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Social Cohesion and Its Relationship to Endogenous Institutional Formation and Economic Growth

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Abstract
Institutional quality is a known predictor of a country's ability to attain increased living standards. Unfortunately, a lack of institutional maturity remains among many countries in the developing world. One possibility for this shortfall is that policymakers within these countries face serious barriers to implementing necessary reforms. This paper argues that the social dynamics existing within a country are at least a partial determinant of institutional development. Using a panel dataset of 111 countries over 8 years, the paper estimates a model in which measures of social cohesion are shown to significantly affect institutional development, subsequently impacting growth.

JEL Codes: O43, O17
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I. Introduction

Despite an increasing global awareness of worldwide poverty, living standards for the majority of developing country populations continue to fall persistently below those of richer nations. This begs the question of why many countries are unable to utilize existing resources to reduce endemic poverty. The importance of institutional quality is one well-known predictor of a country's ability to increase per capita growth and elevate living standards. Given that the importance of sound governance is a recognized fact, why have so

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many countries been unable to reach significant levels of institutional maturity? One possibility is that policymakers within these countries face serious barriers to implementing necessary reforms. If this is true, then the persistence of corruption and inefficiency that results from bad policy will prevent any well-intentioned development strategies from accomplishing their intended objectives.

Understanding the ways in which developing country governments are constrained from instituting reform is a worthwhile goal. To this end, this paper argues that the social and cultural dynamics existing within a country are an important determinant of a policymaker's ability to affect change. The paper builds upon previous work to examine the idea that social cohesion, or the ability of a society to coalesce in pursuit of needed reforms, is at least a partial determinant of institutional development and maturity. Empirically, the work will test the hypothesis that growth is a function of endogenous institutional quality, using measures of social cohesion as an identification strategy.

In the process of developing an empirical model with which to test this hypothesis, the work will also be able to examine some of the usual assumptions made in the literature regarding institutional and cultural characteristics. While it is widely accepted that institutional quality is positively correlated with growth rates, discussions of the attributes of a society that contribute to institutional development are far less common in the literature than might be expected. Though it is recognized that the magnitude of the effect of legal and judicial quality on living standards is important, it is equally valuable to examine the underlying characteristics of a nation that encourage positive institutional outcomes. The results of estimation indicate that a more cohesive society tends to provide a beneficial environment for policymakers to implement reform, though the magnitude of these effects tends to vary according to the institutional types being examined.

The argument is developed using the structure that follows. Section II reviews the current literature and discusses a few possibilities for future progress in this area. Section III is a discussion of the ideas surrounding community fractionalization and institutions, respectively. The reasoning primarily examines whether these measures are accurate indications of the evolution of social relationships, culture, and the ability of an economy to advance. Additionally, the analysis will apply these relationships to economic

growth as it relates to developing countries, with a critical survey of the theories discussed in the past. Section IV builds on this analysis to propose a new model of economic development that more fully captures these relationships. Section V discusses the data, Section VI presents the results of estimation, Section VII performs various robustness checks to ensure the model's validity, and Section VIII concludes the paper.

II. The Current Literature

One of the most recent and comprehensive papers involving social cohesion and the endogeneity of institutions was published by Easterly, Ritzen, and Woolcock in the July 2006 issue of *Economics and Politics*, hereafter referred to as *ERW*. Within the article, it is argued that one of the main explanations for the enactment of bad policies around the world, even among seasoned politicians, is that these politicians face a variety of social and cultural constraints to initiating reform. The authors formally model this relationship using a system of equations in which social cohesion, as measured by ethnic fractionalization and inequality, contributes to the development of sound institutions. In turn, these institutions provide a suitable environment for growth promotion. Subsequently, the *ERW* paper uses a cross-sectional dataset comprised of country-specific averages to measure the extent to which the model captures its predicted effects.

In addition to the *ERW* work, there is a variety of other literature examining the relationship between institutional quality and growth.[1] There are only a select number of papers, however, that take steps to study the determinants of institutions and politics within this context. In contrast to the research citing social cohesion as a mechanism for institutional modernization, a related literature links economic crises to subsequent policy change. Using some of the same economic freedom measures employed within this paper, Pitlik and Wirth (2003) find that severe economic downturns have the potential to hasten reform by raising the costs of bad policy and weakening the power of political coalitions. Proponents of this "crisis hypothesis" provide indirect support for the social cohesion approach. If social cohesion is indeed a constraint on policymakers to reform, then the

[1] See, for example, Acemoglu, Johnson, and Robinson, 2005b; Barro, 1997; and Dawson, 1998, among others.

weakening of political and economic blocks created by such crises may expedite change within developing country governments. In this way, the crisis hypothesis recognizes the role of political structures in determining institutional change.

