

# The Time Cost of Documents to Trade

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The World Bank  
Global Indicators and Analysis  
Enterprise Analysis Unit  
December 2011



## Abstract

This paper analyzes the relationship between the number of documents required to export and import and the time it takes to complete all procedures to trade. It shows that an increase in the number of documents required for export and import tends to increase the time cost of shipments. However, this relationship is far from simplistic, varying sharply in magnitude across rich versus poor countries and small versus large countries. Specifically, the increase in the time cost of increased documentation is much larger for relatively poor and

larger countries. One interpretation of this finding is that richer countries that have more resources and smaller countries that rely more on trade invest more in building efficient documentation systems. Hence, in such countries relative to others, increased documentation adds less to the time cost at the margin. At a broader level, the findings suggest caution in interpreting how input-based measures such as the number of required documents to trade affect the quality of the business environment as far as the associated cost is concerned.

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# **The Time Cost of Documents to Trade**

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*Keywords:* Country size, Trade facilitation, Openness  
*JEL:* F10, F13, F15, O24

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## **1. Introduction**

With the decline in tariff and non-tariff barriers to international trade, trade facilitation measures are increasingly becoming the focus of policy makers for the continued growth of trade (see for example, Wilson et al. 2003). In a narrow sense, trade facilitation measures simply address the logistics of moving goods through ports and the documentation associated with cross-border trade. The present paper focuses on the number of documents required to export and import. However, instead of taking the number of required documents as a measure of trade facilitation itself, we focus on the associated time cost. Specifically, we analyze the relationship between the number of documents required to export and import and the time it takes to complete all procedures to trade. What is the nature of this relationship?

In answering this question, we follow a novel approach in suggesting that the impact of increased documentation on the time cost (of exporting and importing) may not be a simple positive one; that is, it is likely to depend on how efficient the underlying system is in supplying the required documents. To this end, we make two plausible hypotheses. First, richer countries are likely to invest more in the underlying system of documentation and hence the increase in time cost associated with a unit increase in the number of required documents is likely to be smaller than that for the poorer countries.

Second, a number of studies have shown that small countries trade more as a proportion of their GDP than the large countries. In fact, trade openness is one of the few cases where country size seems to matter for economic or even social variables.<sup>1</sup> One argument here is that smallness of markets limits the exploitation of economies of scale, forcing the smaller countries more than the larger countries to expand market size through international trade beyond their

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<sup>1</sup> For example, Rose (2006) shows that small countries are more open to trade than large countries, but country size does not matter for a number of other economic and social phenomena including inflation, health, quality of institutions and income levels.

political borders (Alesina 2002, Alesina and Wacziarg 1998). If trade is more important to small compared with large countries, we might suspect that the relatively smaller countries are more likely to invest in more efficient documentation system. Hence, we hypothesize that a unit increase in the number of required documents leads to a smaller increase in the time cost in the small compared with large countries.

We test the two hypotheses mentioned above using panel data on 125 countries for which data are available on our main variables. The regression results strongly confirm both the stated hypotheses.

The present paper is restricted to a regulatory aspect of trade facilitation; that is, the number of documents required to trade and the associated time cost. The importance of such regulatory measures for trade cannot be denied, although formal empirical work on this issue is still in its infancy. For example, a recent study by Djankov et al. (2010) uses the same time cost measure as we do in the present paper and finds it has significant effects on the volume of trade. The study estimates that for each additional day that a product is delayed prior to being shipped reduces the volume of trade by more than 1 percent. Alternatively, each day is equivalent to a country distancing itself from its trade partners by about 70 kilometers on average. The present paper complements such studies in highlighting an important determinant of the time cost of clearing all the required procedures for shipment.

Notwithstanding the importance of time costs of shipments and the number of required documents, trade facilitation extends to a number of other dimensions that we do not include in the present study. Examples include internet availability (Freund and Weinhold, 2000) and standards harmonization and automating customs procedures (Herter et al. 2001). Hence, we caution that our results discussed below should be treated with due caution and not generalized

to other aspects of trade facilitation without further analysis. For example, standards harmonization could reduce time cost of shipment clearance, but this effect could vary depending on the overall efficiency of the customs procedures. Much like as in our case, the relationship between standards harmonization and the time cost of shipment clearance could vary between rich and poor countries and between small and large countries. However, this is an empirical issue that requires validation or rejection.

