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Culture, Openness, and Finance Revisited

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Structured Abstract:

Purpose: In a paper published titled "Culture, Openness, and Finance" in the Journal of Financial Economics which has been cited over 2000 times, the authors, Stulz and Williamson (2003) (hereafter S&W), find that cultural differences, proxied by religion and language, impact shareholder rights, creditor rights, and investor protection, and also include other control variables like trade openness, income, and legal system variables. This paper revisits the S&W study and innovates across multiple margins.

Design/methodology/approach: We use econometric methods similar to those of S&W to replicate their results and innovate with new variables and methods.

Findings: In general, some of our findings are quite different from those of S&W. Like S&W, culture matters less when openness is factored in. We also find that religious traditions play a greater role in low-income countries.

Originality/value: This paper revisits the S&W study and innovates across multiple margins. We also include a new contribution to the literature examining how the interaction of culture and low-income countries affects finance.

Policy Implications: Policymakers should prioritize investor protection reforms that are adapted to the religious and cultural contexts of each jurisdiction. International financial institutions and development agencies should incorporate cultural diagnostics—such as religious composition and trust indices—into their governance assessments and reform recommendations. This culturally attuned approach can lead to more sustainable financial systems globally.

Key Words: Creditor rights; shareholder rights; Legal Systems; Religion; Weber; Investor protection; Financial market development

JEL Codes: G15; G28; G39; Z19

1. Introduction:

This paper revisits the work of Stulz and Williamson (2003) (hereafter S&W), which examines how cultural differences, proxied by religion and language variables, influence shareholder rights (anti-director rights), creditor rights, and the enforcement of investor protection or investor rights (rule of law). Culture is defined as "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation" (Guiso et al., 2006). Starting with Smith (1776) and Weber (1904), scholars reasoned that religions and hence cultures played a significant role in organizing the economic activities of societies and nations (Friedman, 2021), and that would include investors.

S&W finds that culture does not explain the cross-country variation in shareholder rights, however, they find that for creditor rights, it does matter, but this is tempered when trade openness is introduced. Further, culture matters for the enforcement of investor rights. Their paper leaves a few questions unanswered, which they acknowledge. For example, looking at the "channels through which culture and legal origin matter is required" (Stulz & Williamson, 2003, p. 346). In this paper, we revisit the S&W paper and make some improvements. Unlike S&W, we allow for arbitrary heteroscedasticity and potential endogeneity between GDP per capita and the financial development measures. They use a database of 49 countries. In this research, we have expanded the data sample to 129 countries to determine whether the broader range of countries will offer similar or different results. Further, instead of language, we use a measure of generalized trust. Moreover, we also use various measures of trade openness. We also include a new contribution beyond S&W's paper that looks at whether there is a Weberian story for low-income countries.

Our findings sometimes coincide with and sometimes diverge from S&W's results. When dealing with Culture and Finance, our results are similar to S&W's, but when we look at Culture and Legal Origin, our results differ from S&W's. When including openness in our analysis and studying the determinants of financial market development, our results align with those of S&W, and we offer additional insights. When looking at low-income countries, we find that the Weberian thesis has validity.

We divide this paper into five sections. Section 2 provides a literature review. Section 3 details the data sources and summary statistics. Section 4 provides the updated empirical analysis. Section 5 concludes.

2. Literature review

S&W (2003) preface their initial paper with a quote from Landes (2000) stating that "Max Weber was right. If we learn anything from the history of economic development, it is that culture makes almost all of the difference." This seems to be even more relevant today as cultures receive more emphasis in the increasingly globalized world (Inglehart, 1997). S&W set out to examine the importance of culture, proxied by religion and language, on countries' legal systems and shareholder rights. Subsequent research has also examined the relationship between culture and creditor rights. This relationship remains significant even after controlling for the legal system and GDP per capita, as demonstrated in studies by Djankov et al. (2007) and La Porta et al. (2008).

2.a. Investor Rights (Protection) & Rule of Law

The growing importance of investor rights across nations is increasing, with capital flows becoming more globalized (Berger & Dore, 1996). With the robust financial networks, the economies of the participating countries benefit from economic growth (Valickova et al., 2015). Countries differ in their emphasis on capital markets, and therefore, the firm's ability to access capital. Numerous studies focus on the protection of owners under various types of laws, such as common law or civil law. Predominantly, studies focus on the Anglo-Saxon countries as a model for the protection of investor rights (La Porta et al., 2000; Zogning, 2017).

Some researchers use religion to proxy for different attitudes toward tolerance and the formation of trust in financial decisions (Dupont & Karpoff, 2020). To date, cultural measures based on religion have been developed at both the country and individual levels. Like the findings of S&W (2003), Dupont and Karpoff (2020) find a link between a country's predominant religion and its level of investors' rights

at the country level. The authors find that Catholicism is positively correlated with investors' rights, indicating that Catholic cultures may have more trust in financial systems. Additionally, the authors find that legal institutions, such as regulatory oversight and penalties for illegal behavior, are important for building trust in financial transactions. Reputation and culture also play a role in building trust, as these factors are positively correlated with investor protection. Overall, the paper suggests that a combination of laws, reputation, and culture is necessary for building trust in financial transactions.

Research by Marron and Steel (2000) and Papaioannou (2009) also explore the impact of institutional factors, such as the rule of law, corruption, law and order, risk of expropriation, and risk of contract repudiation, on different aspects of the economy. While Marron and Steel focus on the protection of intellectual property rights, Papaioannou examines the determinants of international financial flows. Both papers highlight the importance of the rule of law in creating a predictable and stable environment for investors. In addition, corruption is identified as a significant impediment to investment, as it increases the risk of expropriation and contract repudiation. Both papers also find that law and order play a role in attracting investment.

Boubakri, Mansi, and Saffar (2013) emphasize the need for a strong rule of law, reliable property rights, and contractual enforcement mechanisms to attract foreign investment and promote economic growth in emerging markets. Dam (2006) argues that the rule of law is crucial for economic development and that corruption, the lack of law and order, and the risk of expropriation and contract repudiation can undermine economic growth. More recently, Mahmood and Ashraf (2025) investigated the influence of religion, particularly Protestantism, among other factors, on the risk of money laundering across 27 European Union (EU) member states. The authors assessed the proportion of Protestant populations in each country to determine the influence of religious heritage. The study finds that countries where Protestantism is the dominant religion tend to exhibit a lower risk of money laundering. This association is attributed to cultural traits commonly linked with Protestantism, such as greater individual self-discipline and stronger institutional economic governance (Cohen, 2002).

2.b. Shareholder (Antidirector) Rights, Creditor Rights, and Investor Protection

A large body of research has sought to investigate shareholder and creditor rights. Creditor rights are more complex than shareholder rights for several reasons. First, there may be different kinds of creditors, with different interests, so protecting the rights of some creditors has the effect of reducing the rights of others (Pistor et al., 2000). For example, in the case of a default, senior secured creditors may have a simple interest in getting possession of collateral no matter what happens to the firm, whereas junior unsecured creditors may wish to preserve the firm as a going concern so that they can hope to get some of their money back if the firm turns a profit (Bae & Goyal, 2009).

Creditor and shareholder rights have been shown to affect risk-taking decisions in opposite ways. Stronger creditor rights in bankruptcy tend to reduce corporate risk-taking (Acharya et al., 2011), while stronger shareholder rights tend to increase firm risk-taking (John et al., 2008; Paligorova, 2010). This is consistent with the conflict of interest between shareholders and creditors, with the creditors receiving only fixed payoffs and being rather risk-averse to risky projects. In contrast, the shareholders have an interest in pursuing risky projects because they are only subject to the upside consequences of risky decisions (Mihet, 2013).

Further, the study of 155 Italian listed firms, involving 2,382 firm-year observations over the study period 2000–2016 by Cebula and Rossi (2021) examines the influence of local religiosity on corporate risk-taking behaviours among Italian publicly listed firms. Their findings indicate a statistically significant negative relationship between religiosity and corporate risk-taking, suggesting that firms headquartered in more religious regions of Italy tend to engage in less risky corporate behaviours.