Taking a different approach to the study of institutional causation, other work has exploited historical differences between countries to examine the determinants of good governance. This line of research is primarily associated with the work of Daron Acemoglu. Acemoglu (2003) refutes previous notions that geography is a primary determinant of institutional and economic development, arguing that the mere correlation between climate differentials and standards of living does not imply a causal relationship. Rather than using social cohesion as an exogenous source of variation, Acemoglu views 15th century colonization as a "natural experiment" through which to separate the endogenous relationship between institutions and growth into two distinct channels. He finds that, rather than geographic factors contributing to a country's potential for future growth, a history of colonization serves as a far better indicator of future progress. In a later work, Acemoglu, Johnson, and Robinson (2005a) assert that the significant expansion of trade volume among countries along the Atlantic enhanced the ability for colonialism to flourish, entrenching these institutional differences even further.

Recognizing the potential barriers created by colonialism could be beneficial to the determination of the optimal course of action for former colonies to take moving forward. Unfortunately, though a history of colonization can be taken into account when formulating policy, that history can hardly be changed. Thus, there exists a limitation as to the potential benefits that can be drawn from such a conclusion. The discovery of other, more contemporary determinants of an effective policy environment with the potential to be changed in the future can build on Acemoglu's findings.

In addition to historical analyses involving colonialism, there are other possible explanations of institutional differences across nations that relate primarily to factor endowments. Sokoloff and Engerman (2000) argue that differences in initial resource allocations are a primary explanation of the persistence of inequalities across time. Such inequalities contributed to the dominance of a particular cultural or ethnic group that installed institutions to ensure their persistence, subsequently decreasing growth. Like Acemoglu, Sokoloff and Engerman agree that initial colonization patterns still

contribute to the cross-country differences observed today. Their work is also very much related to the social cohesion arguments presented here and in the *ERW* paper, because it is the divide between those with power and those without power that causes bad policies to persist. In this way, the analysis presented in this paper aligns well with the Sokoloff and Engerman hypothesis, as it examines the divisions among people that lead institutional inequalities to be sustainable over the long run.

All of the research discussed above recognizes that it is not only a discussion of institutional impacts on growth that is necessary, but also an examination of the best mechanisms to initiate and prolong good governance. The avenues for further analysis, however, are far from exhausted. There are a variety of ways that this research could be expanded in order to increase its applicability to broader development goals and program evaluation.

The use of cross-sectional averages in place of panel data is common in the literature when examining the causal impacts of social norms on institutional formation. Examples of the use of cross-sectional data can be found in the *ERW* paper, as well as in research of a similar nature by Knack and Keefer (1997). While cross-sectional analysis allows the researcher to examine the long run impacts usually associated with the creation of institutions, the use of this type of data is not without its drawbacks. If there are persistent unobservable country characteristics that occur simultaneously with random shocks through time, for example, there could be some doubt as to the consistency of a cross-sectional model's estimates. Additionally, the use of panel data allows for lagged variables to mitigate problems of reverse causality and aid inference. For these reasons, the measurement of social cohesion effects using panel data, as carried out in this paper, could serve as a robustness check to satisfy the concerns surrounding cross-sectional analysis, lending support to previous results.

In addition to the use of cross-sectional data, most papers in this area employ a set of institutions that are generally accepted by the majority of economists, but do not attempt to justify the inclusion of particular institutional characteristics specifically. Thus, to provide clarity and expand understanding, a discussion of the measurement of a variety of institutional characteristics will be undertaken in Section III of this paper. Specifically, the analysis will break down political

structures and characteristics of governance into specific subgroups in order to compare outcomes across institutional types.

As a final consideration, the straightforward relationships described by the *ERW* model can be expanded to incorporate the effects of education into the ideas of social cohesion. Incorporating education into a model of social cohesion will broaden the scope of the current discussion and augment the ways in which the discipline thinks about social networks. In summary, while it is recognized that the previous work in this literature is both important and unique, there are still enhancements to be made that, if successful, will strengthen these arguments.