The plan of the remaining sections is as follows. In section 2 we describe the data and the empirical methodology. Regression results for our main specification along with robustness checks are provided in section 3. The concluding section summarizes the main findings of the paper and suggests scope for future work.

## **2. Data description and methodology**

Our sample consists of a panel of 125 countries for which data are available for all our main variables. The data span six years from 2005 to 2010. To avoid the simultaneity problem, we use lagged values of the various explanatory variables including the number of documents required to trade (discussed in detail below). The panel nature of the data allows us to control for all unobserved and time invariant country specific factors through country fixed effects. Similarly, we are able to control for all time or year specific factors common to all countries through time fixed effects. That is, the regression results discussed below are obtained from fixed-effects panel data estimation method.<sup>2</sup> However, given the short span of the panel data, there is not enough variation over time in either the income level or country size measured by population. Hence, the variation in the effects of the number of required documents to trade on the time cost

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<sup>2</sup> That is, we use the Ordinary Least Squares estimation method with country and year fixed effects included in the specification.

across rich vs. poor countries and across small vs. large countries is estimated with income and country size assumed to be constant over time; only the number of required documents is allowed to vary temporally. This is discussed in more detail below.

All standard errors used for computing the significance levels of the estimated coefficient values are Huber-White robust. Throughout the paper, significance level is denoted by \*\*\* (1 percent or less), \*\* (5 percent or less) and \* (10 percent or less).

A formal definition of all the variables used in the paper is provided in Table 1. Summary statistics of the main variables and the correlation between the main explanatory variables are provided in Table 2 and Table 3, respectively.

## 2.1 *Dependent variable*

The dependent variable equals the log of the time (recorded in calendar days) it takes to clear all procedures to export and import ( $Time_{it}$ ). The subscripts  $i,t$  denote the country and year, respectively. As mentioned above, the time span for the variable is 2005 to 2010. However, since we use lagged values of the explanatory variable, number of required documents, we lose the first year (2005) values of  $Time$ . The data source for the variable is World Bank's Doing Business project. We note that  $Time$  includes the time cost of all procedures as well as the waiting time between procedures (for example, during unloading of the cargo). Hence, only part of the variation in the time cost of shipments across countries and time can be explained by the variation in the number of required documents.

In the full sample, the mean value of  $Time$  equals 3.98 and the standard deviation is .51. Averaging over time, the value of  $Time$  is highest for Iraq (5.27) and lowest for Panama (2.89). Computing the annual change in the value of  $Time$ , the change averages -.047 or about 1.2

percent of the mean value of *Time*. In terms of the frequency, about 36 percent of the countries witnessed a change in the value of *Time* in any two consecutive years on average. Further, over the entire time span of 2006-2010, every country in the sample experienced a change at least once in the value of *Time*.

## 2.2 Main explanatory variables

Our first explanatory variable is the (log of) number of documents required to export and import as measured by the World Bank's Doing Business project (*Documents*). As mentioned above, to avoid simultaneity problem, we use one year lagged values of the variable. Hence, the regression results discussed below cover the period 2006 to 2010. The mean value of *Documents* equals 2.73 and the standard deviation is .27. Averaging over time for each country, the highest value of *Documents* is observed in Central African Republic (3.23) and lowest in Panama (1.96). Computing annual changes in the value of *Documents*, the mean value of the change equals -.024 or .89 percent of the mean value of *Documents* and the standard deviation equals .12. On average, in any two consecutive years, over 13 percent of the countries in the sample witnessed a change in the value of *Documents*. Further, every country in our sample witnessed a change in the value of *Documents* at least once over the time period under study.