Mihet (2013) points out that culture has been linked with creditor rights and investor protection (Stulz & Williamson, 2003), judicial efficiency (Radebaugh et al., 2006), corporate governance (Doidge et al., 2007), with bankruptcy protection and insolvency management (Beraho & Elisu, 2010), and with overall levels of transparency and corruption (Husted & Instituto Tecnologico y de, 1999). According to Mihet (2013), research shows that national culture affects board composition and leadership (Li and Harrison, 2008) as well as individual decision-making (Halek & Eisenhauer, 2001; Hilary & Hui, 2009). Culture also indirectly affects risk attitudes directly through cultural norms. Expanding on the earlier

findings, Licht et al. (2005) investigate creditor rights, shareholder rights (Anti-Director), and the enforcement of investor rights (rule of law). Their study reveals that, after accounting for the origin of the legal system, culture significantly influences the enforcement of rights. Specifically, Catholic countries, particularly those that are Spanish-speaking, exhibit weaker enforcement of rights (Grzymala-Busse and Slater, 2018; Fergusson, 2006). To test for differences between firms from stronger and weaker investor protection legal regimes, Behn et al., (2013) split the sample into two subsamples using three different investor protection measures. The first measure of investor protection is based on the anti-director rights index developed by La Porta et al., (1998). The results reveal that common-law countries tend to offer the most robust legal protections for investors, while French civil-law countries tend to offer the weakest. German and Scandinavian civil-law countries fall somewhere in between. The researchers also discovered a negative correlation between the concentration of share ownership in large public companies and investor protection. This finding supports the theory that in countries where shareholder rights are not protected, small, diversified shareholders are unlikely to hold significant sway.

Similarly, other studies have also tested the relationship between culture and law in developing trust in financial transactions (Dupont & Karpoff, 2020). In their meta-study, Dupont and Karpoff (2020) find that trust is necessary for successful financial outcomes, along with the set of legal institutions that impose regulatory oversight of economic transactions and the risk of penalty for illegal behaviour. This finding is important because, as King and Levine (1993) point out that earlier, Schumpeter (1911) also supported the claim that a robust financial system is important for economic growth and that a less-developed financial system will impede economic growth.

Countries high in individualism tend to have good shareholder and creditor protection mechanisms and strong enforceability of deals (Carpini et al., 2017; Maung et al., 2020; Mihet, 2013; Raz, 1979). While societies high on collectivism, assigning priority to the group to the detriment of the individual, tend to give less importance to protecting individuals' interests, to satisfying their preferences (Baumeister et al., 2016; Licht et al., 2005). These findings correspond with the Weberian theory of social ethics and economic growth in low-income nations.

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When looking at legal protection for minority shareholders and the banking sector, using data from 5918 banks, from 1998 to 2007, and 52 countries, a study finds that strong legal rights for minority shareholders result in banks paying higher dividends. Further, banks pay lower dividends in countries with strong creditor rights. The paper suggests this is due to banks being incentivized to extend more loans. This result contrasts with non-financial firms (Ashraf & Zheng, 2015).

Cultures high on harmony emphasize adaptation to the world as a given, and members of such cultures are uncomfortable with openly challenging the status quo and assertively claiming their rights and privileges. According to Li et al (2013), harmony has a positive correlation with initial earnings at the country level, as well as the rule of law. On the other hand, harmony has a negative correlation with anti-self-dealing, creditor rights, and GDP growth volatility. This discomfort is reflected in the high levels of rule of law and low levels of minority shareholder and creditor protection in these cultures (Li et al., 2013; Licht et al., 2005). Further, the research by Russell et al. (2023) highlights the significant role that Judeo-Christian ethical values play in shaping a sustainable and ethical business environment. These ethical values can indirectly strengthen corporate governance mechanisms, including shareholder rights, creditor rights, and investor protection, by fostering conditions that support economic freedom, reduce corruption, and promote social progress. This underscores the importance of considering cultural and ethical factors in the analysis and development of corporate governance frameworks.

Previous empirical research has been inconclusive about the question of whether cultural characteristics directly or indirectly shape corporate risk-taking. Departing from prior research, Li et al., (2013), examined both the direct and indirect ways in which culture can influence corporate risk-taking. On the indirect side, they examine whether a country's formal institutions, which are shaped by cultural factors, affect corporate risk-taking. Cultural values such as individualism and uncertainty avoidance may lead to different legal frameworks as well as different laws concerning investor protection and

creditor rights, which in turn may affect corporate risk-taking. For example, more individualistic countries have legal systems that promote individual freedom and autonomy, which may encourage corporate risk-taking via legislation that protects the shareholder and creditor rights (Rehbein, 2014). The opposite could be true in countries that have higher levels of uncertainty avoidance and are more harmonious. In these countries, less corporate risk-taking may occur because of legal proscriptions that discourage such behaviour (Kardes et al., 2013).

The study by Maung et al., (2020) provides empirical evidence that religiosity influences investment behaviours, particularly in the context of venture capital. They investigate the relationship between religiosity and venture capital (VC) activity across 56 countries from 2000 to 2016. The authors find that higher levels of religiosity are associated with lower levels of venture capital investments. This negative relationship is not specific to any particular religion but is attributed to the inherent risk aversion associated with religiosity and leads to a preference for more stable and less risky investments. This investment behaviour has broader implications for corporate governance structures, potentially resulting in environments that favor stronger shareholder and creditor rights, as well as enhanced investor protection mechanisms.

Kumar et al. (2011) conjecture that the Catholic church's relatively lenient views toward gambling, relative to many Protestant denominations, will lead to greater risk-taking behaviour in regions with high concentrations of Catholics relative to Protestants. Consistent with this view, they find that U.S. counties with higher ratios of Catholics to Protestants are characterized by a greater propensity among investors to hold risky or lottery-like stocks, more employee stock ownership plans, and higher initial-day IPO returns.

2.c. Revisiting Weber and low-income countries.

Religious traditions could play a larger role in low-income countries. The Weberian literature primarily focuses on religion's role in economic growth and development, not financial development specifically. However, financial development is tied to economic development. One recent study that looks at religion and financial development found that there is a negative relationship between religiosity

and financial development, but that relationship becomes insignificant for more financially developed countries (Amissah & Świerczyńska, 2021).

Hilary and Hui (2009) examine whether religion has an impact on corporate decision-making in America. The authors find that firms headquartered in counties with a higher proportion of religious adherents are less likely to engage in high-risk activities such as mergers and acquisitions but tend to elicit a more favourable market response upon announcing new investments. They find that firm risk measures are negatively related to the numbers of both Protestants and Catholics in the county. Additionally, the authors find that these firms experience lower stock price volatility, suggesting that religion has a stabilizing effect on financial decision-making.

While Yin et al., (2020) explore the role of religion and social trust in the context of increasing financialization in rural Chinese communities as it relates to various income groups, including the low-income group. They find that individuals with higher levels of religious involvement, particularly those affiliated with traditional Chinese religions, are more likely to trust financial institutions such as banks and credit cooperatives. This trust is especially meaningful for low-income individuals, who typically have limited access to formal financial systems and rely more heavily on informal financial arrangements (also in Giraldo et al., 2024; Jiao et al., 2025; Xu et al., 2023).

Economic growth in low-income nations is often grounded in the Weberian 'social ethic' that promotes impersonal trade and focuses on collective economic markets (Woolcock, 1998). For example, Arruñada compares Protestants and Catholics and finds Protestantism is better conducive to economic growth, not because of the Weberian work ethic, but rather a ‘social ethic’ that promotes impersonal trade and thus markets. The Reformation lowered the “transaction costs of impersonal trade” as it made values more homogenous among Christians due to its emphasis on “universal charity and its greater reliance on ‘external’ sources for enforcement” (Arruñada, 2010). Similarly, culture, proxied by guilt and shame, also impacts entrepreneurship and informality, with shame-based cultures having a higher share of informality (Bose & Mironko, 2023).

Further, economic growth studies in low-income nations often ground their theory in the Weberian "social ethic" that promotes trade openness and a focus on collective economic markets (Becker et al., 2016; Woolcock, 1998). These studies generally find that countries with a strong social ethic, characterized by a strong work ethic, trust in institutions, and a sense of civic duty, tend to have higher levels of economic growth and development (Fukuyama, 1995a; Inglehart, 1988). Additionally, these studies often find that countries with a strong social ethic also tend to have more efficient and effective markets (Benabou & Tirole, 2010; Bhattacharya & Sen, 2004), which can lead to higher levels of productivity and economic growth even in the case of low-income or developing economies. A study on Ghana, a low-income country, using quarterly data from 1990 to 2020, found a long-run equilibrium relationship between financial openness and financial development, indicating that financial openness is a critical factor, though policies promoting it should be approached with caution, as openness alone may not guarantee the outcomes desired (Eduboah, 2024).

Further, Fukuyama (1995b) argues that trust is a crucial factor in the economic and social well-being of a society. He points out that high levels of trust contribute to economic efficiency, cooperation, and wealth creation. Trust reduces transaction costs and facilitates economic exchanges, leading to increased prosperity. Overall, these studies suggest that the Weberian 'social ethic' promotes impersonal trade and focuses on collective economic markets can be an important factor in promoting economic growth in low-income nations.

