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INSTITUTIONS AND ECONOMIC DEVELOPMENT: DISENTANGLING THE ROLE OF CONTRACTING AND PROPERTY RIGHTS INSTITUTIONS

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This paper aims at estimating the effect of different types of institutions on economic development. To tackle the endogeneity problem that is prevalent, an identification strategy exploiting the heteroskedasticity in the data is used. This also allows to analyze the reverse effect, running from economic development to institutions. In a sample of about 100 countries, an impact of property rights institutions but not contracting institutions on economic development is detected. Furthermore, the results suggest that a higher level of economic development improves contracting institutions, but not property rights institutions.

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1. INTRODUCTION

A broad consensus prevails among economists that the institutional setting securing property rights is beneficial for economic development. The relative importance of different types of institutions has been studied recently by Acemoglu and Johnson (2005), suggesting that property rights institutions but not contracting institutions are

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pivotal for economic development. However, causality may run as well in the opposite direction, wherefore an appropriate identification method is needed.

Due to the specific instrumental variables used, Acemoglu and Johnson (2005) have to restrict their sample to former colonies.[1] Therefore, in order to increase the sample size, the effect of institutions on economic development is investigated by applying a novel identification strategy, the so-called identification through heteroskedasticity method (henceforth IH method) suggested by Rigobon (2003).[2] The main objective of this paper is to contribute to the discussion about the relative importance of different types of institutions for economic development. However, as the IH method also allows to capture the reverse causality, the potential effect of economic development on different types of institutions can be analyzed as well.

This paper contributes to a vast literature on the effect of institutions on economic development and growth. In their seminal work, North and Thomas (1973) expose how the development of efficient economic organization, that is the establishment of an institutional arrangement that secured property rights, was beneficial for the rise of Western Europe. North and Weingast (1989) point out how the institutional changes towards secure property rights and the elimination of confiscatory government in seventeenth-century England was favorable for economic development. According to North (1990), institutions are pivotal, as they determine under which constraints individuals organize themselves in their societies. Some institutional settings stimulate humans to save and to invest, to innovate, to learn or to educate, some do not (Acemoglu and Robinson, 2005). Developing a formal growth model, Tebaldi and Elmslie (2008) show how the quality of institutions, via their effect on technological innovation, affect the transitional and steady state growth rates of output. Hall and Jones (1999) analyze the effect of social infrastructure, that is institutions and government policies, on long-run economic performance. They conclude that differences in social infrastructure explain differences in the level of output per worker, due to the effect social infrastructure has on the rates of investment in physical and human capital and on the level of productivity. Acemoglu *et al*. (2001) and Acemoglu *et al*. (2002), exploiting differences in European mortality rates and population density in former colonies as instrumental variables, estimate large effects of institutions on economic performance. Other papers explaining differences in economic development with historic events are those by La Porta *et al*. (1997; 1998) and Engerman and Sokoloff (1997; 2002). Nunn (2009) provides an overview of this literature. Rodrik *et al*. (2004) examines the relative importance of institutions, trade openness and geography in explaining cross-country differences in economic development. They conclude that the effect of institutions

[1] They use settler mortality or population density at the time of colonization as instrumental variables for property rights institutions and legal origin as instrumental variable for contracting institutions. This reduces the sample to about 60 countries.

[2] The use of the IH method allows to increase the sample size to about 100 countries.

outweighs effects emanating from trade openness or geographic location. Regressing the mean annual rate of growth of output on, inter alia, a political freedom index and the mean growth of exports as a proportion of output (as a measure of the degree of trade openness), Mbaku and Kimenyi (1997) find similar results for output growth: There is a positive and significant effect of institutions on economic growth. Trade openness, in contrast, does not seem to have a significant impact. Finally, Acemoglu and Johnson (2005) investigate the relative importance of different types of institutions and suggest that, at least for former colonies, property rights institutions but not contracting institutions are pivotal for economic development. Contracting institutions seem to matter only for the form of financial intermediation.

The IH method has several advantages. Firstly, one appropriate split of the data suffices for identification. In contrast, to apply an instrumental variables (IV) strategy, the researcher needs a suitable instrument for each endogenous variable. Secondly, a measure for the quality of the identification is obtained, indicating the reliability of the results. Thirdly, it is possible to estimate all coefficients of a simultaneous equations model. As the identification by the IH method is based on arguments exploiting country differences that are stable over time (see Section 2.1 and 4), this investigation relies on the cross-section variation between countries. Further, some variables used (e.g., legal formalism) are not available as time-series. Also, as institutions only change slowly over time, it is reasonable to exploit the cross-section variation.

Following Acemoglu and Johnson (2005), this paper differentiates between a horizontal and a vertical view on institutions. Contracting institutions point to the (horizontal) protection of property among individuals, e.g., the right of a creditor to prosecute a claim, whereas property rights institutions suggest a vertical dimension protecting the individual from expropriation by the ruling elite.[3] Thus, both types of institutions aim at the protection of property of individuals, but once vis-à-vis another individual and once vis-à-vis the state and the ruling elite. Economic development is measured by four different variables, GDP per capita, the investment to GDP ratio, credit provided to the private sector, and stock market development.

The results suggest that, in line with the findings of Acemoglu and Johnson (2005) on former colonies, property rights institutions are relatively more important than contracting institutions for economic development. Acemoglu and Johnson (2005) offer a possible explanation. The relative importance of property rights institutions over contracting institutions for economic development may be due to the fact that the possibilities for an individual to cope with poor property rights institutions are far more limited than to contend with poor contracting institutions. In credit markets for example, a lender has several possibilities, as to increase the interest rate or to write long-term

[3] Acemoglu and Johnson (2005) follow North (1981) who differentiates between contracting (the horizontal view) and predatory institutions (the vertical view, called property rights institutions by Acemoglu and Johnson, 2005).

contracts which are based on reputation, to circumvent adverse contracting institutions. However, these remedies do not exist for the case of poor property rights institutions. It is almost impossible for an investor to protect himself from expropriation by the ruling elite.

Concerning the reverse effect running from institutions to economic development, a fairly robust and significant positive effect of economic development on contracting but not property rights institutions is detected. Thus, the results suggest that better property rights institutions have a potential to advance economic development. This in turn may create an appropriate environment for better contracting institutions.

The paper is organized as follows. Section 2 introduces the identification strategy, Section 3 shows the data and the model. The following Section 4 discusses two splits of the data that ensure identification of the model. Section 5 presents the results and robustness checks and Section 6 finally concludes.

2. IDENTIFICATION STRATEGY

This section introduces the identification strategy that relies on the heteroskedasticity in the data (it follows closely Rigobon, 2003). To see how the IH method works, consider the following simple example of a simultaneous equations model with two endogenous variables

$$\underbrace{\begin{pmatrix} 1 & -\theta_{12} \\ -\theta_{21} & 1 \end{pmatrix}}_{\Theta} \underbrace{\begin{pmatrix} y_1 \\ y_2 \end{pmatrix}}_{y} = \underbrace{\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix}}_{e},$$

where θ are the structural coefficients of interest, *y* are the two endogenous variables and *e* are the structural form residuals. For the moment, disregard potential exogenous explanatory variables as they do not change the nature of the method. Further suppose that $E[e]=0$, that is the data will be demeaned such that no constant has to be included in the estimation. The problem is that the simultaneous equations model is not identified and cannot be estimated by OLS. The four unknown coefficients θ_{12}, θ_{21}, $\sigma^2_{\varepsilon_1}$, $\sigma^2_{\varepsilon_2}$ have to be explained by three moment conditions from the variance-covariance matrix $Var(y)=\hat{\Omega}=\Theta^{-1}Var(e)\Theta^{-1'}$, wherefore identification is not possible. In order to solve the identification problem, further information is necessary. The idea is to use the potential heteroskedasticity of the structural residuals to achieve identification. The split of the sample in 2 $(s=1,2)$ or even more subsamples, which need to satisfy the following properties

$$\Theta y_s = e_s, \tag{1}$$

$$Var(e_s) = \sum{}_s = \begin{pmatrix} \sigma^2_{\varepsilon_{1s}} & 0 \\ 0 & \sigma^2_{\varepsilon_{2s}} \end{pmatrix}, \tag{2}$$

and

$$\frac{\sigma^2_{\varepsilon_{11}}}{\sigma^2_{\varepsilon_{21}}} \neq \frac{\sigma^2_{\varepsilon_{12}}}{\sigma^2_{\varepsilon_{22}}}, \tag{3}$$

allows to increase the number of moment conditions: $\hat{\Omega}_1 = \Theta^{-1}\sum{}_1\Theta^{-1'}$ and $\hat{\Omega}_2 = \Theta^{-1}\sum{}_2\Theta^{-1'}$. If properties (1), (2) and (3) are satisfied, there are 6 unknowns (θ_{12}, θ_{21}, $\sigma^2_{\varepsilon_{11}}$, $\sigma^2_{\varepsilon_{21}}$, $\sigma^2_{\varepsilon_{12}}$, $\sigma^2_{\varepsilon_{22}}$) and 6 moment conditions and the model is just identified.

Assumption (1) states that the parameters have to be stable across the two subsamples. This is an assumption often made in cross-country regressions and does not impose a major restriction on the estimation. In the application, this assumption will be relaxed by allowing the constants to differ across the subsamples. Assumption (2) guarantees that the structural residuals are not correlated. The intuition behind the identification strategy and why property (3) is needed can be explained by using a simple example of demand and supply (see Rigobon, 2003). Suppose there is data of the sales of a good dependent on the price that describes the demand and supply curves. An estimation of the slope of the demand curve by OLS is not possible, as the supply and the demand curve cannot be distinguished from each other. But given the data can be split in two subsamples such that the shock to the supply curve is more volatile in one of the subsamples than in the other, and the shock to the demand curve does not change across the subsamples, the system of equations will be identified. The reason is that the realizations, comparing the two subsamples, expands along the demand schedule if the variance of the supply shock increases. Notice however, that it is not an increase in the variance of the supply shock that is needed, but a change in the relative variance of the residuals. Thus, also the variance of the demand shock can change, but if both variances shift exactly by the same amount, identification is not possible. This is stated by assumption (3), which is equivalent to the rank condition for identification (see Appendix D for the derivation).