III. Social Cohesion and Institutional Quality

The definition of social cohesion seems quite nebulous at first, and is interpreted in a variety of ways by authors using the term in different contexts. Researchers using social cohesion to examine distributional consequences usually define it in terms of income distribution and other inequalities. In contrast, those using the term to describe a "willingness to work together" to create bonds within communities or a level of personal investment in society often look at variables such as rates of civic participation and levels of trust of other people (Beauvais and Jenson, 2002). Regardless of the context in which it is used, the commonality between these measures is that they promote the idea that there are important links between an individual's place within a society and the aggregate outcomes of the society itself.

It is therefore important to define what one means when using these terms, especially for the purposes of economic and political research. When examining the contribution of social cohesion to institutional development around the world, both the distributional aspects of the term and a civic participation component become important. In this light, I define social cohesion as those attributes that contribute to a breakdown of economic, social, and political barriers to reform within a society. Measures of this quality can be manifested in several forms. To measure the extent to which a population feels a certain level of economic inclusion, income inequality can provide a suitable mechanism for evaluation. Income inequality has been cited as an important measure of social cohesion by a variety of authors (e.g., Easterly et al., 2006; Kawachi and Kennedy, 1997). Notions of inclusion could also manifest themselves

through education and civic participation, as people who are more equipped with basic skills may be more civically engaged. To this end, the adult literacy rate of a society could provide a valuable indicator of progress. To gauge the degree of social and political divisions, indices of ethnolinguistic fractionalization can be of use. All of these potential variables will be discussed in greater detail in the fourth section of this paper. Though these measures are by no means perfect, they provide good proxies with which to measure social divisiveness or inclusion.

Unlike the general pattern of consensus that seems to have emerged with respect to measures of social cohesion, when thinking about the qualities of a good economic or political institution, there are a wide variety of views about which characteristics should dominate the discourse. Many times institutions are consolidated into groups without identifying or ranking their individual attributes. In a recent paper by Acemoglu and Johnson (2005), the authors argue that this approach masks the fundamental economic ideas that institutions are thought to promote.[2] To examine this hypothesis, the authors divide institutions into two categories: those supporting private contracts between individuals, and those preventing inappropriate government expropriation or exploitation of the powerless by the powerful. Using an instrumental variables approach, they find that while the property rights-type of institutions have a positive impact on economic growth, the contracting or private institutional varieties seem to matter much less. As will soon be shown, by making distinctions between various institutional types within the data, this paper will be able to provide an indirect test of the Acemoglu and Johnson hypothesis.

One additional type of institution that is often overlooked in the literature is the methods by which the political and bureaucratic organizations within a country promote or discourage production and innovation. For example, a country could have well defined property rights and limited corruption, but a plethora of "red tape" that makes entry into an industry difficult by a relatively new or small firm. These barriers to entry can place constraints on competition, diminishing the potential for positive spillovers, and creating social

[2] The 2005 paper builds upon previous work by these authors in 2002, where they examine the "institutional reversal" caused by European intervention in colonial investment markets. (Acemoglu, Johnson, and Robinson, 2002)

losses from inefficiency. Several prominent economists have recognized the significance of these qualities and have taken steps to measure its importance in national economies. The *Global Competitiveness Report*, published annually and edited by Xavier Sala-i-Martin and colleagues (2004), is an attempt to measure both the macroeconomic policies that create a suitable environment for prosperity and the ability of firms to generate wealth at the microeconomic level. The indices recognize that the ease of doing business in a country can dramatically affect its potential to grow, and that measuring the degree to which this occurs is important for understanding long run patterns of economic progress.

The previous discussion indicates the need to establish an intellectual "common ground" when discussing the potential impacts of institutional quality on growth. Without making clear distinctions about the nature and types of institutional quality, difficulties can arise when interpreting the estimation results of such complex relationships. Focusing on these issues prior to an empirical analysis greatly simplifies subsequent work, making the data easier to understand and simplifying formal economic modeling.

IV. The Empirical Model

With these ideas in mind, a basic dual-equation econometric model is presented that will support and extend the previous work established in this area. The form of the model builds upon an original model presented by *ERW* in which ethnolinguistic fractionalization and middle class income share are used as instruments for institutions in a bivariate per-capita growth equation.