3. Data

We obtain data for our paper from various sources. Creditor rights is an index summing four variables focused primarily on senior secured creditors. Scores range from 0 to 4. The initial dataset used by S&W came from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998), encompassing 49 countries. In contrast, our analysis draws on data from Djankov, McLiesh, and Shleifer (2007), which covers 129 countries.

Shareholder rights, also termed anti-director rights, look at how the legal system protects minority shareholders in the voting and decision-making process. It is an index that is formed by adding six variables. Countries can get a score from 0 to 6. The original data used by S&W was for 49 countries. The original anti-director rights index also had several errors and concerns that were corrected, and further, the index was expanded to 72 countries (Djankov et al., 2008; Spamann, 2010).

Regarding the enforcement of investor rights, some of the variables used by S&W are no longer available. We use two variables that are the same as S&W- rule of law, from the World Bank's Worldwide Governance Indicator database (Kaufmann & Kraay, 2023), and Control of Corruption from the International Country Risk Guide (ICRG) (ThePRSGroup & others, 2023) Our third governance variable is Law and Order, also obtained from ICRG. This measure captures both law and order. Thus, a country that has an effective judiciary could score high on law, but if it also has a high crime rate, it would score lower on the aggregate index. We also use three of the four measures of financial development from S&W- equity issue, private credit to GDP, and stock market capitalization to GDP. The fourth measure we use is the ratio of liquid liabilities to GDP, which is considered a summary measure of a nation's financial development (Levine, 1997). These variables are obtained from the Financial Development and Structure Dataset (Beck et al., 2019).

For religion variables, we use percentages and dummy variables, unlike S&W, which used only dummy variables. Data were obtained from the World Christian Encyclopedia online version (Johnson & Zurlo). For the legal code dummy, we obtained data from LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (1999). We also incorporated data from the World Values Survey (Haerpfer et al., 2020) to capture Generalized Trust based on responses to the question: "Generally speaking, would you say that most people can be trusted?"

Trade openness is an important concern when dealing with financial rights. Trade openness is examined for its relationship with financial development and economic growth. While some literature suggests trade openness positively influences GDP growth, a study on India, using data from 1970 to 2011, found that trade openness did not affect either domestic financial sector development or output

growth. Instead, it observed a unidirectional causality running from "financial development and economic growth to trade openness" (Satyanarayana Murthy et al., 2014).

It is argued that if a country increases international trade, the more you protect shareholder rights, creditor rights, and investors. Therefore, culture becomes less relevant. To capture the extent of trade, S&W uses the measure of natural trade openness developed by Frankel and Romer (1999). This variable tries to capture the extent of a country's trade attributable to natural factors like population, endowment, and distance, and was introduced by Frankel and Romer as an instrument for trade share in growth-type regressions. In this study, we use two current measures of openness- the ratio of trade to GDP and net FDI (Foreign Direct Investment) to GDP. A third measure we use is the Chinn-Ito index of financial openness, which measures a country's degree of capital account openness (Chinn & Ito, 2006, 2008). This measure is constructed by codifying a country's cross-border restriction on financial openness. Chin and Ito (2006) show that this measure is strongly correlated to a country's development of financial and equity markets, conditional on a country's legal and institutional development. Finally, we use the World Bank classification of Low-income countries in 2018, which is the last year of our corruption and financial structure database. All our time-varying variables are averaged till 2019. Appendix Tables A.1, A2.1, A2.2, and A2.3 provide summary statistics and correlation tables.

4. Empirical Methodology and Results

The starting point of our empirical estimation is like that of S&W, where we examine the impact of culture on investor protection and enforcement environment. The estimating equation is:

$$y_i = \beta_0 + \beta_1 \text{maj Catholic}_i + \beta_2 \text{maj Protest}_i + \beta_3 \text{maj Islam}_i + \beta_4 \text{maj Buddhist}_i + \beta_5 \text{Ln GDP per cap.} + u_i \quad (1)$$

where y_i is alternated between the anti-director rights, creditor rights and various enforcement measures.

We also estimate another version of model where we replace the religious majority dummy with the share of adherents of each of these religions.

$$y_i = \beta_0 + \beta_1 \text{Share Catholic}_i + \beta_2 \text{Share Protest}_i + \beta_3 \text{Share Islam}_i + \beta_4 \text{Share Buddhist}_i + \beta_5 \text{Ln GDP per cap.} + u_i \quad (2)$$

Like S&W, we also estimate various models where the religion variable is interacted with measures of common or civil legal origin and various measures of openness. In these specifications, the religion variables are consolidated into Protestant, Catholic and Other. These specifications take the general form below:

$$y_i = \beta_0 + \beta_1 \text{maj Catholic}_i + \beta_2 \text{maj Protest}_i + \beta_3 \text{maj Catholic}_i * Z_i + \beta_4 \text{maj Protestant}_i * Z_i + \beta_5 \text{maj Other}_i * Z_i + \beta_6 \text{Ln GDP per cap.} + u_i \quad (3)$$

Here, Z_i is the variable of interest that is interacted with the culture/religion variables.

There are some key differences between our estimation approach and that of S&W. Most specifications include average GDP per capita as an independent variable. GDP per capita, however, is determined by most of the dependent variables used in the S&W study. If such reverse causality is not addressed, the parameter estimates obtained from ordinary least squares can be biased. Unlike S&W, we carry out our estimation using an instrumental variable approach where we control for the endogeneity of GDP per capita. It is, however, hard to find valid instruments for GDP per capita that are correctly excluded from the model. Instead of finding external instruments, we construct Lewbel (1997) type instruments where we use the second and third-ordered deviation of the GDP per capita from its mean. Second, in all our estimations, we report Newey-West type (Newey & West, 1987; Stock & Watson, 2008) robust standard errors, consistent for arbitrary heteroscedasticity and autocorrelation. Finally, our sample size is two to three times that of S&W for most specifications.

4.a. Culture and Finance

We begin by estimating the base model where the various dependent variables are regressed on the religion/culture variables and a measure of economic development (Equation 1). The results are presented in table 1.

Table 1: Culture and Finance- Majority Religion Dummies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	Anti-Director Rights		Creditor Rights		Rule of Law		Control of Corruption		Law and Order	
Ln GDP pc	0.096	0.078	0.112*	0.114*	0.480***	0.487***	0.486***	0.495***	0.587***	0.591***
	(0.089)	(0.092)	(0.060)	(0.060)	(0.031)	(0.030)	(0.075)	(0.070)	(0.062)	(0.061)
Majority Protest.	-0.129	-0.371	0.447*	0.337	0.268**	0.057	0.432**	0.099	0.228	0.005
	(0.399)	(0.577)	(0.255)	(0.317)	(0.112)	(0.150)	(0.200)	(0.228)	(0.203)	(0.237)
Majority Catholic	-0.780**	-1.027*	-0.168	-0.278	0.025	-0.187	0.024	-0.310	-0.330*	-0.554***
	(0.376)	(0.580)	(0.237)	(0.302)	(0.115)	(0.152)	(0.179)	(0.208)	(0.175)	(0.213)
Maj Islam		-0.574		-0.149		-0.363**		-0.533**		-0.340
		(0.726)		(0.327)		(0.153)		(0.233)		(0.217)
Maj Buddhist		0.181		-0.292		0.099		-0.006		-0.167
		(0.588)		(0.469)		(0.206)		(0.321)		(0.348)
Countries	60	60	119	119	180	180	133	133	133	133
R-squared	0.105	0.124	0.088	0.091	0.614	0.630	0.462	0.482	0.558	0.564
K-P Underid p	0	0	0	0	0	0	0	0	0	0
K-P Weak id F	62.15	57.06	139.4	141.2	181.4	183.9	138.8	139.9	138.8	139.9

Robust standard errors in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

The first two columns of Table 1 consider *Anti-Director Rights* as the dependent variable. Unlike S&W, who do not find any impact of religion on this variable, we find that the majority Catholic dummy has a negative impact. Regarding *creditor rights* (columns 3 and 4), while the estimate on the majority Catholic is negative, unlike in S&W, it is not statistically significant. In column 3, we also see that the log of GDP per capita and majority Protestant have a positive impact on *creditor rights*, however, these two religion variables are not significant when we also include majority Islam and majority Buddhist. Moving to the enforcement measures (investor protection), GDP and Protestant are positive and significant for both the *rule of law* and *control of corruption* (columns 5 and 7). When we include all four religious dummies, majority Islam has a negative impact on *rule of law* while Protestant is not significant. For *control of corruption* (column 8), while S&W find that Catholic, Buddhist, and Islam all have negative and statistically significant effects, in our results only Islam's coefficient is significant (though all three

are negative). In columns 9 and 10, the dependent variable is *law and order,* and we find that while GDP has a positive impact, majority Catholic has a negative impact.

