

Will a Collectivistic Culture protect your Intellectual Property? Effect of Individualism on Intellectual Property Protection

Tian Zengrui¹, Guillermo A. Buitrago¹, Shoirahon Odilova¹

¹Glorious Sun Faculty of Management, Donghua University, China

Correspondence: Guillermo A. Buitrago, Glorious Sun Faculty of Management, Donghua University, China.

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Abstract

This study is intended to explore the effect of individualism on intellectual property rights protection. Using data from 92 countries, we found out that individualism index has positive and significant effect on IPR protection. More specifically, a 10-point increase in individualism index is associated with 0.4-point increase in IPR index. Moreover, individualism alone seems to explain nearly 45% of cross-national variation in IPR index. The mentioned significant effect remains robust even after considering the role of economic development, democracy, ethnic diversity, economic freedom and legal heritage.

Keywords: individualism, intellectual property rights protection, Latin America

1. Introduction

According to *The Software Alliance* - BSA (2009 p. 8) the commercial value of unlicensed software used in China scored \$7.6 billion —\$900 million more than 2008; Moreover, 'in 2009, the worldwide value of unlicensed software hit \$51.4 billion. (BSA, 2009 p. 9). Therefore, understanding which tools can contribute to reduce the illegal use of software becomes a paramount research objective. Nill and Shultz (2009) assert that intellectual property rights (IPR) protection is instrumental to reducing software piracy rates across developed and developing countries. Indeed, Figure 1 suggests that IPR protection remains very heterogeneous across developed and developing countries. For example, while USA scored 7.7, Ukraine only got 3.9 points in the IPR protection index. Moreover, research evidence suggests that IPR protection is an important antecedent of Foreign Direct Investment FDI, technological development (Yi & Naghavi, 2017) and trade (Auriol et al., 2015). For example, Delgado et al. (2013), using data from 158 countries between 1993 and 2009, found out that implementation of Trade Intellectual Property Agreements TRIPS had sizeable effect on trade of knowledge intensive goods. Naturally, exploring antecedents of IPR protection has numerous implications for society. Chiang (2004) explores causes of IPR protection using a large set of macroeconomic and industry specific data. The author found that patent filings are predicted by the quality of legal institutions such as corruption levels. Das et al (2014) further shows, using data from 68 countries, reports that '*a country's economic status and regulatory status emerge as the primary factors affecting music piracy*' (p.6). Furthermore, Park (2002) concluded that economic freedom and IPR protection are positively correlated across countries. In addition, economic development and trade openness are also controlled in the regression model. Odilova and Gu (2017) tested the hypothesis that culture, measured by cognitive capital, and democracy are related to IPR protection. Their study reports that the effect of cognitive skills is partially mediated by political institutions. In addition, they also show that culture explains more than 20% of cross-country variations in IPR protection.

In this study, we contribute to the existent literature by exploring the link between cultural factors and IPR protection. In particular, we test the hypothesis that *individualism dimension of culture is a significant predictor of IPR protection across developing and developed countries*. Related literature shows that individualism is an essential ingredient of socio-economic development. For example, Gorodnichenko and Roland (2011) concluded that individualistic societies motivate personal success, thus, foster innovative activities. On national level, innovation spurs economic growth and foster development. Nikolaev et al. (2017), using *pathogen prevalence index* as an instrument for individualism index, tested the hypothesis that *individualism is inversely related to income inequality*. Their findings suggest that '*societies with more individualistic values have significantly lower net income inequality*'. The results are robust even after controlling for a number of confounding factors such as economic development, legal origins, religion, human capital, other cultural values, economic institutions, and

geographical controls (p. 30). Jha and Panda (2017) showed that individualism is a robust antecedent of corruption, even after controlling for democracy, religion, education and economic development. They also show that genetic distance and infectious diseases are significant predictors of individualism at the first stage. Drawing on this rich set of studies, it is possible to conjecture that *individualistic societies should be associated with stronger IPR protection*. Our results showed that a 10-point increase in individualism index is associated with 0.4-point increase in IPR index. Moreover, individualism alone seems to explain nearly 45% of cross-national variation in IPR index.