The ethnolinguistic fractionalization variable used in that paper is measured as the probability that two randomly drawn individuals from a population will belong to different ethnolinguistic groups, as derived by Easterly and Levine (1997). However, as is noted by Alesina and colleagues (2003), since these data are largely based on linguistic distinctions, they can mask other important differentiating information such as racial origins or skin color. In contrast, measuring fractionalization with respect to religious differences has been shown to have the opposite of the paper's hypothesized effect on political institutions because freer and more tolerant societies also tend to have a large number of religious groups. Fortunately, Alesina and his coauthors have improved upon these measures by separating fractionalization measures into three distinct groups pertaining to

ethnicity, language, and religion. Given the problems pertaining to the use of the language and religion measures described above, the empirical analysis shown here will make use of the ethnic fractionalization component of the work, while recognizing that future work with the other two measures and more direct metrics pertaining to political participation could be a useful extension of the current project.

As previously mentioned, the *ERW* paper uses the income share of the middle class within a society as a measure of economic cohesion. The authors suggest that this measure of economic divisions is preferred to household-level measures such as the gini coefficient. The use of the "middle class share" variable, however, is not available as a panel during the measured time frame, necessitating that 20-year cross-sectional averages be used in the *ERW* paper when measuring inequality. As noted above, this approach, while offering some substantial benefits, is unable to account for any time-varying characteristics that affect institutional quality and inequality simultaneously. The authors note that they are "well aware of the limitations of cross-country regressions" and hope to improve upon this potential for bias in future work (Easterly, Ritzen, and Woolcock, 2006, p.104). Fortunately, by using household-level income measures of the gini coefficient instead of middle class share, this paper is able to construct a panel data set that can accurately capture the potential for heterogeneity of inequality measures across a short time span, and improve upon the work in a manner in which the authors had hoped would occur.

In addition to the previous concerns surrounding the measures of fractionalization and inequality, the empirical specification of the *ERW* model suggests that inequality is assumed to be uncorrelated directly with growth, implying that it only affects the institutional variable. This exclusion restriction seems to be only marginally valid in the paper for some of the institutional specifications, as the test statistics of overidentification are fairly large with small *p*-values. Unfortunately, recent econometric research has shown that the power of these overidentification tests against plausible alternatives is relatively minor, necessitating that small test statistics (or large *p*-values) be obtained to have confidence in this type of exclusion restriction (Cameron and Trivedi, 2005, pp.105-107). To further investigate the robustness of these restrictions, overidentification tests were conducted on the *ERW* model using the panel data from

this paper, replacing the "middle class share" measure with the gini coefficient variable. The results (not shown here) indicated that the gini coefficient measure, which is known to be highly correlated with variables measuring middle class share, does not meet the requirements to be validly excluded from the growth equation. For this reason, the model estimated in this paper includes the inequality measure in the growth equation.

Given these considerations, the hypothesized model of the paper is as follows:

$$Institutions_{i,t-1} = \gamma_0 + \gamma_1(EthnicFractionalization)_{i,t-1} + \gamma_2(Inequality)_{i,t-1} + \gamma_3(AdultLiteracy)_{i,t-1} + \mu_{i,t-1}$$

$$RGDPPCGR_{it} = \gamma_4 + \gamma_5(Institutions)_{i,t-1} + \gamma_6(Inequality)_{i,t-1} + \eta_{it}$$

where *RGDPPCGR* represents the annual growth in real GDP per capita for country *i* at time *t*.[3] There are several aspects of this specification that require explanation in order to interpret the model's predictions. First, it is important to note that adult literacy is included as a new measure of social cohesion that was not previously incorporated into the *ERW* model. The addition of this variable is believed to be an improvement because it measures an aspect of social inclusion that is not already captured by ethnic fractionalization or income inequality. The ability to read enables an individual to participate more fully in society on a variety of different levels. Not only is literacy a good proxy for basic educational attainment, it also reflects the ability of an individual to engage in simple political and social functions, such as voting, applying for government programs and services, and asserting certain rights that may be provided by the current political system. Recent World Bank projects have recognized the importance of the relationship between educational outcomes and social cohesion, especially when that education is tailored to foster a sense of inclusion among members of a society (Roberts-Schweitzer, 2006). From an econometric perspective, the use of this variable also contributes an additional instrument to control for the endogeneity of institutions, allowing the model to remain

[3] The model specification as presented here is similar to the structure of the *ERW* model. Although for purposes of brevity the exact equations of that model are not included here, a comparison of the two approaches may prove useful to the reader.

overidentified.[4] For these reasons, it is believed that the inclusion of the literacy variable captures components of social cohesion that may not already be taken into account.

