate the law or result in liability. The court shall have jurisdiction to impose a civil penalty not exceeding three times the profit gained or loss voided. In addition, anyone who violates the low might face up to twenty years of imprisonment.

The differences in the regulation of insider trading could have different influence on a country's financial system. For example, Beny (2005) shows that countries with more prohibitive insider trading laws generally have more dispersed equity ownership, more informative stock prices, and more liquid stock markets. Bhattacharya and Daouk (2002) find that the enforcement, not the existence, of insider trading laws would lead to a significant decrease in the cost of equity as well as an increase in market liquidity. Bebchuk and Fershtman (1994) find that insider trading regulation disincentivizes managers to engage in excessively risky investment behavior or value-reducing projects. Benabou and Laroque (1992) show that restricting insider trading reduces managers' incentives to manipulate information disclosure. On the other hand, there are several opposing views on the regulation of insider trading. For example, proponents of market efficiency argument think that insider trading makes the market price of the effected stock more accurate (Finnerty, 1976; Meulbroek, 1992). Supporters of the efficient compensation argument think that insider trading provides more incentives to managers to produce additional information of value (Manne, 1966b; Manne, 1969). In addition, Insider trading increases stock price accuracy and is less costly than traditional disclosure (Carlton and Fischel, 1983).

Extensive work has been done on the impact or outcomes of insider trading activities. However, less work has been done on the determinants of the differences in insider trading regulation across countries. On a broader picture, La Porta et al. (1997, 1998) and Djankov et al. (2008) explore the association between a country's legal origin (including the English common law, French and German civil law, Scandinavian law, and Socialist law) and the regulation of economic and other activities. Costs and benefits of legal rules regarding investor rights are also greatly weighed (Grossman and Hart, 1988; Harris and Raviv, 1988; Bebchuk, 1994). La Porta et al. (1997) also find that richer countries normally have more complete legal framework than poorer countries.

In this paper, we examine whether cultural values determine the completeness and severity of a society's legal regime. If so, what is the channel through which culture affects the regulation of insider trading? More importantly, we study the impact of individualism on market outcomes. These questions are important because firstly, firms would like to know what to expect when they decide to have their equity traded in countries that have different cultural values as compared to what they have in their home country. If culture can influence a country's insider trading regulation, then it would be beneficial for firms to have their stock traded in countries where they have similar cultural values, if they want to avoid the costs due to different regulatory regime. Moreover, studying the association between individualism and market outcomes help clarify the association between culture and social preferences over the level of regulation. Previous literature has documented that individualistic countries prefer a lower level of financial regulation (Davis and Willamson, 2016; Cline and Williamson, 2017). Further analyzing the relation among individualism, financial regulation, and market outcomes gives us a deeper understanding of the differences between individualism and collectivism.

When exploring cultural influences, we focus on a particular dimension of cultural variation: individualism versus collectivism. As Gorodnichenko and Roland (2012) suggest, the main difference between individualistic cultures and collectivist cultures lies on the people's fundamental understanding of "self". There are several reasons why we focus on individualism instead of other cultural indicators. Firstly,

individualism has been recognized as a vital component of a country's cultural structure. Hofstede (2003) shows that individualism-collectivism is the most important dimension in understanding international variation across cultural environments. Gorodnichenko and Roland (2011) find empirical evidence suggesting that only the individualism-collectivism cultural dimension is robust regarding long-term economic growth. Secondly, literature also shows that the development of democratic institutions is believed to be influenced by individualism (Licht et al., 2007; Klasing, 2013). Since the rule of law reflects a country's democratic situation, there is a potential channel through which individualism could impact insider trading regulation. Lastly, individualistic values help form certain type of social preferences, which matters if social preferences impact policy formation.

To perform our tests, we hand collect insider trading regulation data across countries following the method suggested in Beny (2007). Our data collection produces a sample of 163 countries that have stock exchanges. As for the proxy for individualism, we follow Beugelsdijk et al.'s (2015) measure of individualism which uses four survey questions in World Values Survey (WVS) from 1981 to 2008 to update Hofstede's (1980, 2003) original measure of individualism. Using Beugelsdijk et al.'s (2015) method significantly increases the number of countries that is available to be included into our dataset.

Our baseline results can be summarized as follows. Empirical results suggest a positive and significant relation between the level of individualism and the severity of insider trading regulation in our sample. In other words, more individualistic countries tend to regulate insider trading more heavily. This finding is robust to controlling for a wide variety of other cultural indicators and exogenous institutional determinants. We also perform instrumental estimations to address the measurement and endogeneity issues of individualism. Specifically, we use two instrumental variables identified in previous culture literature including genetic distance (Gorodnichenko and Roland, 2010, 2011) and prevalence of infectious diseases (Murray and Schaller, 2010; Nikolaev and Salahodjaev, 2017). Based on the IV estimations, we find a strong positive relation between the exogenous component of individualism and the level of insider trading regulation.

We also explore the mechanism through which individualism impacts insider trading regulation. We argue that individualism may affect the choice of insider trading regulation directly through its impact on people's preference over social policy, or indirectly through its impact on the political institutional development. The second mechanism (indirect effect) echoes the work stressing Institutional Layers Hypothesis which claims that culture determines political institutions, or informal institutions serve as a basis for the development of formal institutions (Williamson, 2000). In section five, we test and reject the indirect effect, suggesting that individualism directly shapes people's preferences over social policy. And this result is robust after controlling for the quality of political institutions.

Next, we examine the Interdependent Institutions Hypothesis by including the interaction between democracy and individualism. The Interdependent Institutions Hypothesis claims that political institution, such as democracy, works with individualism as complements or substitutes in determining insider trading regulation. Specifically, democracy significantly magnifies the effect of individualism on insider trading regulation. If this is the case, we expect to observe significant coefficients on the interaction between democracy and individualism. However, the results suggest otherwise. Therefore, we reject the Interdependent Institutions Hypothesis and claim that individualism works independently in determining insider trading regulation.

More importantly, we reconcile the conflicting results on the relation between individualism and financial regulation by studying the economic outcomes of both individualism and insider trading regulation. We first regress market outcome indicators on insider trading regulation only and document a positive relation, suggesting that restricting insider trading activities leads to a more prosperous and healthier financial market in a certain country. Next, we include the measure of individualism in the same regression and the positive association between insider trading regulation and market outcomes disappears. Only the coefficients on individualism remain positive and significant. The results indicate that individualism subsumes the effect of insider trading regulation on the economy. Therefore, we argue that the individualistic values are more powerful. More individualistic countries have better economy, and

individualism favors the regulation that has a positive influence on the financial market and discards other financial regulations that harm market activities.

There are three major contribution of our work. Firstly, it empirically tests how individualism and formal insider trading regulations interchange with each other. In countries where people are more individualistic, they also tend to adopt stricter insider trading regulations. While in countries where people are more collectivistic, less severe insider trading regulations come into play. This analysis adds to a relatively small literature examining the role of culture in financial regulation. Secondly, our paper uses hand-collected insider trading regulation data across countries, providing an up to date overview of how insider trading regulations evolve around the world.

Secondly, our work is also closely related to the growing literature exploring culture and financial outcomes. For example, Bryan et al. (2015) identifies a strong relation between national culture and compensation structure. It also demonstrates important impact of informal institutions on corporate decision-making. Culture is also believed to be linked with corporate decision making. Lievenbruck and Schmid (2014) documents the association between culture and a firm's hedging decisions. They find that more long-term orientation reduces hedging activities. Sarkissian and Schill (2003) find that culture influences the market preferences of firms listing their stock abroad. Grinblatt and Keloharju (2001) suggest that investors are more likely to hold, buy, and sell the stocks of Finnish firms that are located close to the investor, that communicate in the investor's native tongue, and that have chief executives of the same cultural background. Furthermore, culture also influences corporate capital structure (Chui et al., 2002), corporate debt maturity (Zheng et al., 2012), and dividend policy (Shao et al., 2010).

Most important of all, to the best of our knowledge our work is the first to try to solve the countervailing effect of individualistic cultures on financial regulation. In contrast to most prior research, we focus on the financial outcomes of both individualism and insider trading regulation. We find that individualism favors insider trading regulation because insider trading regulation fosters market development. While previous research documents a negative relation between individualism and other types

of financial regulations since those regulations delay market development (e.g., Djankov et al., 2002; Cline and Williamson, 2016). These observations may help explain why prior empirical research finds mixed evidence on the relation between individualism and financial regulation. Furthermore, we observe that cultural values are more powerful, since it can choose the favorable regulation to achieve their goal.

Collectively, our results suggest a more nuanced view of how culture relates to financial regulation and financial market development. In particular, we show that individualistic values are not always negatively correlated to financial regulation. On the contrary, if certain type of regulation (such as insider trading regulation) promotes economic consequences, we would observe a positive association, because individualism values financial market development.

The remainder of this paper is organized as follows. Section 2 discusses hypotheses. Section 3 describes our data sample and variable measurement choice. Section 4 presents baseline model. Section 5 evaluates the *Institutional Layers Hypothesis.* Section 6 evaluates the *Interdependent Institutions Hypothesis.* Section 7 discusses the market outcomes of individualism and insider trading regulation. And Section 8 proves concluding remarks.

2. Hypotheses development

2.1 Direct effect hypothesis

We begin by exploring the role of culture, especially individualism, in shaping people's preferences over financial regulation in a given country. Gorodnichenko and Roland (2012) argue that the major distinction between individualistic society and collectivistic society is grounded in the fundamental understanding of individual self. In individualistic societies, people view the self as independent entity, they care more about personal freedom and individual achievement, with the emphasis on individual autonomy. While in collectivistic societies, the self is interdependent, connected through a web of

relationships and obligations to other individual and to society as a whole. People in collectivistic societies appreciate conformity, loyalty, and respect for superiors, with more emphasis on large social units.

Based on the existing literature and logical analysis, we hypothesize that individualism *directly* affects the level of financial regulation in a country by influencing people's preferences over potential regulatory regime. As mentioned above, individualistic cultures place more importance on personal achievements, thus emphasizing market activity and commercial exchange. In order to achieve their personal goal through their success in business world, people in individualistic countries are more likely to foster greater commercial activities. This might lead to a greater preference, and thus demand, for lightly regulated financial market, namely fewer procedures and more commercial freedom. This argument follows the public choice theories that consider financial regulation a rent-seeking device benefiting a restricted group of insiders (e.g., bureaucrats, politicians, and market incumbents) at the expense of other agents in the economy (Tullock, 1967; Stigler, 1971; Peltzman, 1976).