The IH method has three advantages: Firstly, a simultaneous equations model is identified by splitting the sample in two subsamples, wherefore no instruments for each endogenous variable are needed, like in the case of an IV estimation. Secondly, assumptions underlying the identification of the structural parameters can be, at least partially, tested. To see if property (1) holds, the constant terms for each subsample will

be computed after estimating the parameters. These constants will then be compared.[4] If the hypothesis that the constants are identical cannot be rejected, there will be a justification for the assumption that the structural coefficients are stable across the split. Property (3) can also be tested by means of a t-test. Thus, it can be seen directly how well the identification works. Thirdly, the IH method allows to estimate the entire system of equations. That in turn allows to explore the reverse causality. One drawback of the method is that assumption (2) has to be maintained without the possibility of checking its reliability with a post-estimation test. However, by including control variables (as will be done later) the risk that the results are biased by common shocks across countries that affect both economic development and institutions can be alleviated. Further, in our view, the more serious problem is that of endogeneity of the variables. Indeed, in an OLS estimation, both of these problems (the endogeneity and the assumption, that the structural residuals are not correlated) are present. With the IH method, at least one of them is taken into account.

The bivariate case without exogenous variables can be extended to the multivariate case with several endogenous and exogenous variables and the system will still be just identified. The system of equations is estimated by the generalized method of moments (GMM). Since in this application the problem is just identified, an identity matrix is used as weighting matrix. The variances of the parameters are computed by bootstrapping with draws out of the stored residuals. In all applications 500 draws are used.[5]

3. DATA AND MODEL

As in Acemoglu and Johnson (2005), the two dimensions of institutions are measured by legal formalism and constraints on executive indices. Constraints on executive (CONSTRAINTS), the measure for property rights institutions, reflects the checks and balances between the various parts of the decision-making process, capturing institutionalized constraints on the decision making power of chief executives. The values of the index range from 1 to 7, with higher values indicating more constraints (Marshall and Jaggers, 2009). Legal formalism (FORMALISM), the measure for contracting institutions, captures the legal hazard involved in collecting a bounced check before local courts. Djankov *et al*. (2003), relying on work by Shapiro (1981), note that the current resolution mechanisms in courts depart, with respect to the degree of formalism, heavily from an idealized resolution mechanism with a disinterested third party judging the case without being bound to any law or procedure. They construct a formalism index mapping various deviations from the ideal resolution mechanism to a

[4] Remember that the constants are allowed to be different across the subsamples.

[5] With respect to the number of draws for the bootstrap, this application follows Rigobon (2003).

measure ranging from 0 to 7, with higher values indicating higher formalism. The index increases, for example, with higher qualification requirements for lawyers and judges, with the necessity of written rather than oral presentation and with legal justification of the case and the decision of the judge. Higher formalism makes a claim more costly and potentially less predictable (compared to the idealized resolution mechanism) for both parties involved. This in turn may have negative consequences on investment and, at the end, on economic development. The variables measuring economic development are GDPPC, real GDP per capita (based on purchasing power parity), INVEST, the investment to GDP ratio, CREDIT, an activity indicator in order to measure private credit allocated by deposit money banks and other financial intermediaries to the private sector as a share of GDP and STOCK, a size indicator measuring stock market capitalization divided by GDP. The latter two measures deliver an idea about the state of financial development and are widely used in the literature. The financial development data were collected from the Financial Structure Database (FSD, 2007) (Beck *et al*., 2000). Beck *et al*. (2004) provide a compilation and a discussion of the data. The former two measures are from Heston *et al*. (2006) (Penn World Tables Release 6.2). To test the robustness of the relationship between institutions and economic development, several exogenous control variables are considered. MUSLIM, PROTESTANT and CATHOLIC capture the share of the population affiliated with Islam, Protestantism and Catholicism. The omitted group are all other religions, as for example Buddhism, Hinduism or Taoism. The religion variables are included to control for the influence of culture. Furthermore, LATITUDE, the absolute distance to the equator, is used to control for geographic location.

Table A.1 in Appendix A provides a description of the data. For all but one variable, averages over the 1990s are used. The only exception is FORMALISM for which only one observation in 2003 is available (see Djankov *et al*., 2003). In Table B.1 in Appendix B, summary statistics and correlations between the different variables are presented. FORMALISM is negatively, and CONSTRAINTS positively correlated with GDP per capita, the investment to GDP ratio and credit and stock market development. Importantly, FORMALISM is hardly correlated with CONSTRAINTS, thus confirming that these two variables indeed measure different dimensions of institutions. The simultaneous equations model that will be estimated by the IH method consists of three equations including a variable for economic development (ECONDEV), and two variables for institutions, FORMALISM and CONSTRAINTS. The baseline model, without controlling for exogenous variables, looks as follows:

$$\left.\begin{aligned} ECONDEV &= \alpha_{12} FORMALISM + \alpha_{13} CONSTRAINTS \\ FORMALISM &= \alpha_{21} ECONDEV + \alpha_{23} CONSTRAINTS \\ CONSTRAINTS &= \alpha_{31} ECONDEV + \alpha_{32} FORMALISM \end{aligned}\right\}. \qquad (4)$$

The parameters of interest are α_{12} and α_{13}. In the subsequent models, several

exogenous control variables will be included to test for the robustness of the results.

4. SPLITTING THE SAMPLE

An elementary step in applying the IH method is to find a split of the data such that differences between the variances of the structural residuals occur and cause the relative variances of the residuals to differ across the subsamples. Following Rigobon and Rodrik (2005), the analysis considers two different splits. The first split is based on the geographical location of a country. All countries located on the Eurasian continent and in Oceania are in one subsample, all countries on the African or American continent in the other subsample (see Table C.1 in Appendix C). The idea behind this split is based on an argument brought forward by Diamond (1997) and is related to the literature focusing on the effect of the climatic environment on economic development (e.g., Gallup *et al*. (1999) amongst others). Diamond (1997), exploring the determinants of the history of conquest in the world, suggests a correlation between geographic location and technology transfer. Geography plays an important role in the sense that it is much more difficult for technologies (especially seed varieties and other agricultural technologies) to migrate along a North-South than an East-West axis because of the more unequal climatic environment along the former dimension. Importantly, the spatial distribution of countries in the African/American subsample is more concentrated around the equator than that in the Eurasian/Oceania subsample. In terms of the level of economic development, countries located on the African and American continents are therefore expected to be poorer and more homogenous than countries belonging to the Eurasia/Oceania subsample. As shown above, not a difference in the variances is needed, but a change in the relative variances of the structural residuals. Thus, a discrepancy in the variances of at least one of the two other equations with the institutions variables on the left-hand is required. Table 1 anticipates the estimation results and presents summary statistics, in particular the variances, for the structural residuals. These results support the above mentioned reasoning. For the geography split (Panel A), the variance of the structural residual of the GDP per capita equation is more pronounced in the subsample containing countries located on the East-West axis than on the North-South axis. Importantly, the variances of the other equations with legal formalism and constraints on executive as dependent variables differ as well. In particular, the countries located on the Eurasian continent and Oceania are more homogenous with respect to institutional quality. In terms of property (3), it becomes clear that there is indeed a shift in the relative variances across the subsamples. For example, the relative variances of the economic development and the legal formalism equations in the geography split amounts to $0.924/0.526=1.757$ in the subsample with countries located on the Eurasian continent and Oceania. In contrast, the relative variance in the other subsample amounts to $0.274/1.353=0.203$. There is a difference of about $1.757-0.203=1.554$. A formal test whether this difference is significantly different from zero will follow in

Section 5 when the results will be discussed.[6]

Table 1. Summary Statistics of Structural Residuals

Panel A		GDPPC		FORMALISM		CONSTRAINTS	
Geography Split		1	0	1	0	1	0
Obs		57	47	57	47	57	47
Mean		0.351	-0.426	-0.156	0.189	0.271	-0.329
Variance		0.924	0.274	0.526	1.353	0.87	0.976
Percentiles	25%	-0.454	-0.726	-0.639	-0.724	-0.168	-1.214
	50%	0.212	-0.519	-0.232	0.404	0.796	-0.289
	75%	1.035	-0.267	0.395	0.923	0.943	0.571
Panel B							
Colony Split		1	0	1	0	1	0
Obs		55	49	55	49	55	49
Mean		-0.155	0.174	0.058	-0.065	-0.178	0.2
Variance		0.621	0.907	1.082	0.748	0.976	0.968
Percentiles	25%	-0.663	-0.546	-0.639	-0.691	-1.141	-0.289
	50%	-0.399	-0.038	0.232	-0.17	-0.132	0.656
	75%	0.051	1.017	0.624	0.573	0.823	0.955

Notes: Summary statistics of structural residuals obtained after estimation of model 4. In Panel A (geography split), 1 indicates the group of countries located on Eurasian continent or Oceania, and 0 indicates the countries located on the African or American continent. In Panel B, 1 indicates the group of former (poor) colonies, and 0 indicates the group of the other countries.