To see how the correlation between *Time* and *Documents* varies by income and country size, we interact *Documents* with a measure of per capita income level and country size. For income level, we use log of GDP per capita, PPP adjusted and at constant 2005 international dollars. Values of GDP per capita used in the paper are average values taken over 2001-2005 (*Income*). The data source for the variable is World Development Indicators, World Bank. We note that lagged values of GDP per capita are used in order to avoid the potential simultaneity



problem with our estimation results. Also, due to the short span of the data, we do not exploit variations over time in the level of income. Hence, what our results seek to establish is the differential effect of the number of required documents on the time cost across countries that are at different levels of income to begin with. The same holds for our measure of country size which equals the log of the average level of total population of a country where the average is taken over 2001-2005 (*Population*). The data source for *Population* is World Development Indicators, World Bank.

Briefly, the mean value of *Income* equals 8.0 and the standard deviation equals .94. For *Population*, the corresponding figures equal 15.6 and 2.03, respectively. We check all our results for potential outliers, especially with respect to countries that are very small (island countries) and the very large countries.<sup>3</sup>

Our estimation equation takes the following form

$$Time_{it} = \alpha + \beta_1 Documents_{it} + \beta_2 Documents_{it} * Income_i + \beta_3 Documents_{it} * Population_i \\ + Country\ fixed\ effects + Time\ Fixed\ effects + Other\ controls$$

### 2.3 Other explanatory variables

The remaining explanatory variables in the regression results discussed below are motivated to guard against the potential omitted variable bias or spurious correlation problem. We would like to mention here that our main focus is on the interaction terms in the equation above. That is, how the relationship between the number of required documents and the time cost varies across

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<sup>3</sup> We do find that Afghanistan, China and Tanzania have unduly large effects on our results. Including China in the sample makes our results weaker while the opposite holds for Afghanistan. For Tanzania, the results vary depending on the specification. To ensure that our results are not unduly affected by individual countries, we exclude Afghanistan, China and Tanzania from our sample.

countries at different levels of income and population. The chances of spurious correlation for our interaction terms are less severe than it is otherwise the case with level variables. For example, it is entirely plausible to suggest that the relatively richer countries have less corruption. So, our income variable could easily pick up the effect of corruption, if any, on the dependent variable. However, there is little theoretical or empirical reason to believe that corruption should affect the strength of the relationship between the number of required documents and the dependent variable. In short, while income may spuriously pick up the effect of corruption on the dependent variable, there is no reason to suggest that this holds for the interaction term also (*Documents\*Income* picking up the effect of *Documents\*Corruption* level). Nevertheless, we show that our results survive a number of controls such as for corruption, etc.

Our first set of controls includes the country and year fixed effects. As discussed above, these controls ensure that our main results are robust to all time invariant country specific factors (country fixed effects) as well as world-wide shocks to the dependent variable in a given year (time fixed effects). In short, what these controls imply is regressing changes in the explanatory variables on changes in the dependent variable. Such first-differenced regressions tend to suffer less from the omitted variable bias problem than regressions based on the actual levels of the variables (cross-section data).

One could still argue that the differential effect of the required documents on the time cost across income and population levels could be spuriously driven by a non-linearity in the documents-time cost relationship. That is, the reason why the effect of documents on the time cost varies with the income (or population) level is that income simply picks up higher or lower values of *Documents* and that the effect of *Documents* on the dependent variable varies over its

range. To guard against this possibility, we control for the square of the number of required documents (*Documents*<sup>2</sup>).

A number of studies have shown that small countries tend to trade more than the large countries and that the same holds for rich compared with poor countries. One might then speculate that the reason why income and population matter for the strength of the documents-time cost relationship is because income and population are picking up the effect of trade openness. To check for this possibility, we control for trade (exports plus imports) to GDP ratio (log values of the average of trade to GDP ratio taken over 2001-2005) interacted with the number of required documents (*Documents*\* Trade to GDP ratio).<sup>4</sup>

The argument in the previous paragraph can be extended to another variable: the quality of the overall business climate. For example, higher income countries are likely to be less regulated (less burdensome business climate). Hence, the differential effect of the number of required documents on the time cost across rich and poor countries could potentially be the differential effect across less and more regulated economies if regulation and required documents to trade are compliments for the time cost. To guard against this possibility, we control for *Documents*\**Business Climate*, where *Business Climate* equals the log of the average value over 2001-2005 of the overall score of economic freedom as measured by the Index of Economic Freedom, Heritage Foundation.