More precisely, individualism may directly influence the regulation of insider trading *per se*, since insider trading activities foster market efficiency by making the market price of the affected stock more accurate. Regulating insider trading could potentially harm market efficiency. Therefore, people in individualistic countries who favor market efficiency and liquidity would be less likely to vote for insider trading regulation. On the other hand, insider trading not only preserves the market gain of accurate pricing while permits the firms to retain the benefit from non-disclosure (Manne, 1966a), providing firms with more freedom to design their own internal regulatory regime. This also reflects the individualistic values that emphasize on individual freedom and independent autonomy. Under such circumstance, more individualistic countries would adopt less strict insider trading regulation.

These discussions lead to our first hypothesis, which simply states that if these associations do exist, we expect individualism to be negatively associated with the regulation on insider trading.

Hypothesis 1A: Individualism is negatively related to insider trading regulation

However, according to the public interest theory initiated by Pigou (1938), government intervention may provide a second-best solution to market failures occurring in the first place. Under this situation, the fear of market failure can lead to an increasing demand for stricter financial regulation in individualistic countries. Even if there is a cost from governmental intervention and regulation is believed to hamper beneficial market activities, people under this scenario would be more worried about the functioning of the market rather than the costs from regulation. As argued by the opponents of insider trading regulation, insider trading activities increase information asymmetry between insiders and outsiders. As a result, uninformed investors would refrain from trading thus decreasing the market liquidity and causing market failure. In this case, people in more individualistic countries would call for stricter insider trading regulation.

Another explanation focuses on the monitoring and supervising nature of insider trading regulation. In the presence of insider trading regulation, corporate insiders themselves would behave accordingly and there is no need for government agencies to intervene. Insider trading regulation serves as the standard of behavior rather than the device for government to exert its influence on financial market or conduct rent-seeking activities. The behavior-shaping role of insider trading outweighs the punishing role. If people in individualistic cultures view insider trading regulation more as a monitoring device over commercial activities instead of a barricade of the free market transaction, public preferences (and thus public demand) over insider trading regulation could be stronger.

Hypothesis 1B: Individualism is positively related to the insider trading regulation.

In Section 4 we empirically test this hypothesis and find a positive relationship between individualism and the regulation on insider trading. The result supports the hypothesis that insider trading reduces market efficiency and market liquidity which attract more attention of people in individualistic countries.

2.2 Indirect effect hypothesis – Institutional Layers Hypothesis

In addition to influencing the public preferences over social policy or financial regulation, individualism could also influence insider trading regulation indirectly through its influence on the adoption of formal political institutions, such as democracy versus autocracy. This idea is largely derived from the study of North (1991) and Williamson (2000) who introduce a hierarchy of institutional development from fundamental to proximate. For example, North (1991) defines institutions as the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights). Culture, as one of the informal institutions, provides the foundation of the development of formal regulations. Williamson (2000) outlines a tiered system of institutional hierarchy with norms, customs, traditions etc. forming the top level. He argues that higher levels impose constraints on the level immediately below. Culture is part of the highest level, which influences the next level where formal institutional values such as democracy or polity are built. Roland (2005) proposes a classification of institutions into slow-moving institutions (culture) and fast-moving institutions (political institutions). Since the effect of slow-moving institutions reacts relatively slowly, the major mechanism of institutional influence flows from slow-moving institutions, i.e. culture, to fast-moving institutions, i.e. democracy. This conclusion is also supported by Licht et al. (2005) and Stultz and Williamson (2003). Together, these discussions imply that culture determines formal institutions, which in turn influence the formation of financial policy.

In recent studies, Tabellini (2008) and Klasing (2013) both find that culture has a causal relationship with democracy. Gorodnichenko and Roland (2015) find that countries with an individualistic culture are more likely to end up adopting democracy faster than countries with a collectivist culture. Together, these evidences imply that there might be a potential tunnel through which individualism influences formal political institutions, which in turn impacts the adoption of financial regulation. This leads to our second hypothesis.

Hypothesis 2: Culture only impacts insider trading regulation indirectly through political institutions.

In order to test this hypothesis, we control for both individualism and democracy simultaneously in Section 5. If the hypothesis is true, we would expect individualism to be insignificant while democracy to be significant in these regressions. Since the influence of individualism on insider trading regulation would be incorporated by democracy. However, the regression results in section five show that individualism is significant while democracy is not when we include them together in the same regression. This finding leads to a rejection to the *Institutional Layers Hypothesis.*

2.3 Interdependent Institutions Hypothesis

The rejection to the *Institutional Layers Hypothesis* weakens the credibility of the explanation that cultural values indirectly influence the regulation on insider trading through their role in determining formal political institutions. Therefore, there might exit two alternative explanations regarding the relation between informal institutions (e.g., cultural values) and formal political institutions (e.g., democracy). First, individualism and democracy play independent roles in determining the severity of insider trading regulation. Both of them can exert influence in the formation of insider trading regulation but not necessarily in the same manner. Cultural values, by gradually forming people's preferences over financial policy, determine a country's level of insider trading regulation. While political institutions, by allowing the public to participate in the policy-making process, determine the formation of insider trading regulation. Second, individualism and democracy interact with each other to impact the level of insider trading regulation. More specifically, individualism and democracy may substitute or complement each other in determining insider trading regulation. And we term this the *Independent Institutions Hypothesis.*

Previous economic literature supports the idea that formal and informal institutions work together in determining economic policy and outcomes. One branch of the literature identifies a substitutive relation between formal and informal institutions, suggesting that when formal institutions are weak, informal

institutions such as cultural norms become important in market transactions. For example, Knack and Keefer (1997) argue that societies characterized by high levels of trust are less dependent on formal institutions to enforce agreements. Informal credit markets dependent on strong interpersonal trust can facilitate investment where there is no well-developed formal system of financial intermediation. In this case, interpersonal trust can provide an imperfect substitute for government-backed property rights or contract enforcement where governments are unable or unwilling to provide them. Similar arguments are put forward by Guiso et al. (2004) regarding financial development. They find that the effect of trust on the use and availability of financial contracts is stronger where legal enforcement is weaker and among less-educated people. Their results also suggest a substitutive relationship between cultural values and formal institutions.

On the other hand, another branch of studies documents a complementary role between informal and formal political institutions. North (1991) supports the idea of complementary effect of informal institution and formal institution. He argues that the same formal institutions adopted by countries with different cultural environment would exhibit different economical outcomes. Hayek (1960) points out that the functioning of formal political institutions is sensitive to cultural values in the determination of economic policy. Greif (2006) explores the complementary role of formal and informal institutions and shows how different societies rely on a variety of combinations of formal and informal institutions to cooperate. In a more recent study, McCannon et al. (2018) explore social preferences and third-party enforcement of contracts and find that trust and contract complement one another.

In addition, formal political institutions such as democracy could magnify the effect of culture on the public preferences over financial regulation. It is true that culture might directly mold people's predilection for financial policy, it is democracy that provides a channel through which individual voice can be heard by the policy maker. In autocratic countries, even if the public majority prefers less financial regulation, their voices might be ignored by the dictator since people have no influence over the policy-

making process. In this sense, individualism and democracy interact with each other to determine the level of financial regulation. And this introduces the third hypothesis.

Hypothesis 3: Individualism and democracy interact as Interdependent Institutions impacting insider trading regulation.

We test the Interdependent Institutions Hypothesis in Section 6 by introducing interaction terms between individualism and democracy. In analyzing these regressions, a significant coefficient on an interaction term between individualism and democracy might be seen as evidence in support of this hypothesis. On the contrary, if we observe no significant coefficient on an interaction term between individualism and democracy, we can then conclude that individualism and democracy function independently in determining insider trading regulation.

2.4 Cultural Determinism Hypothesis

As discussed in the introduction, we try to answer why individualistic values favor insider trading regulations by looking at the financial development. Existing studies have shown that individualism and financial regulation are contradictory to each other (see, e.g., Davis and Williamson, 2016; Cline and Williamson, 2017). These literatures argue that individualistic cultures view the self as an independent entity, thus valuing personal achievements over collective identity. As for their views on market and regulation, people in more individualistic countries tend to perceive a less regulated market as an avenue for exploring growth opportunities and achieving personal goals. They care more about unrestrained market activities than government correcting market imperfections. The demand for government intervention or regulation is perceived as cost of social disorder (Djankov et al., 2003). Therefore, there is a negative association between individualism and financial regulation that has been established in previous papers.

We agree with the argument that people in more individualistic countries care more about unbridled market activities and market efficiency. But recall that there is also a monitoring role of financial regulation. Therefore, we hypothesize that the countervailing results documented in previous studies is due to the

failure to establish the association between financial regulation and economic consequences with the existence of individualism. More specifically, we argue that the role of financial regulation should be seen as a critical intermediate link in pursuing higher market efficiency, not as the ultimate goal. For example, the sole purpose of insider trading regulation should be eliminating information asymmetry between insiders and outsiders and promoting market efficiency and liquidity but not to restricting market transactions.

We hypothesis that cultural values are more powerful regarding the choice of financial regulation. To be specific, individualism sorts out the regulations that have positive impact on market outcomes and abandons other financial regulations which create barrier, reduce liquidity, or cause market failure.

Hypothesis 4: Individualistic values emphasize financial market development and prefer social policy and regulation that will facilitate market outcomes and efficiency.

In Section 7 we first regress market outcome indicators on insider trading regulation only, and we observe a positive and significant relation. Next, we include individualism in the same regressions. The results suggest that the positive effect of insider trading regulation is being channeled through individualism, indicating that cultural values are more powerful. These observations support our hypothesis.

3. Data and Methodology

3.1 Insider Trading Regulation

There are two major methods developed in previous literature that capture the level of insider trading restrictions in a certain country. One method comes from the 1999 Global Competitiveness Report. This Report records responses from approximately 4000 executives in 59 countries to the following survey question regarding the likelihood of insider trading in their respective countries:

3.15 [Insider trading] Insider trading is not common in the domestic market (1=strongly disagree, 7=strongly agree)

Larger values correspond with a more restrictive insider trading environment in that country. Another method is an insider trading regulation index created by Beny (2007) that uses four indicators to measure the overall severity of the insider trading law in a given country. Since Beny's (2007) index directly come from a country's legal document, we believe that Beny's (2007) method is a more complete measure of insider trading regulation than the method based on survey question.

