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Three essays on institutional change

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THREE ESSAYS ON INSTITUTIONAL CHANGE

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ABSTRACT

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This dissertation consists of three essays which empirically investigate different avenues of institutional change. The introduction opens with a discussion of the topics explored in the three essays and provides an overview of important results from each essay. Essay one is a joint effort with Dr. Andrew Young. In this essay, we examine how foreign aid affects institutional change using a panel of aid recipient countries and multiple measures of institutions. In essay two, I examine how globalization affects informal institutions, measured by the level of culture in a country. The final essay explores if there are spatial spillovers from institutions in the European Union. The final chapter summarizes the conclusions of the three essays and discusses some possibilities for further investigation.

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Introduction

It is widely accepted that the institutional quality of a country affects its economic development (see Hall and Jones (1999), Sturm and De Haan (2001), Rodrick et al. (2004), and Seldadyo et al. (2007)). While recent studies have highlighted the importance of institutions for economic growth, the mechanisms that shape these vital institutions are less understood. Since institutions are important for the economic growth of a country, it is important to better understand how a country forms its institutions and how they evolve over time. In the following essays, I empirically investigate different mechanisms that may affect institutional quality.

My first essay, "Foreign Aid, Institutional Quality, and Growth", is a joint effort with Dr. Andrew Young. Using a panel of up to 135 countries from 1970-2005 we estimate the effects of foreign aid flows on a variety of measures of institutional quality. We find that aid flows are associated with the deterioration of both political and economic institutions. Regarding the latter, aid flows are associated with deterioration in a recipient's legal system and property rights, all well as its openness to international trade. Controlling for both political and economic institutions in growth regressions, the latter robustly and positively associated with growth. After controlling for institutional quality, aid flows are not otherwise significantly related to growth.

In my second essay, I examine how globalization impacts culture. Many believe that globalization can lead to cultural change within a society, but how globalization impacts culture is not well understood. In this paper I empirically investigate how globalization affects economic culture. The KOF globalization index is employed as a measure of globalization while a measure of culture is constructed from European Value and World Value Surveys data. The constructed measure emphasizes cultural dimensions that have been shown to positively correlate with entrepreneurship and economic growth. Based on a panel of data for 91 countries covering 1970-2005 I report that globalization is positively related to this measure of culture. Furthermore, the economic and social (rather than the political) dimensions of globalization appear to drive the estimated relationship.

My final essay looks to see if there are institutional spillover effects. Institutional quality in one country is likely affected by the economic environment and institutional quality in neighboring countries. I examine the possibility of institutional spillovers in countries in the European Union by

employing spatial econometric techniques. Because a country's neighbors may affect their institutional quality by a variety of avenues, I use a Spatial Durbin maximum likelihood model. I find that the Economic Freedom of the World measure of institutions shows positive institutional spillovers as well as the components that measure access to sound money, the freedom to trade internationally, and the regulations of credit, labor and business. For these measures of institutions, a country's institutions directly affect the institutional quality of their neighboring countries' institutions. The Worldwide Governance Indicator rule of law and the institutional measures by Freedom House also show positive institutional spillovers. The presence or absence of institutional spillovers will help in better understanding how institutions evolve overtime.

In my final chapter, I summarize my findings and discuss some possibilities for future research.

Chapter 1:
Foreign Aid, Institutional Quality, and Growth

1. Introduction

Institutional quality is an essential ingredient for economic growth. As Rodrick et al. (2004) famously proclaimed: *institutions rule*. And while foreign aid is aimed at promoting growth and prosperity in developing nations, some researchers have argued that its effectiveness is a function of institutional quality (e.g., Burnside and Dollar, 2000 & 2004). Recent evidence that aid flows are detrimental to institutions is therefore doubly troubling (Svensson (2000), Rajan and Subramanian (2007), Heckelman and Knack (2008), and Djankov et al. (2008)). Aid may harm the very institutions under which it can be effective: the same institutions that themselves promote economic growth.

There are plausible reasons why aid flows might be detrimental to a recipient's institutional quality. For example, a government receiving aid is less reliant on the collection of tax revenues. It may therefore be less responsive and accountable to its citizens. Aid flows are also windfalls that are disbursed through specific channels. The rewards to controlling the channels (rent-seeking) may be high relative to the rewards from productive activities (Baumol, 1990). Like the flow of rents from a subterranean natural resource, aid may "curse" a country by exerting a corrupting influence on its institutions (Djankov et al., 2008).[1]

In this paper we investigate the links between foreign aid, institutional quality, and growth. Up until now there have been three fairly distinct literatures on the effects of (i) aid on growth, (ii) institutions on growth, and (iii) aid on institutions. One of our contributions is to explore (i), (ii), and (iii) together with a single panel composed of data from up to 116 countries and covering the years 1970 through 2010. Another of our contributions is to tie these separate literatures together, asking which (if any) dimensions of institutional quality are likely channels through which aid affects growth.

Specifically, we ask which dimensions of institutional quality (e.g., economic versus political freedoms) are significantly affected by aid flows. Those affected dimensions are potential

[1] Evidence of natural resources curses has been reported in several influential papers including Auty (1990) and Sachs and Warner (1999, 2001).

channels through which aid affects growth. We then estimate growth regressions including all of the affected dimensions to determine which represent likely indirect channels for aid to affect growth. In doing so, we control for the direct effect of aid on growth. This last step acknowledges that there are certainly other channels through which aid affects growth (e.g., through increasing the resources available for investments).

Our analysis includes a large number of institutional quality measures, including Polity IV scores, the Economic Freedom of the World (EFW) index from the Fraser Institute, the checks and balances measure from Keefer and Stasavage (2003), and both the political rights and civil liberties measures from Freedom House. Besides including a larger number of institutional variables than previous studies, we also break the EFW into its five constituent components, separating the effects of aid on, e.g., the legal environment and property rights versus the size of government. This gives us a finer picture of which economic institutions are affected by aid flows. Given this large number of measures of political and economic institutions, our study is unique in analyzing the effects of all of them using a uniform identification strategy.

We find that aid flows are associated with decreases in measures of both political and economic institutions. Relative to the sample variation in our institutional measures, the effect on economic institutions is larger. Controlling for all of the affected measures, only decreases in economic institutions are significantly associated with lower rates of economic growth. Discerning from the data which specific dimensions of economic institutional quality matter most is difficult. However, the strongest evidence points towards deteriorations in international trade freedoms being a channel through which aid affects growth.

This paper is organized as follows. A review of the relevant literature and an explanation of how our paper contributes are contained in section 2. Section 3 contains a description of our data and econometric strategy. Our empirical results are presented and discussed in section 4. Concluding comments constitute section 5.

2. Existing Literature and the Present Paper

There is a substantial literature addressing the effect of foreign aid on economic growth. The conclusions of individual researchers are varied. Our reading of the literature suggests that a consensus, though by no means a unanimity, exists: at best aid contributes positively to growth

only in good policy environments; at worst it is detrimental to a recipient's development. Our reading of the literature, however, will undoubtedly be controversial. As Rajan (2005) concluded: "the debate about aid effectiveness is one where little is settled."[2]

In the 1970s Peter Bauer (1972) was a relatively lone voice among economists in questioning the effectiveness of foreign aid. Inspired by Bauer's work, however, Boone (1996) provided a seminal econometric study reporting that aid is not associated with higher growth or investment in developing countries. This pessimistic view of aid was tempered by the later research of Burnside and Dollar (2000, 2004) who found that, while aid has little impact on growth on average, it does have a positive impact on growth conditional on a good policy environment. Subsequent studies by Collier and Dehn (2001), Collier and Dollar (2002, 2004), and Collier and Hoeffler (2004) reported similar results.

The Burnside and Dollar research proved remarkably influential in the development community but not uncontroversial. Easterly (2003) and Easterly et al. (2004) argued that the Burnside and Dollar results are sensitive to small changes in the time period and countries included. Rajan and Subramanian (2008) is another recent study that failed to find a positive effect of aid even in good policy environments. Worse yet, Barro and Lee (2005) actually found the effect of aid on growth to be negative. However, other researchers are more sanguine about the potential for aid to foster growth. Influential papers by Hansen and Tarp (2000, 2001) found that aid increases growth in recipient countries and that this positive effect is not conditional on a good policy environment.[3] Dalgaard et al. (2004) and Karras (2006) reported similar results.[4]

A large literature also addresses the effect of institutions on economic growth. Inspired by the seminal work of North and Thomas (1973) and North (1990), these studies relate differences in

[2] Doucouliagos and Paldam (2008, 2009,2011) conducted meta-analyses of, respectively, 100 and 68 papers examining the effect of aid on growth. In both meta-analyses they conclude that the effect of aid on growth is not statistically significant. Bjørnskov (2013) is a recent and novel attempt to use factor analysis to break aid down into different types according to its intended purposes: (i) economic, (ii) social, (iii) reconstruction, and then (iv) a residual type. He reports that only (iii) has significantly positive effects on growth.

[3] Hansen and Tarp reported that the effect of aid in growth regressions disappears when human and physical capital investments are included as controls. However, they also found that aid positively affects investment. According to Hansen and Tarp, then, investment is the likely channel through which aid fosters economic growth.

[4] Bjerg at al. (2011) present evidence from 38 least developed countries (LDCs) that aid does not generally foster growth, but may be beneficial if the country is highly-indebted and uses the aid specifically to alleviate that debt burden.

growth rates across countries to "the humanly devised constraints that shape human interaction" (North, 1990, p. 3). Such constraints include, but are not limited to, private property rights and regulatory structure (*economic freedoms*) and the structure of elections and systems of checks and balances in a government (*political freedoms*). While Rodrick et al.'s (2004) assertion that *institutions rule* is not uncontroversial, nearly all students of development recognize the critical role of institutional quality in growth outcomes.[5]

Several early cross-country studies found that strong private property rights are associated with higher income per capita levels (Knack and Keefer (1995), Hall and Jones (1999) and Acemoglu et al. (2001, 2002)). Barro (1996) analyzed a broader set of institutions, including economic freedom, rule-of-law, and democracy, and found that the first two are significantly, positively related to growth.[6] Rodrick et al. (2004) reported that measures of the rule of law and property rights contribute to economic growth and, furthermore, once they are controlled for geography variables play an insignificant role in growth determination. Acemoglu and Johnson (2005), using an identification strategy based on exogenous variation in institutional quality from colonial times, also reported that changes in the strength of property rights are associated with large changes in a country's rates of investment and economic growth.

The question of whether aid impacts a recipient's institutions has only caught the attention of researchers recently. That this question came to the fore is unsurprising given the positive relationship between institutional quality and growth on the one hand, and the relative paucity of evidence for a positive correlation between aid and growth on the other. Being a relatively new literature it has as of yet produced few widely-accepted conclusions.

In an early and influential paper Svensson (2000) provides a game theoretic model of rent-seeking activities focused on foreign aid flows. In the model, aid is a common-pool resource that can be either be allocated towards public goods investment or appropriated for private consumption. He called attention to how efforts by agents in recipient countries to appropriate aid

[5] The chief alternative offered to the primacy of institutions in growth determination is geography. See Gallup et al. (1999) and Sachs (2003). Glaeser et al. (2004) have also argued that, while institutions are important, human capital is a more fundamental source of economic growth.

[6] Barro found the overall relationship between growth and democracy to be weakly negative. However, he also found some evidence that the relationship is non-linear. In particular, starting from low levels, increases in democracy are good for growth; but the marginal effect becomes negative in more advanced democracies.

could both be wasteful (redundant) and costly in terms of the forgone productive activities. Hoddler (2007) and Economides et al. (2008) incorporate similar rent-seeking games into Barro (1990)-type endogenous growth models. While aid may have a positive direct effect on growth through providing funds to finance public goods, an offsetting (and perhaps larger) indirect effect is associated with the allocation of resources towards rent-seeking. Moving beyond the models, if foreign aid flows promote rent-seeking, then over time the institutions of recipient countries are likely to become geared towards such unproductive activities.

Svensson (2000) reports evidence that, due to increases in rent seeking activity, foreign aid is associated with higher corruption levels. Using the International Country Risk Guide as a measure of institutional quality, Rajan and Subramanian (2007) found that aid flows reduce the quality of institutions and governance in developing countries. While foreign aid has often been used to promote democracy, Djankov et al. (2008) found that higher levels of foreign aid actually harm a recipient's political institutions.[7] Kalyvitis and Vlachaki (2012) also find that aid recipients are less likely to experience democratic reforms (though they find the effect to be mitigated if economic reforms are precede the aid). Heckelman and Knack (2008) considered aid's impact on economic institutions and found that it hinders (rather than encourages) market-oriented reform. Powell and Ryan (2006) found similar results. However, in a later paper Heckelman and Knack (2009) concluded that aid had no significant effect on economic institutions.

In this paper we employ the empirical framework and dynamic panel data techniques that are employed in Djankov et al. (2008) to estimate the effect of aid flows on institutional quality. However, while Djankov et al. (2008) use (1) the Polity IV democracy score and (2) the Keefer and Stasavage (2002, 2003) checks and balances measure, we expand their analysis to several other measures of institutional quality: (3) the *Economic Freedom of the World* (EFW) score and (4) its five component area scores; as well as the Freedom House measures of (5) political rights and (6) civil liberties. As in Djankov et al. (2008) we address the potential endogeneity of aid using instrumental variables GMM estimation. Since the over-identifying restrictions are not rejected when considering a large number of institutional measures, our identification strategy allows for

[7] Knack (2004) also found that aid did not promote democracy. He did not, however, estimate the effect to be significantly negative.

the comparison of aid's effects on various dimensions of institutional quality, both qualitatively and quantitatively.[8]

Not only can our paper be viewed as an extension of the Djankov et al. (2008) study to include a considerably larger number of dimensions of institutional quality and a longer time period. It is also an improvement upon the existing studies of aid's effect on economic institutions. Our study includes a larger data set than Heckelman and Knack (2008). Rather than 10 or 20 year cross-sections we examine a true panel including 8 five year periods. We are also able to examine a greater number of countries with EFW scores: 88 rather than 73.

Lastly, the existing literature on aid's effect on institutional quality stops short of formally "connecting the dots" to the literatures on how aid and institutional quality, respectively, affect economic growth. We contribute by bridging this gap. Having identified the dimensions of institutional quality that are affected by aid, we employ the same data and methods to estimate growth regressions including all of those identified institutional variables as controls. The results highlight the institutional channels through which aid likely affects growth. Furthermore, we check the robustness of these channels to including aid independently as a control. In addition to a robustness check, the estimated coefficient on aid indicates whether aid affects growth through channels other than institutional quality, and whether the effect through those channels is positive or negative.

3. Data

We use official development assistance (ODA) data as our measure of the amount of foreign aid a country receives. ODA is constituted by grants and loans given to a recipient country during a given year. ODA data is converted into 2005 dollars using the World Import Unit Value Index from the IMF and then taken as a share of a recipients real GDP. GDP data is gathered from the Penn World Table Version 8.0 (Feenstra et al., 2013).

While the ODA share of GDP is our variable of primary interest, in some specifications we consider (log of) ODA per capita as an alternative. However, unless we explicitly refer to "ODA

[8] Validity is the null hypothesis in tests of overidentifying restrictions, so any identification strategy must still be intuitively convincing. We argue for the intuitive plausibility of our identification strategy below.

per capita", when we refer to the variable "ODA" below we will be referring to the aid share of a recipient's GDP.

We relate average aid flows (as a share of GDP) over five year periods to the changes in institutional variables over those same periods. These variables are proxies for various economic and political institutions that are often thought to be correlated with growth experiences. They are (1) the Polity IV democracy scores; (2) the checks and balances measure from Keefer and Stasavage (2003); (3) the Economic Freedom of the World index from the Fraser Institute and (4) its five constituent area scores; and the (5) political freedoms and (6) civil liberty scores provided by Freedom House.[9]

The Polity IV Project (Marshall and Jaggars, 2010) scores the level of democracy (DEMOC) in a country with a particular emphasis on executive recruitment and constraints and the level of political competition. Polity IV uses a scale of zero to 10, with 10 representing a fully institutionalized democracy. Keefer and Stasavage (2002, 2003) utilize an alternative measure of political institutions based on indicators from the Database of Political Institutions (DPI) (Beck et al., 2010). Their checks and balances (CHECKS) variable is based on the number of "veto players" that exist in a country's political system. Veto players are decision-makers whose agreement is required for policy changes to occur. A higher CHECKS score corresponds to greater restraint on government; to a higher level of consensus necessary for policies to be changed. In our sample there are 135 countries for which we have observations on the change in CHECKS with corresponding ODA data.