A second criterion to split the data is whether a country was colonized by a foreign (European) power or not. The idea is that countries colonized by European colonizers have similar experiences making them different to other countries with respect to the variance of the structural residuals. However, Acemoglu *et al*. (2001) and Acemoglu *et al*. (2002) plausibly elaborate that the colonization history was not a homogenizing experience, as the colonization strategy employed was dependent on the disease environment and the population density in the colonies. In former European colonies with a substantially better disease environment and lower population density, the colonizers set up good institutions and settled down themselves. In contrast, if the disease environment was hostile and the country densely populated, the colonizers set up extractive institutions. Today, the successful countries (in terms of economic

[6] For this particular case, with a conventional *t*-test it is possible to reject the null of equality of the relative variances at the 1% level of significance. Table 3 reports the result under the heading of Rank Condition.

development) are the ones that had a better disease environment and a lower population density at the time of colonization, because they have benefited from the good institutions installed by the colonizing powers. Therefore, only former European colonies that cannot be assigned to the group of high income countries (according to the World Development Indicators (WDI) country classification in 2000) are considered in the sample of former colonies to increase the homogeneity (in terms of economic development) in this subsample (see C.2 in Appendix C).[7] Panel B of Table 1 presents summary statistics for the structural residuals when countries are classified according to their colonial experience, that is, whether they once were occupied by a colonial power or not. The variances of the structural residuals again support the above mentioned argument. The group of countries classified as former colonies is more homogenous (in terms of GDP per capita) than countries pooled in the other group. The summary statistics further indicate that the group of (ex-)colonies are more heterogenous in terms of the institutions variables. A difference in the relative variances across the subsamples is thus expected. Again, a formal test will follow in Section 5.

5. RESULTS

This section presents the main results,[8] concentrating on the relative effect of property rights and contracting institutions on economic development. To begin, estimates of the impact of legal formalism and constraints on executive on GDP per capita, the investment to GDP ratio, credit provided to the private sector, and stock market capitalization by OLS are reported in Table 2. Based on these results, both contracting and property rights institutions impact significantly on economic development. Only for stock market development, contracting institutions seem to be more important than property rights institutions. However, OLS estimates may be biased due to endogeneity of the regressors, in particular by a feedback effect running from economic development on both contracting and property rights institutions. Therefore, the analysis next concentrates on the coefficients estimated by the IH method that are robust to such feedback effects.

[7] Australia, Canada, New Zealand, Singapore and the United States are therefore not classified as former (poor) European colonies. The results if they are instead classified as former colonies are discussed in Section 5, the corresponding results can be found in Appendix F, Tables F.1 and F.2.

[8] The effects are presented as beta-coefficients. The relationship between the beta-coefficient $\hat{b}$ and the ordinary coefficient $\hat{\beta}$ is $\hat{b}_j = (\hat{\sigma}_j / \hat{\sigma}_y)\hat{\beta}_j$, with y indicating the dependent variable and j the j-th regressor. The beta coefficient has the following interpretation: An increase in the j-th explanatory variable by one standard deviation is associated with a change in the dependent variable by $\hat{b}_j$ standard deviations.

Table 2. OLS Estimates

	Dependent Variable					
	GDPPC			INVEST		
	(1)	(2)	(3)	(4)	(5)	(6)
FORMALISM	-0.293***	-0.228***	-0.328***	-0.250***	-0.226**	-0.265**
	(0.0722)	(0.0702)	(0.0918)	(0.0923)	(0.100)	(0.105)
CONSTRAINTS	0.417***	0.213**	0.378***	0.417***	0.343***	0.403***
	(0.0903)	(0.0852)	(0.0978)	(0.0860)	(0.0798)	(0.111)
LATITUDE		0.450***			0.164*	
		(0.0795)			(0.0966)	
MUSLIM			0.207			-0.0788
			(0.138)			(0.114)
PROTESTANT			0.251***			-0.0802
			(0.0849)			(0.101)
CATHOLIC			0.236**			-0.0203
			(0.105)			(0.132)
Observations	104	104	104	104	104	104
adj. *R*^2	0.275	0.425	0.313	0.246	0.260	0.231
F	19.08	36.45	11.14	24.62	20.05	10.88
	Dependent Variable					
	CREDIT			STOCK		
	(1)	(2)	(3)	(4)	(5)	(6)
FORMALISM	-0.368***	-0.345***	-0.365***	-0.445***	-0.438***	-0.485***
	(0.0795)	(0.0834)	(0.0920)	(0.102)	(0.113)	(0.119)
CONSTRAINTS	0.331***	0.258***	0.342***	0.173*	0.151	0.191*
	(0.0811)	(0.0834)	(0.107)	(0.0941)	(0.0916)	(0.0986)
LATITUDE		0.162*			0.0484	
		(0.0971)			(0.113)	
MUSLIM			0.0273			0.139
			(0.139)			(0.123)
PROTESTANT			0.0114			0.0505
			(0.122)			(0.0912)
CATHOLIC			0.00206			0.125
			(0.140)			(0.0959)
Observations	98	98	98	98	98	98
adj. *R*^2	0.260	0.273	0.237	0.231	0.225	0.218
F	19.11	15.27	7.581	13.44	11.80	5.568

Notes: Reported are beta-coefficients. Standard errors are reported in parentheses. They are heteroskedasticity robust by the method of White. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level.

The results obtained by estimating the baseline model (4) by the IH method using the geography split are reported in Table 3 for GDP per capita, the investment to GDP ratio, credit provided to the private sector, and stock market capitalization. Table 4 shows the results for the baseline model using the colony split. The dependent variables are listed in the top row of each panel. The coefficients are arranged in columns. Results for testing properties (1) and (3) follow under the heading of Constants and Rank Condition, respectively.

Panel 1 of Tables 3 and 4 reports the coefficients for GDP per capita.[9] For both, the geography and the colony split, property rights institutions have a positive and significant effect on GDP per capita. However, there is no systematic (positive) relationship between contracting institutions and GDP per capita. The corresponding coefficient is negative in the geography split, pointing to a positive effect of contracting institutions. But the coefficient is not significant at an acceptable level. In the colony split, the coefficient is positive, but again not significant. For each split, the second panel of Tables 3 and 4 shows the results for investment. The investment to GDP ratio is positively and significantly affected by property rights institutions in the geography split. There is, however, no significant effect from property rights institutions on the investment to GDP ratio observable in the colony split. For both splits, better contracting institutions do not increase the investment share. Panel 3 of Tables 3 and 4 reports the results for credit market development. Countries with better property rights institutions also have more developed credit markets (in terms of credit provided to the private sector as a share of GDP). However, the respective coefficient is positive and significant only in the geography split, but not the colony split. There is again no systematic relationship between contracting institutions and credit provided to the private sector. In both splits, the coefficient is negative, but small and insignificant. The results for stock market development (in terms of stock market capitalization as a share of GDP) are reported in panel 4 of Tables 3 and 4. Both contracting and property rights institutions have a positive and significant effect on stock market capitalization in the case of the geography split. In the colony split however, both coefficients are imprecisely estimated and thus not significant.

To summarize, the coefficient estimates for the baseline model based on the geography split reveal that better property rights institutions impact positively on economic development, while contracting institutions have no effect on GDP per capita, the investment to GDP ratio, and credit provided to the private sector. The coefficient on

[9] Note that the results using the log of GDP per capita instead of GDP per capita are less persuasive. Results using the log of GDP per capita are reported in Table E.1 in Appendix E. It is worth noting, however, that taking the log of GDP per capita reduces the heteroskedasticity in the data (with respect to the geography and the colony split), something that makes identification more difficult by the IH method. Remember that the identification method relies on the heteroskedasticity in the data. Therefore, in the main part, results for GDP per capita are reported.

contracting institutions is only significant in the case of stock market capitalization. The results based on the colony split are less conclusive. The effect of property rights institutions on economic development only persists in one case, namely GDP per capita.

Table 3. IH Estimation: Baseline Model (Geography Split)

Panel 1	Dependent Variables					
	GDPPC	FORMALISM	CONSTRAINTS			
GDPPC		-0.170	0.069			
		(0.126)	(0.261)			
FORMALISM	-0.080		0.162			
	(0.097)		(0.305)			
CONSTRAINTS	0.305**	-0.129				
	(0.153)	(0.273)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	1.554***	0.782**	-0.781**			
	(0.617)	(0.370)	(0.395)			
Constants	Eq.1. horizontal	Eq.1. vertical	Eq.2. horizontal	Eq.2. vertical	Eq.3. horizontal	Eq.3. vertical
	-1.335	-1.063	4.276	4.712	5.179	4.061
	(0.495)	(0.523)	(0.751)	(1.182)	(1.689)	(1.791)
		((0.378))		((0.311))		((0.454))
Panel 2	Dependent Variables					
	INVEST	FORMALISM	CONSTRAINTS			
INVEST		-0.369***	-0.059			
		(0.121)	(0.244)			
FORMALISM	0.097		0.205			
	(0.103)		(0.245)			
CONSTRAINTS	0.419***	-0.094				
	(0.146)	(0.184)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	1.816**	0.725**	-0.867**			
	(0.887)	(0.346)	(0.395)			
Constants	Eq.1. horizontal	Eq.1. vertical	Eq.2. horizontal	Eq.2. vertical	Eq.3. horizontal	Eq.3. vertical
	-2.567	-2.271	4.119	4.577	5.051	3.899
	(0.684)	(0.733)	(0.737)	(1.173)	(1.699)	(1.799)
		((0.295))		((0.331))		((0.466))
Panel 3	Dependent Variables					
	CREDIT	FORMALISM	CONSTRAINTS			
CREDIT		-0.259***	0.018			
		(0.104)	(0.221)			
FORMALISM	-0.112		0.218			
	(0.097)		(0.321)			

CONSTRAINTS	0.299**	-0.174				
	(0.136)	(0.273)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	2.109**	0.948**	-0.766*			
	(0.919)	(0.460)	(0.420)			
Constants	Eq.1. horizontal	Eq.1. vertical	Eq.2. horizontal	Eq.2. vertical	Eq.3. horizontal	Eq.3. vertical
	-0.734	-0.672	4.724	4.976	5.108	3.853
	(0.578)	(0.479)	(0.733)	(1.219)	(1.668)	(1.828)
		((0.083))		((0.177))		((0.507))
Panel 4	Dependent Variables					
	STOCK	FORMALISM	CONSTRAINTS			
STOCK		-0.276*	-0.318			
		(0.156)	(0.330)			
FORMALISM	-0.260**		0.306			
	(0.127)		(0.426)			
CONSTRAINTS	0.425**	-0.314				
	(0.217)	(0.294)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	2.368*	0.860*	-0.530			
	(1.364)	(0.521)	(0.413)			
Constants	Eq.1. horizontal	Eq.1. vertical	Eq.2. horizontal	Eq.2. vertical	Eq.3. horizontal	Eq.3. vertical
	-1.150	-0.782	5.502	5.611	4.944	3.555
	(0.825)	(0.708)	(0.807)	(1.308)	(1.697)	(1.890)
		((0.339))		((0.071))		((0.547))

Observations: 57 horizontal, 47 vertical for GDPPC and INVEST, 53 horizontal, 45 vertical for CREDIT and STOCK.