In addition to the inclusion of an additional explanatory variable, the use of panel data allows a number of flexibilities specific to the empirical estimation of the model. For example, because of the potential for correlation between institutions, inequality, and the error term, the independent variables in the growth equation are lagged one year. Though this does not necessarily eliminate any remaining endogeneity problems entirely, it has the potential to improve upon the case in which a lag does not occur by minimizing the potential for a bidirectionally causal relationship. In addition, although institutional characteristics were unable to be obtained for each year measured, two waves of data were used to incorporate time-varying characteristics partially.

V. Data and Estimation

Descriptive statistics for the data used in estimation are given in Table 2. The data spans 111 countries over the years 1992-1999.[5] Observations with missing or inconsistent estimates were dropped, leaving 419 total observations for estimation purposes. Because results were not available in all cases for the *Law and Order* variable, the estimates using that measure are limited to 398 observations. To check for potential selection bias from dropped observations, observed country characteristics were compared between the original sample and the sample used for estimation. The means for all observed characteristics do not differ significantly between the two groups of observations. This provides some evidence that sample selection issues are unlikely to be driving the estimation results.[6]

As noted in Table 1, institutional characteristics for each country were obtained from the 2004 annual report of the *Economic Freedom of the World*, created by James Gwartney and Robert Lawson, as well as

[4] This analysis assumes that the adult literacy rate of a country can be validly excluded from the growth equation. The validity of such an assumption will be examined when discussing estimation results.

[5] It should be noted that 1996 is excluded from estimation as a result of complications in the procurement of reliable data for that year.

[6] It is recognized, however, that the potential for bias from selection on unobservables remains. The striking similarities between the two samples, however, provide evidence that this risk is minimal.

the 2004 edition of the *Global Competitiveness Report*. Using a variety of indicators, the reports create indices of the quality of specific institutional groups that range from 1 to 10, where 10 is indicative of the highest level of institutional quality possible. For comparison with previous work, the *Property Rights and Enforcement* variable used in this paper most closely corresponds with Acemoglu and Johnson's definition of "property rights" institutions, while the *Law and Order* variable can be classified in the "contracting" category. The *Ease of Doing Business* indicator incorporates administrative obstacles for new businesses as well as time spent dealing with bureaucracy and bribes

Table 1. Data Sources

	Source
Growth of Real GDP per capita	United Nations Human Development Report (2006)
Institutional Measures	
Property Rights & Enforcement	Gwartney and Lawson (2004)
Law & Order	Gwartney and Lawson (2004)
Ease of Doing Business	Sala-i-Martin et al. (2004)
Measures of Social Cohesion	
Ethnic Fractionalization	Alesina et al. (2003)
Inequality (gini)	UTIP Estimated Household Income Inequality Data Set (2007), United Nations WIDER World Income Inequality Database (2005), and Deininger and Squire (2007)
Adult Literacy Rate	United Nations Human Development Report (2006)

for government officials, the proverbial "greasing the wheels" of corruption (Gwartney and Lawson, 2007; Sala-i-Martin et al., 2004). This measure is similar to the *Doing Business* indicators compiled by the World Bank, though the years spanned by the World Bank data are not sufficient for use in this paper.[7]

The empirical model is estimated using two stage least squares (*2SLS*) with robust standard errors. This technique shares the advantage of three stage least squares (*3SLS*) in that it is able to use the independent variables as instruments to correct the endogeneity of institutions in the growth equation. By using the Huber-White correction of the variance-covariance matrix, the *2SLS* estimator also

Table 2. Descriptive Statistics

	Mean	Std. Dev.	Obs.	Minimum	Maximum
Growth of Real GDP per capita	0.0315	0.1555	538	-0.3952	0.8019
Institutional Measures					
Property Rights & Enforcement	6.116	1.733	570	2.6	9.6
Law & Order	7.039	2.448	534	0	10
Ease of Doing Business	5.814	1.182	570	2.7	8.8
Measures of Social Cohesion					
Ethnic Fractionalization	0.4184	0.2451	666	0.002	0.8635
Inequality (gini)	42.56	8.125	581	20.6	74.3
Adult Literacy Rate	81.70	19.87	658	25.6	99.7

[7] See Djankov et al. (2002) for the background paper discussing the business initiation measures of the *Doing Business* data.

allows for potentially heteroskedastic errors in each equation. It is important to note, however, that *3SLS* estimation will provide increased efficiency over *2SLS* estimates if the error terms are homoskedastic but correlated across equations (Cameron and Trivedi, 2005, p.214). For this reason, the model was also estimated using *3SLS* as a robustness check. As expected, coefficient estimates were quite similar across estimation methods while standard errors varied slightly. The signs, magnitude, and significance level of all relevant variables remained unchanged between each technique. Because of the additional flexibility and ease of interpretation allowed by *2SLS* estimation, results from this estimation method are primarily reported in the paper unless otherwise noted. To ensure the model's validity, various specification tests and other checks will be discussed in Section VII of the paper.