Following Beny (2007), we hand collect the insider trading regulation data across countries. Beny's (2007) index is the sum of four binary variables each represents a primary element of the insider trading law. *Tipping* equals one if corporate insiders are not allowed to tip corporate outsiders (tippees) about material non-public information and equals zero otherwise. *Tippee* equals one if anyone who received material non-public information from insiders is prohibited from trading on that information and equals zero otherwise. *Damages* equals one if potential monetary penalties are proportional to insiders' trading profits and equals zero otherwise. *Criminal* equals one if violation of the insider trading law is a criminal offense and equals zero otherwise. *IT_Law*, the measure of the severity of the insider trading law in a given country, equals the sum of these four binary variables. *IT_Law* ranges from 0 to 4 with 0 representing the least restrictive insider trading legal regime and 4 representing the most restrictive insider trading legal regime.

We start by collecting all the securities market laws for each country. By doing this, we go to the official website of the supervisor of stock exchange in each country that has one and acquire the most updated legal documents regarding securities activities. For some countries the supervisor of the stock exchange is an agency similar to the SEC in the U.S. but for other countries the central bank is regulating and supervising the stock market (i.e., the Central Bank of Armenia is the supervisory organization of all the securities-related activities happened in Armenia). After having all the legal documents needed by hand, we read through each legal article and compare it with the descriptions provided by Beny (2007) to decide what value to assign to each variable. Next, we add each of the four variables up and calculate the final indicator of a country's insider trading regulation.

To better illustrate our identification strategy, consider Canada as an example. In Canada, both the federal and the provincial governments have jurisdiction to enact insider trading laws. As a result, this often leads to a certain amount of overlap or duplication. For example, at the provincial level, insider trading is regulated under provincial corporation laws and securities acts. However, companies registered nationally under the *Canada Business Corporations Act (CBCA)* are also subject to the provisions found in those laws and acts. In Canada, insider trading *per se* is not illegal. Most laws regulating insider trading activities allow insiders to trade securities of a corporation that they have connections with, unless they do not trade based on material non-public information. However, illegal insider trading can incur severe civil and criminal punishments.

Recall that our measure of the toughness of insider trading includes four binary indicators: *Tipping, Tippee, Damage,* and *Criminal*. Under the *Canada Business Corporates Act (CBCA),* an insider may not disclose any material confidential information to outsiders. If an insider does provide any material confidential information to "tippees", the insider is liable to compensate for the damages any person who subsequently sells securities of the corporation to, or purchases securities of the corporation from, any person that received the information. And the insider is also accountable to the corporation for any benefit or advantage received or receivable by the insider as a result of a purchase or sale (section 131 (5) and (6)). Based on these stipulations, "tipping" is not allowed in Canada, so we assign a "1" to *Tipping*. Similarly, a person (the "tippee") who purchases or sells a security of the corporation with knowledge of confidential information is liable to compensate the seller of the security or the purchaser of the security for any damages suffered by the seller or purchaser as a result of the purchase or sale. Also, that person (the "tippee") is accountable to the corporation for any benefit or advantage received or receivable by the person as a result of a purchase or sale (section 131 (4) and (5)). In short, anyone who possess the inside information is banned from trading based on that information. As a result, we assign a "1" to *Tippee* as well. For the civil and criminal penalties, anyone who contravenes the sections under CBCA is guilty of an offence and liable on summary conviction to a fine not exceeding one million dollars or three times the profit made, whichever

is greater; or to imprisonment for a term not exceeding six months or to both[1]. In addition, the *Criminal Code* of Canada also includes insider trading provisions. Specifically, insider trading is subject to a penalty of up to 10 years' imprisonment. Tipping may be punished by up to 5 years' imprisonment.[2] According to all these laws and regulations, we assign a "1" to both *Damage* and *Criminal*. Finally, this procedure gives a total number of 4 for the measure of insider trading regulation in Canada.

We repeat this procedure for the remaining countries that have a stock market and identify a total of 163 countries in our sample. Compared with Beny (2007), our sample significantly expands the database she has (163 countries compared with 33 countries) and provides a better basis for future research. Furthermore, the regulation on insider trading has been strengthened since 2000. And this leads to significant changes in the insider trading indexes for some countries. For example, in Beny's (2007) database, Germany has a score of 3. However, after the last amendment of the *Securities Trading Act* in June 2011, now Germany has a score of 4.

We report the country statistics in Table 1. We include 163 countries with stock market and among them, 29 countries have no insider trading regulation.

(Insert Table 1 here)

3.2 Individualism-collectivism

As for the measurement of individualism-collectivism, we compare two methods used in previous studies including Hofstede (1980, 2003) and Beugelsdijk et al. (2015). Hofstede's (1980, 2003) culture data is collected from survey questions answered by IBM employees around the world which are designed to

[1] See *Canada Business Corporations Act* part XI for details.
[2] These provisions were enacted in 2004. See *Criminal Code* section 382.1 for details.

understand the differences in corporate culture. Hofstede uses factor analysis to identify six cultural dimensions – individualism, power distance, masculinity, uncertainty avoidance, long-term orientation, and indulgence versus restraint – with individualism being the first and the most important factor.

Although Hofstede's measure of cultural dimension has gain most of the recognition in the past literature, one criticism on Hofstede's individualism index in that the survey he uses was conducted 45 years ago, and a country's cultural environment must have been changed, at least to some certain extent, due to the development of the economy (Shenkar, 2001). To address this issue, we follow Beugelsdijk et al.'s (2015) method which updates Hofstede's method by using data from the World Values Survey (WVS) while taking into consideration the difference of birth cohorts (before and after 1958). They find that cultural values among countries are pretty stable over time, not so much influenced by the development of economy. Beugelsdijk et al. (2015) use four questions in the World Values Survey (WVS) for which they think best describe a country's inclination towards individualism or collectivism. The four questions are: (1) one of the main goals in life is to make parents proud. The score ranges from 1 to 4, with 1 representing strongly agree (collectivism) and 4 representing strongly disagree (individualism). (2) private versus government ownership of business. The score range is from 1 to 10. 1 means private ownership of business should be increased (individualism) and 10 means government ownership of business should be increased (collectivism). (3) justifiable of homosexuality. Score of 1 represents never justifiable (collectivism) and score of 10 implies always justifiable (individualism). (4) justifiable of abortion. Similarly, the score ranges from 1 to 10. With 1 representing never justifiable (collectivism) and 10 suggesting always justifiable (individualism). We pull up the same four questions from the World Values Survey (WVS) website and calculate our own individualism index. One thing worth noticing is that the second question is reverse coded, so we use eight minus the original score to create a new score that is in the same direction with other scores.

We rescale the individualism index using the Principal Components Analysis (PCA), which we denote as *idv_pca*.

3.3 Other variables

As suggested by La Porta et al. (2008), a country's legal system represented by the legal origin can significantly affect that country's laws on the book, including the insider trading laws. There are four main legal origins in the world: English, French, German, and Scandinavian. Countries who adopt English legal origin are also known as common law countries, and countries who adopt French, German, or Scandinavian legal origin are known as civil law countries. The data are collected from La Porta et al. (2008) and updated.

We also control for a country's geographical region. EAP (East Asia and Pacific), ECA (Europe and Central Asia), LAC (Latin America and Caribbean), MENA (Middle East and North Africa), NA (North America), SA (South Asia), and SSA (Sub Saharan Africa) are regional controls representing a country's geographical region.

We use four measures of democracy to capture political institutions. These are Gastil Index of Democracy (gastil) from Freedom House (2014), polity 2 from the Polity IV database (Jaggers and Marshall, 2000), Voice Accountability (Kaufmann et al., 2011), and a 0-1 democracy indicator developed by Przeworski et al. (2000) and updated by Cheibub el al. (2010). The gastil index ranges from 1 to 7, with 7 representing strongest democracy. Polity 2 is between -10 and 10, with a mean of 3.81 and a standard deviation of 6.4, and higher scores implying stronger democracy. Voice Accountability (va) has a scale from -2.5 to 2.5, with higher numbers corresponding to higher democracy.

3.4 Summary statistics

Table 2 shows the summary statistics for the sample countries. The insider trading regulation index and individualism measure are available for 90 countries after regression. *IT_Law*, with a mean of 2.91, is the average of Tipping, Tippee, Damage, and Criminal. It measures the severity of the insider trading regulation in a given country. In our sample, developed countries tend to have stricter insider trading regulation while emerging markets have relatively loose insider trading regulation.

Individualism has a mean of -0.02, a standard deviation of 1.62, and a range between -2.54 to 4.52. In our sample, Sweden, Andorra, Norway, Czech Republic, and Netherland rank in the top five, suggesting

people in those countries place a greater importance on personal achievement. Qatar, Egypt, Iraq, Jordan, and Tunisia score the lowest five, revealing that those countries appreciate social bonding over individual choice.

We use four measures to analyze the impact of democracy. *Gastil* is the ranking for political and civil liberties, *Polity2* measures the level of democracy, *Democ* is a dichotomous democracy ranking, and VA represents voice and accountability, it captures the freedom of expression, freedom of association, and freedom of media.

The analysis of financial outcomes uses a total of five measures, including log GDP per capita, log of stock market capitalization (% of GDP), R&D expenditures (% of GDP), protection of minority investors, and the overall healthiness of financial ecosystem.

(Insert Table 2 here)

4. Total effect of individualism on insider trading regulation

4.1 Baseline model

We begin by testing the total effect of individualism on insider trading regulation using the updated individualism index which follows Beugelsdijk et al. (2015). Before turning to the overall effect of individualistic values on insider trading regulation, Table 3 reports univariate regression results and multivariate results. In columns (1)-(4), we regress each individual component of the measure of insider trading regulation on individualism. As we can see, individualism is significantly positively correlated to all three individual indicators except for Damage. In column (5), we regress the overall insider trading regulation index on individualism, and the results suggest a positive correlation between individualism and insider trading regulation, too. These results indicate that more individualistic countries have stronger

insider trading regulation. Specifically, corporate insiders in these countries are usually banned from releasing material non-public information to outsiders, and outsiders who received material non-public information are also banned from trading on that information. More importantly, insider trading activities are perceived as criminal offense. A one standard deviation increase in individualism increases the insider trading regulation by approximately 0.29 unit, which account for 10% of its mean and 28% of its standard deviation. In Column (6) we include exogenous controls for institutional quality in each specification. The proxies we use include seven regional controls and English legal origin (common law). The regional controls are dummy variables reflecting a country's location in the following regions: East Asia and Pacific (EAP), Europe and Central Asia (ECA), Latin America and Caribbean (LAC), Middle East and North Africa (MENA), North America (NA), South Asia (SA), and Sub Saharan Africa (SSA). ECA is the omitted variable. All these dummies come from the World Development Index (WDI) from the World Bank. A country's legal origin is another factor to consider, we include the English dummy to capture the influence of English common law on the choice of regulatory policy.