The Economic Freedom of the World (FREEDOM) index measures how supportive a country's institutions are to economic freedom (Gwartney et al., 2013). Therefore, it represents a gauge of a country's economic institutions. Numerous studies have documented a positive link between this economic freedom measure and economic growth (e.g., Ayal and Karras (1998), Dawson (1998), Gwartney et al. (1999), de Haan and Sturm (2000), Gwartney et al. (2006), and

[9] Some studies (e.g., Karras (2006)) focus on aid per capita. Though aid as a percent of GDP is a more common measure, we check the robustness of our main 2SLS results (analogous to those of **table 3** below) to using aid per capita instead. The point estimates are qualitatively similar but not statistically significant. As it turns out, our instrumental variables are weak for ODA per capita. (The first-stage F-statistics are never greater than 1.259.)

Heckelman and Stroup (2000)).[10] The overall index is the sum of five constituent area scores: size of government (SIZE_GOV), legal structure and property rights (PROP_RIGHTS), access to sound money (MONEY), freedom to trade internationally (TRADE), and regulations of credit, labor, and business (REGULATION). The comprehensive and area scores are all on a scale from zero to 10, with zero being least and 10 being most free.

In addition to our three primary institutional measures (DEMOC, CHECKS, and FREEDOM) we also employ the political rights (POL_RIGHTS) and civil liberties (CIV_LIBS) scores provided by Freedom House. To some extent POL_RIGHTS is a more comprehensive measure of political institutions than either DEMOC or CHECKS. A country's score is based on an evaluation of the characteristics of the electoral process, the functioning of the government, and political participation and pluralism. CIV_LIBS, alternatively, scores the extent to which the government is constrained. It is based on an evaluation of associational and organizational rights, freedom of belief and expression, personal autonomy, and the rule of law. Each score is on the scale of 1 to 7 where 1 is the most free. (These are the only institutional measures where a lower number is "better".)

As additional controls in institutional change regressions we consider oil production as a share of a recipient country's GDP (OIL) and, separately, positive and negative terms of trade shocks (SHOCKS_POS and SHOCKS_NEG). These are controls suggested by Djankov et al. (2008). Controlling for oil production is motivated by the hypothesis of natural resource curses and their effects on institutional quality. Data on oil production and prices are gathered from BP Statistical Review of World Energy, Historical Data. Oil production is measured in barrels and oil prices are given in 2009 dollars which we put into 2005 dollars using the World Import Unit Value index. We use oil share in our analysis which is calculated by multiplying oil production with oil prices and then dividing by a countries GDP. As terms of trade shock measures, we take mean values of, separately, positive and negative growth rates of the terms of trade over the five year periods. Terms of trade are the national accounts exports price index divided by the imports price index, with 2005 equal to 100. Data is gathered from United Nations Conference on Trade and

[10] See de Haan et al. (2006) provide a comprehensive survey of the literature. See Doucouliagos and Ulubasoglu (2006) for a meta-analysis of the literature that reports a robust positive relationship between freedom and growth.

Development, Handbook of Statistics and International Monetary Fund, International Financial Statistics.

In addition to the variables suggested by Djankov et al. (2008) we also relate changes in institutions to a variety of other variables suggested by the literature. These are: linguistic and ethnic fractionalization (LANGUAGE and ETHNIC: Heckelman and Knack (2008), Dreher and Rupprecht (2007), and Coviello and Islam (2006)); real per capita GDP growth (RPCGROWTH: Biglaiser and DeRouen (2011), Heckelman and Knack (2008), Knedlik and Kronthaler (2007), and Dreher and Rupprecht (2007)); a dummy variable taking a value of 1 for countries that represent donors' strategic interests (DONORSSI: Ear (2007) and Coviello and Islam (2007)); regional dummy variables (Bearce and Tirone (2010) and Coviello and Islam (2007)).

Measures of ethnic and linguistic fractionalization are from the MacroDataGuide and are based on Alesina et al. (2003). DONORSSI takes the value of 1 for countries in Sub-Saharan Africa, the Franc Zone, Egypt, and Central American Countries.[11]

Once we have established which of our institutional measures are significantly affected by aid flows, we proceed to estimate growth regressions including the levels of those measures. Specifically, the growth rate over a five year period is related to the initial level of institutions. We include several controls that are standard in growth empirical studies. Based on Penn World Table data, we include the investment to GDP ratio, the population growth rate, and the initial level of real GDP per capita (to control for conditional convergence effects). Additionally, we use World Development Indicator data on primary and secondary school enrollment (to control for human capital effects) as well as the urban population share as controls.

Summary statistics for all of the above variables are contained in **Table 1**. This table also includes, in brief, a description and source for each data series.

4. Results

Our data set is an unbalanced panel of 5 year periods: 1970-1975, 1975-1980, 1980-1985, 1985-1990, 1990-1995, 1995-2000, 2000-2005, and 2005-2010. The baseline set of institutional

[11] We employ 5 regional dummy variables. These dummies are for (i) Sub-Saharan African countries, (ii) Latin American and Caribbean countries, (iii) Middle Eastern and North African countries, (iv) Asian and Pacific countries, and (v) transition (i.e., former Soviet bloc) countries.

variables is DEMOC, CHECKS, and FREEDOM. The first results that we report are from regressions of changes in institutional measures over the five year periods on the average ODA the same period. (For example, the value of CHECKS in 1985 minus its 1980 value is regressed on the average aid flow as a fraction of GDP from 1980 to 1985.) We also include OIL, SHOCKS_NEG, and SHOCKS_POS as controls, as well as LANGUAGE, ETHNIC, RPCGROWTH, DONORSSI, and regional dummies. Lastly, all estimations control for the initial level of institutions.

Controlling for the initial level of institutions is sensible given that institutions are persistent and also that the potential for institutional change is likely a function of the current level of institutional quality. The latter will be true, for example, if institutional improvements are relatively easy to achieve starting from very poor levels of institutional quality, but are more difficult to achieve once institutional quality reaches a higher level. (The dependency of institutional change on the current institutional quality level is also sensible given the bounded-nature of our measures.) Furthermore, controlling for the initial level of institutional quality is standard in the literature (e.g., Bearce and Tirone (2010), Heckelman and Knack (2008), Dreher and Rupprecht (2008), and Djankov et al. (2008)).

Consider the following relationship in levels:

$$INST_t = \beta_0 + \beta_1 ODA_{t-1;t} + \beta_2 INST_{t-1} + \beta_3 X_{t-1}, \quad (4.1)$$

where *INST* is an institutional measure, the dual subscript on *ODA* indicates the average from (*t-1*) to *t*, and *X* is a vector of controls. We can subtract $INST_{t-1}$ from both sides of the above equation to arrive at our dynamic panel data model,

$$INST_t - INST_{t-1} = \beta_0 + \beta_1 ODA_{t-1;t} + (\beta_2 - 1) INST_{t-1} + \beta_3 X_{t-1}. \quad (4.2)$$

The model, (4.2), provides us with the prediction that the coefficient on initial institutional quality should be negative.

From estimations of (4.2) we determine, based on the information in our sample, what measures of institutional quality are significantly affected by aid flows, Following that determination, we then explore (per capita real GDP) growth regressions that include these affected measures. The aim is to understand through which institutional channels aid flows may affect economic growth.

4.1.Aid's Effect on Institutional Quality

Table 2 reports OLS regressions based on (4.2) and using the baseline institutional variables and controls. In all of the regressions period fixed effects are included. Including period effects makes sense because the general level of aid flows may change over time, and not necessarily in a linear or even monotonic fashion. For example, the Millennium Development Goals (MDGs) introduced in 2000 were associated with increased aid giving by many countries. Alternatively, Dang et al. (2013) report evidence suggesting that periods during which donors experience banking crises are associated with substantial decreases in aid. The inclusion of period fixed effects can help to control for these sorts of events and their effects on the variation in aid flows over time.

In the case of DEMOC, the coefficient on ODA is positive and statistically significant at the 5% level. Based on the point estimate, a standard deviation increase in ODA (0.025) is associated with about a 0.213 point increase in DEMOC. This is a small effect. (The sample standard deviation of DEMOC is 3.697.) The coefficient estimates in the CHECKS and FREEDOM estimations are both smaller and statistically insignificant, though they are also both positive. The F-statistics reported in **Table 2** suggest that including period fixed effects is appropriate, always rejecting their joint insignificance at the 1% level.

OLS results are likely to be biased because aid flows are almost certainly endogenous. Decisions concerning whether or not to give aid – as well as how much aid to give – are made by donors who may take into account the institutional quality of potential recipients. For example, Brück and Xu (2012) report that positive regime changes (measured by the Polity IV index) are associated with increases in foreign aid. Furthermore, the influential research of Burnside and Dollar (2000, 2004) can be interpreted as recommending that donors pay attention to institutional quality as a matter of policy. Omitted variables are also a concern. To account for this endogeneity, we report the results of two-stage least squares (2SLS) estimations that employ initial values of a country's agricultural share of GDP (AG_SHARE) and the life expectancy of its citizens (LIFE_EXPECT) as instruments. (When the dependent variable is the change in FREEDOM from 1980 to 1985, for example, 1980 values of AG_SHARE and LIFE_EXPECT are instruments.) Both are drawn from the World Bank's World Development Indicators.

We believe that this identification strategy is plausible. These are variables that are likely to be correlated with subsequent aid flows. For example, a lower life expectancy is likely to evoke a higher rate of giving from donors. While these variables are also likely to be correlated with the *level* of institutions, we do not immediately suspect them of being determinants of the *change* in institutional quality. This combined with the fact that we use initial values suggests that these instruments are likely to be valid. (Since we have two instruments and will be treating only ODA as endogenous, we have one testable overidentifying restriction.) These instruments are both used in previous work by Heckelman and Knack (2008) to instrument aid. Also when ODA is regressed on a constant and these two instruments, each of the instruments enters the regression significantly at the 10% level or better. The R^2 from the regression is 0.179 and the F-statistic from a test of the instruments' joint insignificance is 18.972 (significant at the 1% level).

These regression results are an informal but perhaps helpful way of demonstrating that the instruments are relevant to the endogenous variable, ODA. More formally, we report the first-stage F-statistics for the 2SLS estimations that follow.

The first three columns of results in **Table 3** correspond to 2SLS estimations based on specifications analogous to those reported in **Table 2**. The coefficient estimates on ODA are always negative and, in the case of CHECKS and FREEDOM, statistically significant (10% level for the former; 1% level for the latter). Using the point estimates, a standard deviation increase in ODA is associated with about a 0.376 point decrease in CHECKS, and about a 0.478 point decrease in FREEDOM. The estimated effect is larger for economic institutions. In the case of FREEDOM, 0.478 amounts to almost 38% of a standard deviation (1.262). To put the estimated effect on FREEDOM in perspective, 0.478 of a point is roughly the difference in the 2005 scores between the US (8.03) and countries like Cyprus (7.55), Jamaica (7.62), and Panama (7.44).[12]

[12] One concern about our results may be that they are based on an unbalanced panel. Balancing the panels for the full 1970-2010 time period leaves us with only a handful of countries. However, in the appendix we report results analogous to **Table 3** based on a balanced panel of 48 countries for 5-year periods beginning with 1980-1985 and ending with 2005-2010 (**Table 9**). (The countries in this subsample are contained in **Table 8**.) The ODA point estimates for DEMOC, CHECKS, and FREEDOM remain negative, but the estimate for CHECKS is no longer significant (p-value = 0.194). However, ODA still enters significantly (5% level) in the FREEDOM estimation and the point estimate is roughly the same size (-20.690 compared to -19.111 in **Table 3**). (Note that in these estimations we do not include the transition economy dummy variable. No former Soviet-bloc countries received ODA before the breakup of the Soviet Union.)

Regarding the plausibility of the identification strategy that is employed, the first-stage F-statistics are reported for all three of the **Table 3** estimations. In each case they reject joint insignificance of the instruments at the 1% level. Also, the J-statistics associated with Sargan tests never provide evidence to reject the overidentifying restriction at conventional significance levels.

Moving from the baseline set of institutional quality measures, **Table 4** reports 2SLS estimations based on changes in the Freedom House political rights and civil liberties scores (POL_RIGHTS and CIV_LIBS) and the various component areas of the Economic Freedom of the World index (SIZE_GOV, PROP_RIGHTS, MONEY, TRADE, and REGULATION). All of these estimations include period fixed effects. For compactness, only coefficient estimates on ODA are reported along with the first-stage F-statistics and Sargan test J-statistics. The estimated effects of ODA on both POL_RIGHTS and CIV_LIBS are both positive but only statistically significant for CIV_LIBS. In that case, a standard deviation increase in ODA is associated with about 24% of a standard deviation increase in CIV_LIBS. (Note that both Freedom House measures are constructed so that a *higher* score corresponds to *fewer* political rights or civil liberties.) However, this is the one case where the J-statistic indicates rejection of the over-identifying restriction (5% level), causing us to doubt that we have identified a meaningful effect.

Next, we consider the component areas of FREEDOM. Economic freedom is a multifaceted concept. If aid flows lead to decreases in economic freedom then along which dimensions of freedom do those decreases occur? The two areas where the estimated effects of ODA are statistically significant are PROP_RIGHTS and TRADE. Both estimated effects are negative and statistically significant at the 1% level. A standard deviation increase in aid flows is associated with about a 1.38 point decrease in PROP_RIGHTS and a 0.978 point decrease in TRADE. These estimated effects amount to, respectively, about 82% of a standard deviation and 44% of standard deviation decreases. The estimated effect of aid on the legal system and security of property rights is particularly large. Based on 2005 values this is roughly comparable to the difference between Japan (7.85) and countries such as Namibia (6.46) and Tanzania (6.44) in our sample.

4.2.Growth Regressions Including Affected Institutional Measures

We have established that both political and economic institutions are likely affected by aid flows. Furthermore, the evidence suggests that aid's effect is deleterious. We now return to our baseline set of institutional measures (DEMOC, CHECKS, and FREEDOM) and ask whether any of these variables significantly enter a growth regression when all three are controlled for. In other words, if both types of institutions are negatively affected by aid then is either of them a channel through which aid negatively affects economic growth?

In the case of DEMOC, aid did not enter as a statistically significant determinant (**Table 3**). However, we are still interested to know whether it is a robust correlate with growth. Furthermore, in considering CHECKS and FREEDOM as potential channels through which aid affects growth, DEMOC is potentially a source of bias if omitted. (The correlations of DEMOC with CHECKS and FREEDOM in our sample are, respectively, 0.634 and 0.354.)

The dependent variable is per capita real GDP growth over a 5-year period. The initial level of DEMOC, CHECKS, and FREEDOM are all included regressors. We also include additional controls that are common in the empirical growth literature and suggested by the standard neoclassical growth model from which growth regressions are derived (e.g., Barro and Sala-i-Martin (1992)). These controls are a country's investment share if GDP, its population growth rate, and its initial level of real GDP per capita. We also control for the urban population share and primary and secondary enrollment rates; also ODA is itself a control variable.

Table 5 reports the growth regression results. The first column contains OLS results when period fixed effects are included in the estimation, and the second column contains results when country fixed effects are included. In either case, neither DEMOC nor CHECKS enters significantly. Alternatively, FREEDOM enters positively and significantly in both cases. The point estimates are essentially the same in columns 1 and 2 (each about 0.039) and represent a sizable effect. A standard deviation increase in FREEDOM (about 1.262) is associated with about a 4.9% increase in the 5-year growth rate. We also note that all of the standard neoclassical growth model variables enter with the expected signs: the investment rate enters positively; initial income per capita and the population growth rate enter negatively. ODA itself enters negatively and

significantly and the estimated effect is large. A standard deviation increase in ODA is associated with a about an 11% decrease in the 5-year growth rate.

Despite the similarities between most of the column 1 and column 2 results, the reported F-statistics suggest that the country fixed effects specification is more appropriate. (The unbalanced nature of our panel data does not allow for the inclusion of two-way fixed effects.) As well, the R^2 in the case of country fixed effects is about 2.5 times larger (0.451 versus 0.177). Therefore, unless stated otherwise all subsequent growth regressions that are reported include country fixed effects.