Another factor that is known to be correlated with income level and the business regulations is corruption. Typically, corruption falls with higher income levels and increases with various aspects of more stringent regulation (such as, the number of documents required to

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<sup>4</sup> We also experimented with using an overall (weighted) tariff rate, average values over 2001 to 2005 and taken from World Development Indicators, World Bank. However, our main results did not change much on adding the tariff measure interacted with *Documents* to any of the specifications discussed in the paper. In fact, our results for the main interaction terms were strengthened by using the weighted tariff measure stated.

export and import). The relationship between corruption and country size is less clear, in part due to little research work so far in this area. To ensure that our measures of income and/or country size are not spuriously picking up the effect of corruption on the dependent variable, we control for *Documents\*Corruption*, where *Corruption* is measured by the “freedom from corruption” sub-index of the Index of Economic Freedom, Heritage Foundation. We use log of the average values of the freedom from corruption sub-index, where the average is taken over 2001-2005.

Next, we control for social, cultural and political factors interacted with *Documents*. It is argued that one disadvantage of being large is that large countries are also more diverse such as along ethnic lines. The greater diversity makes it more difficult to closely cater to individual preferences over public goods and in reaching consensus over reforms. Independently of country size, studies have shown that greater ethnic fractionalization has a direct adverse effect on various aspects of overall development and the quality of institutions. To ensure that neither our income nor the population measure is picking up the effect of ethnic diversity, we control for the degree of ethnic fractionalization (*Ethnic*) interacted with *Documents*, where the measure of ethnic fractionalization is taken from a recent study by Alesina et al. (2003). The remaining controls include dummy variables for the largest religious group in the country (Catholic, Muslim, Protestant and the residual category of all other religions) and a measure of the quality of democracy taken from the Polity IV database, average over 2001-2005 (*Polity*). The controls for the main religious group (interacted with *Documents*) are in the nature of robustness checks, although theory provides little guidance on how religion correlates with trade facilitation, income or country-size. For *Polity*, one might suspect it to be higher (better democracy) in the richer countries. Further, reflecting better governance, higher values of *Polity* may be correlated with

lower levels of the number of required documents to trade. Hence, income could easily pick up the effect of better quality of democracy on the time cost of shipments.

### **3. Estimation**

Regression results for the main specification are provided in Table 4. Regressing *Time* on *Documents* without any other controls shows a large positive relationship between the two (column 1). The estimated coefficient value of *Documents* equals 1.08, significant at less than the 1 percent level. Controlling for country fixed effects causes the estimated coefficient value of *Documents* to decline sharply to .331, but it remains significant at less than the 1 percent level (column 2). Given our double log specification, the estimate implies that a 1 percent increase in the number of required documents (without logs) leads to .331 percent change in the time cost of shipments (without logs). Alternatively, moving from the smallest value of *Documents* in our sample to its largest value is associated with an increase in the time cost of shipments (without logs) that equals about 69 percent of its initial value. This is an economically large effect.

Controlling for time fixed effects causes the estimated coefficient value of *Documents* to decline to about half its value from .331 above to .161 (column 3). However, the coefficient value is still economically large and statistically significant at less than the 1 percent level. What the results show so far is that the number of required documents to export and import is strongly positively correlated with the time cost of shipments, notwithstanding the fact that our measure of time cost includes various factors such as time taken for unloading the cargo that has nothing to do with the number of required documents.

We now explore how the *Time-Documents* relationship highlighted above depends on the income level and country size. To this end, we add the interaction term between *Documents* and