The result is similar to the results in univariate regressions. Individualism is positively related to the overall insider trading regulation index, suggesting that more individualistic countries tend to adopt stricter insider trading laws. In addition, a one standard deviation increase in individualism will lead to a 0.46 unit increase in insider trading regulation, which accounts for 16% of its mean and 45% of its standard deviation. This suggests that our results are significant both statistically and economically.

(Insert Table 3 here)

4.2 Robustness to other cultural variables

In this section we explore the possibility that our results are driven by some omitted variables or other set of cultural values. As argued by previous researches, cultural values or beliefs are often intertwined

for clustered, this raises the possibility that our observed relation between individualism and insider trading regulation is biased by the clustering effect of some larger cultural aggregate, which is correlated with both individualism and insider trading regulation.

In Table 4, we use include several sets of cultural values to address those concerns discussed above. In Column (1) we first include the measure of trust from the WVS. Both Aghion, Algan, and Cahuc (2010) and Pinotti (2012) document the impact of trust on financial regulations and market development. In a more recent empirical paper, Cline and Williamson (2016) show that anonymous trust is inversely related to formal self-dealing regulation. It is thus suspicious that individualism and trust correlate with each other and together influence the degree of insider trading regulation. Using a measure of trust derived from a survey question of WVS asking whether most people are trustworthy, we show in Column (1) that the association between individualism and insider trading regulation is robust to the inclusion of trust measure. The negative coefficient of trust (although not significant) suggests that in a country where most people are trustworthy, the need for strict formal insider trading regulation is weakened.

Another concern is that individualism may only be the proxy for economic or political ideology in a given country. It is the ideology not the individualism itself that shapes the insider trading regulation in a given country. To test this hypothesis, we include three economic ideology proxies and one political ideology proxy derived from WVS. First, we use the variable "competition" to measure the degree to which the people in a country view competition as a bad thing. Second, we include "ownership" as a proxy for the preference for state-owned business. Third, we use "nat_imm" to record the degree to which the respondents believe that when jobs are scarce priority should be given to nationals as compared to immigrants. As for the political ideology, we create a variable "left_right" based on the respondents' self-reported position on a political spectrum.

People who believe that business competition is a bad thing would prefer more financial regulations. The positive although not significant coefficient on "competition" agrees with the idea to some certain extent. A preference for more state ownership would be associated with a preference for more financial

regulation. The result on "ownership" partly verifies the hypothesis. For people on the right business regulation is harmful. As a result, we can see a negative although insignificant on "left_right". Moreover, the results in Column (2) do not support the hypothesis that individualism is only the proxy for economic or political ideology, suggesting that the significance of individualism is robust.

Next, we consider the potential effect of religious affiliations. Follow McCleary and Barro (2006), we control for three measures of religious affiliation: the percentage of population that is Catholic, Protestant, and Orthodox in 2000. The result is reported in Column (3). After controlling for religious factors, our measure of individualism still remains positive and significant at the 10 percent level.

The last control we did is to explore the possibility that our results are biased due to the fact that individualism is affected by the social structure of the countries in our sample. For example, previous studies show that ethnic diversity helps explain cross-country differences in public policies, government activities, and institutional quality (Canning and Fay, 1993; Mauro, 1995; Easterly and Levine, 1999). Alesina et al (2003) also find that using measures of ethnic, linguistic, and religious fractionalization could explain the economic growth and institutional quality.

In doing so, we first include three fractionalization variables (ethfrac, langfrac, and relifrac). Each measures the probability that two randomly selected person within a country belong to the same ethnic, language, or religious group, respectively. The results are shown in Column (4). The coefficient on individualism is also positive and significant, and only religious fractionalization is positive and significant at 10% level, suggesting that in a country where two randomly selected citizens are in the same religious group, the insider trading regulation in that country would be stronger.

Overall our results in Table 4 do not suggest that the relation between individualism and insider trading regulation is biased by potential clustering effects of cultural believes. Specifically, our findings are robust to the use of social trust, the political and economic ideology, religions, and three fractionalization factors.

(Insert Table 4 here)

4.3 Robustness to institutional variables

In this section we examine whether our results are robust to the inclusion of additional institutional variables. We continue to control for English legal origin and include regional dummies used in our baseline model. In Table 5 Column (1), we include two additional legal origin variables: French and German legal origin. In this regression, the omitted variable (reference group) is Scandinavian legal origin. The results show that our findings are robust, since individualism remains positive and significant. Specifically, a one standard deviation increase in individualism leads to 0.45 units increase in insider trading regulation, which is 15% of its mean. In addition, the coefficients of both French and German legal origin are insignificant, suggesting that these legal traditions are not significantly different from Scandinavian legal origin, which means the separation between English common law and all other civil law traditions used in our baseline model is valid.

Next, we include a dummy variable of whether a country is landlocked. Olson (1982) reports that whether a country is landlocked can largely determine the efficiency of international trade, which in turn forms the need to reform inefficient regulation. We run this regression in Column (2). And our results are robust to the conclusion of geographical factors.

In addition, we also include the variable "partitioned" which determines the share of a country's population that belongs to an ethnic group that is partitioned by the country's border. Alesina et al. (2011) differentiate artificial states where "political borders do not coincide with a division of nationalities desired by the people on the ground" and argue that artificial states would not have strong collective nationality identity and thus would impact institutional quality that favors national interest. From Column (3) we can

see that the coefficient on individualism in positive and significant at the 1 percent level, suggesting that our results are robust after considering the partitioning effect.

In Column (4), we include another variable that is believed to have exogenous influence on the process of a country's institutional establishment. As suggested by Easterly (2007), The use of agricultural endowments –specifically the abundance of land suitable for growing wheat relative to that suitable for growing sugarcane – would have a significant impact on inequality, which in turn determines a country's development outcomes such as institutions or schooling. We thus include the natural log of land suitable for growing wheat divided by land suitable for growing sugarcane, lwheatsugar, in our regression in Column (4). Although it is not significant, individualism retains its relationship and significance.

A country's colonial history is another potential factor that might influence a county's cultural transfer. The longer the colonial history, the greater the cultural transfer. In Column (5), we include the independence date of each country. The data is collected from Hensel's ICOW Colonial History Dataset, version 1.0. As shown in Column (5), the independence date has a negative and significant relationship with insider trading regulation. The earlier a country achieved independence, the stricter the insider trading regulation.

The structure of a country's GDP may also have an impact on a country's financial regulation. In Column (6), we control for the percentage of manufacturing and international trade in a country's GDP. The data is collected from the World Development Indicators (WDI) in 2015. The results show that only international trade has a negative and significant (10% level) impact on a country's insider trading regulation. In addition, individualism continues to remain positive and significant.

The last control is a country's overall economic condition. We include the natural log of GDP per capita in Column (7). The coefficient of log GDP is not significant, while individualism remains positive and significant. A one standard deviation increase in individualism is associated with a 0.46 unit increase

in the severity of insider trading regulation, which is roughly 16% of its mean and 45% of its standard deviation.

To conclude, our results are robust to the inclusion of two additional legal traditions, fractionalization, geography, political history, colonial history, economy compositions, and overall economy condition. Again, individualism exerts positive and significant relationship with insider trading regulation.

(Insert Table 5 here)

4.4 IV Estimation

There are two major concerns about the relationship between individualism and insider trading regulation as we argue above. The first concern is reverse causality. As Bowles (1998) argues, cultural values may be influenced by various social phenomena. Severe insider trading regulation can shape the public opinion towards individualism versus collectivism. For example, regulating insider trading activities could increase stock accuracy and market liquidity (Kraakman, 1991; Easterbrook, 1981; Gilson and Kraakman, 1984; Akerlof, 1970; Bhattacharya and Daouk, 2002), and greater market efficiency is particularly valuable to individualistic market participants. An additional concern is that there might be a third factor, such as financial development, that influence people's opinion towards insider trading regulation and social norms regarding individualism versus collectivism. In either case, individualism will become endogenous and we are unable to establish any causal effects.

The second source of bias comes from the nature of survey data. Since we use survey questions from WVS to create the measure of individualism, it is likely that different cognitive feedbacks from

different respondents can yield contradictory results. In addition, measurement error can also emerge because of the subjective preferences for certain answers of some questions.

In this section, we perform two-stage least squares regressions to mitigate the reverse causality concern and measurement bias concern by using two instrumental variables: genetic distance (Gorodnichenko and Roland, 2010, 2011) and prevalence of infectious diseases (Murray and Schaller, 2010; Nikolaev and Salahodjaev, 2017).

The first instrumental variable that we use is the genetic distance between the population in a given country and the population in Sweden. As Gorodnichenko and Roland (2010) argue, parental transmission of culture is a fundamental determinant of the cultural values of individuals. Since parents transmit their genes to their offspring, they also transmit culture with the genes. Therefore, measures of genetic distance can be seen as a proxy measure of differences in cultural values. Spolaore and Wacziarg (2009) also show that the whole set of implicit beliefs, customs, habits, biases, conventions etc. are transmitted across generations. Sweden has the highest score of individualism in our sample, we use the measure of genetic distance to Sweden as our first instrumental variable.

Another instrumental variable that we use is the historical prevalence of infectious disease. Murray and Schaller (2010) point out that disease prevalence influences the relative costs and benefits associated with specific behaviors. Since individual behavior and cultural norms prescribing behavior are responsive to these relative costs and benefits, disease prevalence could be a plausible cause, rather than a consequence, of contemporary cross-cultural differences. For examples, they argue that the use of culinary spices can be costly, but it brings health benefits since spices are powerful antibiotics. Thus, spices are more likely to be used in regions with relatively higher prevalence of infectious diseases. In this example, the cultural difference revealed through the use of spices can be caused by the prevalence of infectious disease. In addition, Nikolaev and Salahodjaev (2017) provide evidence from lab experiments showing that individuals who perceive themselves to be more exposed to infectious disease are more likely to develop traits that are associated with avoidance of outsiders. This is another example of how disease prevalence shapes cultural

behaviors. Murray and Schaller created a seven-item index to proxy for the historical disease prevalence, the seven diseases included are leishmanisas, schistosomes, trypanosomes, malaria, typhus, filariae, and dengue.