Table 3. *2SLS* Results: Institutional Equation

	Property Rights & Enforcement	Law & Order	Ease of Doing Business
Ethnic Fractionalization	-1.579*** (0.3557)	-1.801*** (0.566)	-0.5957** (0.2606)
Inequality (gini)	-0.730*** (0.0137)	-0.1013*** (0.0203)	0.0022 (0.0087)
Adult Literacy Rate	0.0159*** (0.0047)	0.0217** (0.0092)	0.0192*** (0.0036)
Constant	8.572*** (0.7595)	10.320*** (1.289)	4.326*** (0.5729)
F-Statistic	30.17	11.27	30.56
Adjusted R^2	0.3593	0.3102	0.1266
N	419	398	419

*, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.
Standard errors are given in parentheses, and are corrected for heteroskedasticity.

VI. Results

The results of the estimation of the model are given in Tables 3 and 4. Observing the estimates of the institutional equation given in Table 3, we can see that the hypotheses of the economic model relating to the first stage are generally confirmed.

Looking at each equation individually, the negative and statistically significant coefficients of the ethnic fractionalization measure indicate that a more ethnically fractionalized society indeed seems to place constraints on policymakers to develop the types of institutions specified in the top row of the table. It also appears that fractionalization tends to have a larger impact on government expropriation and contractual regulations than on the ease of doing business in a society. This seems to make some intuitive sense, as a society run by a particular group (or set of groups) may be more eager to expropriate the wealth of other groups if the society is more dispersed along ethnic lines. Without a large coalition able to fight against government intrusion, it may be easier for unequal policies to persist. For these same reasons, it also makes sense that inequality is a

Table 4. *2SLS* Results: Growth Equation

	Property Rights & Enforcement	Law & Order	Ease of Doing Business
Institutional Measure	0.0471*** (-0.0137)	0.0422*** (0.0140)	0.0467*** (0.0182)
Inequality (gini)	0.0024 (0.0019)	-0.0033 (0.0024)	-0.0016 (0.0010)
Constant	-0.3639** (0.1625)	-0.4083** (0.2002)	-0.1716 (0.1374)
Sargan Statistic (*p-value*)	0.458 (0.498)	0.067 (0.796)	5.347 (0.020)
N	419	398	419

*, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.
Standard errors are given in parentheses, and are corrected for heteroskedasticity.

far better indicator of property rights and the rule of law than the ease of doing business within a country.

Even more interesting for the purposes of this paper are the results pertaining to the adult literacy rate. To take the estimate pertaining to property rights as an example, the coefficient indicates that, ceteris paribus, a single percentage point increase in the literacy rate will increase the average rating of property rights in a country by .0159. The magnitude of the estimated coefficient may seem tiny at first, but it is important to remember that since this political indicator only ranges from 1 to 10 (and from 2.6 to 9.6 among the countries of the sample), even a small change in this indicator can indicate a relatively large change in the policy environment of a nation. In addition, it is important to note that, when viewed individually, these variables are not intended to capture the entire degree of social cohesion within a country, per se. Rather, the main purpose of these measures is to serve as indicators for the general social structure and cultural interactions of a particular environment. When viewed in this light, the results of the political institutions equation can generally be considered to support the theory implicit in the economic model of this paper.

Looking at Table 4, the results of the growth equation are somewhat consistent with that of the previous literature. Unlike previous studies, however, the structure of the empirical model in this paper allows for a more nuanced interpretation of the effects of social indicators on a country's growth prospects. Comparing the coefficients of all three specifications, it seems clear that, rather than having a direct effect on growth rates, measures of social cohesion affect growth through mechanisms relating to institutional quality. Moreover, since the paper differentiates among institutional types, even more information can be obtained from the data. The estimation indicates that the property rights-type indicator of institutional quality has large and significant effects on economic growth. To wit, an increase in these types of political foundations is associated with an increase in growth of more than 4 percent. This estimate is so large, in fact, that it instigates questions as to other factors correlated with these types of institutions that may be driving such results. An investigation into these issues is reserved for future work, but the story of this coefficient remains clear: Protecting the rights of citizens and their property from seizure by others is a crucial element in the promotion of economic growth and stability.