Having seen that FREEDOM is a statistically significant correlate when DEMOC and CHECKS are included (but not the other way around) column 3 of **Table 5** reports results based on including the 5 constituent freedom areas individually (rather than the comprehensive FREEDOM index). None of them enter significantly. (The point estimate on REGULATION is actually negative, though insignificant and very small.) Much of the important information is likely contained in the levels of these freedom measures. If this is true, the inclusion of country fixed effects is likely resulting in collinearity and inflated standard errors. Adding to this problem is the fact that the constituent freedom areas are all positively correlated with one another. (While the correlation between PROP_RIGHTS and SIZE_GOV is only 0.061, all other pairwise correlations between the 5 areas are 0.303 or greater.)

The next concern to be addressed is endogeneity. Despite the statistical significance of FREEDOM in the column 1 and 2 results, institutions are almost certainly endogenous. In addition to omitted variables, a country's economic growth rate is a likely determinant of institutional quality. For example, if incomes are rising then the opportunity costs associated with activities aimed at reforms (e.g., attending city council meetings or protests) are falling. Furthermore, aid flows are also almost certainly endogenous. Having a lower rate of growth will likely result in a country being a more probable candidate for aid.

We pursue an identification strategy along lines similar to that of Dalgaard et al. (2004). Specifically, we employ as instruments the lags of ODA, ODA squared, ODA multiplied by a policy measure (we use Freedom House's POL_RIGHTS), ODA multiplied by population, and ODA multiplied by real GDP. Dalgaard et al. are particularly interested in instrumenting for aid

flows. However, we treat ODA and the institutional measures (DEMOC, CHECKS, and FREEDOM) all as endogenous. Therefore we begin by reporting first-stage regressions for all of these variables in **Table 6**. Since the inclusion of country fixed effects make degrees of freedom particularly dear, we focus on only the standard neoclassical controls (the investment and population growth rates; initial income) as predetermined variables.

The F-statistics associated with tests of instrument joint insignificance all imply rejection of the null at the 1 percent level. They are not particularly large (except for ODA: 170.276). However, we are employing 1 set of instruments for 4 different endogenous variables. Furthermore, at least 2 instruments (3 in the case of FREEDOM) enter significantly in any of the first-stage regressions. We note that one of the instruments (the lag of ODA multiplied by real GDP) does not enter significantly in any case (even for ODA itself). In column 4 of **Table 5** we begin by reporting 2SLS results based on the full instrument set. This provides us with an overidentifying restriction to test. Then, in column 5, we report results based on excluding the ostensibly weak instrument and see whether, for the just-identified case, any results of interest are changed. (The first-stage F-statistics for DEMOC, CHECKS, and FREEDOM when this instrument is excluded are, respectively, 7.462, 3.917, and 7.675.)

In either of the **Table 5** 2SLS results (column 4 or column 5) neither DEMOC nor CHECKS enters significantly. However, in both cases FREEDOM enters positively and significantly (at the 5% level or better) and the point estimate is more than twice as large as that reported based on OLS (columns 1 and 2). A standard deviation increase in FREEDOM is associated with more than a 10 percentage point increase in the 5-year growth rate. That about 2% annually, or what is widely considered to roughly be the long-run balanced growth rate of developed economies. Furthermore, ODA no longer enters significantly into the estimation when institutional quality is controlled for. In column 5 (the overidentified case) the J-statistic provides no evidence against the validity of the identification strategy.

Based on the results from sections 4.1 and 4.2, we can provide a back-of-the-envelope calculation of the indirect effect of aid flows on economic growth through its negative effects on economic freedom. A standard deviation in ODA is associated with about a 0.478 point drop in

FREEDOM (**Table 3**; column 3). In turn, a 0.478 point drop in freedom is associated with about a 3.8 percentage point drop in the 5-year economic growth rate (**Table 5**; column 4).

Finally, in **Table 7** we report some growth regression results based on exploring the role of individual freedom areas in economic growth. Columns 1 and 2 report, respectively, period and country fixed effects OLS results where, instead of FREEDOM, the 5 constituent areas (SIZE_GOV, PROP_RIGHTS, MONEY, TRADE, and REGULATION) are included individually. Only in the period effects regression does an individual freedom area (PROP_RIGHTS) enter significantly. However, once again the F-statistics indicate that the inclusion country fixed effects is more appropriate. Columns 3-7 then report 2SLS results. Instrumenting for all 5 freedom areas simultaneously is not feasible given the availability of instruments. Alternatively, each estimation includes a single freedom area that is treated as endogenous. Treating DEMOC, CHECKS, and ODA merely as control variables now, we instrument for the freedom areas using lags of ODA, ODA^2, ODA*POLITICAL_RIGHTS, and ODA*population.

SIZE_GOV enters positively and significantly but the first-stage F-statistic is very small (0.874) (column 4). PROP_RIGHTS does not enter significantly and the F-statistics is also very small in its case (column 5). REGULATION also does not enter significantly (column 7).

In the column 5 and 6 estimations, respectively, MONEY and TRADE enter positively and significantly (10% level or better). In both cases the first-stage F-statistics reject the joint insignificance null at the 1% significance level; the J-statistics offer no evidence to reject instrument validity. In particular, TRADE was found above to be negatively affected by aid flows (**Table 4**). Providing another back-of-the-envelope calculation, a standard deviation increase in ODA is associated with about a 0.978 point decrease in TRADE; this is, in turn, associated with about a 6.4 percentage point decrease in the 5-year growth rate. We note, however, that if all 5 individual areas are included together in an estimation that includes country fixed effects, statistically significant results are not achieved. Therefore the individual freedom area results must be handled with more care than those associated with the comprehensive FREEDOM measure.

5. Conclusions

Institutional quality appears to be an essential ingredient to economic growth. Considering that the goal of foreign aid is to help poorer economies, it is therefore doubly troubling that not only is there a paucity of evidence that aid promotes growth but, also, recent studies suggest that aid can harm institutional quality.

We contribute in this paper by tying together three largely disparate empirical literatures exploring the effects of (1) aid on growth, (2) institutions on growth, and (3) aid on institutions. Institutional quality is one channel through which aid flows may affect economic growth. We analyze a large panel of countries (for five year periods; 1970 through 2010) receiving official development assistance. We relate aid flows to changes in a large number of institutional quality variables representing both political and economic institutions. Those dimensions of institutional quality that are significantly affected are then subsequently included in growth regressions. Using a common data set and identification strategies, we aim to "connect the dots" and provide evidence on which dimensions of institutional quality are likely channels through which aid affects growth.

The evidence suggests that aid flows are, all else equal, detrimental to both political and economic institutions. However, in growth regressions including both types of institutions, only economic institutions are positively and significantly correlated with growth. Specifically, aid flows are associated with deterioration in the legal system and property rights of a recipient country and its international trade freedoms. The results of growth regressions suggest that, in turn, such deterioration can be associated with large, negative effects on growth. Using our point estimates, a standard deviation increase in aid, economic freedom, is associated with lower per capita GDP growth of about 2 percentage points annually. Aid is also itself included as an additional control in growth regressions. In our preferred specifications, the estimated effect of foreign aid is statistically insignificant. Once the negative effects on institutional quality are controlled for, aid is not robustly associated with more or less growth.

Table 1. Summary variables included in regression analyses

Variable	Description	Source	Mean	Stand. Dev
DEMOC	Polity IV democracy ranking	Polity IV	3.217	3.697
FREEDOM	Economic Freedom of the World index	Gwartney et al. (2013)	5.739	1.262
CHECKS	index for number of checks and balances	Keefer and Stasavage (2003)	2.022	1.517
ODA	official development assistance to GDP ratio	DAC	0.016	0.025
POL_RIGHTS	index of political rights	Freedom House	4.357	2.015
CIV_LIBS	index of civil liberties	Freedom House	4.282	1.643
SIZE_GOV	EFW area 1: size of government	Gwartney et al. (2013)	6.029	1.613
PROP_RIGHTS	EFW area 2: legal structure & property rights	Gwartney et al. (2013)	4.872	1.691
MONEY	EFW area 3: access to sound money	Gwartney et al. (2013)	6.396	2.252
TRADE	EFW area 4: freedom to trade internationally	Gwartney et al. (2013)	5.351	2.201
REGULATION	EFW area 5: regulations of credit, labor, & business	Gwartney et al. (2013)	5.855	1.196
OIL	oil production as a share of GDP	British Petroleum (2011)	0.000	0.001
(OIL when > 0)			0.001	0.001
SHOCKS_POS	mean value of positive terms of trade growth rates	UN & IMF	0.066	0.118
SHOCKS_NEG	mean value of negative terms of trade growth rates	UN & IMF	-0.045	0.086
AG_SHARE	agricultural share of GDP expressed as a percentage	World Develop. Indicators	21.560	15.658
LIFE_EXPECT	life expectancy at birth	World Develop. Indicators	61.211	10.992
RGDP_PC	real per capita GDP, 2005 US$	Penn World Tables 8.0	8,114.560	27,446.530
LANGUAGE	linguistic fractionalization	MacroDataGuide	0.450	0.289
ETHNIC	ethnic fractionalization	MacroDataGuide	0.501	0.245
Investment/GDP	gross capital formation as a share of GDP	Penn World Tables 8.0	0.198	0.118
Pop. Growth	population growth rate (over 5-year periods)	Penn World Tables 8.0	0.105	0.073
Urb. Pop. Share	urban population share expressed as a percentage	World Develop. Indicators	45.227	23.424
Prim. Enroll.	primary school enrollment rate expressed as a percentage	World Develop. Indicators	94.409	25.668
Second Enroll.	secondary school enrollment rate expressed as a percentage	World Develop. Indicators	50.075	30.243

Table 2. OLS period fixed effects regressions of baseline institutional variables on foreign aid

	(1)	(2)	(3)
	Dependent Variable		
	DEMOC – DEMOC(-1)	CHECKS – CHECKS(-1)	FREEDOM – FREEDOM(-1)
ODA	8.507**	2.851	0.131
	(3.865)	(2.101)	(2.468)
OIL	-20.225	-26.949	9.249
	(61.478)	(37.283)	(85.099)
SHOCKS_NEG	3.442***	0.484	-0.780
	(1.109)	(0.796)	(0.481)
SHOCKS_POS	2.748***	-0.013	-0.650
	(1.053)	(0.517)	(0.441)
LANGUAGE	0.447	0.573*	0.014
	(0.398)	(0.311)	(0.100)
ETHNIC	-0.738*	-0.292	-0.090
	(0.420)	(0.300)	(0.129)
RPCGROWTH	-0.008	0.069	0.542***
	(0.278)	(0.148)	(0.133)
DONORSSI	-0.074	-0.251	0.103*
	(0.202)	(0.173)	(0.056)
INST(-1)	-0.231***	-0.535***	-0.203***
	(0.039)	(0.054)	(0.028)
Redundant Fixed Effects	5.989***	4.303***	13.513***
R^2	0.165	0.305	0.296
Countries	111	116	81
Observations	802	732	545

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants and regional dummy variables included in all regressions (though not reported). "Redundant fixed effects" refer to F-tests are for the null hypothesis that the period fixed effects are jointly insignificant.

Table 3. 2SLS period fixed effects regressions of baseline institutional variables on foreign aid

	(1)	(2)	(3)
	Dependent Variable		
	DEMOC – DEMOC(-1)	CHECKS – CHECKS(-1)	FREEDOM – FREEDOM(-1)
ODA	-13.461	-15.028*	-19.111***
	(12.599)	(8.921)	(7.014)
ODA per capita			
OIL	-137.515	-137.331**	-97.015
	(101.222)	(69.548)	(115.057)
SHOCKS_NEG	2.818**	0.051	-0.716
	(1.179)	(0.939)	(0.610)
SHOCKS_POS	2.529**	-0.133	-0.636
	(1.257)	(0.608)	(0.617)
LANGUAGE	0.019	0.427	0.003
	(0.371)	(0.333)	(0.150)
ETHNIC	-0.419	-0.083	0.062
	(0.442)	(0.349)	(0.210)
RPCGROWTH	-0.147	0.047	0.436***
	(0.362)	(0.185)	(0.167)
DONORSSI	0.085	-0.115	0.221***
	(0.216)	(0.156)	(0.066)
INST(-1)	-0.257***	-0.575***	-0.284***
	(0.042)	(0.058)	(0.039)
F-stat (first stage)	8.924***	9.278***	13.465***
J-stat	0.165	1.505	0.731
Countries	107	112	79
Observations	676	629	481

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants and regional dummy variables included in all regressions (though not reported). "ODA per capita" enters as the natural log of the dollar value plus 5. J-stats are associated with Sargan tests of overidentifying restrictions. F-statistics are associated with tests that the instruments are jointly insignificant in the first-stage regression. Lagged values of AG_SHARE and LIFE_EXPECT are employed as instruments. ODA is treated as endogenous.

Table 4. 2SLS period fixed effects regressions of additional institutional variables on foreign aid

Dependent Variable (INST – INST(-1))	(1) Coefficient on ODA	(2) J-stat	(3) F stat (first stage)
POL_RIGHTS	11.122	1.290	8.742***
	(7.559)		
CIV_LIBS	15.962**	4.151**	9.776***
	(6.436)		
SIZE_GOV	1.764	1.274	17.409***
	(8.034)		
PROP_RIGHTS	-55.024***	0.379	11.307***
	(19.582)		
MONEY	-12.475	1.061	15.462***
	(12.864)		
TRADE	-38.713***	0.421	13.762***
	(13.358)		
REGULATION	-8.535	0.017	13.741***
	(5.476)		

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants and regional dummy variables included in all regressions (though not reported. Lagged values of AG_SHARE, and LIFE_EXPECT are employed as instruments.

Table 5. Regressions of real GDP per capita growth on institutional variables, initial income, and other controls

	(1) Dependent Variable (Per Cap. Real GDP Growth)	(2)	(3)	(4)	(5)
	Fixed Period Effects	Fixed Country Effects	Fixed Country Effects	Fixed Country Effects; 2SLS	Fixed Country Effects; 2SLS (just identified)
DEMOC	0.003	0.005	0.003	0.009	-0.005
	(0.004)	(0.007)	(0.006)	(0.044)	(0.038)
CHECKS	0.005	0.011	0.018	-0.006	0.031
	(0.008)	(0.016)	(0.013)	(0.130)	(0.141)
FREEDOM	0.039**	0.039*		0.079**	0.090***
	(0.017)	(0.023)		(0.040)	(0.030)
SIZE_GOV			0.011		
			(0.015)		
PROP_RIGHTS			0.012		
			(0.016)		
MONEY			0.003		
			(0.009)		
TRADE			0.017		
			(0.014)		
REGULATION			-0.009		
			(0.023)		
Investment/GDP	0.165	0.110	0.309	-0.058	-0.173
	(0.194)	(0.188)	(0.408)	(0.447)	(0.443)
Population Growth	-0.894***	-0.641	-0.910***	-0.496	-0.428
	(0.336)	(0.458)	(0.212)	(0.545)	(0.582)
Init. Real GDP Per Cap.	-0.139***	-0.518***	-0.411***	-0.409***	-0.417***
	(0.031)	(0.072)	(0.061)	(0.058)	(0.057)
Urban Pop. Share	0.003***	0.004	0.009*		
	(0.001)	(0.004)	(0.005)		
Primary Enrollment	-0.000	-0.000	-0.001		
	(0.000)	(0.000)	(0.001)		
Secondary Enrollment	0.001	0.001	-0.002		
	(0.001)	(0.002)	(0.002)		
ODA	-4.594***	-4.823*	-3.569	1.423	0.971
	(1.074)	(2.893)	(3.772)	(2.675)	(1.943)
F-stat (Red. Fix. Effects)	1.158	2.068***	1.985***		
J-stat				0.055	
R^2	0.177	0.451	0.492		
Countries	76	76	73	78	78
Observations	366	366	300	437	437

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants are included in all regressions (though not reported). Initial real GDP per capita enters in natural log form. The F-statistic is associated with a test of the joint insignificance of the fixed effects (period or country). In column 5 the instruments are lagged values of ODA, ODA^2, ODA*POLITICAL_RIGHTS, ODA*population, and ODA*(real GDP). In column 6 the instruments are ODA, ODA^2, ODA*POLITICAL_RIGHTS, and ODA*population. In 2SLS estimations DEMOC, CHECKS, FREEDOM, and ODA are treated as endogenous.