Both genetic distance to Sweden and seven-item disease prevalence are negatively and significantly correlated with idv_pca (-0.37 and -0.68, respectively) at 1% level. This relationship indicates that the greater genetic distance to Sweden and the greater disease prevalence index lead to a lower level of individualism. The first stage regression results are shown in Table 6, supporting the use of these instrumental variables. In Column (1) we use our measure of individualism as the dependent variable. The coefficients suggest that both genetic distance and seven items are significantly (1%) negatively related to individualism. In Column (2) we use Hofstede's original measure of individualism as a robustness check, and the results are similar to those in Column (1). In Column (3) to Column (5) we add additional controls one at a time, and in Column (6) we add all the control variables together. In each regression, genetic distance and seven items are significantly negatively related to individualism. We also report the first stage F statistics. All the F statistics are greater than 10, indicating that the instruments we choose are strong.

(Insert Table 6 here)

In Table 7 we show the IV regressions. We instrument for individualism with two variables discussed above. In each of the three regressions we continue to control for the exogenous legal origin and regions, since these factors cannot be influenced by either individualism or insider trading regulation. In Column (1), the coefficient of the exogenous component of individualism is positive and significant at 1% level, indicating that there is a positive effect of individualism on insider trading regulation. In addition, the coefficient (0.386) is larger than that of the OLS regression (0.285). A one standard deviation increase in individualism leads to a growth in severity of insider trading regulation by 60% standard deviation, which

is 1.3 times the size of the impact suggested by the OLS estimations. The larger IV coefficients indicate that the OLS estimation suffers from attenuation bias. In Column (3) through Column (5), we add one control variables at a time and in Column (6), we include the natural log of GDP per capita as another control. The significant effect of individualism on insider trading persists in all the regressions.

We also report P-values from the Sargan-Hansen's overidentification test of instruments. All of the P-values are insignificant and close to 1, suggesting that we cannot reject the null hypothesis that the overidentifying restrictions of our instrumental variables are valid. Therefore, our instruments are exogenous.

Overall, the results from IV regressions are in line with our results from OLS estimations. More importantly, the larger coefficients on individualism from IV regressions show that OLS estimations might underestimate the degree of the impact of individualism on insider trading regulation. In short, individualism plays an important role in determining the degree of insider trading regulation, with more individualistic countries have stricter insider trading regulation.

(Insert Table 7 here)

5. Institutional Layers Hypothesis

In this section, we evaluate the Institutional Layers Hypothesis which claims that culture affects financial regulation exclusively through its impact on political institutions. Djankov et al. (2002) find that political institution, especially democracy, has an impact on entry regulation. Tabellini (2008) and Klasing (2013) both find that culture has a causal relationship with democracy. If their findings are consistent, the relationship between individualism and insider trading regulation established earlier could be weakened when we consider the effect of political institutions such as democracy. On the one hand, it is possible that

individualism directly and independently affects insider trading regulation. If this is the case, we expect to find democracy insignificant in the regressions. On the other hand, it is also possible that individualism only determines insider trading regulation indirectly, for example, through its influence on political institutions such as democracy. If this is the case, we would expect democracy to be highly significant in the regressions.

In order not to fall into the trap of using particular database or measurement, we include four measures of democracy. These are Gastil Index of Democracy (gastil) from Freedom House (2014), polity 2 from the Polity IV database (Jaggers and Marshall, 2000), Voice Accountability (Kaufmann et al., 2011), and a 0-1 democracy indicator developed by Przeworski et al. (2000) and updated by Cheibub el al. (2010).

We first present regressions only controlling for democracy but not individualism. The reason is to compare and contrast with the work in Djkankov et al. (2002) which argue that political institutions have significant impact on financial regulations. And in each specification, we continue to control for exogenous institutional quality determinants, including English legal origin and regional dummies. Column (1)-(4) of Table 8 show the results. Without individualism, three out of four measures of democracy (Gastil, Polity2, VA) are significant in determining insider trading regulation at 1%, suggesting that a country with higher level of democracy usually regulates insider trading activity heavily. Democ measure is positive and significant at the 10% level, indicating that stronger democracy makes a country regulate insider trading activities heavily. The results support the idea that democracy has a significant impact on insider trading regulation.

In Column (5)-(8), we repeat the same process. But this time we include both individualism and democracy. We can see that all the four coefficients of individualism are positive and significant at the five percent level or better. In addition, the size of the positive effect is also significant economically. For example, in Column (5), a one standard deviation increase in individualism leads to a 42% standard deviation increase in the strictness of insider trading regulation. However, none of the democracy variable

is significant after we include individualism, indicating a rejection to the Institutional Layers Hypothesis. The result suggests that individualism directly impact a country's choice of insider trading regulation.

In Column (9)-(12), we present the results from IV estimations, since it is likely that both individualism and democracy are endogenous. Like the OLS regressions, the coefficients of the democracy measures remain insignificance after including individualism index while the coefficients on individualism remain positive and significant except in Column (11). These results provide additional evidence to reject the Institutional Layers Hypothesis and show that individualism directly impact a country's establishment of insider trading regulation. Moreover, the size of the coefficients from IV estimations are significantly larger than those of OLS estimations, suggesting that the OLS estimations understate the extent to which individualism determines a country's choice of insider trading regulation.

(Insert Table 8 here)

6. Interdependent Institutions Hypothesis

In the previous section, we have proved that political institution such as democracy has a significant influence on the adoption of financial regulation. We further show that cultural value such as individualism also determines financial regulation and its relationship is stronger and often subsumes the effect of democracy. However, we haven't pay attention to the interaction effects between cultural values and political institutions and how these forces impact insider trading regulation. Alesina and Giuliano (2015) argue that studying interaction terms between culture and institution is fruitful since it contains a two-way effect and does not rely on causal relationship.

In this section, we investigate the Interdependent Institutions Hypothesis by testing the interaction term between individualism and democracy. Specifically, we test the interaction term between each

democracy measure with individualism. If democracy interacts with individualism and even magnifies the effect of individualism on insider trading regulation, we would expect to find a significant coefficient on the interaction term. Alternatively, if democracy and individualism represent difference social preferences on insider trading regulation, we should expect the interaction term to be insignificant. Similarly, we continue to control for the English legal origin and geographical regions. In this section we failed to find acceptable instrumental variables capturing the endogeneity of individualism, democracy, and its interactions. As a result, we only report OLS regressions.

Table 9 Panel A shows the results. From Column (1)-(4) we can see that three out of four interaction terms between individualism and democracy are significant at 10% or higher, indicating that individualism and democracy work dependently in influencing a country's preference over insider trading regulation. This finding is consistent with the Interdependent Institutions Hypothesis which claims that political institutions and culture are complements in determining the financial regulation to some certain extent. As usual, all four coefficients on individualism itself remain positive and significant, which is consistent with our previous analyses that a country with higher level of individualism tends to have stricter insider trading regulation. And this effect is also economically significant. For example, after including democ and the interaction between individualism and democ, a one standard deviation increase in individualism causes a 89% standard deviation increase in the severity of insider trading regulation.

In Column (5)-(8), we control for the natural log of GDP per capita. And we can observe similar results as from Column (1) through (4). Again, all of the coefficients on the interaction terms are significant except for democ. On the other hand, all four coefficients on individualism alone are significant at the 5% level or better, indicating a consistent observation as predicted by the Interdependent Institutions Hypothesis. More importantly, the size of the coefficients on individualism form Column (5) to (8) does not vary too much as compared to that of Column (1) to (4), suggesting that the inclusion of income per capita has little impact on the coefficient of individualism.

One thing to notice is that the signs on the interaction terms are negative. We thus report the marginal effects in Panel B. The marginal effects are significant in all level of democracy; however, the magnitude of the marginal effects decreases from less democratic to more democratic countries, suggesting that the effect of individualism on insider trading regulation is stronger in less democratic countries. In Panel B we can see that the marginal effects are all positive, suggesting that democracy amplifies the positive effect of individualism on insider trading regulation.

Overall, we do find evidence in favor of the Interdependent Institutions Hypothesis since almost all of the coefficients of the interaction terms between individualism and democracy measures are significant. Again, all four coefficients on individualism itself are significant at the 5% level or better. Combining these two empirical findings, we conclude that political institutions (such as democracy) magnify the effect of cultural values (such as individualism) on people's preferences over financial regulation.

(Insert Table 9 here)

7. Cultural Determinism Hypothesis

The results presented in previous sections have provided evidence suggesting that individualism and insider trading regulation is positively related. However, this finding requires further elaboration since it is not in line with previous researches where people documented a negative relation between individualistic values and financial regulations (Davis and Williamson, 2016; Cline and Williamson, 2017). We hypothesize that individualistic cultures value positive market outcomes and select financial regulations that will promote market development. Since insider trading regulation is believed to increase stock accuracy, promote market liquidity, and reduce information asymmetry, it creates an environment through

which people who emphasize on personal achievements can interact with each other and make market transactions.

In order to support our hypothesis, we analyze the impact of both individualism and insider trading regulation on financial market outcomes. If our hypothesis is true, we would expect a positive relation between insider trading regulation and our measures of financial market outcomes. Furthermore, we would also expect a positive relation between individualism and financial market outcomes.

In this section five measures of financial market development are examined. We use the first three indicators following traditional agency theory (Jensen and Meckling, 1976). Inv_prot represents the overall strength of investor protection in a country, the data is collected from the World Bank's Doing Business. Fin_eco is an index measuring the conditions of a country's financial ecosystem. It includes the following indicators: bank concentration, commercial bank branches, depth of credit information, financing to SMEs, private sector credit, soundness of banks, and venture capital availabilities.

The regression results are presented in Table 10 Panel A. We first include insider trading regulation only in Column (1)-(5), all the coefficients on insider trading regulation are positive and significant at the 1% level. The results suggest that in a country where insider trading regulation is stronger, it also experiences better financial market development. For example, if we look at the R&D expenditure, a one standard deviation increase in insider trading regulation will lead to a 34% standard deviation increase in R&D expenditure.

In Column (6)-(10) we include both insider trading regulation and individualism. There are two main points worth noticing. First, across all measures of financial market development, individualism shows a significantly positive influence. This finding indicates that individualistic values are associated with healthy financial market development. More importantly, after including individualism in the regressions, three out of five coefficients on insider trading regulation lose significance. Together with the results that all the coefficients on individualism are significant, we find evidence that individualistic values

subsume the positive effect of insider trading regulation on financial market outcomes. In other words, cultural values are more powerful, and they choose the right financial regulations that promote financial market development. this finding reconciles the conflicting evidences on the relation between individualism and financial regulation, providing insights on the true nature of individualistic values.

In Panel B and Panel C of Table 10 we present the interaction effects of individualism and insider trading regulation. The marginal effects of individualism are positive and significant in countries with stronger insider trading regulation. This finding implies that the positive effect of individualism on financial market outcomes is magnified through insider trading regulation.