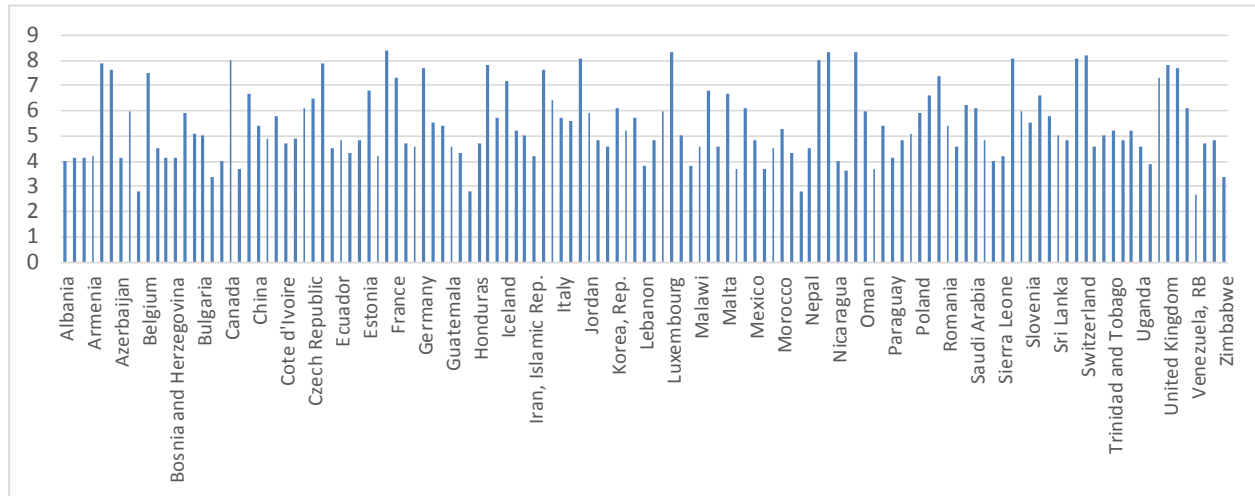


Figure 1. IPR protection index

Source: Property Rights Alliance

2. Data

2.1 Dependent Variable

Our first dependent variable is the International Property Rights (IPR) Index, the leading research output from Property Rights Alliance. The IPRI scores the underlining institutions of a strong property rights regime: the legal and political environment, physical property rights, and intellectual property rights. It is the world's only index entirely dedicated to the measurement of intellectual and physical property rights (<http://internationalpropertyrightsindex.org/about>).

As suggested by IPRI (2017)

The following are the three core components of the IPRI:

1. Legal and Political Environment, LP
2. Physical Property Rights, PPR
3. Intellectual Property Rights, IPR

The Legal and Political Environment (LP) component provides an insight into the strength of governance institutions of a country, the respect for the 'rules of the game' among citizens; consequently, the measures used for the LP are broad in scope. This component has a significant impact in the development and protection of physical and intellectual property rights.

The other two components of the index - Physical and Intellectual Property Rights (PPR and IPR) - reflect two forms of property rights, both of which are crucial to the economic development of a country. The items included in these two categories account for both de jure rights and de facto outcomes for the countries considered.

The overall grading scale of the IPRI ranges from [0 – 10], where 10 is the highest value for a property rights system and 0 is the lowest value (i.e. most negative) for a property rights system within a country. In our sample IPR index ranges from 2.7 in Venezuela to 8.4 in Finland.

Our second dependent variable is Intellectual property protection (IPP) index. IPP index is derived from opinion survey outcomes indicating a country's protection of intellectual property; thus, it is a predominant aspect of the IPR component. Expert participants in each country were asked to rate their nation's IP protection, scoring it from "weak and not enforced" (1) to "strong and enforced." (7). The data for this variable come from the Global Competitiveness Index from The World Economic Forum's 2015-2016.

2.2 Individualism

In this study, we rely on individualism index created by Hofstede (2001) as an indicator of individualism/collectivism across societies. The first edition of Hofstede (2001)'s I/C index was estimated using data from the surveys of IBM employees in forty nations. As asserted by Jha and Panda (2017 p. 5) '[the goal of the project was to estimate the] importance an employee assigns to different work goals such as challenges at work place (sense of personal accomplishment), desirable area to live, an opportunity for high earning, cooperation, opportunities for training, fringe benefits, recognition, physical working conditions, freedom of approach to adapt to the job, employment security, opportunity for advancement, relationship with the manager, opportunity to use skill and ability at work place, and personal time'. The final I/C index ranges from 0 (collectivistic) to 100 (individualistic) societies.