In Table 2, we replace the majority religion with the share of adherents of each of these religions as independent variables (Equation 2). As noted by S&W, results are qualitatively similar, though the robust standard errors are in general a little smaller. While the results for anti-director rights and creditor rights are qualitatively similar, for *rule of law* and *law and order* (investor protection), both % of Catholic and Islam are negative and statistically significant. Economic development, captured by the log of GDP per capita, continues to have a positive effect on *creditor rights* as well as the three enforcement variables.

Table 2: Culture and Finance- Religious Adherents Percentages

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	Anti-Director Rights		Creditor Rights		Rule of Law		Control of Corruption		Law and Order	
Ln GDP pc	0.096	0.063	0.110*	0.116*	0.477***	0.483***	0.478***	0.485***	0.579***	0.585***
	(0.086)	(0.085)	(0.062)	(0.063)	(0.030)	(0.029)	(0.073)	(0.070)	(0.060)	(0.061)
Protestant %	-0.075	-0.313	0.716**	0.221	0.508***	-0.035	0.757**	0.104	0.467	-0.138
	(0.581)	(1.252)	(0.365)	(0.504)	(0.158)	(0.247)	(0.318)	(0.406)	(0.304)	(0.492)
Catholic %	-0.964**	-1.224	-0.210	-0.674	0.030	-0.486*	0.091	-0.508	-0.401*	-0.955**
	(0.492)	(1.144)	(0.307)	(0.461)	(0.154)	(0.253)	(0.222)	(0.323)	(0.222)	(0.407)
Islam %		-0.763		-0.578		-0.703***		-0.785**		-0.712*
		(1.215)		(0.427)		(0.233)		(0.312)		(0.382)
Buddhist %		0.544		-0.448		-0.060		-0.212		-0.277
		(1.140)		(0.620)		(0.332)		(0.443)		(0.543)
Countries	60	60	119	119	180	180	133	133	133	133
R-squared	0.099	0.131	0.084	0.094	0.621	0.646	0.467	0.485	0.556	0.568
K-P Underid p	0	0	0	0	0	0	0	0	0	0
K-P Weak id F	69.24	63.95	155.5	152.1	181.5	180.4	139.3	137	139.3	137

Robust standard errors in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F
*** p<0.01, ** p<0.05, * p<0.1

4.b. Culture and Legal Origin

In Table 3, we revisit the question posed by S&W of whether it is culture or legal origin that matters for finance. Following Table 4 of S&W, we interact majority Protestant, majority Catholic, and majority Other religion with Civil and Common, with majority Other interacted with common law being the omitted category (Equation 3).

Table 3: Culture, Legal Origin, and Finance

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Anti-Director Rights	Creditor Rights	Rule of Law	Corrupt Cntrl	Law and Order
Ln GDP pc	0.198**	0.112	0.476***	0.424***	0.549***
	(0.100)	(0.071)	(0.034)	(0.072)	(0.070)
Maj Protest X Civil	-0.760*	-0.506	0.592***	1.607***	0.543*
	(0.430)	(0.423)	(0.165)	(0.297)	(0.327)
Maj Protest X Common	0.376	0.398	0.386**	0.798***	-0.181
	(0.435)	(0.351)	(0.179)	(0.238)	(0.288)
Maj_Cath X Civil	-0.899**	-0.631**	-0.111	0.273	-0.802***
	(0.402)	(0.247)	(0.136)	(0.185)	(0.209)
Maj_Cath X Common	0.348	-1.020***	0.729***	1.006**	0.402*
	(0.408)	(0.333)	(0.091)	(0.415)	(0.214)
Other Relig X Civil	-0.612	-1.058***	0.051	0.280	-0.368**
	(0.524)	(0.252)	(0.134)	(0.206)	(0.178)
Countries	60	119	120	105	105
R-squared	0.185	0.228	0.708	0.603	0.641
K-P Underid p	0	0	0	0	0
K-P Weak id F	58.80	125.1	124.9	98.50	98.50

Robust standard errors in parentheses; K-P Underid p: p-value for the null of under-identification;
K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

Like S&W, we find that the interactions of majority Protestant and Catholic with civil have a negative impact on *anti-director rights* (col. 1), compared to majority Other interacted with common law. However, some of our findings are different from S&W. They find that there is no difference between common law Protestant and civil law Protestant countries, and that for the same legal origin, Catholic and Protestant country estimates differ. They conclude that while legal origin does not matter, the branch of Christianity a country belongs to affects *anti-director rights*. Our findings are the opposite. The p-value of the test of equality of coefficient between the two legal origins for Protestant is 0.006 and for Catholic is 0.001. On the other hand, we cannot reject the null of equality of civil law Protestant and civil law Catholic, as well as common law Protestant and common law Catholic (p-values of 0.699 and 0.941, respectively). Thus, we conclude that *Anti-director rights* are higher for common law countries, regardless of the majority branch of Christianity.

Our results for *creditor rights* are also a little different (column 2). We find that compared to common law countries with other religious majority, both civil law Catholic and common law Catholic countries have a negative impact. This is the same as S&W. We also find no difference in parameter estimates of these two sets of countries (p-value of 0.303). Unlike S&W, the estimates of civil and Protestant and common and Protestant are not statistically significant. However, S&W find all interactions to be negative and significant. Another interesting finding from our results is that while for civil law countries there is no difference between majority Catholic and majority Protestant (p-value of 0.779), there is a statistically significant difference between these sets of countries having their legal origin in common law. Protestant common law countries have higher *creditor rights* than Catholic common law countries. Finally, civil law countries having a non-Christian majority have fewer *creditor rights* than their common law counterparts.

Our results for enforcement variables (investor protection) are even sharper (columns 3-5). Economic development is associated with better enforcement. Majority Protestant, whether interacted with Civil or Common legal origin, is positive and statistically significant in 5 out of 6 coefficient estimates. Thus, majority Protestant countries, regardless of civil or common legal origin, have higher *rule of law* and *control of corruption* (cols. 3 and 4). Common law Catholic countries also have higher *rule of law*, *control of corruption,* and *law and order* compared to common law countries having Other non-Christian religious majority. In contrast, the coefficient estimates of Other religion and civil law are not significant for *rule of law* and *control of corruption,* while negative and significant for *law and order* (column 5). Taken together, these results are interesting and, in some ways, an improvement over S&W. For example, when using *rule of law* and *control of corruption* as dependent variables, S&W have only one of ten interaction terms as significant. Most of their findings about the impact of religion and legal origin are based on doing tests of equality of the coefficients following their estimation. In contrast, our results are more direct and point to a consistent theme: Common law countries tend to have higher enforcement than civil law countries. Regardless of legal origin, there is a significant difference between enforcement in majority Protestant countries versus other countries, with the former doing better in each

of the three enforcement variables we consider. While legal origin does seem to matter for finance and enforcement, culture, as proxied by religion, also plays an important role, especially for enforcement measures.

4.c. Culture, Openness, and Financial Environment

The next issue examined by S&W is the role culture and openness play in anti-director rights, creditor rights, and investor protection. In Table 4, we look at the effect of openness measures on anti-director rights and creditor rights. Like S&W, we also include measures of Protestant and Catholic religion and a dummy for Civil Law. Instead of language, we use the measure of Generalized Trust (also a measure of social capital). Another difference is that in addition to GDP per capita, we also instrument for Trade share and FDI share by using Lewbel-type instruments discussed above. Looking at *anti-director rights,* GDP per capita results in higher shareholder rights. Trade share is not significant. S&W find that when they include natural openness, the effect is negative, while replacing it with trade share, the latter has no effect. S&W find the negative coefficient of natural openness to be puzzling and argue that countries benefiting from openness may make it harder for minorities (possibly foreigners) to take a board position in a firm. This argument seems to be supported by our results as well, where we see the effect of FDI on *anti-director rights* to be negative (column 2). Civil legal origin also has a strong negative effect on *anti-director rights*. Among the cultural variables, Catholic is negative and significant in two of the three specifications, while Protestant and trust are not significant.

Turning to *creditor rights*, our results are like S&W with one exception. S&W find the effect of GDP to be negative and significant, while we find GDP to be positive, though not statistically significant. A possible source of this difference could be that, unlike S&W, we are allowing for the endogeneity of income and two of the openness measures. Regarding other variables, we also find that openness is positive and significant, while civil legal origin and Catholic are negative in terms of their impact on *creditor rights*.