Note: Standard errors in parentheses, t-statistic for equality of constants in double parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level.

Table 4. IH Estimation: Baseline Model (Colony Split)

Panel 1	Dependent Variables		
	GDPPC	FORMALISM	CONSTRAINTS
GDPPC		-0.248*	0.245
		(0.143)	(0.197)
FORMALISM	0.031		0.356
	(0.047)		(0.307)
CONSTRAINTS	0.134**	-0.319	
	(0.059)	(0.319)	
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3
	-1.454***	-0.894**	0.875*
	(0.553)	(0.404)	(0.529)

Constants	Eq.1. former col.	Eq.1. others	Eq.2. former col.	Eq.2. others	Eq.3. former col.	Eq.3. others
	-0.714	-0.749	5.574	5.389	3.196	4.743
	(0.224)	(0.213)	(1.258)	(0.854)	(1.691)	(1.698)
		((0.113))		((0.121))		((0.646))
Panel 2	Dependent Variables					
	INVEST	FORMALISM	CONSTRAINTS			
INVEST		-0.405**	0.114			
		(0.161)	(0.373)			
FORMALISM	0.146		0.380			
	(0.158)		(0.279)			
CONSTRAINTS	0.286	-0.292				
	(0.229)	(0.274)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-1.505*	-0.621	1.047*			
	(0.920)	(0.395)	(0.540)			
Constants	Eq.1. former col.	Eq.1. others	Eq.2. former col.	Eq.2. others	Eq.3. former col.	Eq.3. others
	-1.820	-2.022	5.480	5.263	3.096	4.679
	(0.511)	(0.458)	(1.237)	(0.830)	(1.694)	(1.709)
		((0.294))		((0.146))		((0.658))
Panel 3	Dependent Variables					
	CREDIT	FORMALISM	CONSTRAINTS			
CREDIT		-0.250**	0.221			
		(0.115)	(0.198)			
FORMALISM	-0.052		0.389			
	(0.099)		(0.358)			
CONSTRAINTS	0.113	-0.334				
	(0.100)	(0.363)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-2.082*	-1.097*	0.838			
	(1.074)	(0.629)	(0.567)			
Constants	Eq.1. former col.	Eq.1. others	Eq.2. former col.	Eq.2. others	Eq.3. former col.	Eq.3. others
	-0.051	0.190	5.715	5.670	3.057	4.617
	(0.240)	(0.447)	(1.288)	(0.835)	(1.715)	(1.668)
		((0.474))		((0.030))		((0.652))
Panel 4	Dependent Variables					
	STOCK	FORMALISM	CONSTRAINTS			
STOCK		-0.350	-0.456			
		(0.243)	(0.692)			
FORMALISM	-0.310		0.563			
	(0.340)		(0.472)			
CONSTRAINTS	0.532	-0.487				
	(0.544)	(0.385)				

Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-1.718	-0.364	0.514			
	(1.193)	(0.947)	(0.721)			
Constants	Eq.1. former col.	Eq.1. others	Eq.2. former col.	Eq.2. others	Eq.3. former col.	Eq.3. others
	-1.054	-1.720	6.428	6.588	2.492	4.382
	(0.881)	(0.977)	(1.438)	(0.949)	(1.819)	(1.777)
		((0.507))		((0.093))		((0.744))

Observations: 49 other countries, 55 poor colonies for GDPPC and INVEST, 46 other countries, 52 poor colonies for CREDIT and STOCK.

Note: Standard errors in parentheses, t-statistic for equality of constants in double parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level.

For the sake of robustness, a number of control variables are included to account for other determinants of economic development. Again, this part starts with the presentation of the OLS results, shown in Table 2. Controlling for geographic location and religious affiliation does not affect the general picture obtained by the baseline models: Both contracting and property rights institutions impact significantly on economic development. Only for stock market development, contracting institutions seem to matter more than property rights institutions. As before, these results may well be corrupted by feedback effects from economic development on institutions.

To get a more reliable picture, the following conclusions will be drawn from coefficients estimated by the IH method. Table 5 reports the effects of contracting and property rights institutions on GDP per capita (left side) and on the investment to GDP ratio (right side), controlling for latitude and religious affiliation.[10] The results are robust to these extensions. In both the geography and the colony split, property rights institutions but not contracting institutions have a significantly positive effect on GDP per capita and the investment share. The coefficient on executive constraints fails to be significant only when latitude is included in the equation with the investment share applying the colony split. Table 6 reports the results for credit and stock market development, again controlling for latitude and religious affiliation. Focusing on credit market development, property rights institutions seem to be relatively more important than contracting institutions. Only in the case of the model extension with religious affiliation using the colony split, the coefficient on constraints on executive fails to be significant. Contracting institutions never have a significant impact on credit market development in both splits. Compared to the baseline model, the biggest differences are observed when controlling for geographic location and religious affiliation in the case of stock market development. Contracting institutions never have a significant effect, and also property rights institutions do not seem to matter for stock market development.

[10] To save space, results for *Constants* are not reported, as they never differ between the subsamples.

Only in the model extension with religious affiliation and applying the geography split, the coefficient on constraints on executive is significant.

Table 5. IH Estimation: GDPPC and INVEST with Control Variables (Geography and Colony Split)

Geography Split

	Dependent Variables				Dependent Variables		
	GDPPC	FORM	CONST		INVEST	FORM	CONST
GDPPC		-0.276**	0.088	INVEST		-0.388***	0.166
		(0.135)	(0.194)			(0.117)	(0.180)
FORMALISM	-0.038		0.345	FORMALISM	0.133		0.224
	(0.060)		(0.349)		(0.088)		(0.288)
CONSTRAINTS	0.223***	-0.357		CONSTRAINTS	0.281***	-0.177	
	(0.082)	(0.377)			(0.109)	(0.324)	
LATITUDE	0.708***	-0.531***	0.456***	LATITUDE	0.477***	-0.426**	0.490***
	(0.101)	(0.213)	(0.137)		(0.108)	(0.184)	(0.104)
Rank Condition	a	b	c	Rank Condition	a	b	c
	1.511***	1.032***	-0.776		2.102**	1.447***	-0.980*
	(0.578)	(0.403)	(0.572)		(1.002)	(0.581)	(0.590)
	Dependent Variable				Dependent Variable		
	GDPPC	FORM	CONST		INVEST	FORM	CONST
GDPPC		-0.488*	0.184	INVEST		-0.600**	0.148
		(0.270)	(0.464)			(0.265)	(0.471)
FORMALISM	0.010		0.975	FORMALISM	0.216		0.779
	(0.155)		(1.147)		(0.160)		(0.949)
CONSTRAINTS	0.350**	-0.987		CONSTRAINTS	0.484***	-0.794	
	(0.170)	(1.143)			(0.175)	(1.008)	
MUSLIM	-0.141	0.629	-0.113	MUSLIM	-0.415***	0.727	-0.205
	(0.156)	(0.431)	(0.315)		(0.177)	(0.451)	(0.193)
PROTESTANT	0.458***	-0.545	0.158	PROTESTANT	0.125	-0.344	0.122
	(0.130)	(0.345)	(0.116)		(0.134)	(0.252)	(0.138)
CATHOLIC	0.223	0.232	0.722	CATHOLIC	0.136	0.386*	0.585
	(0.141)	(0.289)	(0.630)		(0.172)	(0.224)	(0.461)
Rank Condition	a	b	c	Rank Condition	a	b	c
	0.729	0.538	-0.337		1.114	0.851	-0.547
	(0.531)	(0.747)	(0.769)		(0.754)	(0.790)	(0.884)

Colony Split

	Dependent Variables				Dependent Variables		
	GDPPC	FORM	CONST		INVEST	FORM	CONST
GDPPC		-0.275**	0.241	INVEST		-0.366**	0.273
		(0.139)	(0.229)			(0.153)	(0.253)

FORMALISM	0.003		0.457	FORMALISM	0.145		0.36
	(0.060)		(0.456)		(0.118)		(0.343)
CONSTRAINTS	0.149**	-0.499		CONSTRAINTS	0.231	-0.371	
	(0.059)	(0.528)			(0.168)	(0.417)	
LATITUDE	0.665***	-0.598**	0.525***	LATITUDE	0.451***	-0.509**	0.502***
	(0.084)	(0.274)	(0.132)		(0.125)	(0.234)	(0.124)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-1.617**	-1.134**	0.832		-1.858*	-1.234*	0.982
	(0.714)	(0.496)	(0.754)		(1.061)	(0.709)	(0.705)
	Dependent Variable				Dependent Variable		
	GDPPC	FORM	CONST		INVEST	FORM	CONST
GDPPC		-0.456**	-0.235	INVEST		-0.426	-0.438
		(0.195)	(0.327)			(0.401)	(0.406)
FORMALISM	0.075		-0.455	FORMALISM	0.309		-0.58
	(0.081)		(0.585)		(0.292)		(0.621)
CONSTRAINTS	0.170***	0.489		CONSTRAINTS	0.404*	0.711	
	(0.063)	(0.639)			(0.209)	(0.742)	
MUSLIM	-0.059	0.090	-0.479***	MUSLIM	-0.362**	0.128	-0.387***
	(0.116)	(0.270)	(0.175)		(0.183)	(0.305)	(0.140)
PROTESTANT	0.409***	-0.203	0.197*	PROTESTANT	0.094	0.001	0.283**
	(0.101)	(0.206)	(0.105)		(0.133)	(0.215)	(0.120)
CATHOLIC	0.220*	0.537***	-0.061	CATHOLIC	0.166	0.680***	-0.058
	(0.122)	(0.186)	(0.338)		(0.208)	(0.199)	(0.299)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-0.932**	-1.380*	-0.501		-0.816	-1.468	-0.65
	(0.474)	(0.805)	(0.834)		(0.752)	(1.166)	(1.193)

Observations: 57 horizontal and 47 vertical for Geography-split, 49 other countries and 55 poor ex-colonies for Colony-split.