2.3 Control Variables

Considering that IPR protection is not explained solely by culture, as proxied by individualism index, we added a vector of control variables in our empirical exercise. We included, GDP per capita as a proxy for economic development from World Bank. We also control for democracy index from Freedom House and economic freedom from heritage foundation as proxies for quality of institutions. Finally, we also control for ethnic diversity index and binary variable for countries with UK legal origins, as a measure of legal heritage. Descriptive statistics and data sources are presented in Table 1. The correlation matrix is presented in Table 2.

2.4 Model

To test the effect of individualism on IPR protection we estimated the following econometric model:

$$IPR_i = \alpha + \beta INDIVIDUALISM_i + X\lambda + \varepsilon_i$$

Where IPR is one of our dependent variables in ith country, INDIVIDUALISM is an individualism index, X is a vector of control variables and e is an error term, satisfying normality assumptions.

Table 1. Descriptive statistics

Variable	Description	Mean	Std. Dev.	Min	Max
IPR index	International Property Rights (IPR) Index from Property Rights Alliance	5.43	1.44	2.7	8.4
IPP index	Intellectual property protection (IPP) index from World Economic Forum	4.06	1.03	1.68	6.31
Individualism	Individualism Index from Hofstede (2001)	39.17	22.07	6	91
GDP per capita	GDP per capita, at 000' PPP from World Bank	17.78	20.61	0.64	132.97
Economic freedom	Economic Freedom index from Heritage foundation	60.70	10.34	29.6	89.6
Democracy	Democracy index from Freedom House	4.66	1.98	1	7
Ethnic diversity	Ethnic Diversity index from Alesina et al. (2003)	0.44	0.26	0	0.93
UK common law	Dummy variable for countries with UK common law, and zero otherwise from Ashraf and Galor (2013)	0.34	0.47	0	1

Table 2. Correlation matrix

	I	II	III	IV	V	VI	VII	VIII
IPR index	1							
IPP index	0.9574	1						
Individualism	0.7077	0.6667	1					
GDP per capita	0.769	0.7187	0.5217	1				
Economic Freedom	0.8255	0.7758	0.5508	0.6359	1			
Democracy	0.5781	0.5074	0.5615	0.3082	0.6079	1		
Ethnic diversity	-0.3796	-0.323	-0.3475	-0.3166	-0.3229	-0.3205	1	
UK common law	0.0436	0.1168	0.0443	-0.037	0.0713	-0.1675	0.3571	1

3. Results

In column 1, we estimated a bivariate statistical model where we regress IPR index on individualism index only. This regression suggests that individualistic societies are associated with stronger enforcement of IPR protection. For example, a 10-points increase in individualism index was associated with 0.4-point increase in IPR index. Moreover, individualism alone seems to explain nearly 45% of cross-national variation in IPR index.

In column 2, we included GDP per capita. For example, Shoirova (2016) showed that culture and IPR protection is correlated with economic development both in low- and high-income countries. Moreover, Odilova and Xiaomin (2016) further showed that IPR protection is correlated with other growth determinants such as FDI. On

the other hand, other scholars showed that individualism is significantly correlated with economic development (Ball, 2001). Therefore, it is important to control for the level of economic development. The results suggest that economic development is a significant predictor of IPR protection. In particular, a 10,000 USD increase in GDP per capita is associated with 0.4 point increase in IPR index. Individualism retains its significance, although it has quantitatively decreased. This implies economic development captures some of the effect of individualism on IPR protection.

Next, we applied control for the economic freedom index in column 3. Economic freedom may serve as a good proxy for the quality of business environment in a country, thus may predict IPR protection. Our results suggest that economic freedom index has positive and significant effect on IPR protection. Moreover, individualism index remains positive and statistically significant.

In column 4, we incorporated democracy index. While the estimates for individualism, GDP per capita and economic freedom were positive and significant, democracy does not seem to be an important antecedent of IPR protection in our sample. In columns 5 and 6, we included ethnic diversity and a binary variable for countries with UK common law. Both of these variables are insignificant in our regression. However, individualism was significant across all regression specifications. Therefore, the results in Table 3 suggested that individualism is a robust determinant of IPR index.