*Population* and the interaction term between *Documents* and *Income* separately to the specification above. Regression results in column 4 (of Table 4) show that controlling for the interaction term between *Documents* and *Population* alone does not give any significant variation in the effect of *Documents* on *Time* across small and large countries. That is, the estimated coefficient value of *Documents\*Population* is statistically insignificant at the 10 percent level (p value of .131). In contrast, when we control for the interaction term between *Documents* and *Income* alone, the results show the *Documents-Time* relationship does vary significantly with the level of income. That is, the estimated coefficient value of *Documents\*Income* is statistically significant at the 5 percent level (column 5). Given that some studies show that smaller countries are somewhat richer, it is best to control for both the interaction terms simultaneously to guard against either of income or population (or both) picking up the effect of the other. Controlling for both the interaction terms simultaneously we find that it is indeed the case that individually controlling for the two interaction terms tends to bias their estimated coefficient values towards zero. That is, in column 6 where we add both the interaction terms to the specification, the estimated coefficient values of both the interaction terms are economically large and statistically significant at less than the 5 percent level. Further, consistent with our initial hypothesis, the effect of required documents on the time cost is positive but significantly larger at the relatively low levels of income and at relatively smaller population levels. In other words, our results do not reject the claim that the richer and the smaller countries are more efficient (in terms of the time cost) in their documentation process.

To get a sense of the magnitudes, consider a move from the smallest to the lowest value of *Documents*. What is the estimated impact of this on *Time* and how much does this effect vary with the income level and the population level? Focusing on income level first, the change

implies that for an average sized country (population fixed at its mean value), the consequent change in *Time* equals .553 for the poorest country, significant at less than the 1 percent level. For the median country on the income ladder, the corresponding change equals a mere .077, significant at less than the 10 percent level. For the richest country, the corresponding change in *Time* is actually *negative* but statistically insignificant at the 10 percent level (p value of .110).

Now, consider how population affects the magnitude of the *Time-Documents* relationship. Fixing the income level at its mean value, a move from the smallest to the largest value of *Documents* implies that the value of *Time* increases by .41 at the highest value of *Population*, a large change significant at less than the 1 percent level. However, the corresponding change at the smallest value of *Population* is actually negative equaling -.221 but statistically insignificant at the 10 percent level. The results above strongly confirm that the relationship between increased documentation and the time cost in exporting and importing is not a simplistic one; it depends strongly on the income level and the size of the country.

We complete the description of our results for the baseline specification by adding the square of the number of required documents to the specification above. Regression results confirm that doing so makes no difference to the qualitative nature of the results discussed above (column 7).

Robustness of the results for the interaction terms discussed above is confirmed in Table 5. The table provides regression results adding the remaining controls discussed in the previous section to the specification discussed above. Briefly, the additional controls in the table include the interaction terms between *Documents* and trade to GDP ratio, corruption, business climate, ethnic fractionalization, quality of democracy and the main religious group in the country. Regression results adding these controls sequentially to the specification above are provided

through columns 1-5, Table 5. These results confirm the results discussed above in a qualitative sense. Quantitatively, adding the mentioned controls only serves to strengthen our main results; that is, the estimated coefficient values of our main interaction terms are only increased (in absolute value) by adding the controls (column 7 in Table 4 vs. columns 1-5 in Table 5).

For the various controls discussed above, we find that they have little effect on the dependent variable. This is not too surprising as we stated earlier. That is, while corruption for example, may be expected to be well correlated with the time cost of shipments, there is little reason to believe the strength of the relationship between time cost and the number of required documents should vary with the level of corruption.

#### **4. Conclusion**

The paper shows that the number of documents required for export and import adds to the time cost of shipments, but this positive effect varies sharply depending on the income level and the size of the country. Simply comparing the number of required documents does not give us an accurate picture as to which countries face higher time cost of shipments. More broadly, simply comparing input-based measures across countries or over time may not give us an accurate picture of the actual quality of the business climate as experienced by private agents. We hope that the present paper inspires future work to better understand how input-based measures need be interpreted in terms of their impact on the functioning of economies.