Table 6. First stage regressions from 2SLS growth regressions

	(1) DEMOC	(2) CHECKS	(3) FREEDOM	(4) ODA
ODA (lag)	116.304***	31.800***	40.687*	0.793***
	(28.335)	(10.334)	(22.161)	(0.081)
ODA^2 (lag)	-161.2655	-51.821	-164.004*	-0.288
	(155.163)	(65.429)	(93.952)	(0.446)
ODA*POLITICAL_RIGHTS (lag)	-11.592***	-2.881**	-5.280***	0.010
	(3.167)	(1.287)	(1.404)	(0.011)
ODA*population (lag)	0.140	0.064	0.893***	-0.007***
	(0.360)	(0.222)	(0.242)	(0.002)
ODA*(real GDP) (lag)	0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Investment/GDP	5.808***	2.024**	3.563***	0.067***
	(2.248)	(0.809)	(1.036)	(0.014)
Population Growth	-3.738**	-1.822***	-3.599**	0.006
	(1.528)	(0.670)	(1.505)	(0.009)
Initial Real GDP Per Cap.	1.599***	0.459**	1.283***	-0.004***
	(0.503)	(0.223)	(0.284)	(0.001)
F-stat (Instruments)	6.068***	3.204***	5.950***	170.276***
R^2	0.710	0.544	0.621	0.698

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants are included in all regressions (though not reported). Country fixed effects are also included in all regressions. The F-statistic is associated with the test of joint insignificance of ODA^2, ODA*POLITICAL_RIGHTS, ODA*population, and ODA*(real GDP).

Table 7. Regressions of real GDP per capita growth on separate areas of economic freedom and other controls

	(1) Dependent Variable (Per Cap. Real GDP Growth)	(2)	(3)	(4)	(5)	(6)	(7)
	Fixed Period Effects	Fixed Country Effects	Fixed Country Effects; 2SLS	Fixed Country Effects; 2SLS	Fixed Country Effects; 2SLS	Fixed Country Effects; 2SLS	Fixed Country Effects; 2SLS
DEMOC	-0.004	0.003	0.000	-0.000	0.007*	0.002	0.010*
	(0.004)	(0.006)	(0.009)	(0.013)	(0.004)	(0.007)	(0.005)
CHECKS	0.007	0.018	-0.007	0.002	0.010	-0.003	0.009
	(0.008)	(0.013)	(0.017)	(0.022)	(0.012)	(0.018)	(0.012)
SIZE_GOV	0.005	0.011	0.139**				
	(0.010)	(0.015)	(0.067)				
PROP_RIGHTS	0.024**	0.012		0.240			
	(0.011)	(0.016)		(0.296)			
MONEY	0.006	0.003			0.033**		
	(0.008)	(0.009)			(0.014)		
TRADE	0.010	0.017				0.065*	
	(0.012)	(0.014)				(0.037)	
REGULATION	-0.011	-0.009					0.039
	(0.016)	(0.023)					(0.080)
Investment/GDP	0.106	0.309	-0.211	-0.210	0.075	-0.230	0.119
	(0.179)	(0.408)	(0.336)	(0.830)	(0.174)	(0.429)	(0.295)
Population Growth	-0.920***	-0.910***	-0.358	-0.692	-0.634	-0.560	-0.670
	(0.269)	(0.212)	(0.679)	(1.123)	(0.420)	(0.375)	(0.411)
Init. Real GDP Per Cap.	-0.098***	-0.411***	-0.400***	-0.505***	-0.426***	-0.425***	-0.404***
	(0.026)	(0.061)	(0.057)	(0.178)	(0.057)	(0.066)	(0.065)
Urban Pop. Share	0.002***	0.009*					
	(0.008)	(0.005)					
Primary Enrollment	-0.001**	-0.001					
	(0.006)	(0.001)					
Secondary Enrollment	0.001	-0.002					
	(0.001)	(0.002)					
ODA	-3.564***	-3.569	-2.291	1.912	-2.042	-0.801	-2.276
	(1.226)	(3.772)	(1.636)	(4.224)	(1.499)	(1.571)	(1.658)
F-stat (Red. Fix. Effects)	1.542	1.985***					
F-stat (First Stage)			0.874	0.460	10.132***	4.224***	4.081***
J-stat			0.016	0.336	0.606	0.138	2.512
R^2	0.179	0.492					
Countries	73	73	78	78	78	77	78
Observations	300	300	440	417	445	406	436

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants are included in all regressions (though not reported). Initial real GDP per capita enters in natural log form. The F-statistic is associated with a test of the joint insignificance of the fixed effects (period or country). In 2SLS estimations the instruments are ODA, ODA^2, ODA*POLITICAL_RIGHTS, and ODA*population; the freedom area is treated as endogenous.

Table 8. 48 countries included for in balanced subsample: periods 1980-1985, 1985-1990, 1990-1995, 1995-2000, 2000-2005, and 2005-2010

Argentina	Kenya
Bangladesh	Korea (South)
Bolivia	Malawi
Botswana	Malaysia
Brazil	Mauritius
Burundi	Mexico
Cameroon	Morocco
Chile	Nepal
China	Pakistan
Colombia	Panama
Congo (Democratic Republic of)	Paraguay
Congo (Republic of the)	Philippines
Costa Rica	Senegal
Dominican Republic	Sierra Leone
Egypt	South Africa
Fiji	Sri Lanka
Gabon	Thailand
Ghana	Togo
Guatemala	Tunisia
Honduras	Turkey
India	Uganda
Indonesia	Zambia
Iran	Zimbabwe
Jordan	

Table 9. 2SLS period fixed effects regressions of baseline institutional variables on foreign aid: balanced subsample

	(1)	(2)	(3)
	Dependent Variable		
	DEMOC – DEMOC(-1)	CHECKS – CHECKS(-1)	FREEDOM – FREEDOM(-1)
ODA	-42.339	-23.361	-20.690**
	(29.400)	(17.833)	(9.631)
OIL	-915.109***	-196.764	-234.323**
	(284.816)	(174.198)	(122.459)
SHOCKS_NEG	3.578**	1.906	-0.594
	(1.391)	(1.355)	(0.781)
SHOCKS_POS	2.374	0.979	-0.480
	(2.227)	(0.872)	(1.065)
LANGUAGE	0.167	0.114	-0.067
	(0.838)	(0.646)	(0.249)
ETHNIC	-0.353	0.475	0.257
	(0.805)	(0.490)	(0.313)
RPCGROWTH	0.502	0.631	0.572**
	(0.780)	(0.577)	(0.259)
DONORSSI	-0.069	-0.142	0.211**
	(0.268)	(0.234)	(0.104)
INST(-1)	-0.389***	-0.721***	-0.317***
	(0.065)	(0.079)	(0.047)
J-stat	2.613	0.587	1.038
Countries	47	47	47
Observations	282	282	282

Notes: *, **, and *** denote statistical significance the 10, 5, and 1 percent levels, respectively. Standard errors are clustered by country and reported in parentheses. Constants and regional dummy variables included in all regressions (though not reported). "ODA per capita" enters as the natural log of the dollar value plus 5. J-stats are associated with Sargan tests of overidentifying restrictions Lagged values of AG_SHARE and LIFE_EXPECT are employed as instruments. Subsamples is outlined in **Table 8**. Samples periods are 1980-1985, 1985-1990, 1990-1995, 1995-2000, 2000-2005, and 2005-2010.

Chapter 2:
Globalization and Culture

1. Introduction

While there is a general consensus that globalization can affect a country's culture, whether its effects are desirable is more controversial. According to some authors, globalization enhances important cultural characteristics that promote risk-taking and allow for the merging of culture commonalities that reduce the costs of exchange (Inglehart and Baker (2000), Jones (2006), and Coyne and Williamson (2012)). These cultural characteristics have been positively linked to economic outcomes (Guiso et al. (2006), Tabellini (2008), and Williamson (2009)). Others argue that globalization leads to a loss of community identity, leading to increased income inequality (Rodrik (1997), Huntington (1996), Chan (2007), Bergh and Nilsson (2010)). According to this view, globalization comes at the cost of creating social instability and disintegration through the erosion of social networks. Regardless of the consequences of globalization, it is important to understand the role of globalization in cultural change.

Culture is a broad concept that encompasses the values, beliefs, and social norms of a society. Following Porter (2000, p. 14) I define and focus on a subset of cultural characteristics constituted by "beliefs, attitudes, and values that bear on economic activities of individuals, organizations, and other institutions" (Porter, 2000 pg. 14). Using a panel of data from 91 countries covering 1970-2005 I then examine the relationship between globalization and a measure of culture. I employ the KOF globalization index values (Dreher, 2006) and data on cultural characteristics from the European and World Value Surveys. I also break the KOF globalization index into its three major sub-indices – economic, social, and political – and examine how each of them individually affects economic culture.

To my knowledge no other paper examines the relationship between a comprehensive measure of globalization and culture. Coyne and Williamson (2012) report that trade openness affects certain aspects of economic culture that Williamson (2009) has linked to economic development. However, trade openness is just one aspect of globalization. Cultural and other institutional spillovers may also be associated the social and political dimensions of globalization. For example, Sheehan and Young (2014) report evidence that greater Internet use is associated

with increases in economic freedom, and Wolf and Young (2014) find that the social (rather than economic or political) dimension of globalization is associated with a higher rate of income convergence.[1] In examining economic culture, I report evidence on the potential effects arising from overall globalization, as well as economic, social, and political globalization separately.

Any definition of culture is bound to be somewhat arbitrary. However, I closely follow the precedent set by existing studies of economic culture (e.g., Tabellini (2010), Williamson and Kerekes (2011), and Coyne and Williamson (2012)). In particular, I define culture in terms of several traits: (i) the tendency to *trust* strangers, (ii) a sense of *respect for other individuals*, (iii) the value placed on *obedience to authority*, and (iv) individuals' perception of *self-determination*. These traits guide the everyday interactions of individuals and organizations and will affect economic activities (Tabellini, 2010). Tabellini (2010) and Williamson and Kerekes (2011) hypothesize that trust, respect for others, and a perceived level of self-determination will have a positive impact on economic interaction and exchange, while obedience will have a negative impact.

In this paper I explore the relationship between economic culture and globalization. As Dreher et al. (2010) note, "Globalization is conceptualized as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence" (p.1). For example, a businessman who begins production in a new country needs to learn the business customs of that country to be successful. In the process of setting up his company and learning these customs, he is exposed to the food, hotels, transportation, government regulations, and local business norms, among other things, in that country. The flow of goods and services through economic exchange exposes individuals to not only the particular good or service, but also to other countries' customs and norms. A government official sitting on the United Nations council is exposed to the political workings of other countries and sees where they succeed and where they fail. A person logging onto the Internet to watch YouTube videos is exposed to music, television shows, beauty tips, and educational videos from all over the world with one click of the mouse. It is highly unlikely that a culture would stay

[1] Internet use is a component of the KOF social globalization index. Young and Wolf employ the KOF globalization index and its sub-indices in their analysis. Both of these empirical studies are based on cross-country panel data.

constant when so widely exposed to others. For example, Japan has experienced high increased levels of globalization. During this same time, they have experienced cultural changes as well. As their businesses turned toward technical innovation and development, their culture changed as well. Woman now participate in the work force and beliefs about self-determination and trust have also changed.

Using a panel of 91 countries covering the years 1970-2005, my evaluation of the data suggests that globalization does, in fact, have a net positive and significant impact on the economic culture within a society. Culture is affected through the economic and social channels of globalization. The more globalized a country is, the more likely it is to have a culture that is conducive to economic development. I am aware of the likelihood of endogeneity affecting my results. While globalization likely influences the culture in a country, the culture in a country may also influence how globalized the country is. Due to the complex nature of both globalization and culture, it is difficult to isolate the direction. However, my findings are robust to the inclusion of different control variables and model specifications, including instrumental variable analysis where a lag of globalization serves as my instrument. These robustness checks lend additional support to my findings. Because of the potential for reverse causality I interpret my findings cautiously.

To examine the question of how globalization affects economic culture, I proceed as follows. Section 2 examines how globalization may alter culture. A description of the data and the empirical framework and results are presented in section 3 and 4, respectively. Concluding comments constitute section 5.

2. Globalization and Culture

My focus on how globalization impacts culture contributes to understanding how culture evolves within a country. Institutional change may occur in "open societies," that is, in societies with high levels of globalization. An open society may allow for piecemeal institutional change where individuals adopt changes that are compatible with their current institutional framework (Hayek,1960). This would also provide an environment for future incremental adoptions as globalization increases. With increased globalization, individuals are better able to observe and experience cultures from other regions, meaning some culture qualities are likely to spillover to the exposed region.

As a country becomes more globalized, the number of "neighbors" it has increases. No longer are countries' neighbors only geographical, but with globalization, neighbors can be countries that have the same religion, political institutions, industries, or even popular YouTube sensations. Boundaries begin to erode and there is increased integration of culture. So as a country's level of globalization increases, individuals are exposed to more and different kinds of norms, customs, and practices; they are exposed to different informal institutions that may spillover into their culture[2]. As individuals observe and experience these institutions, they may alter and adopt their own norms, customs, and practices, thus altering their culture. In this way, any change to culture that takes place emerges spontaneously.

Roland (2004) describes culture as a slow moving institution. Culture evolves continuously, but it does so slowly. Institutions are also highly persistent and show path dependency (North (1990), Glaeser et al. (2004)). Some institutions become "locked in" due to historical reasons in the region. Yet with the introduction of new ideas, customs, and values, institutions still evolve over time. Individuals make gradual changes to their mental models as they become more interconnected and are more aware of new perceptions and ideas. These updates will act as an engine for institutional change (Denzau and North (1994) and Coyne and Leeson (2009)). Since globalization dramatically increases interconnectivity and provides a variety of interactions with different cultures, the number of opportunities for individuals to marginally alter their own ideas and customs also increases. With increased globalization, these changes may even occur at faster rates and the overall economic culture of the society will evolve.

Globalization can be separated into three main dimensions: economic, political, and social. The inherent complexity of globalization means that not all dimensions of globalization will affect countries in the same way (Dreher et al 2008). All three dimensions provide the opportunities for creating networks of connections that allow for the flow of new information and ideas. Then all three dimensions provide a possible mechanism for gradual cultural change.

[2] While no study has directly examined spillover effects from globalization or of informal institutions, there is a growing literature examining institutional spillovers in general. Many of these studies examine how such spillovers affect economic development. Bosker and Garretsen (2009) find that institutional quality in neighboring countries is an important determinant of economic growth. Similarly, de Groot (2011) analyzes how the expansion of political freedoms in neighboring countries leads to spillovers in the home country and Simmons and Elkins (2004) find that not only do countries copy their neighbor's policies; they tend to mainly copy the successful policies. It appears that individuals are willing and able to adopt the institutions of their neighbors.

For example, economic globalization is "characterized as long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges" (Dreher (2006) p. 1092). As economic globalization increases, more trade will take place with a greater number of individuals; trade will no longer be limited to small networks but will expand to larger degrees of market participation. If exchanges are continually done successfully to the satisfaction of participates, the amount of trust in a society is likely to increase. Economic globalization may also alter the cultural aspect of trust by increasing the need for long term contracts. If these contracts are continually met and fulfilled, this has the potential to increase the amount of trust individuals in a society have. However, if these contracts are continually broken, trust could decrease as a result. With increase economic globalization, there will also be new opportunities for entrepreneurship. This will also likely alter the underlying economic culture of a region, potentially increasing the amount of control individuals believe they have over their lives.

Political globalization also has the potential to influence culture. Involvement with the United Nations or international organizations, the prevalence of embassies, and grants conditional on political grounds all represent potential avenues for political globalization. This type of globalization may affect culture, for example, through altering individuals' beliefs on obedience. Exposure to political systems that require different levels of citizen participation may alter people's beliefs on or willingness to follow commands from perceived authority figures. For example, if exposure to different political systems causes citizens in an authoritarian regime to begin to question the legitimacy of its ruler, the underlying culture may change to be more conducive towards entrepreneurship. Alternatively, if exposure to political systems where greater levels of obedience is needed to support things like a large welfare state, the culture may change to be less conducive towards entrepreneurship.