(Insert Table 10 here)

8. Conclusion

Insider trading has been continuously concerned. However, regulation against insider trading varies across countries. It is true that the extent to which the development of financial markets differs significantly among countries, the cultural factor that shapes the perception of insider trading among different countries cannot be ignored as well.

This paper explores whether culture influences a society's choice of insider trading regulation. And, if so, what kind of mechanism through which culture shapes a country's attitude towards insider trading regulation. Specifically, we use individualism as a key dimension of culture and explores the relationship between individualism and insider trading regulation. Our results suggest that individualism is positively related to the severity of insider trading regulation, as more individualistic cultures prefer stricter insider trading regulation. The reason is that individualistic cultures emphasize on the functioning of the market

rather than the cost of governmental intervention. Their fear of market failure exceeds the potential harm of the insider trading regulation.

We further examine how individualism affects insider trading regulation in a given country by assuming that individualism may indirectly influence insider trading regulation through its direct impact on political institution: democracy. After controlling for democracy, the regression results suggest that individualism directly exerts influence on insider trading regulation and is independent of democracy, which contradicts the Institutional Layers Hypothesis.

Next, we test whether democracy has a magnifying effect over the impact of individualism on insider trading regulation. In order to do that, we include the interaction terms between individualism and democracy. And the results verify our hypothesis. We find a significant interaction term between individualism and insider trading regulation, indicating that democracy magnifies the positive association between individualism and insider trading regulation.

Last but not least, we prove that individualism is not naturally anti-regulation. People in more individualistic countries care more about the market outcomes and market efficiency. Individualistic cultures are pro-market cultures. They tend to choose social policy or financial regulation that will have a positive impact on market outcomes or market efficiency.

Overall, our study sheds a light on how culture shapes people's expectations, preferences, and selections which lead to a variety of economic and financial outcomes. Through our study of individualism, we provide a potential angle to study a country's financial regulation and its relationship with economic growth, that is to consider the slow but far-reaching influence of culture.

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Appendix 1. Data description

	Description	Scource
Dependent variable:		
IT_law	Overall index of insider trading regulation, score from 0-4, combining tipping, tippee, criminal, and damage. Collected from each country's securities market law.	Hand collect
Culture variables:		
Idv_pca	Update to Hofstede's individualism based on World Values Surveys between 1981-20014. Four questions from WVS: (1) private vs. government control of business, (2) one of the main goals in life is to make parents proud, (3) justifiability of abortion, (4) justifiability of homosexuality. The index is created using principal component analysis.	Beugelsdijk et al., 2015; Authors' calculation
Idv	The degree to which individuals are integrated into groups. Measures the overall level of individualism in a given country.	Hofstede, 2001
pdi	Power distance. Measures the degree to which less powerful citizens of a country think and accept that power is distributed unequally. Captures people's view of inequality.	Hofstede, 2001
mas	The degree of masculinity of a society. Measures a society's emphasis on caring for others, solidarity, and quality of life (Femininity) as compared to individual achievement and success (Masculinity).	Hofstede, 2001
uai	Uncertainty avoidance deals with a society's tolerance for uncertainty and ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations.	Hofstede, 2001
Trust_most	Percentage of respondents answering "yes" to the WVS question: most people can be trusted. Averaged from 6 waves.	WVS, 1981-2014
Competition	Mean score from 1-10 to the WVS question: competition is good (1) and competition is harmful (10). Averaged from 6 waves.	WVS, 1981-2014
Ownership	Mean score from 1-10 to the WVS question: private ownership should be increased (1) or government ownership should be increased (10). Averaged from 6 waves.	WVS, 1981-2014
Nat_imm	Percentage of respondents answering "yes" to the WVS question: when jobs are scarce should priority be given to nationals? Averaged of 6 waves.	WVS, 1981-2014
Left_right	Mean score from 1-10 to the WVS question: in political matters, people talk of "the left" and "the right". How would you place your views on the scale, left (1) and right (10)? Averaged from 6 waves.	WVS, 1981-2014
Religion	Percentage of population that is catholic, protestant, or orthodox. Measured in 2000.	McCleary and Barro, 2006
Market variables:		
Ln_marketcap	Natural log of the stock market capitalization to GDP. Averaged from 1998-2008.	WDI, 2018
Ln_GDP	Natural log of GDP per capita, measured in 2015.	World Bank
R&D	Overall research and development expenditures to GDP. Averaged from 1998-2008.	WDI, 2018
Inv_prot	Investor protection index. Averaged from 2006-2019.	World Bank Doing Business, 2019
Fin_eco	Overall condition of financial ecosystem. Created using principal component analysis approach. Seven indicators are used to create the index: bank concentration, commercial bank branches, depth of credit information, financing to SMEs, private sector credit, soundness of banks, and venture capital availabilities.	World Bank

Control variables:		
English:	Dummy variable coded as 0 or 1. 1 indicates that a country follows English legal origin.	La Porta et al., 2008
French	Dummy variable coded as 0 or 1. 1 indicates that a country follows French legal origin.	La Porta et al., 2008
German	Dummy variable coded as 0 or 1. 1 indicates that a country follows German legal origin.	La Porta et al., 2008
Scan	Dummy variable coded as 0 or 1. 1 indicates that a country follows Scandinavian legal origin.	La Porta et al., 2008
Ethfrac	The probability that two randomly selected people from a country belong to the same ethnic group. Ranges from 0 to 1.	Alesina et al., 2003
Langfrac	The probability that two randomly selected people from a country speak the same language. Ranges from 0 to 1.	Alesina et al., 2003
Relifrac	The probability that two randomly selected people from a country belong to the same religious group. Ranges from 0 to 1.	Alesina et al., 2003
Partitioned	Share of a country's population belonging to the same ethnic group but is partitioned by the country's border.	Alesina et al., 2011
Lwheatsugar	Natural log of a country's land suitable for growing wheat divided by land suitable for growing sugarcane.	Easterly, 2007
Transition	Dummy variable coded as 0 or 1. 1 indicates that a country is a transition country.	International Monetary Fund
Independence	Year of achieving independence.	Hensel, 2014
Manu	Manufacturing, value added (% of GDP). Averaged from 1998-2008.	WDI, 2018
Trade	Trade (% of GDP). Averaged from 1998-2008.	WDI, 2018
Gastil	Ranking for political and civil liberties from Freedom House. Ranges from 1-7, averaged from 1998-2008.	Freedom House, 2014
Polity2	Measures the level of democracy. Ranges from -10 to 10. A higher number means stronger democracy. Averaged from 1998-2008.	Polity IV, Jaggers and Marshall, 2000
VA	Voice accountancy. Captures the freedom of expression, freedom of association, and freedom of media. Measured in 2008.	Worldwide Governance Indicators, 2017
Democ	Binary democracy ranking from Przeworski et al. (2000). Updated in Cheibub et al. (2010). Averaged from 1998-2008.	Cheibub et al., 2010
Instrumental variables:		
Fst_distance	Standard error of the genetic distance from Sweden.	Spolaore and Wacziarg, 2009
Seven_items	Historical prevalence of seven infectious diseases. the seven diseases are leishmanisas, schistosomes, trypanosomes, malaria, typhus, filariae, and dengue.	Murray and Schaller, 2010

Table 1
Country statistics.
IT_law is the index meauring the severity of insider trading regulation in a given country. It is calculated as the sum of four binary indicators: Tipping, Tippee, Damange, and Criminal.

Country	IT_law	Country	IT_law	Country	IT_law
Afghanistan	0	Canada	4	Grenada	4
Albania	3	Cape Verde	3	Guatemala	1
Algeria	3	Cayman Islands	3	Guinea Bissau	0
Antigua and Barbuda	4	Central African Rep.	0	Guyana	3
Argentina	4	Chad	0	Haiti	0
Armenia	2	Chile	3	Honduras	0
Aruba	0	China	4	Hong Kong	3
Australia	4	Colombia	3	Hungary	3
Austria	4	Costa Rica	3	Iceland	3
Azerbaijan	3	Croatia	3	India	4
Bahamas	4	Cyprus	3	Indonesia	3
Bahrain	3	Czech Republic	3	Iran	4
Bangladesh	3	Dem. Rep. of the Congo	0	Iraq	3
Barbados	3	Denmark	3	Ireland	3
Belarus	3	Dominica	4	Isle of Man	3
Belgium	4	Dominican Republic	3	Israel	4
Belize	0	Ecuador	3	Italy	3
Benin	0	Egypt	3	Ivory Coast	0
Bermuda	3	El Salvador	0	Jamaica	4
Bhutan	2	Estonia	3	Japan	4
Bolivia	2	Fiji	4	Jordan	4
Bosnia and Herzegovina	3	Finland	3	Kazakhstan	3
Botswana	3	France	3	Kenya	4
Brazil	4	Gabon	0	Kuwait	4
Bulgaria	3	Georgia	3	Kyrgyzstan	2
Burkina Faso	0	Germany	3	Laos	2
Cambodia	3	Ghana	3	Latvia	3
Cameroon	0	Greece	3	Lebanon	4

Table 1 (continued)

Country	IT_law	Country	IT_law	Country	IT_law
Libya	0	Palestine	2	Sweden	3
Lithuania	2	Panama	3	Switzerland	4
Luxembourg	3	Papua New Guinea	3	Syria	3
Macedonia	2	Paraguay	3	Taiwan	3
Malawi	2	Peru	3	Tajikistan	0
Malaysia	3	Philippines	3	Tanzania	4
Maldives	3	Poland	3	Thailand	3
Mali	0	Portugal	3	Togo	0
Malta	4	Puerto Rico	0	Trinidad and Tobago	3
Mauritius	4	Qatar	3	Tunisia	3
Mexico	3	Romania	3	Turkey	2
Moldova	2	Russia	3	Turkmenistan	0
Monaco	3	Rwanda	3	Uganda	4
Mongolia	2	Saudi Arabia	3	Ukraine	3
Montenegro	3	Senegal	0	United Arab Emirates	2
Morocco	4	Serbia	3	United Kingdom	4
Mozambique	0	Seychelles	4	United States	4
Myanmar	3	Sierra Leone	0	Uruguay	2
Namibia	3	Singapore	3	Uzbekistan	0
Nepal	3	Slovakia	3	Venezuela	0
Netherlands	3	Slovenia	3	Vietnam	3
New Zealand	3	South Africa	3	Zambia	4
Nicaragua	4	South Korea	4	Zimbabwe	3
Niger	0	Spain	4		
Nigeria	4	Sri Lanka	3		
Norway	4	Sudan	0		
Oman	3	Suriname	0		
Pakistan	4	Swaziland	3		

Table 2
Summary Statistics.
Tipping equals one if corporate insiders are not allowed to tip corporate outsiders (tippees) about material non-public information and equals zero otherwise. *Tippee* equals one if anyone who received material non-public information from insiders is prohibited from trading on that information and equals zero otherwise. *Damage* equals one if potential monetary penalties are proportional to insiders' trading profits and equals zero otherwise. *Criminal* equals one if violation of the insider trading law is a criminal offense and equals zero otherwise. *IT_Law* is the measure of the severity of the insider trading law in a given country and equals the sum of these four binary variables. *Gastil* is the ranking for political and civil liberties. *Polity2* measures the level of democracy. *Democ* is a dichotomous democracy ranking. *VA* represents voice and accountability, it captures the freedom of expression, freedom of association, and freedom of media. *Ln_GDP* is the log GDP per capita. *Ln_marketcap* is the stock market capitalization to GDP. *R&D* is the overall research and development (R&D) expenditures to GDP. *Inv_prot* measures investor protection. *Fin_eco* is the overall healthiness of financial ecosystem.