Similar inferences can be obtained when examining the estimates pertaining to the ease of doing business. It seems that easing the ability of a firm to conduct business within a society also has large impacts on future growth, a result that has been well documented by other sources. The unique contribution presented here, however, arises when connecting these results to those of Table 2. Examining the result of both equations simultaneously, it is evident that social cohesion measures such as ethnic fractionalization and the adult literacy rate are major contributors to the promotion of entrepreneurship, subsequently affecting growth outcomes.

One of the most interesting pieces of information obtained from Table 4 is the significance and magnitude of the variables involving law and order. The distinction drawn between the *Property Rights and Enforcement* and *Law and Order* variables can be directly related to Acemoglu's arguments that the property rights components of institutions matter far more than contractual or private concerns. Acemoglu's emphasis on property protection does not seem to be upheld by these results, however, as the coefficient representing the effect of property rights is not significantly larger than the coefficient relating to law and order. This result suggests that the colonization arguments put forth in previous work may not always hold under alternative specifications. This implies that even more empirical work is needed in this area in order to dissect the relative importance of social cohesion versus colonization effects with respect to institutional outcomes.

It is also interesting to note that the effects of inequality, as measured by the gini coefficient, are insignificant across all institutional specifications, even though overidentification tests indicate that the variable cannot validly be excluded from the growth equation. A possible explanation for this outcome relates to the Kuznets (1955) hypothesis, which dictates that inequality will vary along the stages of a country's growth path. If the relationship between inequality and growth is nonlinear in nature, a linear specification may yield insignificant coefficients even if the two variables are directly related. This brings forth the possibility for the incorporation of a nonlinear specification of inequality as a potentially fruitful avenue for future work.

VII. Specification Tests and Robustness Checks

As noted above, the use of *2SLS* in estimation requires two main assumptions: that measures of social cohesion are highly correlated with institutional outcomes and that at least one of these social cohesion measures can be validly excluded from the growth equation.

The large *F*-statistics reported for all three institutional equation specifications in Table 3 indicate that these instruments are strong predictors of institutional quality. The importance of instrument strength has been increasingly emphasized in the literature. According to Staiger and Stock (1997, p.557), the value of the *F*-statistic should exceed 10 in regressions of this type, while values below 5 suggest serious problems relating to finite-sample bias (Cameron and Trivedi, 2005, p.105). It is encouraging, then, to observe that the possibility of inconsistent estimates resulting from irrelevant instruments do not appear to threaten the validity of this work.

These large *F*-statistics and reasonable R^2 values indicate that the first of the two main assumptions of *2SLS* is likely to hold. The task remains, then, to examine whether the exclusion restrictions of the model hold under scrutiny. Intuitively, theories of social cohesion generally support the idea that ethnic fractionalization should only have a significant and direct impact on growth through its effect on institutional characteristics. Social environments that foster an increased willingness of citizens to work together should promote positive governmental reforms, but may not directly impact a country's growth rate. A plausible argument can also be made for the exclusion of the adult literacy rate as a direct cause of economic growth. While an increase in the number of literate citizens per capita certainly affects the communication and networking ability of a population, it is unclear that this component will also directly affect growth outcomes in a given year. Additionally, since both the adult literacy and ethnic fractionalization variables are lagged one year with respect to current growth, there is minimal risk of feedback effects of an economic boom on past outcomes.

To examine the validity of excluding both ethnic fractionalization and adult literacy from the growth equation from an econometric perspective, Sargan tests of overidentifying restrictions were conducted for each growth equation estimated, and the results of these tests are reported in Table 4. Note that a rejection of the null hypothesis of a Sargan test implies that the joint validity of the

instrument moment conditions does not hold, thus rejecting the model specification (Verbeek, 2004, p.147). It is therefore encouraging to observe that for all specifications with the exception of the *Ease of Doing Business* regression, the test strongly supports the overidentification conditions. The *p*-values corresponding with each of these two statistics are especially high, helping to mitigate concerns of a lack of power for this test. As an additional check, separate *2SLS* regressions were run including either ethnic fractionalization or literacy in the second stage. In all institutional specifications, an exceptionally small and insignificant coefficient on adult literacy was obtained when including the variable in the second stage. Similarly, no significant effect was found when including ethnic fractionalization in the growth equation, except for the case when the *Ease of Doing Business* indicator was used as the instrumental variable. Though these are informal tests, they do contribute additional support to the assumption of validly excluded instruments.