Notes: Standard errors in parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level. Rank Condition: a = Eq.1 vs Eq.2, b = Eq.1 vs Eq.3, c = Eq.2 vs Eq.3.

Table 6. IH Estimation: CREDIT and STOCK with Control Variables (Geography and Colony Split)

Geography Split							
	Dependent Variables				Dependent Variables		
	CREDIT	FORM	CONST		STOCK	FORM	CONST
CREDIT		-0.276***	0.179	STOCK		-0.289**	-0.005
		(0.105)	(0.175)			(0.126)	(0.286)
FORMALISM	-0.077		0.316	FORMALISM	-0.206		0.421
	(0.081)		(0.371)		(0.133)		(0.438)

CONSTRAINTS	0.179**	-0.299		CONSTRAINTS	0.265	-0.427	
	(0.088)	(0.386)			(0.192)	(0.419)	
LATITUDE	0.450***	-0.434**	0.469***	LATITUDE	0.370**	-0.456*	0.385***
	(0.118)	(0.218)	(0.104)		(0.179)	(0.257)	(0.133)
Rank Condition	a	b	c	Rank Condition	a	b	c
	2.268**	1.466**	-0.811		2.117*	1.044	-0.749
	(1.132)	(0.668)	(0.575)		(1.251)	(0.763)	(0.618)
	Dependent Variable				Dependent Variable		
	CREDIT	FORM	CONST		STOCK	FORM	CONST
CREDIT		-0.198	-0.406	STOCK		-0.084	-0.410
		(0.203)	(0.356)			(0.260)	(0.293)
FORMALISM	-0.004		-0.913	FORMALISM	-0.179		-0.794
	(0.124)		(1.056)		(0.184)		(0.874)
CONSTRAINTS	0.410***	0.919		CONSTRAINTS	0.413*	0.686	
	(0.145)	(1.064)			(0.213)	(0.816)	
MUSLIM	-0.358**	-0.067	-0.537**	MUSLIM	-0.262	-0.011	-0.564**
	(0.154)	(0.460)	(0.247)		(0.181)	(0.339)	(0.248)
PROTESTANT	0.216	0.009	0.280*	PROTESTANT	0.269	-0.024	0.251*
	(0.163)	(0.273)	(0.151)		(0.171)	(0.233)	(0.140)
CATHOLIC	-0.050	0.673***	-0.229	CATHOLIC	-0.098	0.616***	-0.185
	(0.176)	(0.210)	(0.502)		(0.160)	(0.189)	(0.443)
Rank Condition	a	b	c	Rank Condition	a	b	c
	0.860	1.267	0.494		0.951	1.609	0.627
	(0.753)	(1.016)	(0.852)		(1.055)	(1.180)	(0.853)

Colony Split

	Dependent Variables				Dependent Variables		
	CREDIT	FORM	CONST		STOCK	FORM	CONST
CREDIT		-0.235*	0.296	STOCK		-0.334	-0.068
		(0.127)	(0.182)			(0.239)	(0.462)
FORMALISM	-0.064		0.429	FORMALISM	-0.227		0.595
	(0.091)		(0.469)		(0.273)		(0.587)
CONSTRAINTS	0.099	-0.435		CONSTRAINTS	0.354	-0.583	
	(0.074)	(0.517)			(0.403)	(0.564)	
LATITUDE	0.410***	-0.483*	0.488***	LATITUDE	0.416	-0.538*	0.338*
	(0.110)	(0.265)	(0.112)		(0.260)	(0.319)	(0.176)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-2.253*	-1.547**	0.751		-1.465	-0.444	0.703
	(1.239)	(0.785)	(0.709)		(1.271)	(0.881)	(0.883)
	Dependent Variable				Dependent Variable		
	CREDIT	FORM	CONST		STOCK	FORM	CONST
CREDIT		-0.320*	-0.163	STOCK		-0.208	-0.384
		(0.183)	(0.232)			(0.351)	(0.391)

FORMALISM	0.025		-0.456	FORMALISM	-0.083		-0.540
	(0.159)		(0.557)		(0.451)		(0.588)
CONSTRAINTS	0.250**	0.473		CONSTRAINTS	0.429	0.424	
	(0.105)	(0.559)			(0.426)	(0.543)	
MUSLIM	-0.288*	0.130	-0.471***	MUSLIM	-0.244	0.098	-0.502***
	(0.151)	(0.251)	(0.165)		(0.258)	(0.251)	(0.192)
PROTESTANT	0.180	-0.096	0.245**	PROTESTANT	0.258	-0.096	0.217*
	(0.160)	(0.185)	(0.113)		(0.166)	(0.173)	(0.116)
CATHOLIC	-0.063	0.611***	-0.033	CATHOLIC	-0.048	0.581***	-0.062
	(0.178)	(0.162)	(0.276)		(0.289)	(0.162)	(0.308)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-1.285*	-2.007	-0.559		-0.557	-1.434	-0.729
	(0.729)	(1.369)	(0.810)		(1.155)	(1.738)	(0.974)

Observations: 53 horizontal and 45 vertical for Geography-split, 46 other countries and 52 poor ex-colonies for Colony-split.

Notes: Standard errors in parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level. Rank Condition: a = Eq.1 vs Eq.2, b = Eq.1 vs Eq.3, c = Eq.2 vs Eq.3.

Concerning property (3), that indicates the quality of model identification, it becomes evident that the overall performance of the IH method in the baseline model is good in the case of GDP per capita, the investment to GDP ratio and credit market development using the geography as well as the colony split. The geography split is somewhat better, as for the investment to GDP ratio and credit market development the rank condition is satisfied in all three cases, but only in two of three cases for the colony split. Extending the model with latitude reduces the quality of identification, but is still acceptable. However, the identification is generally less conclusive when extending the models with religious affiliation. For stock market development, identification is only acceptable for the geography split in the baseline model.

There is, though, a further caveat of the colony split. The original colony split (described in Section 4 and used above) proposes that the homogenizing experience was bad European colonization. Therefore, the five countries in the sample that have been colonized by European powers, but can be assigned to the group of high income countries today (Australia, Canada, New Zealand, Singapore and the United States) are not classified as former colonies. However, if the sample would be split along the argument that European colonization per se is crucial, these five countries have to be classified as former European colonies. The results thereon are presented in Tables F.1. and F.2 in Appendix F. The main differences to the original colony split concern GDP per capita and credit market development. Property rights institutions seem to be no longer important for GDP per capita. For credit market development, contracting institutions have a significant effect in the baseline model and the model extension with

latitude. However, in the model extension with religious affiliation again property rights institutions are relevant, identical to the result from the original colony split. Hence, the results from this alternative colony split do only confirm partially the findings of the original colony split. However, the results applying the alternative colony split still differ completely from the OLS estimation. Nevertheless, in our view, the argument that it has to be considered that the colonization strategy employed by the colonizers may have differed from one place to the other is more convincing.

Thus, comparing coefficients from the OLS regressions and the IH method, it becomes evident that ignoring feedback effects from economic development on institutions appear to bias estimates. This is particularly apparent for the effect of contracting institutions on economic development. The results from the IH estimates indicate that differences in economic development can hardly be explained by differences in contracting institutions. However, there is evidence that better property rights institutions are positive for economic development. Overall, it seems that property rights institutions are relatively more important than contracting institutions for economic development. This result is in line with previous findings by Acemoglu and Johnson (2005). Their sample is, however, restricted to about 60 former colonies due to the specific instrumental variables they apply (settler morality and population density in 1500). One exception is the impact of institutions on financial development. Acemoglu and Johnson (2005) find that, in addition to property rights institutions, contracting institutions matter for stock market development, an effect not present for credit market development. They thus conclude that contracting institutions matter for the form of financial development. Based on the results presented here, there is no support for this conclusion. It has to be admitted, however, that the identification in this case is unsatisfactory.

Looking at the reverse effect, running from economic development on institutions,[11] the results from the IH estimates indicate that differences in property rights institutions can hardly be explained by differences in GDP per capita, the investment to GDP ratio, credit provided to the private sector, and stock market capitalization. However, there is evidence that a higher level of economic development entails better contracting institutions. This result is robust to the inclusion of geographic location and religious affiliation.

[11] α_{21} for the effect of economic development on contracting institutions, and α_{31} for the effect of economic development on property rights institutions (see baseline model (4)).

6. CONCLUSION

In this paper a simultaneous equations model is identified using the heteroskedasticity in the data to analyze the relative effect of property rights and contracting institutions on economic development. The results suggest that property rights institutions are relatively more important than contracting institutions for GDP per capita, the investment share and credit market development. However, neither contracting nor property rights institutions seem to have an impact on stock market development. Regarding the reverse effect running from economic development to institutions, an impact from economic development on contracting but not property rights institutions is detected. Apparently, property rights institutions do not improve as the level of economic development increases. Other forces have to be identified, such as sizeable income inequalities for example, that may explain changes in property rights institutions. However, the results indicate that at lower levels of economic development, contracting institutions are substantially inferior. Thus, the results suggest that better property rights institutions have a potential to advance economic development. This in turn may create an appropriate environment for better contracting institutions.