Social globalization involves the spreading of ideas and information. This form of globalization is often identified most with changing a country's culture. With increased social globalization, new social relationships can form, potentially altering individuals' tolerance for values, beliefs, and choices different to their own. This may later translate into a greater willingness to engage in economic activities with more people or with greater willingness to adapt new ideas about technology or business practices, promoting entrepreneurship. It could also result

in social disintegration; as people perceive losing their identity, they may become less tolerant of others, show less respect, potentially altering culture so that it is less conducive to entrepreneurship.

Different dimensions of globalization may not affect culture in the same way. In some cases, increased economic globalization may move culture towards one conducive to entrepreneurship and increased political globalization may move culture away from this. The opposite may also occur. It is not clear that the effects of globalization will be the same for different dimensions or that they will affect culture in the same way.

As identified by Cowen (2002) and Coyne and Williamson (2012), the process of cultural exchange will also create cultural creative destruction. Cultural exchange will destroy existing economic culture on some margins and will enhance it on other margins. This could have either positive or negative effects on culture. If globalization results in erosion of already existing social networks, it may have on net a negative influence. However, if globalization promotes views of entrepreneurship by increasing the number of opportunities for interaction, net effects may be positive. In examining trade openness' effect on economic culture, Coyne and Williamson find that on net, increased trade openness has a positive effect on culture.

The three dimensions of globalization may also affect culture at different rates. Social globalizations effects may be seen faster than economic or political globalization effects. This will likely depend on which areas of culture the dimensions are altering.

3. Data

3.1. Globalization

I use the KOF index of globalization (Dreher, 2006 and Dreher et. al 2008) as a measure of a country's level of globalization. This index is widely used in empirical studies and linked to multiple positive economic outcomes. Globalization is associated with higher rates of economic growth (Dreher, 2006), life expectancy (Bergh, 2010), and reports of subjective well-being (Hessami, 2011). The KOF index is a weighted average of the three constituent sub-indices: economic, social, and political. The globalization index and its sub-indices are measured on a scale of 0 to 100 and are measured annually. Data is available from 1970 to 2010 on a yearly basis for 207 countries, 91 of which will align with my culture variable. I break this time period into seven

five-year averages (1970-1974, 1975-1979, 1980-1984,1985-1989, 1990-1994, 1995-1999, and 2000-2004).

The *economic globalization* index consists of two components: *flows* and *restrictions*. Economic flows are measured by trade, foreign direct investment flows, portfolio investment and income paid abroad to foreign nationals, all as percentages of GDP. Restrictions measure hidden import barriers, tariff rates, taxes on international trade and capital account restrictions.

The *social globalization* index consists of three components: personal contacts, information flows, and cultural proximity. The component personal contacts is measure by telephone traffic, transfers as a percent of GDP, percent of the total population that are foreign or foreign-born residents, number of international letters sent and received per capita, and international tourism. Information flows consists of the number of Internet users, televisions, and trade in newspapers. Cultural proximity is made up of the number of McDonald's restaurants and the number of Ikeas per capita and the trade in books as a percent of GDP. By measuring these areas, social globalization examines the spread of ideas, information, images, and people (Dreher, 2006).

The *political globalization* index is the simplest of the indices and measures the diffusion of government policies. It is measured by the number of embassies in the country, membership in international organizations, participation in U.N. Security Council missions, and participation in international treaties.

3.2. Culture

Identifying and measuring culture and informal institutions is challenging. In measuring culture, I focus on cultural characteristics that are pertinent for economic interaction and exchange. One method to measure culture is to use survey research in an attempt to capture individuals' expectations and beliefs (Helmke and Levitsky, 2004). In order to measure culture, I use a culture variable identified by Tabellini (2010) and expanded upon by Williamson and Kerekes (2010). The cultural variable identifies cultural traits that serve as constraints on entrepreneurial behavior and have been shown to correlate with economic development (Coyne and Williamson, 2012). This measure of culture has four components: 1. *trust*, 2. *control and individual self-determination*, 3. *respect*, and 4. *obedience*. The culture variable is created using questions identified in the European Values Survey (EVS) and the World Value Survey (WVS). Surveys for the EVS and

WVS that have been conducted in 91 countries questions are meant to reflect the local norms and customs in countries. Each component comes from a specific question in the surveys.

Trust is identified by the question, "Generally speaking, would you say most people can be trusted or that you can't be too careful in dealing with people?" The level of trust is measured by the percentage of respondents that answered "Most people can be trusted" as opposed to "Can't be too careful" and "Don't know". *Control and individual self-determination*, is identified by the question, "Some people feel they have completely free choice and control over their lives, while other people feel that what we do has no real effect on what happens to them. Please use this scale (from 1 to 10) where 1 means 'none at all' and 10 means 'a great deal' to indicate how much freedom of choice and control in life you have over the way your life turns out". The control component is measured by aggregating the answers, averaging by the number of responses, and multiplying by 10.

Respect and *obedience*, are both identified by the same question, "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five." Respect is defined as the percent of respondents in each country who list "tolerance and respect for other people" as being important and obedience is defined as the percent of respondents who list "obedience".

Trust, *respect*, and *individual self-determination* are thought to encourage entrepreneurial activity while *obedience* is thought to hinder (Tabellini, 2010). I follow Coyne and Williamson (2012) and sum trust, control and respect and subtract the obedience score to create an aggregate variable meant to measure economic culture. This measure is then converted to a relative scale ranging for 0 to 10 with 0 representing weak culture for entrepreneurship and 10 representing strong for each country, for each time period. The EVS and WVS have five waves, 1981-1984, 1989-1993, 1994-1999, 1999-2004, and 2005-2007. To maximize the number of periods included in my analysis, I match the values obtained for each country from the first wave, 1981-1984, with the 1980-1984 time period and continue so that the fifth wave, 2005-2007, matches with the 2000-2004 time periods. Examples of countries with high culture scores include Sweden, Norway, Switzerland, and New Zealand while Ghana, Rwanda, Zambia, and Burkina Faso are examples of countries with low culture scores.

3.3. Control variables

The data I use for my control variables are those identified in the literature as being important influences on culture (Acemoglu, Johnson, and Robinson (2001, 2002), Rodrik, Sunbramanian, and Trebbi (2004) and Tabellini (2010)) and employed by Coyne and Williamson (2012). These variables are from the World Bank's World Development Indicators. Country size, gross domestic product (GDP), GDP growth, and urban population are all identified in the literature as potentially influencing a country's economic culture. For example, Inglehart and Baker (2000) note that culture changes occur once a society begins to industrialize. Country size, gross domestic product (GDP), per capita GDP growth, and urban population are all important for industrialization. For country size, I use the logarithm of total population and the logarithm of total area of a country. GDP is measured by constant 2005 international dollars and GDP growth is the per capita annual growth rate. Urban population is measured by the percentage of the population living in urban areas. I take average values over five year time periods for each control variable for the years 1980-1984,1985-1989, 1990-1994, 1995-1999, and 2000-2004. Descriptions, sources, and summary statistics of all variables are provided in table 1.

4. Empirical Framework

I examine an unbalanced panel of data from 91 countries surveyed in the European and World Value Surveys. A list of the countries included can be found in **Table 18.** The data consists of seven five year time periods beginning in 1970 and ending in 2004. I break the time span into seven periods for which I take average values (1970-1974, 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, and 2000-2004). The five waves for my dependent variable, culture, 1981-1984, 1989-1993, 1994-1999, 1999-2004, and 2005-2007 with average values of my independent variables in the time periods 1980-1984, 1985-1989, 1990-1994, 1995-1999, and 2000-2004. My variable of interest is a measurement of the level of globalization in a country.

The KOF globalization index covers the years 1970-2010. Because culture is persistent over time globalization likely only affects economic cultural change over time. **Table 11** reports correlations between economic culture and globalization for lags varying from zero (contemporaneous) to six. The correlation between culture and the different lags of globalization is fairly stable. A two period (ten year) lag still allows for over 200 observations and has a high

average correlation when examining all globalization components. A two-period lag still allows for culture to take time to change; in my analysis, I use a two-period lag for my measurement of globalization[3]. With this lag structure, globalization from the 1970-1974 average will be paired with cultural data from the 1981-1984 wave and control variable data from 1980-1984.

Figure 1 presents scatter plots of culture versus the KOF globalization index values and the separate components of globalization (political, economic, and social). The best-fit ordinary least squares (OLS) lines show a positive relationship between the level of globalization in a country and its level of culture. A higher level of globalization (and its components) corresponds to a higher level of culture in that country. This result suggests that further investigation is warranted.

Partly because of collinearity concerns, I start with a simple OLS regression that shows the basic relationship between the cultural index, and the four measurements of globalization. This serves as a benchmark for later regressions. The following general specification is used:

(1) $Culture_{it} = \beta_0 + \beta_1 GLOB_{it-2} + v_{it}$

Based on general specification (1), **Table 11** reports the results of both pooled OLS regressions and random effects regressions. Columns 1-5 report pooled OLS, columns 6-10 report results using random effects and columns 11-15 report results using random and period effects. The Breusch-Pagan Lagrange Multiplier test for random effects suggests that a random effects model is appropriate to use for my specification. The Hausman test for each regression also shows the superiority of a random effects model over fixed effects in the regressions. Additionally, I perform a joint test for my period effects to see if all the year coefficients are jointly equal to zero; Chi^2 results are reported in **Table 11.** In all cases, I reject the null; it is likely that time period effects are necessary.

The coefficients for globalization and all of its components are positive and statistically significant at the one percent level. The coefficients are also extremely similar across the different specifications. A standard deviation increase in globalization or social globalization is associated with approximately a 0.70 percent standard deviation increase in culture; a standard deviation increase in economic globalization is associated with approximately a 0.60 percent standard

[3] I also considered a three period lag structure. The baseline estimates do not alter in sign and the magnitudes are not meaningfully changed. ECON_GLOB(-15) is no longer significant in column (2), however the sign and magnitude remain similar.

deviation increase in culture; and a standard deviation increase in political globalization is associated with approximately a 0.40 percent standard deviation increase in culture. These findings imply that the more globalized a country is, the higher the level of culture in that country. These results serve as a benchmark specification.

The variation for these benchmark results is seen when the components of globalization, economic, social, and political, are included in the specification at the same time. In these specifications, economic globalization is not significantly different from zero in columns 5, 10 and 15; however, its sign does switch from being negative to positive. Social globalization is positive and significant in all three regressions at the one percent level and political globalization is positive and significant at the five to ten percent level, depending on the specification. When all three dimensions of globalization are controlled for, it appears that increased social and political globalization positively impacts the culture of a country. The results in **Table 11** serve as a benchmark specification.

Next, I introduce my controls to the model:

(2) $$Culture_{it} = \beta_0 + \beta_1 GLOB_{it-2} + \beta_z Z_{it} + v_{it}$$

Where z_{it} is a vector of my control variables.

Table 13 reports the results of the random effects model when the control variables are included; the Breusch-Pagan Lagrange Multiplier and the Hausman test both again support the use of a random effects model. Chi^2 statistics for period fixed effects are reported for each regression with time period effects. The coefficient for GLOB is positive and significant; this implies the more globalized a country is, the higher the level of culture in that country. Political globalization, while positive, is no longer significant. Both economic and social globalization are positive and significant. The channels through which globalization impacts culture appear to be the level of economic and social globalization. The globalization results reported in column 2 and 3 suggest that a standard deviation increase in economic globalization is associated with a 32 percent standard deviation increase in culture and a standard deviation increase in political globalization is associated with a 49 percent standard deviation increase in culture. This corresponds to a 0.26 and 0.34, respectively, increase in the culture variable. This is the equivalent of going from a culture

similar to Bulgaria or Turkey's to one like Poland. When economic, social, and political globalization are included in the same regression, only social globalization is significant.

The log of population is consistently negative and significant in my results and the log of GDP is consistently positive and significant. Increases in population appear to negatively impact a country's culture while increases in GDP appear to positively impact culture. For example, in columns 3 and 8, when examining social globalization's impact on culture, a one percent increase in the population of a country decreases the level of the culture index by 0.532 and 0.334 units and a one percent increase in the level of GDP increases the level of culture by 0.276 and 0.313 units. This is again similar to moving from a culture like Bulgaria's to one like Polands. The adjusted R-squared value also increases from **Table 12** to **Table 13**, suggesting that the additional controls help to explain the variation in culture.

In order to provide a more complete model estimation, I use a two stage least square (2SLS) approach to re-estimate the random effects model using instrumental variable analysis. My identification strategy is to use a one-period lag of my proxy for globalization, meaning three-period lag instruments for the two-period lagged value of globalization. While using a lagged instrument is not a perfect solution, it is difficult to find good instruments that correlate with the exogenous variables but not with the error term. In using a lagged variable, I follow recent literature that examines culture (Williamson (2009) and Coyne and Williamson (2012)). Therefore, I use the lagged value of globalization instead of weaker instruments. The first stage F-stats shown in **Table 14**. My instrument passes the null hypothesis for weak instruments. Since the data for globalization starts in 1970, this means the culture data from the 1981 wave can no longer be included in the analysis, dropping the number of observations I have for the estimation.

Table 14 reports the results of the random effects model both with and without period fixed effects for the 2SLS estimations. The estimated effect of globalization is positive and significant at the one percent level for both specifications. Political globalization is still positive and insignificant. Economic and social globalization are both positive and significant at the five percent level or better. It appears that globalization impacts culture through the economic and social channels. The coefficients for columns 1-4 are very similar to those from the OLS random effects model. The coefficients for columns 5-10 are similar to those found in **Table 13** but the

magnitude is slightly larger. The globalization results reported in column 6 and 7 suggest that a standard deviation increase in economic globalization is associated with a 34 percent standard deviation increase in culture and a standard deviation increase in political globalization is associated with a 52 percent standard deviation increase in culture.

I perform a robustness check by using additional control variables. The level of education within a country may affect how culture evolves and how globalization is able to influence culture. Tabellini (2010) shows that a higher educated population may adopt better institutions. Additionally, how similar the citizens of a country are to their neighbors may influence how culture changes and what institutions are adopted. I use the percent of secondary school-aged children enrolled in secondary school from the World Bank as a proxy for the level of education. I also use data from Alesina et al. (2003) and measure ethnic fractionalization by the probability that two members of the population belong to the same ethnic group.

Table 15 presents the regression results with these additional controls for a random effects 2SLS model. Similar to earlier results, globalization, economic globalization, and social globalization have a positive and significant effect on culture. Economic globalization is now the only significant variable of interest. Political globalization is not significant from zero and when economic, social, and political globalization are considered simultaneously, only social globalization appears to affect cultural levels. Ethnic fractionalization is negative and significant in all regressions. Greater levels of ethnic fractionalization affect culture negatively. The level of education in a country is positive and significant in columns 1, 4, 6, 8, and 9. The result is strongest in columns 4 and 9 i.e. the regressions where only social globalization is considered. In this case, the level of education positively affects culture when the measure of globalization is not significant. With the additional controls, log of population and log of GDP are only significant when social globalization is considered or when the three different dimensions of globalization are considered simultaneously.

I also perform a "long cross-section" analysis of my data. Here I examine how the average values of globalization and my control variables affect the average value of my culture variable. I average culture and my control variables from 1980 to 2004 and globalization and its dimensions from 1970 to 1994. **Table 16** reports the results of the long cross-section analysis. The overall

index of globalization is again positive and significant but now only at the ten percent level. Of the sub-indices of globalization, only social globalization is significant. When all three dimensions are included, social globalization is again the only dimension that is significant. Higher levels of social globalization positively impact culture.

My final robustness check involves creating a new culture variable. To do this, I follow Coyne and Williamson (2012) and perform a principal component analysis (PCA) on the culture data. PCA extracts the common variation between the four components of the culture variable, creating an overall net measure of the culture needed for economic development (Coyne and Williamson, 2012). In this way, I am able to ensure my results are not sensitive to the construction of the variable. The PCA results are shown in **Table 17**. The results are very similar to the earlier results when the culture variable was used. Globalization is still positive and significant, but now only at the ten percent level. Economic and political globalization are not statistically significant. Social globalization appears to be the dimension that globalization affects culture through; social globalization is positive and significant both when it is included alone and when included with economic and political globalization. Also similar to earlier results, the log of population is negative and significant and the log of GDP is positive and significant except when social globalization is included in the specification. The similarity of these results to my earlier results suggests my results are not sensitive to the construction of my culture variable.