The only concerns regarding overidentification arise when examining the Sargan statistic for the *Ease of Doing Business* regression. A Sargan statistic of 5.347 indicates that exclusion can only fail to be rejected at the 2 percent level. This implies that one or both of the identifying social cohesion variables may need to be incorporated into the growth equation in this case. As noted above, inclusion of adult literacy in the growth equation when *Ease of Doing Business* is used as an institutional measure yields small and insignificant results for that variable.[8] This confirms, albeit informally, that adult literacy is a validly excluded instrument. Inclusion of the ethnic fractionalization measure in the second stage, however, does yield significant results for this single specification. Because these results indicate that ethnic fractionalization may not be validly excluded in all cases, the model is re-estimated including this variable in both equations to test the susceptibility of the results to identification bias.[9] The results of this estimation are reported in Table 5. While the coefficient for ethnic fractionalization does appear to be significant,

[8] Specifically, the coefficient of adult literacy in the growth equation is -0.0045 when using the *Ease of Doing Business* measure, with a standard error of 0.0043.

[9] The inability to test the remaining exclusion restriction in an exactly identified model of this type is recognized, but the importance of including the fractionalization measure in the growth equation seems to outweigh the costs of this potential weakness. This is especially true when considering that all results point to adult literacy as a validly excluded variable.

the inclusion of this variable sweeps out any potential significance from the other explanatory variables. It appears that even though the overidentification restriction for ethnic fractionalization may only weakly hold in one of the model's specifications, it generally seems true that social cohesion affects growth indirectly through institutional outcomes rather than encouraging growth directly. Even if the results of all regressions involving the ease of doing business within a society were dismissed, a strong case could still be made for the links between social structure, institutions, and subsequent growth outcomes using these results.

The specification tests and other checks performed within this section generally support that the economic model of the paper is a valid representation of the relationship between social structures, institutional change, and economic outcomes. As with any empirical work, there are some flaws in estimation that cannot be avoided. In general, however, these tests show that the reader can be reasonably confident in the results generated here.

Table 5. 2SLS Results:
Growth Equation, Exactly Identified Model

	Coefficient *(Standard Error)*
Ease of Doing Business	0.0220 (0.0203)
Inequality (gini)	-0.0011 (0.0009)
Ethnic Fractionalization	-0.0848** (0.0347)
Constant	-0.0166 (0.1457)
Adjusted R^2	0.0413
N	419

** indicates a significance level of 5%. All standard errors are corrected for heteroskedasticity.

VIII. Conclusion

This paper serves as an initial step in what is hoped will be a comprehensive examination of the relationships between social cohesion, institutions, and growth by the discipline. By disaggregating the notion of institutions, the paper has shown that such distinctions matter in the discussions of growth and living standards. The first stage results lend support to the idea that a more ethnically fractionalized society constrains policymakers in their ability to promote institutional maturity within a country's borders. When dissecting these institutional characteristics into specific groups, social cohesion variables seem to have a larger impact on government expropriation and contractual regulations than on the ease of doing business in a society. Adult literacy rates are also shown to have a strong effect on the ability for these institutional characteristics to take hold among a given population. When examining the results of the second stage, however, the similarly positive effects of both *Property Rights* and *Law & Order* types of institutions on growth rates seem to refute previous arguments that the property rights components of institutions matter far more than contractual considerations. In this way, the results here have been able to contribute to a more nuanced discussion of the relationship between social variables, institutions, and growth outcomes. In addition, the paper has made significant headway in extending previous models of relationships between social cohesion and growth to analyze the theoretical underpinnings of these relationships in further detail. Despite this additional level of complexity, the results shown here should reinforce a central conclusion of the development literature: Supporting a country's ability to develop sound institutions is a key determinant of future economic growth and prosperity.

Though there is certainly room for improvement in some aspects of the analysis, it is believed that the work presented here is an important beginning to the encouragement of dialogue surrounding appropriate policy recommendations for less-developed countries. By deconstructing previous notions of social cohesion, institutions, and growth, it is hoped that the paper is able to shed a little more light on the ways in which the developing world can begin to attain standards of living not yet seen in these areas.

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