APPENDICES

A. Variables

Table A.1. Description of the Data Set

Variable	Description	Source
GDDPC	Real Gross Domestic Product per capita (Constant Prices: Laspeyres): Average over 1990s (divided by 100'000).	Penn World Tables (Release 6.2)
INVESTMENT	Investment Share of Real GDP (Constant Prices): Average over 1990s.	Penn World Tables (Release 6.2)
CREDIT	Funds provided by various intermediaries to nongovernmental borrowers relative to GDP. Average over the 1990s.	Compiled from Beck *et al*. (2000), Financial Structure Database (FSD, 2007)
STOCK	Total value of shares traded on capital markets relative to GDP. Average over the 1990s.	Financial Structure Database (FSD, 2007). Complemented with data from Beck et al. (2003).
FORMALISM	Index of formality in legal procedures for collecting on a bounced check. Ranges from 0 to 7.	Djankov *et al*. (2003)

CONSTRAINTS	A seven-category scale, from 1 to 7, with higher score indicating more constraints on the executive. Average over the 1990s.	Marshall and Jaggers (2009), taken from Acemoglu and Johnson (2005).
LATITUDE	Abolute value of the latitude of the country (scaled to take values between 0 and 1, with 0 being the equator).	Acemoglu and Johnson (2005).
MUSLIM	Share of the population affiliated to Islam in 2001.	Encyclopedia Britannica (2001). Complemented with data from CIA World Fact Book (2008) and La Porta *et al.* (1999)
PROTESTANT	Share of the population affiliated to Protestantism in 2001.	Encyclopedia Britannica (2001). Complemented with data from CIA World Fact Book (2008) and La Porta *et al.* (1999)
CATHOLIC	Share of the population affiliated with Catholicism in 2001.	Encyclopedia Britannica (2001). Complemented with data from CIA World Fact Book (2008) and La Porta *et al.* (1999)

B. Summary Statistics

Table B.1: Summary Statistics and Correlations

Panel A: Sample $N = 104$

	GDPPC	INVEST	FORM	CONST	LATITUDE	MUSLIM	PROT	CATHO
	Descriptive Statistics							
Mean	9903	15.31	3.77	5.29	0.32	17.81	13.42	34.86
Std. Dev.	8798	7.66	0.99	1.79	0.2	31.76	23	37.78
Min	606	3.12	1.58	1.18	0.01	0	0	0
Max	38281	39.88	6.01	7	0.72	99.4	97.8	96.9
	Correlations							
GDPPC/INV.	1	1						
FORMALISM	-0.34	-0.3	1					
CONSTRAINTS	0.45	0.45	-0.11	1				
LATITUDE	0.6	0.37	-0.2	0.47	1			
MUSLIM	-0.19	-0.28	0.07	-0.52	-0.17	1		
PROTESTANT	0.35	0.15	-0.33	0.27	0.39	-0.28	1	
CATHOLIC	0.06	0.05	0.42	0.31	-0.09	-0.45	-0.25	1

Panel B: Sample $N = 98$

	CREDIT	STOCK	FORM	CONST	LATITUDE	MUSLIM	PROT	CATHO
	Descriptive Statistics							
Mean	0.47	0.31	3.78	5.37	0.33	17.5	14.14	36.43
Std. Dev.	0.41	0.38	1	1.81	0.2	31.68	23.5	38.26
Min	0.04	0	1.58	1.18	0.01	0	0	0
Max	1.92	1.81	6.01	7	0.72	99.4	97.8	96.9
	Correlations							
CREDIT/STOCK	1	1						
FORMALISM	-0.41	-0.47	1					
CONSTRAINTS	0.38	0.23	-0.12	1				
LATITUDE	0.35	0.21	-0.2	0.47	1			
MUSLIM	-0.18	-0.06	0.06	-0.52	-0.18	1		
PROTESTANT	0.22	0.2	-0.35	0.26	0.39	-0.28	1	
CATHOLIC	-0.06	-0.1	0.42	0.3	-0.1	-0.46	-0.28	1

Notes: Panel A shows descriptive statistics and correlations for the sample of 104 countries. Panel B shows descriptive statistics and correlations for the sample of 98 countries. GDPPC: Real GDP per capita (average over 1990s); INVEST: Investment to GDP ratio (average over the 1990s); CREDIT: Credit issued by financial intermediaries to the private sector as a share of GDP (average over 1990s); STOCK: Stock market capitalization to GDP (average over 1990s); CONSTRAINTS: Constraints on executive index, with values from 1 to 7, where higher values indicate more constraints and thus better property rights institutions; FORMALISM: Legal formalism index, with values from 0 to 7, where higher values indicate more formalism and thus lower quality of contracting institutions; LATITUDE: Absolute value of the latitude of the country (scaled to take values between 0 and 1, with 0 being the equator; MUSLIM: Share of population affiliated with Islam; PROTESTANT: Share of population affiliated with Protestantism; CATHOLIC: Share of population affiliated with Catholicism.

C. Countries

Table C.1. Geography Split

Sample: $N = 98$				Sample: $N = 104$			
Horizontal orientation		Vertical orientation		Horizontal orientation		Vertical orientation	
AUS	Australia	DZA	Algeria	AUS	Australia	DZA	Algeria
AUT	Austria	ARG	Argentina	AUT	Austria	ARG	Argentina
BHR	Bahrain	BOL	Bolivia	BHR	Bahrain	BEN	Benin
BGD	Bangladesh	BWA	Botswana	BGD	Bangladesh	BOL	Bolivia
BEL	Belgium	BRA	Brazil	BEL	Belgium	BWA	Botswana
BGR	Bulgaria	BFA	Burkina Faso	BGR	Bulgaria	BRA	Brazil
CHN	China	CMR	Cameroon	CHN	China	BFA	Burkina Faso
HRV	Croatia	CAN	Canada	HRV	Croatia	CMR	Cameroon

CYP	Cyprus	CHL	Chile	CYP	Cyprus	CAN	Canada
CZE	Czech Rep.	COL	Colombia	CZE	Czech Rep.	CHL	Chile
DNK	Denmark	CRI	Costa Rica	DNK	Denmark	COL	Colombia
EGY	Egypt	CIV	Cote d'Ivoire	EGY	Egypt	CRI	Costa Rica
EST	Estonia	DOM	Dominican Rep.	EST	Estonia	CIV	Cote d'Ivoire
FIN	Finland	ECU	Ecuador	FIN	Finland	DOM	Dominican Rep.
FRA	France	SLV	El Salvador	FRA	France	ECU	Ecuador
GER	Germany	ETH	Ethiopia	GEO	Georgia	SLV	El Salvador
GRC	Greece	GHA	Ghana	GER	Germany	ETH	Ethiopia
HUN	Hungary	GTM	Guatemala	GRC	Greece	GHA	Ghana
ISL	Iceland	HND	Honduras	HUN	Hungary	GTM	Guatemala
IND	India	JAM	Jamaica	ISL	Iceland	HND	Honduras
IDN	Indonesia	KEN	Kenya	IND	India	JAM	Jamaica
IRL	Ireland	MDG	Madagascar	IDN	Indonesia	KEN	Kenya
ISR	Israel	MWI	Malawi	IRL	Ireland	MDG	Madagascar
ITA	Italy	MLI	Mali	ISR	Israel	MWI	Malawi
JPN	Japan	MEX	Mexico	ITA	Italy	MLI	Mali
JOR	Jordan	MCO	Morocco	JPN	Japan	MEX	Mexico
KAZ	Kazakhstan	NAM	Namibia	JOR	Jordan	NCO	Morocco
KOR	Korea, Rep.	NIC	Nicaragua	KAZ	Kazakhstan	MOZ	Mozambique
KWT	Kuwait	NER	Niger	KOR	Korea, Rep.	NAM	Namibia
LVA	Latvia	NGA	Nigeria	KWT	Kuwait	NIC	Nicaragua
LTU	Lithuania	PAN	Panama	LVA	Latvia	NER	Niger
LUX	Luxembourg	PRY	Paraguay	LTU	Lithuania	NGA	Nigeria
MYS	Malaysia	PER	Peru	LUX	Luxembourg	PAN	Panama
NPL	Nepal	SEN	Senegal	MYS	Malaysia	PRY	Paraguay
NLD	Netherlands	ZAF	South Africa	NPL	Nepal	PER	Peru
NZL	New Zealand	SWZ	Swaziland	NLD	Netherlands	SEN	Senegal
NOR	Norway	TZA	Tanzania	NZL	New Zealand	ZAF	South Africa
PAK	Pakistan	TTO	Trinidad/Tobago	NOR	Norway	SWZ	Swaziland
PHL	Philippines	TUN	Tunisia	PAK	Pakistan	TZA	Tanzania
POL	Poland	UGA	Uganda	PHL	Philippines	TTO	Trinidad/Tobago
PRT	Portugal	USA	United States	POL	Poland	TUN	Tunisia
ROM	Romania	URY	Uruguay	PRT	Portugal	UGA	Uganda
RUS	Russian Fed.	VEN	Venezuela	ROM	Romania	USA	United States
SGP	Singapore	ZMB	Zambia	RUS	Russian Fed.	URY	Uruguay
SVN	Slovenia	ZWE	Zimbabwe	SGP	Singapore	VEN	Venezuela
ESP	Spain			SVN	Slovenia	ZMB	Zambia
LKA	Sri Lanka			ESP	Spain	ZWE	Zimbabwe
SWE	Sweden			LKA	Sri Lanka		
CHE	Switzerland			SWE	Sweden		
THA	Thailand			CHE	Switzerland		

TUR	Turkey	TWN	Taiwan
UKR	Ukraine	THA	Thailand
GBR	United King.	TUR	Turkey
		UKR	Ukraine
		ARE	United Arab E.
		GBR	United King.
		VNM	Vietnam

Notes: Countries are classified according to their geographical location. Countries located on the Eurasian continent or belonging to Oceania are assigned to the group Horizontal orientation, countries located on the African and American continents are assigned to the group Vertical orientation. Two samples are considered, one with 98 countries included (for stock and credit market development) and one with 104 countries included (GDP per capita and investment). Countries emphasized with bold letters are those only considered in the sample with 104 observations.