Table 4: Culture, Openness, and Finance

	(1)	(2)	(3)	(4)	(5)	(6)

VARIABLES	Anti-Director Rights	Anti-Director Rights	Anti-Director Rights	Creditor Rights	Creditor Rights	Creditor Rights
Ln GDP pc	0.401**	0.357**	0.281*	0.168	0.078	0.014
	(0.179)	(0.145)	(0.163)	(0.106)	(0.121)	(0.150)
Ln Trade to GDP	-0.351			0.387**		
	(0.390)			(0.193)		
Ln FDI to GDP		-0.409*			0.272**	
		(0.233)			(0.119)	
Kopen Index			0.035			0.159
			(0.156)			(0.101)
Civil Legal Origin	-0.860**	-0.911***	-0.753**	-0.613**	-0.514**	-0.632***
	(0.378)	(0.347)	(0.329)	(0.247)	(0.249)	(0.227)
Catholic %	-1.035*	-0.750	-0.878*	-0.650*	-0.650*	-0.589*
	(0.557)	(0.561)	(0.520)	(0.350)	(0.355)	(0.356)
Protestant %	-0.226	-0.162	-0.101	-0.197	-0.086	-0.059
	(0.589)	(0.573)	(0.587)	(0.286)	(0.325)	(0.322)
Generalized Trust	-2.144	-1.683	-1.849	-0.329	0.045	-0.127
	(1.643)	(1.531)	(1.550)	(0.889)	(0.977)	(0.904)
Observations	53	53	53	80	81	81
R-squared	0.119	0.149	0.148	0.233	0.188	0.189
K-P Underid p	0.0175	0.00102	0.00246	0.00628	0.0242	4.12e-05
K-P Weak id F	49.96	41.24	75.45	52.36	12.66	24.85

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We next look at the impact of openness on the enforcement variables (investor protection). The results are in Table 5.

Table 5: Culture, Openness, and Enforcement

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rule of Law			Corrupt Cntrl			Law and Order		
Ln GDP pc	0.498***	0.497***	0.388***	0.597***	0.578***	0.558***	0.545***	0.459***	0.356**
	(0.060)	(0.058)	(0.069)	(0.083)	(0.069)	(0.107)	(0.089)	(0.111)	(0.159)
Ln Trade to GDP	0.044			0.001			0.186		
	(0.146)			(0.139)			(0.121)		
Ln FDI to GDP		-0.007			0.090			0.369***	
		(0.137)			(0.162)			(0.135)	
Kopen Index			0.177***			0.016			0.193*
			(0.065)			(0.105)			(0.115)
Civil Legal Origin	0.011	0.018	0.039	0.185	0.256	0.220	-0.452***	-0.251	-0.405**
	(0.137)	(0.136)	(0.116)	(0.166)	(0.167)	(0.155)	(0.172)	(0.178)	(0.175)

Catholic %	-0.047	-0.062	-0.072	-0.037	-0.078	-0.015	-0.069	-0.157	-0.025
	(0.221)	(0.234)	(0.210)	(0.220)	(0.234)	(0.224)	(0.277)	(0.287)	(0.304)
Protestant %	0.080	0.115	0.080	0.702**	0.735**	0.759**	0.177	0.281	0.332
	(0.192)	(0.197)	(0.195)	(0.329)	(0.324)	(0.327)	(0.336)	(0.317)	(0.365)
Generalized Trust	1.096**	1.076*	0.941*	1.016	1.005	1.095	2.483***	2.626***	2.544***
	(0.528)	(0.557)	(0.522)	(0.768)	(0.748)	(0.721)	(0.640)	(0.692)	(0.715)
Observations	80	81	81	75	76	76	75	76	76
R-squared	0.703	0.700	0.726	0.711	0.715	0.711	0.695	0.693	0.655
K-P Underid p	0.00628	0.0242	4.12e-05	0.00547	0.0305	0.000234	0.00547	0.0305	0.000234
K-P Weak id F	52.36	12.66	24.85	52.61	12.03	22.56	52.61	12.03	22.56

Robust se in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

Like before, our results are generally in agreement with S&W but also provide some additional insights. Economic development, captured by GDP per capita, has a positive effect on enforcement. Like S&W, we also find the traditional openness measures to not affect *rule of law*. However, the KOpen index has a positive effect on this enforcement variable (column 3). While the religion and legal variables are not significant, generalized trust has a positive and significant effect on the *rule of law*. For *corruption control,* unlike S&W, we do not see any of the openness measures or civil law origin to have a statistically significant effect, but religion does (% protestant).

The next question we explore is what role culture plays as a country opens up. S&W approach this issue by using as explanatory variables income per capita, majority Protestant, majority Catholic, as well as their interaction with the natural openness and the interaction of openness with majority other and regressing them on *creditor rights*. They find that while majority Catholic has a negative impact on *creditor rights*, the coefficient on the interaction of Catholic with Openness is positive, implying that as Catholic countries open up to trade, they afford more protection to investors. In Table 6, we extend this analysis by examining the effect of interacting religion with openness on the financial as well as investor protection. We also use three alternative measures of trade openness: ratios of trade and FDI to GDP, as well as the Chin-Ito Index of Financial Openness (KOpen) discussed above. When trade share is considered as the measure of openness (columns 1 to 4), we see no effect of religion or openness

measures on *anti-director* rights. Regarding *creditor rights,* while the interaction of Other and Trade is positive and significant, indicating that for countries having other religious majority, trade openness results in more *creditor rights*. The coefficient estimates of the three religion interaction terms, however, are very close to each other. We cannot reject the null of the equality of these three coefficients (p-value = 0.805). This seems to suggest, like in S&W, that as countries open up to trade, *creditor rights* increase, and this result is independent of culture.

Table 6: Interaction of Culture Dummies and Openness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Anti-Director Rights	Creditor Rights	Corrupt Cntrl	Law and Order	Anti-Director Rights	Creditor Rights	Corrupt Cntrl	Law and Order
Ln GDP pc	0.063	0.101	0.460***	0.590***	0.096	0.093	0.488***	0.584***
	(0.098)	(0.065)	(0.085)	(0.060)	(0.088)	(0.061)	(0.077)	(0.063)
Protestant	0.568	0.463	1.365***	0.351	0.247	0.708*	0.354	0.188
	(0.896)	(0.687)	(0.437)	(0.473)	(0.522)	(0.384)	(0.257)	(0.275)
Catholic	-0.621	-0.374	-0.150	-0.729**	-0.772	0.002	-0.089	-0.346*
	(0.690)	(0.426)	(0.288)	(0.294)	(0.491)	(0.296)	(0.212)	(0.196)
ProtestantXTrade	-0.005	0.004	-0.012***	-0.002				
	(0.010)	(0.007)	(0.003)	(0.005)				
Catholic X Trade	0.003	0.008	0.002	0.005**				
	(0.008)	(0.005)	(0.002)	(0.002)				
OtherXTrade	0.004	0.005***	-0.001	0.000				
	(0.002)	(0.002)	(0.002)	(0.002)				
ProtestantXFDI					-0.084	0.010	0.003	0.045
					(0.061)	(0.060)	(0.046)	(0.058)
Catholic X FDI					0.038	0.039	0.011	0.019*
					(0.077)	(0.051)	(0.011)	(0.011)
OtherX FDI					0.047	0.095***	-0.023	0.035**
					(0.068)	(0.030)	(0.021)	(0.018)
Countries	60	118	131	131	60	119	132	132
R-squared	0.126	0.127	0.494	0.582	0.123	0.135	0.467	0.579
K-P Underid p	2.41e-05	2.90e-08	3.22e-09	3.22e-09	2.33e-05	3.94e-08	2.95e-09	2.95e-09
K-P Weak id F	58.94	134.1	142.1	142.1	61.20	127.3	136.4	136.4

Robust se in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

Turning to the two enforcement variables, GDP per capita has a positive effect on *Corruption Control* and *law and order*. Majority Protestant countries have lower corruption, while the coefficient on majority Catholic is negative and significant for *law and order,* indicating less *law and order* in Catholic

majority countries. The results are qualitatively the same when trade share is replaced by FDI as the measure of openness. In column 6, we see that majority Protestant has a positive impact on *creditor rights,* and the coefficient of Other and FDI is also positive. We again cannot reject the equality of the interaction coefficients. An additional result we see in column 8 is that the interaction of FDI is positive for majority Catholic and Other countries in explaining *law and order*. This suggests that the negative effect of majority Catholic on *law and order* gets mitigated with openness and increased FDI results in improvement in that enforcement variable.