Table 3. Individualism and IPR index

	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	0.0435*** (0.0051)	0.0253*** (0.0042)	0.0179*** (0.0034)	0.0160*** (0.0038)	0.0158*** (0.0039)	0.0150*** (0.0040)
GDP per capita		0.0435*** (0.0051)	0.0249*** (0.0045)	0.0262*** (0.0047)	0.0259*** (0.0048)	0.0266*** (0.0048)
Economic freedom			0.0681*** (0.0087)	0.0625*** (0.0104)	0.0624*** (0.0105)	0.0595*** (0.0109)
Democracy index				0.0631 (0.0537)	0.0593 (0.0544)	0.0752 (0.0571)
Ethnic diversity					-0.1581 (0.2887)	-0.2719 (0.3136)
UK common law						0.1486 (0.1594)
cons	4.0180*** (0.2304)	3.7385*** (0.1705)	0.0700 (0.4860)	0.1303 (0.5103)	0.2408 (0.5508)	0.3563 (0.5650)
<i>N</i>	89	88	88	87	87	87
adj. <i>R</i> ²	0.4530	0.7112	0.8312	0.8279	0.8264	0.8261

Standard errors in parentheses

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

In Table 4, we re-estimated our baseline results using IPP index as a dependent variable. The relationship between individualism and IPR protection is positive and significant at 1% level across all models. After controlling for GDP per capita, economic freedom, democracy, ethnic diversity and legal origins, a 20-point increase in individualism index was associated with 0.2-point increase in IPP index (column 6).

Table 4. Individualism and IPP index

	(1)	(2)	(3)	(4)	(5)	(6)
Individualism	0.0303*** (0.0039)	0.0178*** (0.0036)	0.0128*** (0.0032)	0.0133*** (0.0035)	0.0134*** (0.0036)	0.0116*** (0.0036)
GDP per capita		0.0300*** (0.0042)	0.0169*** (0.0042)	0.0167*** (0.0044)	0.0169*** (0.0045)	0.0183*** (0.0045)
Economic freedom			0.0480*** (0.0081)	0.0476*** (0.0099)	0.0476*** (0.0099)	0.0421*** (0.0102)
Democracy				-0.0050 (0.0497)	-0.0029 (0.0504)	0.0284 (0.0520)
Ethnic diversity					0.0837 (0.2728)	-0.1496 (0.2929)
UK common law						0.2896* (0.1463)
Constant	3.0824*** (0.1769)	2.9035*** (0.1426)	0.3049 (0.4559)	0.3460 (0.4828)	0.2865 (0.5229)	0.5066 (0.5259)
<i>N</i>	92	91	91	90	90	90
adj. <i>R</i> ²	0.3938	0.6177	0.7241	0.7131	0.7100	0.7198

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In Table 5, we focused on one region of the world, namely Latin America. We regressed our dependent variables on individualism, dummy variable for Latin America countries and their interaction term. The results, reported in columns 1 and 2, suggested that the effect of individualism on IPR protection is marginally weaker in this region. One explanation may be that this region is associated with overall collectivistic cultures. On the other hand, the dummy variable for Latin America countries may capture unobserved characteristic such as colonization or endowment in natural resources such as oil, forest or copper. These resources hinder economic development and deteriorate legal institutions, so called resource curse phenomena.

Table 5. The effects in Latin America

	(1) IPR index	(2) IPP index
Individualism	0.0451*** (0.0054)	0.0314*** (0.0042)
Latin America	0.7903 (0.5591)	0.5917 (0.4826)
Individualism * Latin America	-0.0369* (0.0197)	-0.0290* (0.0163)
Constant	3.9532*** (0.2914)	3.0440*** (0.2134)
<i>N</i>	89	92
adj. <i>R</i> ²	0.4551	0.3967

Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4. Conclusion

Software piracy and violation of copyright rules are still present across developed and developing countries. Several papers have shown that economic development, democratization, reduction of corruption and stronger legal environments can contribute to solve to this problem. Meanwhile, in the other hand, a separate strand of literature has shown that cultural dimension seem to be important antecedents of socio-economic development.

In this study, we have explored the role of one aspect of cultural values, namely individualism, in improving IPR protection across developed and developing countries. Our results suggested that a 10-point increase in individualism index is associated with 0.4-point increase in IPR index. Moreover, individualism alone seems to explain nearly 45% of cross-national variation in IPR index. These results indicate that apart from fostering economic development and strengthening legal institutions to reduce copyright violations, it is important to take into account the role of culture in modeling IPR protection using global data.

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