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<b>Table 1: Description of Variables</b>	
<b>Variable</b>	<b>Description</b>
<i>Time</i>	Log of the time it takes to clear all procedures for exporting and importing a good. That data span from 2006 to 2010. The time for exporting and importing is recorded in calendar days. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed. If a procedure can be accelerated for an additional cost and is available to all trading companies, the fastest legal procedure is chosen. Fast-track procedures applying to firms located in an export processing zone are not taken into account because they are not available to all trading companies. Ocean transport time is not included. It is assumed that neither the exporter nor the importer wastes time and that each commits to completing each remaining procedure without delay. Procedures that can be completed in parallel are measured as simultaneous. The waiting time between procedures – for example, during unloading of the cargo – is included in the measure. <i>Source: Doing Business, World Bank.</i>
<i>Documents</i>	Log of the number of documents required to export and import. One year lagged values are used. The data span from 2005 to 2009. All documents required per shipment to export and import the goods are recorded. It is assumed that the contract has already been agreed upon and signed by both parties. Documents required for clearance by government ministries, customs authorities, port and container terminal authorities, health and technical control agencies and banks are taken into account. Since payment is by letter of credit, all documents required by banks for the issuance or securing of a letter of credit are also taken into account. Documents that are renewed annually and that do not require renewal per shipment (for example, an annual tax clearance certificate) are not included. <i>Source: Doing Business, World Bank.</i>
<i>Population</i>	Log of the average level of total population of a country, where the average is taken over 2001-2005. <i>Source: World Development Indicators, World Bank.</i>
<i>Income</i>	Log of the average level of GDP per capita (PPP adjusted and at constant 2005 International \$), where the average is taken over 2001-2005. <i>Source: World Development Indicators, World Bank.</i>
Trade to GDP ratio	Log of the average level of trade (exports plus imports) to GDP ratio, where the average is taken over 2001-2005. <i>Source: World Development Indicators, World Bank.</i>
<i>Corruption</i>	Log of the average level of the “freedom from corruption” score as measured by the Heritage Foundation’s Index of Economic Freedom, where the average is taken over 2001-2005 values. <i>Source: Heritage Foundation.</i>
<i>Business Climate</i>	Log of the average level of the “overall” score of economic freedom as measured by the Heritage Foundation’s Index of Economic Freedom, where the average is taken over 2001-2005 values. <i>Source: Heritage Foundation.</i>
<i>Ethnic</i>	A measure of ethnic fractionalization. Higher values imply more ethnic fractionalization or diversity. <i>Source: Alesina et al. (2003), Journal of Economic Growth, June 2003; Table A1.</i>
<i>Polity</i>	Polity variable from Polity IV data. Higher values imply better quality of democracy. Average values of the variable taken over 2001-2005 are used. <i>Source: Polity IV Database.</i>
<i>Catholic</i>	A dummy variable equal to 1 if the largest religious group in the country is Catholic and 0 otherwise. <i>Source: La Porta et al. (1999).</i>
<i>Muslim</i>	A dummy variable equal to 1 if the largest religious group in the country is Muslim and 0 otherwise. <i>Source: La Porta et al. (1999).</i>
<i>Protestant</i>	A dummy variable equal to 1 if the largest religious group in the country is Protestant and 0 otherwise. <i>Source: La Porta et al. (1999).</i>
All other religious groups	A dummy variable equal to 1 if the largest religious group in the country is the residual group (other than Catholic, Muslim and Protestant) and 0 otherwise. <i>Source: La Porta et al. (1999).</i>

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**Table 2: Summary statistics**

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<b>Variable</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Observations</b>
<i>Time</i>	3.98	0.51	2.89	5.31	625
<i>Documents</i>	2.73	0.27	1.95	3.53	625
<i>Population</i>	15.57	2.03	10.76	20.78	625
<i>Income</i>	7.99	0.94	5.53	9.75	625
Trade to GDP ratio	64.37	30.98	20.30	177.80	605
<i>Corruption</i>	28.84	13.48	10.00	73.40	515
<i>Business Climate</i>	55.91	8.35	16.40	76.72	515
<i>Ethnic</i>	0.49	0.25	0	.93	605
<i>Polity</i>	2.92	5.86	-9.2	10	525
<i>Catholic</i>	0.33	0.47	0	1	625
<i>Muslim</i>	0.30	0.46	0	1	625
<i>Protestant</i>	0.14	0.34	0	1	625
All other religious groups	0.24	0.43	0	1	625

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**Table 3: Correlation between the explanatory variables**