Table 6: Interaction of Culture dummies and Openness (continued)

VARIABLES	(9) Anti-Director Rights	(10) Creditor Rights	(11) Corrupt Cntrl	(12) Law and Order
Ln GDP pc	0.108	-0.024	0.404***	0.478***
	(0.127)	(0.091)	(0.091)	(0.084)
Protestant	0.025	0.483*	0.445**	0.282
	(0.410)	(0.258)	(0.193)	(0.214)
Catholic	-0.740*	-0.164	0.060	-0.375**
	(0.395)	(0.228)	(0.171)	(0.185)
ProtestantXKOpen	-0.159	0.100	0.389***	0.237**
	(0.184)	(0.167)	(0.127)	(0.117)
Catholic X KOpen	-0.011	0.217	0.163	0.333**
	(0.227)	(0.165)	(0.127)	(0.137)
Other X KOpen	0.290	0.343**	-0.165*	0.015
	(0.200)	(0.157)	(0.096)	(0.101)
Observations	60	119	128	128
R-squared	0.148	0.118	0.526	0.573
K-P Underid p	7.54e-05	4.42e-09	9.30e-09	9.30e-09
K-P Weak id F	62.21	64.79	78.83	78.83

Robust se in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

One drawback with these results could be that FDI and trade could be endogenous to shareholder and investor rights, as well as to the enforcement measures. In columns 9-12, we interact with our third measure of openness, the Chin-Ito Index of Financial Openness (KOpen). In column 9, majority Catholic has a negative effect on *Anti-Director Rights*. For *creditor rights,* majority Protestant is positive, and the

interaction of Other with KOpen is positive and significant. Regarding investor protection, GDP per capita is positive and significant. Majority Protestant by itself, as well as interacted with KOpen is positive and significant for *Corruption Control* and *law and order*. This shows the positive effect of culture as captured by majority Protestant in lower corruption as well as improvements in corruption control and law and order in majority Protestant countries with greater financial market liberalization. We also see that for *law and order*, while the sign of majority Catholic is negative, the interaction term is positive and significant, again indicating that with greater openness, *law and order* improves in majority Catholic countries as well.

Having looked at creditor rights, anti-director rights, and investor protection, we now study the impact that culture may have on financial market development. S&W examined the effect on four market development variables- *Equity issued to GDP, Long term private debt to GDP, Total private credit to GDP,* and *Stock market capitalization to GDP*. We use three of these variables and replace *debt issues* with the ratio of liquid liabilities to GDP ratio. This latter measure has been considered in the literature as a summary measure capturing the extent of financial market development (Levine, 1997). Results are presented in Table 7.

For the liquid liabilities-to-GDP ratio, Catholic and Protestant percentages have a negative and significant effect, while higher GDP results in higher financial development. *Private credit* is positively affected by GDP as well as by Generalized trust. So, countries with a higher level of economic development and having a greater level of generalized trust have a higher credit-to-GDP ratio. Among trade variables, FDI has a negative effect. Protestant and Catholic are both negative, like in S&W, but only Protestant share is statistically significant. The signs of all the coefficients are the same as S&W. The only variable statistically significant in explaining *Stock market capitalization* is GDP per capita, and again these results are identical to S&W. For *equity issues,* they found that the only significant variable was Civil Origin, whose sign was negative. We find that instead of civil legal origin, GDP is positive and significant, while the two religion variables are negative and significant.

Table 7: Culture and Financial Market Development

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Liquid Lia % of GDP			Pvt Credit % of GDP			Stock Mkt Cap			Equity Issued		
Ln GDP pc	0.312***	0.273***	0.243***	0.428***	0.395***	0.341***	0.609***	0.622***	0.634***	0.759***	0.691***	0.791***
	(0.051)	(0.066)	(0.070)	(0.062)	(0.074)	(0.074)	(0.108)	(0.118)	(0.152)	(0.120)	(0.106)	(0.136)
Ln Trade_GDP	0.001			-0.024			-0.127			-0.287		
	(0.099)			(0.137)			(0.207)			(0.270)		
Ln FDI_GDP		-0.198			-0.306*			-0.522			0.038	
		(0.139)			(0.173)			(0.373)			(0.201)	
Kopen Index			0.024			0.051			-0.112			-0.172
			(0.053)			(0.069)			(0.136)			(0.121)
Civil Legal Origin	0.033	-0.019	0.079	0.084	-0.015	0.138	-0.201	-0.409	-0.173	0.044	0.167	0.128
	(0.098)	(0.120)	(0.095)	(0.118)	(0.138)	(0.108)	(0.271)	(0.297)	(0.250)	(0.257)	(0.246)	(0.229)
Catholic %	-0.607***	-0.471**	-0.537***	-0.358	-0.179	-0.286	-0.743	-0.526	-0.662	-1.816***	-1.745***	-1.700***
	(0.194)	(0.211)	(0.194)	(0.240)	(0.273)	(0.234)	(0.501)	(0.556)	(0.512)	(0.396)	(0.333)	(0.363)
Protestant %	-0.838***	-0.717***	-0.768***	-0.708***	-0.566**	-0.649***	-0.562	-0.429	-0.518	-1.407***	-1.412***	-1.371***
	(0.188)	(0.197)	(0.193)	(0.226)	(0.243)	(0.233)	(0.445)	(0.449)	(0.439)	(0.390)	(0.387)	(0.378)
Generalized Trust	0.479	0.753	0.724	1.367**	1.662**	1.595**	0.351	0.481	0.670	0.670	0.943	1.153
	(0.511)	(0.558)	(0.514)	(0.638)	(0.709)	(0.636)	(1.009)	(1.098)	(1.047)	(0.881)	(0.868)	(0.867)
Observations	80	81	81	80	81	81	75	75	75	71	71	71
R-squared	0.563	0.521	0.554	0.660	0.638	0.657	0.359	0.367	0.362	0.563	0.560	0.568
K-P Underid p	0.00628	0.0242	4.12e-05	0.00628	0.0242	4.12e-05	0.00622	0.0493	3.29e-05	0.00829	0.000117	8.00e-05
K-P Weak id F	52.36	12.66	24.85	52.36	12.66	24.85	43.05	9.714	54.57	40.51	24.65	49.72

Robust se in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F stat

*** p<0.01, ** p<0.05, * p<0.1

We next carry out a similar exercise as in Table 6, where we interact openness measures with majority Protestant, Catholic, and majority other to see the effect of culture/religion on market development as a country opens up to global engagement. These results are presented in Table 8.

Table 8: Interaction of Culture and Openness on Market Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Liquid Lia % of GDP		Pvt Credit % of GDP		Stock Mkt Cap		Equity Issued	
Ln GDP pc	0.273***	0.175***	0.422***	0.339***	0.507***	0.558***	0.715***	0.796***
	(0.044)	(0.058)	(0.045)	(0.058)	(0.058)	(0.088)	(0.077)	(0.100)
Protestant	-0.652**	-0.015	-0.109	0.075	0.563	0.033	0.288	-0.619**
	(0.278)	(0.128)	(0.334)	(0.138)	(0.405)	(0.220)	(0.564)	(0.265)
Catholic	-0.439*	-0.095	0.037	0.005	-0.494	-0.561**	-0.455	-1.053***
	(0.261)	(0.102)	(0.228)	(0.124)	(0.323)	(0.235)	(0.457)	(0.271)
ProtestantXTrade	0.006*		0.002		-0.004		-0.013***	
	(0.004)		(0.003)		(0.003)		(0.004)	
Catholic X Trade	0.003		-0.000		0.003		-0.009***	
	(0.003)		(0.002)		(0.002)		(0.002)	
OtherXTrade	-0.000		0.001		0.003		-0.002	
	(0.001)		(0.002)		(0.002)		(0.004)	
ProtestantXKopen		0.107		0.161**		-0.187		0.052
		(0.075)		(0.073)		(0.139)		(0.160)
Catholic X Kopen		0.166**		0.141*		0.072		0.030
		(0.066)		(0.076)		(0.140)		(0.143)
OtherX Kopen		0.072		0.051		0.012		-0.285*
		(0.068)		(0.077)		(0.129)		(0.155)
Observations	167	168	167	168	113	112	108	107
R-squared	0.359	0.326	0.508	0.514	0.425	0.416	0.516	0.504
K-P Underid p	5.98e-11	0	5.98e-11	0	1.00e-07	1.32e-07	1.26e-07	1.81e-07
K-P Weak id F	194.2	103.5	194.2	103.5	176.2	92.69	172.7	86.08

Robust se in parentheses; K-P Underid p: p-value for the null of under-identification;
K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

In the regressions for *liquid liabilities,* per capita GDP has a positive effect, majority Catholic and Protestant are negative, though significant only in column 1. Protestant interacted with trade share and Catholic interacted with KOpen index are positive and significant, implying that with the opening up of trade, the negative religion effect starts getting tempered. For *private credit,* the religion variables are not significant. However, the interaction of both these variables with KOpen Index is positive and

significant. Thus, private credit increases in majority Protestant and Catholic countries as they undertake financial openness reforms. Except for Catholic estimate being negative, none of the interaction terms and religion variables are statistically significant in the case of *stock market cap* (columns 5 and 6). For the second stock market variable, *equity issued*, the religion dummies, and their interaction with trade variables are generally negative.