Table C.2. Colony Split

Sample: $N = 98$				Sample: $N = 104$			
Former colonies		Other countries		Former colonies		Other countries	
DZA	Algeria	AUS	Australia	DZA	Algeria	AUS	Australia
ARG	Argentina	AUT	Austria	ARG	Argentina	AUT	Austria
BGD	Bangladesh	BHR	Bahrain	BGD	Bangladesh	BHR	Bahrain
BOL	Bolivia	BEL	Belgium	BEN	Benin	BEL	Belgium
BWA	Botswana	BGR	Bulgaria	BOL	Bolivia	BGR	Bulgaria
BRA	Brazil	CAN	Canada	BWA	Botswana	CAN	Canada
BFA	Burkina Faso	CHN	China	BRA	Brazil	CHN	China
CMR	Cameroon	HRV	Croatia	BFA	Burkina Faso	HRV	Croatia
CHL	Chile	CYP	Cyprus	CMR	Cameroon	CYP	Cyprus
COL	Colombia	CZE	Czech Rep.	CHL	Chile	CZE	Czech Rep.
CRI	Costa Rica	DNK	Denmark	COL	Colombia	DNK	Denmark
CIV	Cote d'Ivoire	EST	Estonia	CRI	Costa Rica	EST	Estonia
DOM	Dominican Rep.	FIN	Finland	CIV	Cote d'Ivoire	FIN	Finland
ECU	Ecuador	FRA	France	DOM	Dominican Rep.	FRA	France
EGY	Egypt	GER	Germany	ECU	Ecuador	GEO	Georgia
SLV	El Salvador	GRC	Greece	EGY	Egypt,	GER	Germany
ETH	Ethiopia	HUN	Hungary	SLV	El Salvador	GRC	Greece
GHA	Ghana	ISL	Iceland	ETH	Ethiopia	HUN	Hungary
GTM	Guatemala	IRL	Ireland	GHA	Ghana	ISL	Iceland
HND	Honduras	ISR	Israel	GTM	Guatemala	IRL	Ireland
IND	India	ITA	Italy	HND	Honduras	ISR	Israel
IDN	Indonesia	JPN	Japan	IND	India	ITA	Italy
JAM	Jamaica	JOR	Jordan	IDN	Indonesia	JPN	Japan

KEN	Kenya	KAZ	Kazakhstan	JAM	Jamaica	JOR	Jordan
MDG	Madagascar	KOR	Korea, Rep.	KEN	Kenya	KAZ	Kazakhstan
MWI	Malawi	KWT	Kuwait	MDG	Madagascar	KOR	Korea, Rep.
MYS	Malaysia	LVA	Latvia	MWI	Malawi	KWT	Kuwait
MLI	Mali	LTU	Lithuania	MYS	Malaysia	LVA	Latvia
MEX	Mexico	LUX	Luxembourg	MLI	Mali	LTU	Lithuania
MAR	Morocco	NLD	Netherlands	MEX	Mexico	LUX	Luxembourg
NAM	Namibia	NZL	New Zealand	MAR	Morocco	NLD	Netherlands
NPL	Nepal	NOR	Norway	MOZ	Mozambique	NZL	New Zealand
NIC	Nicaragua	POL	Poland	NAM	Namibia	NOR	Norway
NER	Niger	PRT	Portugal	NPL	Nepal	POL	Poland
NGA	Nigeria	ROM	Romania	NIC	Nicaragua	PRT	Portugal
PAK	Pakistan	RUS	Russian Fed.	NER	Niger	ROM	Romania
PAN	Panama	SGP	Singapore	NGA	Nigeria	RUS	Russian Fed.
PRY	Paraguay	SVN	Slovenia	PAK	Pakistan	SGP	Singapore
PER	Peru	ESP	Spain	PAN	Panama	SVN	Slovenia
PHL	Philippines	SWE	Sweden	PRY	Paraguay	ESP	Spain
SEN	Senegal	CHE	Switzerland	PER	Peru	SWE	Sweden
ZAF	South Africa	THA	Thailand	PHL	Philippines	CHE	Switzerland
LKA	Sri Lanka	TUR	Turkey	SEN	Senegal	TWN	Taiwan
SWZ	Swaziland	UKR	Ukraine	ZAF	South Africa	THA	Thailand
TZA	Tanzania	GBR	United King.	LKA	Sri Lanka	TUR	Turkey
TTO	Trinidad/Tobago	USA	United States	SWZ	Swaziland	UKR	Ukraine
TUN	Tunisia			TZA	Tanzania	ARE	United Arab E.
UGA	Uganda			TTO	Trinidad/Tobago	GBR	United King.
URY	Uruguay			TUN	Tunisia	USA	United States
VEN	Venezuela			UGA	Uganda		
ZMB	Zambia			URY	Uruguay		
ZWE	Zimbabwe			VEN	Venezuela		
				VNM	Vietnam		
				ZMB	Zambia		
				ZWE	Zimbabwe		

Notes: Countries are classified according to their colonial history. Former colonies, expect those that can be assigned to the group of high income countries (according to the World Development Indicators' (WDI) country classification as of the year, 2000), are classified as Former colonies, the rest of the countries as Other countries. Two samples are considered, one with 98 countries included (for stock and credit market development) and one with 104 countries included (GDP per capita and investment). Countries emphasized with bold letters are those only considered in the sample with 104 observations.

D. Rank Condition

The rank condition in the case of a simultaneous equations system with two endogenous variables is (see Rigobon, 2003)

$$r \equiv \omega_{11,1} \cdot \omega_{22,2} - \omega_{22,1} \cdot \omega_{11,2} \neq 0\,, \tag{5}$$

where $\omega_{11,1}$ is the variance of the reduced form residual for the first equation in the first subsample and $\omega_{22,2}$ the one for the second equation in the second subsample. Therefore, it can be written

$$\omega_{11,s} = \frac{1}{1-\theta_{21}\theta_{12}}(\theta_{12}^2\sigma_{\varepsilon_{2s}}^2 + \sigma_{\varepsilon_{1s}}^2)\,,$$

$$\omega_{22,s} = \frac{1}{1-\theta_{21}\theta_{12}}(\sigma_{\varepsilon_{2s}}^2 + \theta_{21}^2\sigma_{\varepsilon_{1s}}^2)\,.$$

Thus

$$r = \frac{1}{(1-\theta_{21}\theta_{12})^4}[(\theta_{12}^2\sigma_{\varepsilon_{21}}^2 + \sigma_{\varepsilon_{11}}^2)(\sigma_{\varepsilon_{22}}^2 + \theta_{21}^2\sigma_{\varepsilon_{12}}^2) - (\sigma_{\varepsilon_{21}}^2 + \theta_{21}^2\sigma_{\varepsilon_{11}}^2)(\theta_{12}^2\sigma_{\varepsilon_{22}}^2 + \sigma_{\varepsilon_{12}}^2)]\,,$$

$$r = \frac{1}{(1-\theta_{21}\theta_{12})^4}[(\theta_{21}^2\theta_{12}^2\sigma_{\varepsilon_{21}}^2\sigma_{\varepsilon_{21}}^2 + \sigma_{\varepsilon_{11}}^2\sigma_{\varepsilon_{22}}^2) - (\sigma_{\varepsilon_{21}}^2\sigma_{\varepsilon_{12}}^2 + \theta_{21}^2\theta_{12}^2\sigma_{\varepsilon_{11}}^2\sigma_{\varepsilon_{22}}^2)],$$

$$r = \frac{1}{(1-\theta_{21}\theta_{12})^4}[(\sigma_{\varepsilon_{21}}^2\sigma_{\varepsilon_{12}}^2(\theta_{21}^2\theta_{12}^2 - 1) - \sigma_{\varepsilon_{11}}^2\sigma_{\varepsilon_{22}}^2(\theta_{21}^2\theta_{12}^2 - 1)]\,,$$

$$r = \frac{\theta_{21}^2\theta_{12}^2 - 1}{(1-\theta_{21}\theta_{12})^4}[\sigma_{\varepsilon_{21}}^2\sigma_{\varepsilon_{12}}^2 - \sigma_{\varepsilon_{11}}^2\sigma_{\varepsilon_{22}}^2]\,,$$

$$r = \frac{(\theta_{21}\theta_{12} - 1)(\theta_{21}\theta_{12} + 1)}{(1-\theta_{21}\theta_{12})^4}\left[\frac{\sigma_{\varepsilon_{11}}^2}{\sigma_{\varepsilon_{21}}^2} - \frac{\sigma_{\varepsilon_{12}}^2}{\sigma_{\varepsilon_{22}}^2}\right] = \frac{-(1-\theta_{21}\theta_{12})(\theta_{21}\theta_{12} + 1)}{(1-\theta_{21}\theta_{12})^4}\left[\frac{\sigma_{\varepsilon_{11}}^2}{\sigma_{\varepsilon_{21}}^2} - \frac{\sigma_{\varepsilon_{12}}^2}{\sigma_{\varepsilon_{22}}^2}\right],$$

$$r = -\frac{(\theta_{21}\theta_{12} + 1)}{(1-\theta_{21}\theta_{12})^3}\left[\frac{\sigma_{\varepsilon_{11}}^2}{\sigma_{\varepsilon_{21}}^2} - \frac{\sigma_{\varepsilon_{12}}^2}{\sigma_{\varepsilon_{22}}^2}\right].$$

Hence, the rank condition (5) is nothing else as to test whether

$$\frac{\sigma^2_{\varepsilon_{11}}}{\sigma^2_{\varepsilon_{21}}} - \frac{\sigma^2_{\varepsilon_{12}}}{\sigma^2_{\varepsilon_{22}}} = 0 .$$

As long as

$$\theta_{21}\theta_{12} \neq \mp 1 .$$

E. Results for Log GDP per capita

As Table E.1 indicates, using log GDP per capita instead of GDP per capita, the model identification (Rank Cond.) is less persuasive than the model identification in the baseline model (see Tables 3 and 4).