<i>Documents</i>	1											
<i>Population</i>	0.29	1										
<i>Income</i>	-0.36	-0.16	1									
Trade to GDP ratio	-0.03	-0.17	0.20	1								
<i>Corruption</i>	-0.21	-0.17	0.48	0.12	1							
<i>Business Climate</i>	-0.21	-0.17	0.30	-0.12	0.67	1						
<i>Ethnic</i>	0.17	0.29	-0.37	-0.14	-0.28	-0.13	1					
<i>Polity</i>	-0.37	0.00	0.26	-0.10	0.38	0.57	-0.14	1				
<i>Catholic</i>	-0.15	-0.10	0.12	-0.13	0.17	0.35	-0.10	0.30	1			
<i>Muslim</i>	0.19	0.24	-0.13	-0.06	-0.27	-0.31	0.13	-0.39	-0.45	1		
<i>Protestant</i>	-0.01	-0.22	0.02	0.05	0.20	0.12	0.05	0.22	-0.28	-0.26	1	
All other religious groups	-0.04	0.03	-0.01	0.17	-0.04	-0.12	-0.07	-0.05	-0.39	-0.36	-0.22	1

**Table 4: Base regression results**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable: <i>Time</i>							
<i>Documents*Population</i>				.030 [.131]		.064** [.025]	.065** [.022]
<i>Documents*Income</i>					-.153** [.043]	-.188** [.020]	-.195** [.018]
<i>Documents</i>	1.08*** [.000]	.331*** [.000]	.161*** [.010]	-.323 [.307]	1.35** [.026]	.594 [.185]	.773 [.326]
Country fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects			Yes	Yes	Yes	Yes	Yes
<i>Documents</i> <sup>2</sup>							-.025 [.796]
Observations	625	625	625	625	625	625	625
Number of countries	125	125	125	125	125	125	125

P-values in brackets. All regressions use Huber-White robust standard errors. Significance level is denoted by \*\*\* (1% or less), \*\* (5% or less) and \* (10% or less).

**Table 5: Robustness results**

Dependent variable: <i>Time</i>	(1)	(2)	(3)	(4)	(5)
<i>Documents*Population</i>	0.081** [0.027]	0.099** [0.035]	0.102** [0.021]	0.120** [0.017]	0.108** [0.047]
<i>Documents*Income</i>	-0.182* [0.064]	-0.234** [0.018]	-0.323** [0.049]	-0.336** [0.035]	-0.331** [0.041]
<i>Documents</i>	0.785 [0.367]	0.966 [0.331]	1.918 [0.260]	1.948 [0.255]	1.828 [0.273]
Year fixed effects	Yes	Yes	Yes	Yes	Yes
<i>Documents</i> <sup>2</sup>	-0.074 [0.498]	-0.106 [0.361]	-0.143 [0.144]	-0.187 [0.171]	-0.125 [0.505]
<i>Documents*Trade to GDP ratio</i>	-0.002 [0.457]	-0.004 [0.299]	-0.003 [0.371]	-0.003 [0.364]	-0.002 [0.555]
<i>Documents*Corruption</i>		0.013 [0.237]	0.016 [0.146]	0.014 [0.251]	0.01 [0.421]
<i>Documents*Regulation</i>		-0.002 [0.849]	-0.001 [0.898]	0 [0.991]	-0.003 [0.805]
<i>Documents*Ethnic</i>			-0.395 [0.429]	-0.429 [0.388]	-0.3 [0.541]
<i>Documents*Catholic</i>				0.012 [0.969]	0.082 [0.799]
<i>Documents*Muslim</i>				0.098 [0.569]	0.13 [0.441]
<i>Documents*Protestant</i>				-0.503 [0.161]	-0.533 [0.139]
<i>Documents*Polity</i>					0.014 [0.489]
Constant	3.34*** [0.000]	2.94*** [0.001]	2.55*** [0.001]	2.41** [0.035]	2.91* [0.060]
R-squared	0.359	0.373	0.376	0.379	0.384
Observations	605	505	505	505	480
Number of countries	121	101	101	101	96

P-values in brackets. All regressions use Huber-White robust standard errors. Significance level is denoted by \*\*\* (1% or less), \*\* (5% or less) and \* (10% or less). Sample size varies due to missing observations.