Variable	Observations	Mean	Std. Dev.	Min	Max
Insider trading regulation & individualism:					
Tipping	90	0.86	0.35	0.00	1.00
Tippee	90	0.92	0.27	0.00	1.00
Damage	90	0.29	0.46	0.00	1.00
Criminal	90	0.84	0.36	0.00	1.00
IT_law	90	2.91	1.03	0.00	4.00
Idv_pca	90	-0.02	1.62	-2.54	4.52
Democracy measures:					
Gastil	87	4.76	1.83	1.00	7.00
Polity2	86	4.46	6.24	-10.00	10.00
Democ	87	0.63	0.47	0.00	1.00
VA	90	0.05	0.94	-1.91	1.57
Financial development:					
Ln_GDP	89	4.05	0.46	2.98	5.05
Ln_marketcap	89	3.59	1.06	0.96	6.27
R&D	74	0.81	0.83	0.02	3.50
Inv_prot	90	55.69	13.73	24.52	91.31
Fin_eco	80	0.39	1.51	-3.08	3.64

Table 3

Individualism and measures of insider trading regulation.

OLS regressions with measures of insider trading regulation as the dependent variables and individualism as the primary independent variable. *Tipping* equals one if corporate insiders are not allowed to tip corporate outsiders (tippees) about material non-public information and equals zero otherwise. *Tippee* equals one if anyone who received material non-public information from insiders is prohibited from trading on that information and equals zero otherwise. *Damage* equals one if potential monetary penalties are proportional to insiders' trading profits and equals zero otherwise. *Criminal* equals one if violation of the insider trading law is a criminal offense and equals zero otherwise. *IT_Law* is the measure of the severity of the insider trading law in a given country and equals the sum of these four binary variables. Panel A reports the univariate results. *Idv_pca* is the index measuring the level of individualism in a given country using principal component analysis. Panel B controls for legal origins and regions. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Tipping	Tippee	Damage	Criminal	IT_law	IT_law
Idv_pca	0.0650***	0.0416***	0.0167	0.0567***	0.180***	0.285***
	(0.0187)	(0.0156)	(0.0307)	(0.0200)	(0.0613)	(0.0777)
English						0.215
						(0.362)
Regions						Yes
Constant	0.859***	0.924***	0.283***	0.838***	2.904***	3.800***
	(0.0349)	(0.0269)	(0.0474)	(0.0376)	(0.103)	(0.466)
Observations	92	92	92	92	92	90
R-squared	0.089	0.063	0.004	0.060	0.079	0.239

Table 4

Total effect of individualism on insider trading regulation with additional cultural variables.

OLS regressions with measures of insider trading regulation as the dependent variables and individualism as the primary independent variable. *IT_Law* is the measure of the severity of the insider trading law in a country. *Idv_pca* is the index measuring the level of individualism in a country using principal component analysis. *Trust_most* measures the percentage of respondents answering "yes" to the WVS question: most people can be trusted. *Competition* is the mean score from 1-10 to the WVS question: competition is good (1) and competition is harmful (10). *Ownership* is the mean score from 1-10 to the WVS question: private ownership should be increased (1) or government ownership should be increased (10). *Nat_imm* represents the percentage of respondents answering "yes" to the WVS question: when jobs are scarce should priority be given to nationals instead of immigrants? *Left_right* shows the mean score from 1-10 to the WVS question: in political matters, people talk of "the left" and "the right". How would you place your views on the scale, left (1) and right (10)? *Religion* measures the percentage of population that is catholic, protestant, or orthodox in 2000. *Ethfrac* measures the probability that two randomly selected people from a country belong to the same ethnic group. *Langfrac* measures the probability that two randomly selected people from a country speak the same language. *Relifrac* measures the probability that two randomly selected people from a country belong to the same religious group. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)
	IT_law	IT_law	IT_law	IT_law
Idv_pca	0.276***	0.286***	0.191*	0.217**
	(0.0859)	(0.106)	(0.107)	(0.0873)
Trust_most	-0.170			
	(0.724)			
Competition		0.108		
		(0.218)		
Ownership		0.0725		
		(0.184)		
Nat_imm		-0.482		
		(0.619)		
Left_right		-0.118		
		(0.195)		
Religion			Yes	
Ethfrac				-0.316
				(1.040)
Langfrac				0.323
				(0.886)
Relifrac				1.063*
				(0.541)
English	0.218	0.461	0.279	0.143
	(0.366)	(0.444)	(0.384)	(0.402)
Regions	Yes	Yes	Yes	Yes
Constant	4.079***	3.718***	3.602***	3.412***
	(1.263)	(1.252)	(0.519)	(0.529)
Observations	90	81	85	84
R-squared	0.240	0.238	0.283	0.260

Table 5

Total effect of individualism on insider trading regulation with additional institutional variables.

OLS regressions with measures of insider trading regulation as the dependent variables and individualism as the primary independent variable. *IT_Law* is the measure of the severity of the insider trading law in a country. *Idv_pca* is the index measuring the level of individualism in a country using principal component analysis. *French* is a dummy indicating whether a country follows French legal origin. *German* is a dummy indicating whether a country follows German legal origin. *Landlocked* is a dummy measuring whether a country is landlocked. *Partitioned* represent the share of a country's population belonging to the same ethnic group but is partitioned by the country's border. *Lwheatsugar* is the natural log of a country's land suitable for growing wheat over land suitable for growing sugarcane. *Transition* is a dummy indicating whether a country is a transition country. *Independence* is the year of achieving independence for a country. *Manu* is the total output of manufacturing sector in a country measured as a percentage of GDP. *Trade* is the sum of exports and imports of goods and services measured as a share of GDP. *Ln_GDP* is the natural log of GDP per capita in a country. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	IT_law	IT_law	IT_law	IT_law	IT_law	IT_law	IT_law
Idv_pca	0.278***	0.268***	0.312***	0.217***	0.253***	0.234***	0.285***
	(0.0936)	(0.0748)	(0.0905)	(0.0718)	(0.0805)	(0.0645)	(0.101)
French	0.157						
	(0.485)						
German	0.454						
	(0.397)						
Landlocked		-0.608**					
		(0.293)					
Partitioned			0.00279				
			(0.00489)				
Lwheatsugar				0.416			
				(0.624)			
Independence					-0.000907***		
					(0.000314)		
Manu						-0.00482	
						(0.0218)	
Trade						-0.00285*	
						(0.00160)	
Ln_GDP							0.0112
							(0.407)

English	0.444	0.126	0.251	0.453	0.315	0.0306	0.196
	(0.497)	(0.343)	(0.576)	(0.629)	(0.382)	(0.444)	(0.422)
Regions	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.563***	3.868***	4.138***	3.764***	5.435***	4.091***	3.143**
	(0.545)	(0.453)	(0.660)	(0.247)	(0.766)	(0.673)	(1.570)
Observations	90	90	73	71	86	86	89
R-squared	0.251	0.273	0.236	0.280	0.266	0.270	0.240

Table 6

Total effect of individualism on insider trading regulation, first stage IV regressions.

Idv_pca is the index measuring the level of individualism in a country using principal component analysis. *Idv_hof* is the measure of individualism used in Hofstede (1980; 2003). *Gendist* is the standard error of the genetic distance from Sweden. *Seven_items* represents the historical prevalence of seven infectious diseases. *Landlocked* is a dummy measuring whether a country is landlocked. *Trust_most* measures the percentage of respondents answering "yes" to the WVS question: most people can be trusted. *Ethfrac* measures the probability that two randomly selected people from a country belong to the same ethnic group. *Langfrac* measures the probability that two randomly selected people from a country speak the same language. *Relifrac* measures the probability that two randomly selected people from a country belong to the same religious group. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1) Idv_pca	(2) Idv_hof	(3) Idv_pca	(4) Idv_pca	(5) Idv_pca	(6) Idv_pca
Gendist	-0.00700***	-0.0707**	-0.00692***	-0.00650***	-0.00510***	-0.00489***
	(0.00156)	(0.0302)	(0.00156)	(0.00144)	(0.00148)	(0.00131)
Seven_items	-0.939***	-12.03**	-0.945***	-0.652***	-0.961***	-0.703**
	(0.254)	(5.010)	(0.261)	(0.229)	(0.282)	(0.272)
Landlocked			-0.105			-0.0719
			(0.392)			(0.369)
Trust_most				-3.041***		-2.581***
				(0.982)		(0.969)
Ethfrac					-1.793***	-1.459**
					(0.630)	(0.573)
Relifrac					0.912	0.934
					(0.572)	(0.576)
Langfrac					0.0857	0.0698
					(0.559)	(0.503)
English	-0.00892	12.09**	-0.0289	0.0631	-0.0952	-0.0463
	(0.203)	(4.945)	(0.226)	(0.211)	(0.192)	(0.220)
Regions	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.435	66.36***	-0.415	4.573***	-0.0507	4.085**
	(0.668)	(11.06)	(0.684)	(1.686)	(0.731)	(1.646)
Observations	85	65	85	85	83	83
R-squared	0.661	0.652	0.662	0.706	0.714	0.745
F-stat	22.74	21.41	20.33	26.01	42.09	40.90

Table 7

Total effect of individualism on insider trading regulation, second stage IV regressions.