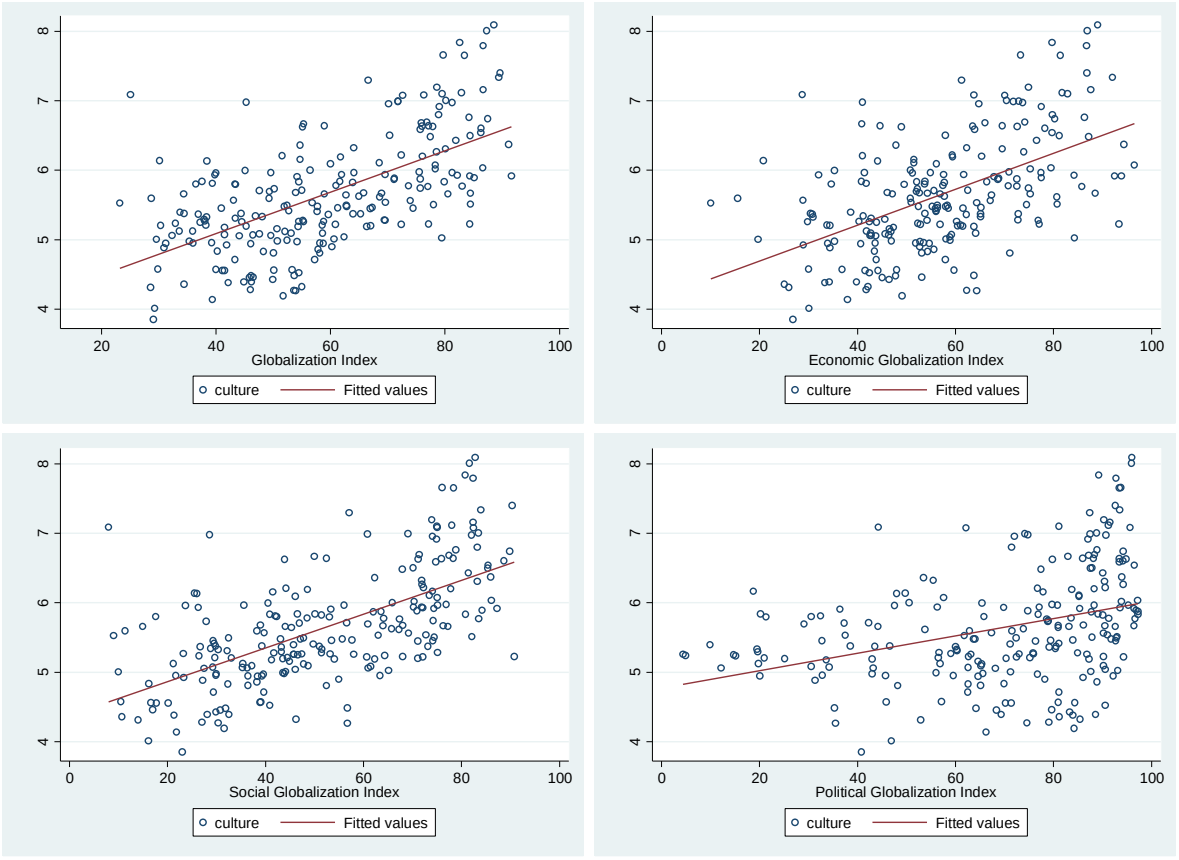
5. Conclusion

Using a panel data set of 91 countries with data spanning from 1970-2005 and using a cultural variable constructed from the European Value Surveys and the World Value Surveys, I conclude that globalization has a positive impact on countries' culture. In particular, the culture is impacted through the social globalization within a country. Increased globalization moves a society's culture towards one more conducive to entrepreneurship and economic growth.

Globalization is generally considered to influence culture within societies but it is not well understood how globalization impacts culture. This paper empirically examines what dimensions of globalization affect economic culture. As globalization increases, culture also changes and moves towards norms that are conducive to economic development. This potentially has positive

implications for growth. As globalization continues to become more prevalent local culture will likely evolve and move toward a culture conducive to growth and development.

Figure 1. Culture versus (a) globalization (b) economic globalization (c) social globalization (d) political globalization



Notes: Culture is an index created using variables from the European Value Survey and the World Value Survey and is measured on the vertical axes. Globalization is the KOF Index of Globalization and the subcomponents of globalization –economic, social, and political – are the KOF Index of Globalization. Average scores from 1980-2005 in five year increments are used. OLS regression lines are included.

Table 10. Summary statistics

Variable	Description	Source	Mean	Std Dev
CULTURE	cultural traits important for entrepreneurship	European and World Value Survey	5.647	0.818
RESPECT	respect and tolerance as a quality one wants to pass on to their children	European and World Value Survey	0.674	0.133
OBEDIENCE	obedience as a quality one wants to pass on to their children	European and World Value Survey	0.360	0.170
TRUST	belief of if most people can be trusted	European and World Value Survey	0.294	0.152
CONTROL	belief of if have free choice and control over life	European and World Value Survey	0.636	0.133
GLOB	KOF Index of Globalization	Dreher (2006)	53.736	18.657
ECON_GLOB	economic dimension of KOF	Dreher (2006)	53.411	20.043
SOC_GLOB	social dimension of KOF	Dreher (2006)	46.943	22.476
POL_GLOB	political dimension of KOF	Dreher (2006)	63.633	23.229
GLOB(-10)	KOF Index of Globalization, lagged 10 years	Dreher (2006)	49.463	17.896
ECON_GLOB(-10)	economic dimension of KOF, lagged 10 years	Dreher (2006)	48.941	19.250
SOC_GLOB(-10)	social dimension of KOF, lagged 10 years	Dreher (2006)	42.992	21.581
POL_GLOB(-10)	political dimension of KOF, lagged 10 years	Dreher (2006)	59.252	23.219
LPOP	natural log of total population	World Development Indicators	16.213	1.696
LLAND	natural log of the total land area	World Development Indicators	12.101	2.137
URBAN_POP	percent of population living in urban areas	World Development Indicators	56.022	23.498
LGDP	natural log of GDP	World Development Indicators	25.465	1.725
GDP_PCGROWTH	growth rate of per capita GDP	World Development Indicators	0.101	0.166
SEC_EDU	percent of secondary school age children enrolled in secondary school	World Development Indicators	70.863	39.649
ETHNIC	probability that two randomly drawn individuals (from a country) are not from the same group	Alesina et al. (2003)	0.375	0.238

Note: Panel is unbalanced across 91 countries

Table 11. Correlation Table for lags of globalization and the economic, political, and social components of globalization

	Culture	Obs		Culture	Obs		Culture	Obs		Culture	Obs
glob	0.614	220	e_glob	0.535	217	p_glob	0.347	223	s_glob	0.628	223
glob(-1)	0.617	206	e_glob(-1)	0.528	203	p_glob(-1)	0.372	209	s_glob(-1)	0.628	209
glob(-2)	0.627	194	e_glob(-2)	0.499	191	p_glob(-2)	0.421	197	s_glob(-2)	0.633	197
glob(-3)	0.635	169	e_glob(-3)	0.500	166	p_glob(-3)	0.445	172	s_glob(-3)	0.630	172
glob(-4)	0.647	136	e_glob(-4)	0.487	133	p_glob(-4)	0.453	139	s_glob(-4)	0.640	139
glob(-5)	0.639	101	e_glob(-5)	0.459	98	p_glob(-5)	0.457	103	s_glob(-5)	0.628	103
glob(-6)	0.677	47	e_glob(-6)	0.540	46	p_glob(-6)	0.458	48	s_glob(-6)	0.643	48

Table 12. Benchmark regressions of culture on globalization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Culture									
	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Random Effects	Random Effects	Random Effects	Random Effects	Random Effects
GLOB(-10)	0.032***					0.032***				
	(0.006)					(0.004)				
ECON_GLOB(-10)		0.025***			-0.005		0.025***			0.002
		(0.005)			(0.006)		(0.004)			(0.005)
SOC_GLOB(-10)			0.026***		0.027***			0.026***		0.022***
			(0.005)		(0.006)			(0.004)		(0.005)
POL_GLOB(-10)				0.017***	0.008*				0.015***	0.007**
				(0.004)	(0.004)				(0.004)	(0.003)
Adj R^2	0.389	0.245	0.398	0.173	0.424	0.427	0.249	0.401	0.177	0.393
Countries	78	76	80	80	76	78	76	80	80	76
Observations	194	191	197	197	191	194	191	197	197	191

	(11)	(12)	(13)	(14)	(15)
VARIABLES	Random Effects with Period Effects	Random Effects with Period Effects	Random Effects with Period Effects	Random Effects with Period Effects	Random Effects with Period Effects
GLOB(-10)	0.031***				
	(0.005)				
ECON_GLOB(-10)		0.023***			0.004
		(0.005)			(0.005)
SOC_GLOB(-10)			0.024***		0.019***
			(0.004)		(0.004)
POL_GLOB(-10)				0.012***	0.007**
				(0.003)	(0.003)
Chi2-stat (Per. Fixed Effect)	40.27***	45.43***	36.92***	59.45***	36.98***
Adj R^2	0.404	0.253	0.412	0.154	0.435
Countries	78	76	80	80	76
Observations	194	191	197	197	191

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions

Table 13. Random effects model of culture on globalization with controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Culture									
GLOB(-10)	0.020***					0.016**				
	(0.006)					(0.007)				
ECON_GLOB(-10)		0.013***			0.005		0.009*			0.005
		(0.005)			(0.006)		(0.005)			(0.006)
SOC_GLOB(-10)			0.018***		0.015***			0.013***		0.011**
			(0.005)		(0.005)			(0.005)		(0.005)
POL_GLOB(-10)				0.003	-0.001				0.002	-0.001
				(0.004)	(0.004)				(0.004)	(0.004)
LPOP	-0.323**	-0.426***	-0.262*	-0.532***	-0.280*	-0.363**	-0.465***	-0.334**	-0.533***	-0.346**
	(0.139)	(0.149)	(0.147)	(0.133)	(0.152)	(0.150)	(0.156)	(0.159)	(0.136)	(0.164)
LLAND	0.072	0.096	0.084	0.055	0.103*	0.087	0.111*	0.095	0.079	0.115*
	(0.056)	(0.060)	(0.057)	(0.054)	(0.060)	(0.059)	(0.061)	(0.059)	(0.058)	(0.061)
LGDP	0.306***	0.409***	0.276**	0.517***	0.284**	0.316***	0.411***	0.313***	0.478***	0.313***
	(0.108)	(0.106)	(0.109)	(0.093)	(0.111)	(0.112)	(0.106)	(0.112)	(0.091)	(0.116)
URBAN_POP	-0.001	-0.000	-0.000	-0.001	-0.000	-0.000	0.000	0.001	0.000	0.000
	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
GDP_PCGROWTH	0.216	0.293	0.273	0.313	0.278	0.314	0.357	0.342	0.302	0.366
	(0.236)	(0.241)	(0.215)	(0.253)	(0.236)	(0.216)	(0.223)	(0.208)	(0.225)	(0.223)
Period Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Chi^2-Stat (Per Fixed Effect)						45.20***	50.67***	43.50***	53.56***	44.08***
Adj R^2	0.467	0.448	0.483	0.437	0.483	0.487	0.470	0.500	0.453	0.503
Countries	74	72	74	74	72	74	72	74	74	72
Observations	186	183	186	186	183	186	183	186	186	183

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 14. 2SLS random effects model of culture on globalization with controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Culture									
GLOB(-10)	0.021***					0.027***				
	(0.007)					(0.008)				
ECON_GLOB(-10)		0.011**			-0.002		0.014**			0.000
		(0.006)			(0.007)		(0.007)			(0.009)
SOC_GLOB(-10)			0.019***		0.020***			0.024***		0.024***
			(0.006)		(0.008)			(0.007)		(0.009)
POL_GLOB(-10)				0.004	-0.001				0.005	-0.000
				(0.004)	(0.005)				(0.006)	(0.006)
LPOP	-0.289*	-0.424***	-0.222	-0.646***	-0.278*	-0.222	-0.398**	-0.139	-0.492***	-0.180
	(0.158)	(0.152)	(0.167)	(0.110)	(0.150)	(0.163)	(0.158)	(0.173)	(0.142)	(0.175)
LLAND	0.086	0.111*	0.102*	0.071	0.105**	0.087	0.118*	0.107*	0.071	0.121*
	(0.058)	(0.061)	(0.058)	(0.046)	(0.053)	(0.059)	(0.062)	(0.059)	(0.064)	(0.064)
LGDP	0.248*	0.378***	0.212	0.589***	0.273**	0.187	0.353***	0.144	0.435***	0.171
	(0.136)	(0.125)	(0.140)	(0.090)	(0.127)	(0.139)	(0.128)	(0.142)	(0.118)	(0.146)
URBAN_POP	-0.001	0.000	0.000	-0.006	-0.000	-0.001	0.001	0.001	0.000	0.000
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
GDP_PCGROWTH	0.225	0.334	0.311	0.758*	0.427	0.322	0.406	0.392	0.293	0.404
	(0.276)	(0.272)	(0.268)	(0.418)	(0.322)	(0.268)	(0.273)	(0.268)	(0.279)	(0.286)
Period Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
F-Stat (first stage)	76.03***	49.03***	29.29***	15.69***	29.54***	59.48***	39.83***	24.37***	16.13***	30.19***
Countries	70	68	70	70	68	70	68	70	70	68
Observations	163	160	163	163	160	163	160	163	163	160

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 15. 2SLS random effects model of culture on globalization with ethnic and education controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Culture									
GLOB(-10)	0.021***					0.025***				
	(0.008)					(0.008)				
ECON_GLOB(-10)		0.014**			0.004		0.017**			0.005
		(0.007)			(0.008)		(0.007)			(0.009)
SOC_GLOB(-10)			0.020***		0.020**			0.025***		0.023***
			(0.006)		(0.008)			(0.007)		(0.008)
POL_GLOB(-10)				0.000	-0.005				0.002	-0.005
				(0.004)	(0.006)				(0.006)	(0.006)
LPOP	-0.119	-0.207	-0.039	-0.372***	-0.041	-0.055	-0.170	0.046	-0.310**	0.040
	(0.161)	(0.153)	(0.165)	(0.128)	(0.161)	(0.168)	(0.161)	(0.173)	(0.153)	(0.173)
LLAND	0.141**	0.161**	0.152**	0.145***	0.168***	0.124*	0.149**	0.136**	0.126*	0.155**
	(0.066)	(0.068)	(0.065)	(0.050)	(0.065)	(0.068)	(0.070)	(0.066)	(0.073)	(0.069)
LGDP	0.047	0.137	0.001	0.301***	0.020	-0.001	0.115	-0.058	0.241*	-0.039
	(0.141)	(0.130)	(0.140)	(0.108)	(0.138)	(0.144)	(0.134)	(0.143)	(0.130)	(0.145)
URBAN_POP	-0.002	-0.001	0.000	-0.006	0.000	-0.001	0.000	0.001	0.000	0.002
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
GDP_PCGROWTH	0.188	-0.289	0.276	0.367	0.363	0.322	0.414	0.409	0.345	0.502*
	(0.288)	0.006	(0.278)	(0.404)	(0.304)	(0.280)	(0.287)	(0.277)	(0.291)	(0.294)
SEC_EDU	0.006*	-0.004	0.005	0.012***	0.005	0.006*	0.006	0.006*	0.008**	0.005
	(0.003)	-1.046***	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
ETHNIC	-0.975***	-0.386	-0.953***	-0.787***	-1.005***	-0.823**	-0.924**	-0.792**	-0.743*	-0.859**
	(0.368)		(0.357)	(0.273)	(0.361)	(0.385)	(0.401)	(0.374)	(0.402)	(0.388)
Period Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
F-Stat (first stage)	69.45***	44.06***	29.90***	11.01***	31.64***	49.13***	38.93***	24.30***	16.19***	35.96***
Countries	65	64	65	65	64	65	64	65	65	64
Observations	152	150	152	152	150	152	150	152	152	150