Table E.1. Using Log GDP per capita Instead of GDP per capita

Geography Split				Colony Split			
	Dependent Variables				Dependent Variables		
	logGDPPC	FORM	CONST		logGDPPC	FORM	CONST
logGDPPC		-0.462	1.007	logGDPPC		-1.135	0.253
		(0.374)	(0.912)			(1.447)	(0.665)
FORM	0.555		-0.069	FORM	0.493		0.321
	(0.480)		(0.394)		(0.698)		(0.436)
CONST	-0.762	-0.108		CONST	0.345	-0.163	
	(0.989)	(0.283)			(0.477)	(0.504)	
Rank Cond.	a	b	c	Rank Cond.	a	b	c
	1.843**	-1.252	-1.484		-0.436	0.163	2.037
	(0.797)	(1.410)	(1.092)		(0.770)	(0.832)	(1.444)

Observations: 57 horizontal and 47 vertical for Geography-split, 49 other countries and 55 poor ex-colonies for Colony-split.

Notes: Standard errors in parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level. Rank Condition: a = Eq.1 vs Eq.2, b = Eq.1 vs Eq.3, c = Eq.2 vs Eq.3.

F. Alternative Colony Split

Table F.1. AUS, CAN, NZL, SGP, USA Classified as Former Colonies

	Dependent Variables					
	GDPPC	FORMALISM	CONSTRAINTS			
GDPPC		-0.058	0.004			
		(0.157)	(0.390)			
FORMALISM	-0.203*		0.108			
	(0.119)		(0.271)			
CONSTRAINTS	0.282	-0.164				
	(0.242)	(0.268)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-1.637**	-0.560	0.913**			
	(0.809)	(0.650)	(0.463)			
Constants	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others
	-0.500	-0.805	4.700	4.567	4.364	5.597
	(0.522)	(0.480)	(1.189)	(0.669)	(1.753)	(1.648)
		((0.429))		((0.097))		((0.512))
	Dependent Variables					
	INVEST	FORMALISM	CONSTRAINTS			
INVEST		-0.252	0.181			
		(0.186)	(0.521)			
FORMALISM	-0.018		0.096			
	(0.186)		(0.242)			
CONSTRAINTS	0.201	-0.082				
	(0.428)	(0.222)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-1.528	-0.247	1.023***			
	(1.371)	(0.569)	(0.385)			
Constants	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others
	-0.770	-0.946	4.338	4.121	4.390	5.606
	(0.334)	(0.313)	(1.165)	(0.647)	(1.748)	(1.642)
		((0.384))		((0.163))		((0.507))
	Dependent Variables					
	CREDIT	FORMALISM	CONSTRAINTS			
CREDIT		-0.176*	0.093			
		(0.094)	(0.227)			
FORMALISM	-0.207**		0.132			
	(0.095)		(0.231)			
CONSTRAINTS	0.197	-0.153				
	(0.152)	(0.220)				

Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-3.069*	-1.056	0.949**			
	(1.799)	(0.984)	(0.439)			
Constants	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others
	0.190	0.212	4.701	4.663	4.289	5.567
	(0.381)	(0.478)	(1.189)	(0.620)	(1.770)	(1.617)
		((0.036))		((0.028))		((0.533))
	Dependent Variables					
	STOCK	FORMALISM	CONSTRAINTS			
STOCK		-0.153	-0.590			
		(0.214)	(0.853)			
FORMALISM	-0.383		-0.003			
	(0.249)		(0.361)			
CONSTRAINTS	0.604	-0.224				
	(0.722)	(0.229)				
Rank Condition	Eq.1 vs Eq.2	Eq.1 vs Eq.3	Eq.2 vs Eq.3			
	-2.356	-0.351	0.533			
	(1.644)	(0.898)	(0.517)			
Constants	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others	Eq.1. former col.	Eq.1. others
	-1.182	-1.887	5.024	5.045	4.988	6.360
	(1.082)	(1.060)	(1.216)	(0.654)	(1.831)	(1.637)
		((0.466))		((0.015))		((0.558))

Observations: 44 other countries, 60 former colonies for GDPPC and INVEST, 41 other countries, 57 former colonies for CREDIT and STOCK (AUS, CAN, NZL, SGP, USA classified as former colonies).

Notes: Standard errors in parentheses, t-statistic for equality of constants in double parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level.

Table F.2. AUS, CAN, NZL, SGP, USA Classified as Former Colonies

	Dependent Variables				Dependent Variables		
	GDPPC	FORM	CONST		INVEST	FORM	CONST
GDPPC		-0.110	0.063	INVEST		-0.281*	0.349
		(0.144)	(0.295)			(0.165)	(0.425)
FORMALISM	-0.156		0.182	FORMALISM	0.033		0.111
	(0.105)		(0.256)		(0.174)		(0.238)
CONSTRAINTS	0.189	-0.212		CONSTRAINTS	0.018	-0.069	
	(0.179)	(0.283)			(0.441)	(0.273)	
LATITUDE	0.716***	-0.364**	0.474***	LATITUDE	0.373	-0.336*	0.580***
	(0.137)	(0.184)	(0.181)		(0.251)	(0.173)	(0.171)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-1.791**	-0.836*	0.975**		-2.096	-0.750	1.081**
	(0.863)	(0.445)	(0.445)		(1.585)	(0.743)	(0.483)

	Dependent Variable				Dependent Variable		
	GDPPC	FORM	CONST		INVEST	FORM	CONST
GDPPC		-0.219	-0.175	INVEST		-0.373	-0.470
		(0.306)	(0.353)			(0.409)	(0.575)
FORMALISM	-0.138		-0.485	FORMALISM	0.203		-0.8691
	(0.229)		(0.703)		(0.417)		(1.036)
CONSTRAINTS	0.258	0.426		CONSTRAINTS	0.427	0.933	
	(0.212)	(0.730)			(0.428)	(1.109)	
MUSLIM	-0.146	0.109	-0.488***	MUSLIM	-0.397*	0.031	-0.453**
	(0.147)	(0.283)	(0.209)		(0.216)	(0.415)	(0.211)
PROTESTANT	0.458***	-0.127	0.224	PROTESTANT	0.114	0.053	0.322**
	(0.131)	(0.236)	(0.151)		(0.167)	(0.292)	(0.163)
CATHOLIC	0.130	0.559***	-0.067	CATHOLIC	0.117	0.721***	-0.201
	(0.189)	(0.204)	(0.397)		(0.311)	(0.272)	(0.511)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-0.631	-0.860	-0.193		-0.405	-0.576	-0.193
	(0.578)	(0.744)	(0.780)		(0.856)	(1.015)	(0.988)
	Dependent Variables				Dependent Variables		
	CREDIT	FORM	CONST		STOCK	FORM	CONST
CREDIT		-0.190**	0.204	STOCK		-0.166	-0.405
		(0.094)	(0.148)			(0.189)	(0.616)
FORMALISM	-0.181**		0.155	FORMALISM	-0.375		0.090
	(0.088)		(0.224)		(0.232)		(0.308)
CONSTRAINTS	0.096	-0.124		CONSTRAINTS	0.537	-0.235	
	(0.117)	(0.253)			(0.567)	(0.236)	
LATITUDE	0.432***	-0.321*	0.510***	LATITUDE	0.531	-0.341*	0.367***
	(0.133)	(0.154)	(0.092)		(0.338)	(0.181)	(0.131)
Rank Condition	a	b	c	Rank Condition	A	b	c
	-3.595*	-1.568*	1.045***		-2.138	-0.357	0.695
	(1.895)	(0.926)	(0.430)		(1.452)	(0.867)	(0.528)
	Dependent Variable				Dependent Variable		
	CREDIT	FORM	CONST		STOCK	FORM	CONST
CREDIT		-0.209	-0.189	STOCK		-0.076	-0.327
		(0.165)	(0.267)			(0.385)	(0.451)
FORMALISM	-0.145		-0.818	FORMALISM	-0.255		-0.731
	(0.140)		(0.981)		(0.420)		(0.871)
CONSTRAINTS	0.282**	0.820		CONSTRAINTS	0.415	0.568	
	(0.144)	(1.017)			(0.497)	(0.808)	
MUSLIM	-0.343***	-0.027	-0.556**	MUSLIM	-0.282	0.034	-0.553***
	(0.146)	(0.409)	(0.248)		(0.243)	(0.338)	(0.227)
PROTESTANT	0.211	-0.012	0.295*	PROTESTANT	0.280	-0.047	0.255*
	(0.171)	(0.256)	(0.163)		(0.189)	(0.233)	(0.154)

CATHOLIC	-0.141	0.657***	-0.208	CATHOLIC	-0.135	0.595***	-0.161
	(0.194)	(0.219)	(0.477)		(0.270)	(0.194)	(0.416)
Rank Condition	a	b	c	Rank Condition	a	b	c
	-0.951	-1.379	-0.266		-0.343	-0.695	-0.334
	(0.984)	(1.389)	(0.790)		(1.230)	(1.403)	(0.908)

Observations: 44 other countries, 60 former colonies for GDPPC and INVEST, 41 other countries, 57 former colonies for CREDIT and STOCK (AUS, CAN, NZL, SGP, USA classified as former colonies).

Notes: Standard errors in parentheses. *, **, and *** indicate, respectively, significance of the parameter estimates on the 10%, 5%, and the 1% level.

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