4.d. Anti-director rights, Creditor rights, Investor protection, and market development in low-income Countries (LICs)

In this section, we examine the effect of culture and openness on a variety of dependent variables used in this study in the context of low-income countries by including the interaction terms between the percentage of Catholic, Protestant, and Common law origin with a dummy variable for low-income countries. The results are presented in Table 9.

For *creditor rights,* among the openness measure, KOpen Index has a positive and statistically significant effect. Share of Protestant population is also associated with better investor protection however, the interaction term is not significant. Common law origin also contributes positively to this measure. For the two enforcement variables that we consider in this table, the effect of religion is quite pronounced. Percent Protestant has a positive and statistically significant effect on the control of corruption. Its interaction with LIC is also positive and significant. Percent Catholic, common law, and trade measures have no effect in the control of corruption. There are some interesting results regarding *law and order*. In the previous tables, we have seen % Protestant does not have any statistical effect on *law and order*. While this is true here as well, in low-income countries, % Protestant has a positive and statistically significant effect. In column 5, share of FDI and common law origin interacted with LIC also have a positive and significant on law and order. Like in the previous specifications, % Catholic has a negative effect.

Table 9: Finance, Enforcement and Market Development in Low-Income Countries

VARIABLES	(1) Creditor Rights	(2) Creditor Rights	(3) Corrupt Cntrl	(4) Corrupt Cntrl	(5) Law and Order	(6) Law and Order	(7) Pvt Credit % of GDP	(8) Pvt Credit % of GDP	(9) Stock Mkt Cap	(10) Stock Mkt Cap
Ln GDP pc	0.067	-0.135	0.583***	0.626***	0.676***	0.643***	0.438***	0.381***	0.504***	0.539***
	(0.080)	(0.119)	(0.091)	(0.133)	(0.072)	(0.110)	(0.056)	(0.081)	(0.074)	(0.113)
Ln FDI_GDP	0.270		0.069		0.332***		-0.254*		-0.366	
	(0.185)		(0.168)		(0.104)		(0.136)		(0.268)	
Kopen Index		0.282**		-0.054		0.057		0.082		-0.044
		(0.123)		(0.098)		(0.092)		(0.072)		(0.109)
% Protestant	0.596*	0.754**	0.684*	0.697*	0.317	0.456	-0.253	-0.372*	0.039	-0.105
	(0.348)	(0.355)	(0.380)	(0.385)	(0.348)	(0.385)	(0.236)	(0.225)	(0.371)	(0.342)
% Protest X LIC	-0.421	-0.581	3.149**	3.248**	2.947***	2.980***	0.668	0.597	2.265***	2.488***
	(1.707)	(1.602)	(1.566)	(1.571)	(0.668)	(0.708)	(0.756)	(0.759)	(0.537)	(0.433)
% Catholic	-0.038	0.109	0.032	0.047	-0.723***	-0.604**	-0.039	-0.118	-0.117	-0.198
	(0.352)	(0.345)	(0.255)	(0.259)	(0.233)	(0.258)	(0.205)	(0.195)	(0.329)	(0.320)
% Catholic X LIC	-0.429	-1.233	-0.280	-0.232	-0.466	-0.913**	0.067	0.323	-5.171***	-6.018***
	(1.151)	(1.041)	(0.918)	(0.959)	(0.327)	(0.387)	(0.398)	(0.380)	(0.870)	(0.810)
Common Law Origin	0.629**	0.585**	0.068	0.069	-0.202	-0.242	0.184	0.208	0.875***	0.948***
	(0.254)	(0.259)	(0.194)	(0.197)	(0.184)	(0.191)	(0.143)	(0.141)	(0.188)	(0.191)
Common LO X LIC	0.126	0.027	-0.005	-0.017	0.631*	0.609	-0.809**	-0.774**	-0.328	-0.050
	(0.360)	(0.348)	(0.455)	(0.450)	(0.376)	(0.387)	(0.364)	(0.384)	(0.317)	(0.231)
Observations	119	119	105	105	105	105	119	119	94	94
R-squared	0.166	0.138	0.541	0.538	0.679	0.644	0.570	0.584	0.489	0.495
K-P Underid p	0.000220	2.24e-08	0.00148	1.44e-07	0.00148	1.44e-07	0.000288	1.81e-08	0.00379	2.17e-06
K-P Weak id F	22.47	56.41	19.07	46.01	19.07	46.01	21.70	57.38	15.09	51.53

Robust se in parentheses; K-P Underid p: p-value for the null of under-identification; K-P Weak Id F: First stage F stat
*** p<0.01, ** p<0.05, * p<0.1

The next two variables look at the credit and equity markets. GDP per capita is positively associated with *Private credit to GDP*, while FDI has a negative effect. Among the religion variables in columns 7 and 8, only % Protestant is negative and significant. Common law origin interacted with LIC dummy is also negative. Columns 9 and 10 have *stock market capitalization* as the dependent variable. Interestingly, while % Protestant and % Catholic are not significant, the former interacted with LIC is positive, while the latter is negative. This suggests that in low-income countries, equity markets are positively associated with % Protestant and negatively with % Catholic. Common law origin also has a positive effect on the equity markets. Neither of the openness variables are significant, while GDP per capita is again positive and significant.

5. Conclusion

This paper follows the approach used in the seminal analysis examining the impact of culture on anti-director rights, creditor rights, and investor protection by S&W. A robust financial system is important for economic growth, and a less-developed financial system will impede economic growth (King and Levine, (1993); Schumpeter, (1911). Our results at times align with S&W and at other times differ. Table 10 summarizes our work indicating where we replicated and our new contributions, though, even within replications we incorporated many improvements (see section 4)

Table 10: We contrast the findings and methodologies of the S&W paper with those of our study. **Bold text highlights contributions and elements unique to our work.** All our regressions use instrumental variable estimation to control for the endogeneity of GDP per capita in financial development while the S&W uses OLS regressions.

	S&W paper	**Our paper**
Primary Religion Dummies	Table 3	Table 1 (religion dummies), **Table 2 (religion as percentages)**
Culture and Law Interactions	Table 4	Table 3
Culture, Openness, and Financial Environment	Table 5	Tables 4 and 5. Market development variables are replicated in Table 7.

Culture and Openness	Results from pg. 339, but only creditor rights is estimated.	Table 6 includes creditor rights but also **anti-director rights, and the rule of law.**
Financial Market Development	Table 5, Market development variables.	Table 7 replicates, whereas **Table 8 interacts openness with religion**
Finance, Enforcement, Market Development in Low Income countries	N/A	**Table 9 focuses on low-income countries.**

Our findings align with S&W in revealing that interactions involving majority Protestant and Catholic with civil law have a negative impact on anti-director rights compared to majority Other interacted with common law. However, our study diverges from S&W in significant ways as well. While S&W assert that there is no disparity between common law Protestant and civil law Protestant countries, our results indicate the opposite, suggesting that the type of Christianity influences anti-director rights even if legal origin does not. We further find that anti-director rights are higher in common law countries, irrespective of the majority Christian denomination.

Moreover, our study unveils another noteworthy discovery concerning creditor rights. In civil law countries, there is no significant difference between majority Catholic and majority Protestant; however, a significant contrast emerges when these countries share a common law origin. Protestant common law countries exhibit higher creditor rights than Catholic common law countries—additionally, civil law countries with a non-Christian majority experience fewer creditor rights than their common law counterparts.

Regarding examining the impact of assessing culture and openness variables on investor protection, our results also diverge from S&W. While religion and legal variables show no significance, our study reveals that generalized trust has a positive and significant effect on the rule of law. Our findings indicate that none of the openness measures or civil law origin has a statistically significant effect on corruption control. However, religion, specifically the percentage of Protestants, exhibits a positive and statistically significant impact on corruption control.