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 16. OLS Long Cross Section

	(1) Dependent Variable: Culture	(2)	(3)	(4)	(5)
GLOB	0.012*				
	(0.007)				
ECON_GLOB		0.005			-0.002
		(0.005)			(0.006)
SOC_GLOB			0.019***		0.019***
			(0.006)		(0.007)
POL_GLOB				0.001	-0.002
				(0.004)	(0.004)
LPOP	-0.372***	-0.475***	-0.203	-0.508***	-0.241
	(0.132)	(0.127)	(0.155)	(0.112)	(0.161)
LLAND	0.089*	0.106*	0.097*	0.083	0.110**
	(0.053)	(0.055)	(0.054)	(0.053)	(0.055)
LGDP	0.329***	0.430***	0.202*	0.462***	0.242**
	(0.108)	(0.091)	(0.116)	(0.086)	(0.118)
URBAN_POP	-0.000	0.000	0.001	0.000	0.001
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)
GDP_PCGROWTH	0.038	0.039	0.044*	0.039	0.047
	(0.024)	(0.027)	(0.026)	(0.024)	(0.032)
Countries	88	86	88	88	86
Adj R^2	0.504	0.505	0.537	0.484	0.535

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 17. 2SLS random effects model of PCA Culture on globalization with controls

	(1) Dependent Variable: PCA Culture	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GLOB(-10)	0.024**					0.031**				
	(0.012)					(0.013)				
ECON_GLOB(-10)		0.015			-0.000		0.015			-0.001
		(0.009)			(0.011)		(0.011)			(0.013)
SOC_GLOB(-10)			0.022**		0.024**			0.029***		0.029**
			(0.010)		(0.012)			(0.011)		(0.014)
POL_GLOB(-10)				0.005	-0.001				0.007	0.001
				(0.008)	(0.008)				(0.009)	(0.009)
LPOP	-0.506**	-0.651***	-0.429*	-0.782***	-0.444*	-0.403	-0.613**	-0.290	-0.709***	-0.329
	(0.245)	(0.233)	(0.261)	(0.186)	(0.235)	(0.252)	(0.242)	(0.266)	(0.215)	(0.270)
LLAND	0.146	0.172*	0.164*	0.123	0.167**	0.146	0.176*	0.168*	0.126	0.176*
	(0.089)	(0.092)	(0.089)	(0.081)	(0.082)	(0.091)	(0.095)	(0.090)	(0.096)	(0.098)
LGDP	0.433**	0.575***	0.391*	0.704***	0.412**	0.336	0.539***	0.271	0.618***	0.298
	(0.211)	(0.193)	(0.219)	(0.156)	(0.198)	(0.215)	(0.198)	(0.220)	(0.178)	(0.225)
URBAN_POP	-0.005	-0.005	-0.003	-0.005	-0.004	-0.003	-0.003	-0.002	-0.003	-0.003
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
GDP_PCGROWTH	0.028	0.172	0.136	0.205	0.346	0.071	0.189	0.171	0.035	0.194
	(0.453)	(0.454)	(0.437)	(0.505)	(0.515)	(0.428)	(0.440)	(0.424)	(0.446)	(0.454)
Period Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
F-Stat (first stage)	76.03***	49.03***	29.29***	15.69***	29.54***	59.48***	39.83***	24.37***	16.13***	30.19***
Countries	70	68	70	70	68	70	68	70	70	68
Observations	168	165	168	168	165	168	165	168	168	165

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 18. Countries Included in Culture Analysis

	1980	1985	1990	1995	2000		1980	1985	1990	1995	2000
Albania			X	X		Kyrgyz Republic				X	
Algeria				X		Latvia		X	X	X	
Argentina	X	X	X	X	X	Lithuania		X	X	X	
Armenia			X			Luxembourg				X	
Australia	X		X		X	Macedonia, FYR			X	X	
Austria		X		X		Malaysia					X
Azerbaijan			X			Mali					X
Bangladesh			X	X		Malta	X	X		X	
Belarus			X	X		Mexico	X	X	X	X	X
Belgium	X	X		X		Moldova			X	X	X
Bosnia and Herzegovina			X	X		Montenegro					
Brazil		X	X		X	Morocco				X	X
Bulgaria		X	X	X	X	Netherlands	X	X		X	X
Burkina Faso					X	New Zealand			X		X
Canada	X	X		X	X	Nigeria		X	X	X	
Chile		X	X	X	X	Norway	X	X	X		X
China		X	X	X	X	Pakistan				X	
Colombia			X		X	Peru			X	X	X
Croatia			X			Philippines			X	X	
Cyprus					X	Poland				X	X
Czech Republic		X	X	X		Portugal		X		X	
Denmark	X	X		X		Romania		X	X	X	X
Dominican Republic			X			Russian Federation		X	X	X	X
Egypt, Arab Rep.				X	X	Rwanda					X
El Salvador			X			Saudi Arabia				X	
Estonia		X	X	X		Serbia			X	X	X
Ethiopia				X		Singapore				X	
Finland		X	X	X	X	Slovak Republic		X	X	X	
France	X	X		X	X	Slovenia		X	X	X	X
Georgia			X		X	South Africa	X	X	X	X	X
Germany		X	X	X	X	Spain	X	X	X	X	X
Ghana					X	Sweden	X	X	X	X	X
Greece				X		Switzerland		X	X		X
Hong Kong SAR, China					X	Tanzania				X	
Hungary	X	X	X	X		Thailand					X
Iceland	X	X		X		Trinidad and Tobago					X
India		X	X	X	X	Turkey			X	X	X
Indonesia				X	X	Uganda				X	
Iran, Islamic Rep.				X	X	Ukraine			X	X	X
Iraq				X	X	United Kingdom	X	X		X	X
Ireland	X	X		X		United States	X	X	X	X	X
Israel						Uruguay			X		X
Italy	X	X		X	X	Venezuela, RB			X	X	
Japan	X	X	X	X	X	Vietnam				X	X
Jordan				X	X	Zambia					X
Korea, Rep.	X	X		X	X						

Table 19. Covariance Analysis: Ordinary, Sample adjusted 5-9, 208 observations after adjustments

	culture	respect	obedience	trust	control	glob	econ_ glob	soc_ glob	pol_ glob	lpop	lland	urban_pop	lgdp	gdp_ pcgrowth
culture	1													
respect	0.548	1												
obedience	-0.632	0.063	1											
trust	0.792	0.216	-0.405	1										
control	0.428	0.374	0.110	0.177	1									
glob	0.624	0.496	-0.244	0.407	0.484	1								
econ_glob	0.557	0.450	-0.185	0.338	0.530	0.904	1							
soc_glob	0.636	0.491	-0.352	0.372	0.394	0.919	0.828	1						
pol_glob	0.363	0.301	-0.032	0.324	0.318	0.709	0.451	0.436	1					
lpop	-0.100	-0.108	0.116	0.060	-0.111	-0.150	-0.331	-0.334	0.371	1				
lland	0.049	0.064	0.141	0.136	0.121	-0.032	-0.215	-0.195	0.403	0.747	1			
urban_pop	0.476	0.270	-0.343	0.239	0.356	0.613	0.537	0.631	0.359	-0.261	-0.008	1		
lgdp	0.284	0.107	-0.159	0.289	0.116	0.330	0.096	0.181	0.615	0.814	0.656	0.220	1	
gdp_pcgrowth	0.017	0.006	0.064	0.049	0.093	0.040	0.041	-0.027	0.110	0.064	-0.016	-0.177	-0.042	1

Table 20. Benchmark regressions of culture on globalization, 3- period lag.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Culture									
	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Pooled OLS	Rand. Effects	Rand. Effects	Rand. Effects	Rand. Effects	Rand. Effects
GLOB(-15)	0.035***					0.032***				
	(0.006)					(0.005)				
ECON_GLOB(-15)		0.027***			-0.004		0.024***			0.004
		(0.006)			(0.006)		(0.004)			(0.005)
SOC_GLOB(-15)			0.028***		0.026***			0.024***		0.018***
			(0.005)		(0.007)			(0.004)		(0.005)
POL_GLOB(-15)				0.018***	0.009*				0.016***	0.010**
				(0.004)	(0.004)				(0.004)	(0.004)
Adj R^2	0.400	0.245	0.397	0.193	0.426	0.403	0.250	0.397	0.198	0.426
Countries	74	72	76	76	72	74	72	76	76	72
Observations	169	166	172	172	166	169	166	172	172	166

	(11)	(12)	(13)	(14)	(15)
VARIABLES	Random Effects with Period Effects	Random Effects with Period Effects	Random Effects with Period Effects	Random Effects with Period Effects	Random Effects with Period Effects
GLOB(-15)	0.034***				
	(0.005)				
ECON_GLOB(-15)		0.025***			0.002
		(0.005)			(0.005)
SOC_GLOB(-15)			0.025***		0.020***
			(0.004)		(0.005)
POL_GLOB(-15)				0.016***	0.010**
				(0.004)	(0.004)
Chi^2-stat (Per. Fixed Effect)	15.32***	10.54**	15.95***	16.53***	17.19***
Adj R^2	0.406	0.250	0.405	0.197	0.435
Countries	74	72	76	76	72
Observations	169	166	172	172	166

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 21. Random effects model of culture on globalization with controls, 3-period lag

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variable: Culture									
GLOB(-15)	0.018**					0.019**				
	(0.009)					(0.009)				
ECON_ GLOB(-15)		0.008			-0.003		0.009			-0.002
		(0.006)			(0.007)		(0.006)			(0.007)
SOC_ GLOB(-15)			0.019**		0.020**			0.020***		0.021**
			(0.007)		(0.009)			(0.008)		(0.009)
POL_ GLOB(-15)				0.003	-0.000				0.003	-0.001
				(0.006)	(0.006)				(0.006)	(0.006)
LPOP	-0.429**	-0.601***	-0.314	-0.643***	-0.347*	-0.411**	-0.592***	-0.282	-0.641***	-0.320
	(0.172)	(0.176)	(0.202)	(0.147)	(0.198)	(0.174)	(0.178)	(0.204)	(0.147)	(0.201)
LLAND	0.072	0.094	0.087	0.070	0.093	0.076	0.101	0.093	0.075	0.102
	(0.058)	(0.060)	(0.060)	(0.059)	(0.062)	(0.059)	(0.062)	(0.062)	(0.060)	(0.064)
LGDP	0.404***	0.557***	0.317**	0.589***	0.342**	0.381***	0.543***	0.282*	0.583***	0.312**
	(0.139)	(0.128)	(0.151)	(0.113)	(0.150)	(0.143)	(0.132)	(0.155)	(0.113)	(0.154)
URBAN_POP	-0.004	-0.005	-0.002	-0.005	-0.002	-0.004	-0.005	-0.002	-0.005	-0.002
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)
GDP_ PCGROWTH	0.778	0.854	0.915	0.773	0.953	0.898	0.992	1.043*	0.842	1.108
	(0.613)	(0.593)	(0.564)	(0.650)	(0.645)	(0.671)	(0.673)	(0.626)	(0.711)	(0.719)
Period Effects	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Chi^2-stat (Per. Fixed Effect)						13.11***	12.42***	13.84***	13.18***	13.89***
Adj R^2	0.468	0.452	0.489	0.442	0.485	0.468	0.451	0.492	0.438	0.489
Countries	163	160	163	163	160	163	160	163	163	160
Observations	0.488	0.473	0.508	0.463	0.511	0.497	0.482	0.520	0.469	0.525

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Chapter 3:
Spatial Spillovers and Institutional Quality

1. Introduction

It is widely accepted that the institutional quality of a country affects its economic development (see Hall and Jones (1999), Sturm and De Haan (2001), Rodrick et al. (2004), and Seldadyo et al. (2007)). While recent studies have highlighted the importance of institutions for economic growth, the mechanisms that shape these vital institutions are less understood. Since institutions are important for the economic growth of a country, it is important to better understand how a country "chooses" its institutions and how they evolve over time. Existing studies tend to focus on the factors *within* a country that may affect its institutional quality. These studies do not allow for the possibility that neighboring countries are also influencing that country's institutions. If there are spillovers from neighboring institutions, understanding what type of institutions are being influenced by neighboring countries can further our understanding of institutions and their evolution.

In this paper I employ spatial econometric techniques to analyze how the institutions in one country are related to the institutions in neighboring countries. I measure institutions using three different sets of indices: the Worldwide Governance Indicators (WGI), the Economic Freedom of the World (EFW) index and its area sub-indices, and the Freedom House political freedoms and civil rights indices. Employing spatial Durbin models, I estimate how institutional quality in one country is related to the institutional quality in neighboring countries over time using a panel of data on 18 to 28 countries that covers the years 1970-2009. Unlike most previous studies, I exploit time as well as cross-country variation to understand the evolution of institutional quality.

A country's institutions are likely affected by the economic, social, and political landscapes of their geographic neighbors. There is growing empirical evidence to support the idea of institutional spillovers across geographic neighbors. For example, de Groot (2011) analyzes how the expansion of political freedoms in neighboring countries in Africa leads to spillovers in the home country. Seldadyo et al. (2010) find that governance institutions are spatially correlated across a broader sample of countries. Also looking at a country's level of governance, Kelejian, et al. (2013) use a panel data set and spatial techniques and show that the institutions of a bordering

country affect a home country's level of institutional development. Furthermore, Simmons and Elkins (2004) report that countries tend to adopt, in particular, institutional improvements from their neighbors.[1] These studies highlight the importance of institutional spillovers. Alternatively, Claeys and Manca (2011), find no evidence of institutional spillovers when using spatial techniques to examine the spillover effects of governance and economic freedom in a cross-section a countries.

Since the level of institutions in a country will change over time, it is important to also look at the spillover effects of institutions across time. I contribute to the developing literature of institutional spillover effects using a SDM model estimated using maximum likelihood and using a panel data set. Only Kelejian et al. (2013) have studied panel data and allowed for spatial dependence in their model. However, in their study they examine institutional spillovers as measured by WGI and the Polity Index. I expand on their work to include a larger number of institutional measures: WGI, EFW, and Freedom House indices. These measures cover a broad set of not only political but also economic institutions. I also concentrate only on a regional study, the EU, due to the ability of goods and labor to be easily traded in the EU. Also, because I am concentrating on geographical neighbors having institutional spillovers, it makes sense to confine the study to one region. Kelejian et al. look more broadly at institutional spillovers for all available countries.

Examining additional institutional measures is important because is it is not clear that different institutions will have the same spatial dependence. In particular, spatial dependence may differ for economic versus political institutions. Furthermore, the substantially longer time period that I study allows for a better opportunity to observe the evolution of a country's institutions in relation to those of its neighbors.

In my study, I examine countries in the region of the European Union. Regional analysis is often best for spatial dependence studies since it studies geographical neighbors. Additionally, the European Union (EU) has fewer restrictions than other parts of the world on the movement of labor and goods within the European Union. Since the flow of people and goods may be a channel

[1] Though not straightforwardly a study of institutional spillovers, Bosker and Garretsen (2009) find that the institutional quality of a country's neighbors is a significant determinant of its economic growth.

of the transmission of institutions and the European Union allows numerous countries to be studies, I concentrate on this region. The time period I cover is from 1970 to 2009 and thus includes countries transitioning from command based to market based economies. I believe many of the institutions adopted in these countries during this time period would still be affected by their geographic neighbors. However, since this was a large institutional change for central and eastern European countries, I also allow for the possibility of time period fixed effects in my analysis.

Theory suggests numerous reasons to think that countries' institutional qualities will be geographically spatially dependent. First, and most straighforwardly, institutions that are easier to observe are more likely to be adopted (Leeson et al., 2012). The costs of observation are likely to be decreasing, all else equal, in geographic proximity. Furthermore, Simmons et al. (2006) discuss the diffusion of institutions and the importance of recognizing the interdependent nature of governments' decision making processes. They highlight four channels of interdependence: coercion, competition, learning, and emulation.