IT_Law is the measure of the severity of the insider trading law in a country. *Idv_pca* is the index measuring the level of individualism in a country using principal component analysis. *Idv_hof* is the measure of individualism used in Hofstede (1980; 2003). *Landlocked* is a dummy measuring whether a country is landlocked. *Trust_most* measures the percentage of respondents answering "yes" to the WVS question: most people can be trusted. *Ethfrac* measures the probability that two randomly selected people from a country belong to the same ethnic group. *Langfrac* measures the probability that two randomly selected people from a country speak the same language. *Relifrac* measures the probability that two randomly selected people from a country belong to the same religious group. *Ln_GDP* is the natural log of GDP per capita in a country. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	IT_law	IT_law	IT_law	IT_law	IT_law	IT_law
Idv_pca	0.368***		0.336***	0.373**	0.296*	0.412*
	(0.132)		(0.126)	(0.159)	(0.159)	(0.222)
Idv_hof		0.0243**				
		(0.0109)				
Landlocked			-0.600**			
			(0.276)			
Trust_most				0.107		
				(0.927)		
Ethfrac					-0.192	
					(1.073)	
Relifrac					0.885	
					(0.574)	
Langfrac					0.342	
					(0.837)	
Ln_GDP						-0.214
						(0.536)
English	0.256	-0.453	0.164	0.255	0.145	0.315
	(0.363)	(0.352)	(0.340)	(0.364)	(0.375)	(0.407)
Regions	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.023***	3.457***	3.413***	2.829*	2.283***	3.741*
	(0.644)	(0.408)	(0.577)	(1.691)	(0.819)	(2.002)
Observations	84	65	84	84	82	83
R-squared	0.245	0.282	0.284	0.244	0.258	0.242
Cragg-Donald F	21.16	10.12	20.44	16.47	14.79	8.72
Sargan-Hansen P	0.99	0.91	0.73	0.97	0.97	0.89

Table 8

Direct effect of individualism on insider trading regulation.

OLS and IV regressions with measures of insider trading regulation as the dependent variables and individualism as the primary independent variable. *Idv_pca* is the index measuring the level of individualism in a country using principal component analysis. *Gastil* is the ranking for political and civil liberties from Freedom House. *Polity2* measures the level of democracy. *VA* captures the freedom of expression, freedom of association, and freedom of media. *Democ* is a dummy indicating whether a country is democratic. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) OLS	(8) OLS	(9) IV	(10) IV	(11) IV	(12) IV
Idv_pca					0.256***	0.263***	0.273**	0.313***	0.368*	0.358**	0.379	0.400***
					(0.0887)	(0.0766)	(0.107)	(0.0826)	(0.211)	(0.163)	(0.262)	(0.145)
Gastil	0.260***				0.0398				-0.00716			
	(0.0626)				(0.0924)				(0.125)			
Polity2		0.0753***				0.0128				0.00158		
		(0.0224)				(0.0264)				(0.0288)		
VA			0.505***				0.0264				-0.0199	
			(0.116)				(0.217)				(0.317)	
Democ				0.504*				-0.261				-0.338
				(0.277)				(0.326)				(0.380)
English	0.757***	0.918***	0.688***	0.896***	0.307	0.313	0.211	0.308	0.297	0.296	0.259	0.284
	(0.266)	(0.271)	(0.256)	(0.268)	(0.393)	(0.388)	(0.378)	(0.383)	(0.372)	(0.371)	(0.366)	(0.368)
Regions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.570***	2.223***	2.333***	2.156***	3.509***	3.631***	3.798***	3.915***	3.025***	2.982***	3.025***	3.138***
	(0.427)	(0.386)	(0.356)	(0.419)	(0.564)	(0.499)	(0.466)	(0.520)	(0.901)	(0.656)	(0.644)	(0.640)
Observations	146	138	151	145	87	86	90	87	83	83	84	83
R-squared	0.348	0.343	0.340	0.276	0.244	0.245	0.239	0.249	0.251	0.252	0.243	0.257

Table 9

Interactions between individualism and democracy on insider trading regulation.

OLS regressions with measures of insider trading regulation as the dependent variables and individualism as the primary independent variable. *Idv_pca* is the index measuring the level of individualism in a country using principal component analysis. *Gastil* is the ranking for political and civil liberties from Freedom House. *Polity2* measures the level of democracy. *VA* captures the freedom of expression, freedom of association, and freedom of media. *Democ* is a dummy indicating whether a country is democratic. *Idv_gastil* is the interaction between individualism and gastil. *Idv_polity2* is the interaction between individualism and polity2. *Idv_VA* is the interaction between individualism and VA. *Idv_democ* is the interaction between individualism and democ. *English* is a dummy indicating whether a country follows English legal origin (common law). *Regions* are dummies reflecting a country's location. Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Interactions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	IT_law	IT_law	IT_law	IT_law	IT_law	IT_law	IT_law	IT_law
Idv_pca	1.052***	0.519***	0.433***	0.540**	1.067***	0.506***	0.426***	0.528**
	(0.342)	(0.162)	(0.120)	(0.256)	(0.341)	(0.161)	(0.125)	(0.253)
Gastil	-0.0127				-0.0223			
	(0.0776)				(0.0853)			
Polity2		-0.0119				-0.0148		
		(0.0225)				(0.0232)		
VA			-0.0325				-0.0428	
			(0.191)				(0.214)	
Democ				-0.354				-0.355
				(0.272)				(0.272)
Idv_gastil	-0.130**				-0.137**			
	(0.0544)				(0.0542)			
Idv_polity2		-0.0300*				-0.0330*		
		(0.0163)				(0.0169)		
Idv_VA			-0.185**				-0.191**	
			(0.0911)				(0.0901)	
Idv_democ				-0.255				-0.263
				(0.270)				(0.276)
Ln_GDP					0.232	0.257	0.111	0.123
					(0.367)	(0.396)	(0.446)	(0.359)
English	0.309	0.291	0.207	0.280	0.205	0.180	0.154	0.222
	(0.398)	(0.394)	(0.383)	(0.387)	(0.450)	(0.466)	(0.426)	(0.452)
Regions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.470***	4.005***	4.117***	3.464***	2.645**	2.401	3.042*	2.997**
	(0.449)	(0.554)	(0.535)	(0.412)	(1.305)	(1.464)	(1.764)	(1.388)
Observations	87	86	90	87	86	85	89	86
R-squared	0.300	0.271	0.278	0.258	0.305	0.276	0.281	0.260

Panel B: Marginal effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Min	0.923***	0.819**	0.785***	0.540**	0.930***	0.836***	0.791***	0.528**
	(0.289)	(0.317)	(0.259)	(0.256)	(0.289)	(0.314)	(0.259)	(0.253)
Mean	0.436***	0.386***	0.424***	0.379***	0.418***	0.360***	0.418***	0.364***
	(0.110)	(0.102)	(0.117)	(0.108)	(0.115)	(0.110)	(0.123)	(0.115)

Max	0.145	0.220***	0.144	0.285***	0.108	0.176*	0.127	0.265**
	(0.096)	(0.075)	(0.128)	(0.084)	(0.102)	(0.102)	(0.133)	(0.107)

Table 10

Insider trading regulation, individualism, and financial market development.

OLS regressions with indicators of financial market development as the dependent variables and insider trading regulation and individualism as the primary independent variable. *Ln_marketcap* is the natural log of stock market capitalization to GDP. *Ln_GDP* is the natural log of GDP per capita. *R&D* is the overall research and development (R&D) expenditures to GDP. *Inv_prot* is an index measuring the investor protection. *Fin_eco* is an index measuring the financial ecosystem environment. *IT_law* is an indicator of the severity of insider trading regulation. *Idv_pca* is an index measuring the level of individualism in a country using principal component analysis. *English* is a dummy indicating whether a country follows English legal origin (common law). Detailed variable descriptions are provided in Appendix A. Robust standard errors are reported in parenthesis, ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Ln_marketcap	Ln_GDP	R&D	Inv_prot	Fin_eco	Ln_marketcap	Ln_GDP	R&D	Inv_prot	Fin_eco
IT_law	0.390***	0.193***	0.271***	4.699***	0.664***	0.300	0.0142	0.120**	2.614	0.287**
	(0.138)	(0.0322)	(0.0518)	(0.705)	(0.113)	(0.182)	(0.0514)	(0.0551)	(1.615)	(0.140)
Idv_pca						0.207**	0.152***	0.340***	2.744***	0.443***
						(0.0802)	(0.0252)	(0.0482)	(0.747)	(0.0915)
English	0.0683	-0.132	-0.0946	6.616**	-0.0681	0.428	0.0164	0.0594	12.46***	0.475
	(0.239)	(0.0990)	(0.195)	(2.549)	(0.344)	(0.284)	(0.104)	(0.138)	(3.396)	(0.368)
Constant	2.296***	3.497***	0.0382	38.32***	-1.644***	2.463***	4.004***	0.373**	44.67***	-0.639
	(0.484)	(0.0935)	(0.123)	(1.894)	(0.339)	(0.590)	(0.158)	(0.160)	(4.638)	(0.426)
Observations	89	146	103	147	120	62	89	74	90	80
R-squared	0.053	0.215	0.109	0.277	0.225	0.177	0.304	0.552	0.353	0.321

Panel B: Interactions

	(1)	(2)	(3)	(4)	(5)
	Ln_marketcap	Ln_GDP	R&D	Inv_prot	Fin_eco
IT_law	0.340*	0.0753	0.266**	0.604	0.481***
	(0.182)	(0.0520)	(0.105)	(1.950)	(0.157)
Idv_pca	-0.0915	-0.0367	-0.144	8.954***	-0.283
	(0.427)	(0.0834)	(0.239)	(3.318)	(0.332)
IT_Idv	0.0899	0.0584**	0.149**	-1.920*	0.223**
	(0.129)	(0.0234)	(0.0689)	(1.028)	(0.0899)
English	0.396	-0.00211	-0.00313	13.08***	0.394
	(0.300)	(0.107)	(0.139)	(3.353)	(0.380)

Constant	2.328***	3.802***	-0.104	51.28***	-1.281***
	(0.596)	(0.159)	(0.320)	(5.848)	(0.471)
Observations	62	89	74	90	80
R-squared	0.183	0.324	0.594	0.377	0.346

Panel C: Marginal effects

	(1)	(2)	(3)	(4)	(5)
	Ln_marketcap	Ln_GDP	R&D	Inv_prot	Fin_eco
Min	-0.091	-0.037	-0.144	8.954***	-0.283
	(0.427)	(0.083)	(0.239)	(3.318)	(0.332)
Mean	0.200**	0.133***	0.301***	3.365***	0.387***
	(0.080)	(0.027)	(0.058)	(0.794)	(0.100)
Max	0.268**	0.197***	0.452***	1.275	0.607***
	(0.127)	(0.028)	(0.066)	(1.165)	(0.096)