In summary, we show that Protestant-majority countries—especially those with common law origins—tend to have stronger anti-director and creditor rights, better control of corruption, and more robust legal systems. This aligns with the historical and sociological view that Protestantism, through its emphasis on individual responsibility, work ethic, and frugality (often referred to as the "Protestant work ethic"), fosters environments conducive to market development, investor confidence, and institutional trust. These traits support capitalist principles such as transparency, accountability, and long-term investment. In contrast, Catholic-majority countries, particularly within common law systems, exhibit weaker creditor rights and less developed equity markets. This may reflect Catholicism's traditional emphasis on communal values and hierarchical structures, which can correlate with stronger state involvement and less emphasis on individual financial autonomy. These cultural orientations may lead to less dynamic financial markets and weaker shareholder protections.

In the context of financial openness (Table 8), we observe that private credit increases in majority Protestant and Catholic countries with openness. Conversely, in the case of stock market capitalization, the interaction terms or religion variables and trade openness are negative and statistically significant.

Our examination of low-income countries reveals several compelling conclusions. The KOpen Index, among the openness measures, exhibits a positive and statistically significant effect on creditor rights. The share of the Protestant population is associated with better creditor rights, although the interaction term is not significant. Common law origin also contributes positively to creditor rights. In terms of investor protection, the effect of religion is pronounced, with the percentage of Protestants having a positive and statistically significant impact on control of corruption, especially when interacting with a low-income country indicator. This trend persists in low-income countries, where the percentage of Protestants demonstrates a positive and statistically significant effect on law and order. Additionally, equity markets in low-income countries are positively associated with the percentage of Protestants and negatively with the percentage of Catholics, highlighting the role of religion in shaping financial outcomes. This suggests that the Weberian thesis holds particular validity for low-income countries,

where financial systems are still evolving and institutional frameworks remain underdeveloped. This needs further exploration.

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Appendix

Table A1: Summary statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Anti-Director Rights	60	3.29	1.15	1	5
Creditor Rights	117	1.83	1.15	0	4
Rule of Law	167	-0.04	0.98	-1.75	1.960042
Cntrl of Corruption	130	3.07	1.16	0.49	6
Law and Order	130	3.70	1.28	0.99	6
Common Law LO	118	0.25	0.44	0	1
Civil Law LO	118	0.53	0.50	0	1
Majority Catholic	167	0.31	0.46	0	1
Majority Protestant	167	0.28	0.45	0	1
Majority Islam	167	0.25	0.44	0	1
Majority Buddhist	167	0.04	0.20	0	1
Majority Other	167	0.41	0.49	0	1
Ln Trade to GDP	167	4.26	0.57	0.41	5.85
Ln FDI to GDP	165	1.29	0.68	0.08	4.07
KOpen	163	0.01	1.29	-1.92	2.32
Generalized Trust	87	0.27	0.15	0.05	0.68
Liquid Lia % of GDP	167	46.54	47.06	3.76	415.32
Pvt Credit % of GDP	167	35.04	31.28	0.80	168.13
Stock Mkt Cap	113	34.44	35.19	0.07	143.24
Equity Issued	107	14.91	22.35	0.01	129.14
Low Income	167	0.16	0.36	0	1

Table A2.1: Correlation between finance variables and explanatory variables

	Anti-Director Rights	Creditor Rights	Common Law LO	Civil Law LO	Majority Catholic	Majority Protestant	Majority Islam	Majority Buddhist	Majority Other	Ln Trade to GDP	Ln FDI to GDP	KOpen	Generalized Trust
Anti-Director Rights	1.00												
Creditor Rights	0.11	1.00											
Common Law LO	0.53	0.28	1.00										
Civil Law LO	-0.32	-0.27	-0.72	1.00									
Majority Catholic	-0.24	-0.33	-0.33	0.26	1.00								
Majority Protestant	0.13	0.20	0.13	-0.10	-0.55	1.00							
Majority Islam	-0.03	0.02	0.07	0.07	-0.37	-0.26	1.00						
Majority Buddhist	0.08	0.01	0.21	-0.15	-0.12	-0.09	-0.06	1.00					
Majority Other	0.13	0.16	0.23	-0.19	-0.55	-0.39	0.67	0.22	1.00				
Ln Trade to GDP	0.08	0.19	0.03	-0.17	-0.05	0.02	0.01	0.12	0.04	1.00			
Ln FDI to GDP	-0.04	0.09	-0.06	-0.18	0.15	-0.05	-0.15	0.00	-0.12	0.70	1.00		
KOpen	0.06	0.10	-0.12	0.22	0.07	0.10	-0.22	-0.08	-0.18	0.29	0.26	1.00	
Generalized Trust	-0.01	0.08	-0.07	0.09	-0.35	0.41	-0.12	0.11	-0.02	0.07	0.11	0.49	1

Table A2.2: Correlation between finance variables and explanatory variables

	Rule of Law	Cntrl of Corruption	Law and Order	Common Law LO	Civil Law LO	Majority Catholic	Majority Protestant	Majority Islam	Majority Buddhist	Majority Other	Ln Trade to GDP	Ln FDI to GDP	KOpen	Generalized Trust
Rule of Law	1.00													
Cntrl of Corruption	0.77	1.00												
Law and Order	0.88	0.83	1.00											
Common Law LO	-0.01	-0.07	0.02	1.00										
Civil Law LO	0.24	-0.03	0.17	-0.60	1.00									
Majority Catholic	0.10	-0.02	0.10	-0.28	0.29	1.00								
Majority Protestant	0.29	0.25	0.18	0.11	-0.17	-0.47	1.00							
Majority Islam	-0.36	-0.33	-0.36	0.13	0.07	-0.40	-0.31	1.00						
Majority Buddhist	-0.08	-0.01	0.00	0.19	-0.11	-0.09	-0.07	-0.06	1.00					
Majority Other	-0.37	-0.21	-0.27	0.18	-0.13	-0.58	-0.45	0.69	0.16	1.00				
Ln Trade to GDP	0.15	0.35	0.23	-0.06	-0.25	-0.03	0.09	-0.16	0.10	-0.06	1.00			
Ln FDI to GDP	0.20	0.38	0.24	-0.08	-0.28	0.11	0.03	-0.31	0.01	-0.14	0.65	1.00		
KOpen	0.60	0.62	0.72	-0.03	0.17	0.15	0.11	-0.27	-0.04	-0.25	0.22	0.21	1.00	
Generalized Trust	0.54	0.60	0.53	-0.04	0.07	-0.27	0.30	-0.12	0.11	-0.01	0.07	0.07	0.45	1.00

Table A2.3: Correlation between financial development measures and explanatory variables

	Liquid Lia % of GDP	Pvt Credit % of GDP	Stock Mkt Cap	Equity Issued	Common Law LO	Civil Law LO	Majority Catholic	Majority Protestant	Majority Islam	Majority Buddhist	Majority Other	Ln Trade to GDP	Ln FDI to GDP	KOpen	Generalized Trust
Liquid Lia % of GDP	1.00														
Pvt Credit % of GDP	0.86	1.00													
Stock Mkt Cap	0.62	0.74	1.00												
Equity Issued	0.58	0.75	0.73	1.00											
Common Law LO	0.00	0.09	0.33	0.17	1.00										
Civil Law LO	0.21	0.20	0.05	0.14	-0.58	1.00									
Majority Catholic	-0.06	-0.04	-0.10	-0.13	-0.30	0.32	1.00								
Majority Protestant	-0.16	0.03	0.09	0.09	0.07	-0.17	-0.51	1.00							
Majority Islam	-0.04	-0.21	-0.05	-0.07	0.19	0.00	-0.37	-0.31	1.00						
Majority Buddhist	0.13	0.15	0.04	0.05	0.19	-0.11	-0.09	-0.08	-0.06	1.00					
Majority Other	0.22	0.01	0.01	0.05	0.24	-0.16	-0.54	-0.45	0.68	0.17	1.00				
Ln Trade to GDP	0.14	0.08	0.23	0.03	-0.08	-0.24	-0.05	0.08	-0.10	0.10	-0.03	1.00			
Ln FDI to GDP	0.02	0.02	0.07	-0.05	-0.12	-0.26	0.08	0.10	-0.25	0.00	-0.19	0.70	1.00		
KOpen	0.42	0.54	0.34	0.44	-0.09	0.20	0.11	0.08	-0.21	-0.06	-0.20	0.26	0.25	1.00	
Generalized Trust	0.42	0.54	0.28	0.48	-0.05	0.14	-0.28	0.24	-0.06	0.11	0.06	0.03	0.03	0.43	1.00