Coercion may manifest in shaping institutions when other countries directly influence policy by manipulating opportunities. An example of this in the EU could be changes in monetary policy since the Euro Zone has certain monetary policies that must be followed. Competition is more decentralized and is based on the idea that differential attractiveness of certain policies in the international market will cause countries to change their institutions. One way a country's institutions may be affected by its neighbors is through international trade. The trading of goods and services between countries allows for ideas, norms, and customs to be exchanged as well. The introduction of new ideas will likely affect the institutions of both countries. Additionally, trading between nations will be easier and will face lower transaction costs if countries have similar governing institutions for trade. In this way, if one nation alters their rules or regulations for trade, a neighboring nation might also alter their rules and regulations. Governments may also compete with each other for things like foreign direct investment (Quin and Roland (1998)). Therefore the governments of neighboring countries need to be aware of both the institutional arrangements and changes of their neighboring countries and the institutional arrangements in their own country to compete for these flows. In this sense, national governments may engage in policy changes in order to attract foreign direct investment if their neighbors have recently become either more or

less competitive for foreign direct investment flows. The fear of migration to neighboring countries will also induce governments to compete with each other. For example, if a neighbor has recently become a more attractive place for employment, people may wish to migrate there for work. However, the home country will not want to lose their tax base and so may alter their institutions in order to remain competitive with their neighbors.

Learning as a diffusion mechanism arises from policy changes that are based on new information. For example, governments learn from experiences in other countries and are likely to alter their behavior based on this (Berkowizt et al. (2003)). Institutions that seem particularly successful in one country may be adopted in the neighboring country as citizens and governments notice the success of their neighbors (Simmons and Elkins (2004)). Emulation is based on policy changes becoming socially accepted and then enacted. This may happen when governments alter their institutions either because they see their neighbors doing well or in order to better facilitate the workings of regional economic organizations (Grilli (1997)). It is difficult to distinguish between learning and emulation (Meseguer (2005)). In this paper, I cannot distinguish between these two potential channels of diffusion. Learning should demonstrate there was evidence of a policy's efficacy before adoption. Emulation of institutions can take place for both successful and unsuccessful institutions, however, more frequent emulation of successful instances occurs (Dobbin et al. (2007)).

In this paper I report evidence that the institutions associated with economic freedom are spatially correlated. The overall measure of economic freedom, *EFW*, and the components *Money*, *Trade*, and *Regulation* all have statistically significant spatially lagged dependent variables. These institutions have spillover affects to their neighbors. For the Worldwide Governance Indicators, the institution measure *Rule_Law* also has a statistically significant spatially lagged dependent variable. The institutions measured by Freedom House do not appear to be spatially correlated.

This paper is organized as follows. Section 2 and section 3 contain a description of my data and econometric model, respectively. My results are presented and discussed in section 4 and I conclude with comments in section 5.

2. Data

Summary statistics for all data can be found in **Table 22**. As discussed above, there are multiple factors that may affect the spread of institutions. Depending on the type of institution and how it is affected by these factors, spatial factors may be more or less important. Because of this, I examine multiple kinds of institutions and their spatial dependence. I use the following as my proxies for institutions quality: (1) Worldwide Governance Indicators variables voice and accountability, government effectiveness, and rule of law; (2) the Economic Freedom of the World index from the Fraser Institute; (3) its five constituent area scores; and (4) the civil liberty and political freedom scores provided by Freedom House.

My data set is a fully balanced panel data set. There are 18 countries over six periods for this analysis. All four regressions using the World Governance Indicators cover the time period 1996-2009 in two year average data for 28 countries (1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, and 2008-2009). All data for regressions using the Economic Freedom Index is from 1980-2009 and is done in five year average increments (1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009). There are seven periods covered for the World Governance Indicators. Data from Freedom House is from 1970-2009 and is done in five-year averages for a total of eight periods (1970-1974, 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004, and 2005-2009).

The Worldwide Governance Indicators (*WGI*s) measure six dimensions of governance: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. The data range from -2.5 to 2.5 with 2.5 being used for institutions that have good governance. I follow Kelejian et al. (2013) and study three of these dimensions: voice and accountability (*Voice*), government effectiveness (*Effectiveness*), and rule of law (*Rule_Law*). These three indicators best represent the political, administrative, and legal institutions discussed in economic development.

The WGI is the institutional measure that has been employed most widely in studying institutional spillovers (Seldadyo et al. (2010), Claeys and Manca (2011), Kelejian et al. (2013)). Kelejian et al. (2013) is the only study that examines this measure using panel data. However, the *WGI*s only cover a short time span (1996-2010) and are not designed to be studied in small time

periods, such as two-year periods. Therefore, I also examine other institutional measures to examine the question of institutional spillovers.

The Economic Freedom of the World index (*EFW*) measures how supportive a country's institutions are to economic freedom (Gwartney et al., 2012). Therefore, it gauges a country's economic institutions. The overall index is the sum of five constituent area scores: size of government (*Size_Gov*), access to sound money (*Money*), freedom to trade internationally (*Trade*), regulations of credit, labor, and business (*Regulation*), and legal structure and property rights (*Prop_Rights*). The comprehensive scores and area scores are all presented on a scale from zero to 10, with zero being least and 10 being most free.

Freedom House also provides political rights (*Pol_Rights*) and civil liberties (*Civil_Lib*) scores for countries. A country's score for political rights is based on an evaluation of the characteristics of the electoral process, the functioning of the government, and political participation and pluralism. Civil liberties alternatively scores the extent to which the government is constrained. It is based on an evaluation of associational and organizational rights, freedom of belief and expression, personal autonomy, and the rule of law. Each score is on the scale of 1 to 7 where 1 is the most free. These are the only institutional measures where a lower number is "better".

In selecting my control variables, I follow those commonly used in the literature to study institutional levels. My control variables have been extensively used in the literature to examine variables important in determining the level of institutions. La Porta et al. (1999) show that the origin of a country's legal system has an impact on its institutional performance. In my model, I follow Seldadyo et al (2010) and capture legal origin by creating an index form 1 to 3. Countries with socialist origins are given a 1, civil origins a 2, and common law traditions a 3. Common law is generally thought to lead to better institutions today while a history of socialism is generally thought to harm current levels of institutions. These traditions reflect a country's degree of state involvement.

The culture within a country may also impact the level of institutions within it. A country's religion may serve as a proxy for important cultural variation. I measure the proportion of the population that belongs to Protestantism as measured in La Porta et al. (1999). Ethnic

fractionalization may also impact institutional levels. Having different ethnic groups can increase transaction costs in establishing effective institutional arrangements. I employ the measure of ethnic fractionalization developed in Alesina et al. (2003) and measure fractionalization by the probability that two members of the population belong to the same ethnic group.

A country's institutions are also likely affected by its income level. I use the log of GDP per capita as a measure of income level. A country's population may also affect its institutional levels. Public goods are cheaper with a higher population, but collective action problems also increase with a larger population. These variables come from the Penn World Tables 7.1. How much a country trades may also affect both the level of institutions as well as serve as a transmission mechanism for how institutions may spillover. My measure of openness also comes from the Penn World Tables 7.1.

It is possible that there are omitted unobservable factors that vary over space. Spatial dependence exists when there are unobservable geographical correlations. For example, it may be that a neighbor's institutions are affecting the home country's institutions. In this case, a dependent lag variable, a spatial lag of the institutional variable, would also need included. The presence of a dependent lag variable is my variable of interest and the possibility of spatial variables needing to be included in the analysis is developed in the next section.

3. Econometric Model

Because it is likely that there is spatial dependence in the model, estimating the model using OLS will be misleading, either due to the errors having a downward bias or the model suffering from omitted variable bias. Instead, a spatial econometric model must be estimated.

I begin by looking at a general spatial econometric model represented by the following[2]:

$$y_{it} = \delta \sum_{j=1}^{N} w_{ij} y_{jt} + x_{it}\beta + \sum_{j=1}^{N} w_{ij} x_{ij}\gamma + \mu_i + \lambda_t + u_{it} \quad (1)$$

$$u_{it} = \rho \sum_{j=1}^{N} w_{ij} u_{it} + \epsilon_{it}$$

where $i=1,\ldots, N$ and is an index for the countries and $t=1,\ldots,T$ is an index for the time periods. y_{it} is an observation on the dependent variable, institution, at i and t, x_{it} is a (1,K) row

[2] I utilize the notation in Elhorst (2010) and further used in Kalenkoski and Lacombe (2012)

vector of observations on the explanatory variables, and β is a matching (K,1) vector of fixed, but unknown, parameters. μ_i and λ_t allow for the possibility of space-period and time-period fixed effects.

The additional terms allow for the possibility of a spatially lagged dependent variable, a spatial autoregressive process in the error term, or spatially weighted explanatory variables in the model. The spatial weight matrix, w_{ij}, establishes the geographical relationship among the countries in my sample. w_{ij} is built using the 'k-nearest-neighbors' criterion and is determined using the latitude and longitude coordinates of the countries' capital cities. Latitude and longitude data comes from CEPII (Mayer and Zignago, 2011). I define a country's neighbors to be the three countries with the closest capital city in my sample and the individual elements in the matrix w_{ij} equal "1" if observations *i* and *j* are neighbors and "0" otherwise. The weight matrix is a row stochastic weight matrix, meaning the rows of the spatial weight matrix sum to 1. $w_{ij}y$ is then considered a weighted average of the surrounding observations on the dependent variable, $w_{ij}x$ is considered a weighted average of the surrounding observations on the independent variables, and $w_{ij}u$ is considered a weighted average of the surrounding error terms. This allows for the extent of the spatial autocorrelation to be measured.

Equation (1) allows for multiple special cases by restricting parameters. These special cases allow for the spatial aspect to occur in a combination of the dependent variable, error term, and spatially lagged independent variables. There are theoretical reasons to believe that the spatial dependence will occur in any of these cases, as discussed below.

For example, when $\rho = 0$ and $\gamma = 0$, the model is the spatial autoregressive (SAR) model. In this case, the spatial dependence only occurs in the dependent variable. This models when spatial spillovers happen directly through the institutions in the neighboring countries. Governance institutions or economic freedom from neighboring countries directly spillover and affect governance institutions or economic freedom in the home country. This happens, for example, when one country alters its regulatory policy and the home country, after seeing the change, wishes to copy it.

When $\delta = 0$ and $\gamma = 0$ are in effect, the model is the spatial error model (SEM) and results in the spatial dependence occurring in the error term alone. This happens, for example, if

the spatial effects are occurring through some unobserved avenue, such as civil war, YouTube, or shared membership in the U.N.

The spatial Durbin model (SDM) occurs when $\rho = 0$. In this case, the spatial dependence occurs through both the spatially lagged dependent variable and the spatially lagged independent variables. Here, the spatial spillovers occur through both the neighbor's institutions and its explanatory variables; for example, a neighbor's per capita GDP affects the home country's institutions by encouraging it to improve its institutions in order to compete for foreign direct investment.

As discussed in LeSage and Pace (2009), the SDM model should be used when it is believed that 1) there is an omitted variable that is spatially correlated and 2) this omitted spatially correlated variable is correlated with an included explanatory variable. Therefore, I use an SDM model for my initial spatial approach.

In my analysis, I concentrate only on countries that are in the European Union. Because my weight matrix is a geographical nearest neighbor matrix, a regional analysis is best. The European Union also allows for greater flows of labor and capital goods than other regions of the world. Since the movement of people and goods may be an important transmission mechanism, I study an area where the flows of labor and capital are not as heavily restricted.

4. Results

Table 23, **Table 24**, and **Table 25** present results from a standard pooled OLS model that does not take into account spatial dependence for institutional measures from the Economic Freedom Index, Worldwide Governance Indicators, and Freedom House, respectively.

Each column in the tables examines the effect of ethnic fractionalization, religion, legal origin, the natural log of per capita income, the natural log of population, and the natural log of trade openness on a different measure of institutions.

The OLS results appear to match what previous research has found. Having a country with higher levels of Protestantism leads to more economic freedom, a better legal origin, greater levels of openness, and higher GDP per capita all lead to higher levels of economic freedom. Depending on what institution if being examined, these variables may or may not be significant, but they are all the expected sign when they do enter significantly.

However, these models do not take into account the possibility of spatial dependence. LeSage and Pace (2009) show that estimating OLS models could lead to biased, inconsistent, or inefficient results due to the possibility of spatial correlation. The SDM model allows for spatial dependence in both the independent and dependent variables estimating the SDM model using maximum likelihood estimation will avoid the simultaneity bias in the spatially lagged dependent variable that is present in least-squares estimation. It is important to remember that while the SDM model I estimate controls for the same independent variables as the OLS model as well as allows for spatial dependence, the results from the SDM model cannot be directly compared to the results of the OLS model. Results from the SDM model consider both direct, indirect and total effects. The coefficient results from OLS models cannot be thought of as the same as the total effect results.

In estimating the SDM model, I first determine if a fixed time period effects model is necessary for each estimation. To do this, I use a likelihood ratio test to assess the null hypothesis that $H_0 = \lambda_1, \lambda_2, \ldots, \lambda_t = 0$. The results of the likelihood ratio, it's *p*-value and whether fixed time period effects are used are reported at the bottom of **Table 26**, **Table 27**, and **Table 28**. One reason it is important to potentially include time period effects is due to dramatic changes in the political landscape of eastern and central Europe in the late 80s and early 90s. While additional consideration of this may be warranted, time period effects will capture some of this variation.

In my model, a country fixed effect model cannot be utilized. This is because of the independent variables *Ethnic*, *Legal_Origin*, and *Protestant*. These three control variables are all time invariant within my sample and thus already control for country fixed effects. By including time invariant control variables the areas where country fixed effects manifest may be able to be seen. This will help in understanding spillover transmission mechanisms and it will also allow me to compare institution spillovers to other determinants of institutional quality.

Table 26 reports the results for economic freedom and its components. Spatial autocorrelation in the dependent variable is present for *EFW*. δ is equal to 0.320 and is significant at the 1 percent level. This shows that in the case of *EFW* there are institutional spillover affects. As economic freedom increases in one country, on average, it increases by 0.320 units in surrounding areas. The adjusted R^2 is equal to 0.881. However, this could be high because the

fixed effects are absorbing the variation. Because of this possibility, I follow Elhorst (2010) and also report another goodness-of-fit measure that is based on the squared correlation coefficient between actual and fitted values. This correlation is equal to 0.766. In this case, 11.5 percent of the variation in *EFW* is explained by fixed effects. While the spatial lag of the dependent variable is my variable of interest, it is also useful to interpret some control variables.

For economic freedom, *EFW*, the indirect effects for *Ethnic, Protestant, lnGDP_pc, lnPop* are all statistically significant. For example, as Protestanism increases in a country by 10 percent, institutional quality in adjacent countries increases by 1.4 percent. As per capita GDP increases by 10 percent, institutional quality decreases in adjacent countries by 21.78 percent. The negative effect on neighbor's institutions may be because of some businesses or foreign direct investment are moving to the neighboring countries and governments are trying to compete quickly through institutional change.

Spatial autocorrelation is also present for the economic freedom components *Money*, *Trade*, and *Regulation*. *Size_Gov* and *Prop_Rights* do not appear to have spatial autocorrelation. *Money*, *Trade*, and *Regulation* each have a positive and statistically significant spatially lagged dependent variable. δ is equal to 0.416, 0.432, and 0.276, respectively at the one percent level. For example, as *Money* increases in one country, on average it increases by 0.416 in the surrounding countries.

Per capita GDP continues to have a negative indirect effect for these institutions. It appears that as a country increases its own GDP per capita, institutional quality in neighboring countries decreases. This may be because of businesses moving, foreign direct investment, migration of productive workers, better trading with other countries or other reasons. The total effect of per capita GDP is negative. An increase in GDP decreases the institutional quality. This result seems to be largely influenced by the indirect effects.

In **Table 27**, the results for the institutional measures of *Voice*, *Effectiveness*, and *Rule_Law* are reported. *Voice* shows spatial autocorrelation (δ = -0.193) but only at the ten percent level. Voice and accountability, participating in selecting government, freedom of expression, association, and media, seem to be negatively impacted by neighboring institutions. *Voice* has time period effects included in the regression and an adjusted R^2 of 0.856 and a

correlation coefficient of 0.849. *Effectiveness* does not appear to have spatial autocorrelation. *Rule_Law*, however, is positive and significant at the one percent level ($\delta = 0.321$). Citizens' confidence in the quality of contract enforcement, property rights, police and courts does appear to have spillover affects. The adjusted R^2 for *Rule_Law* is 0.852 and the correlation coefficient is 0.840.

Kelejian et al. (2013) use an SDM model only as a robustness check and do not report direct, indirect, and total effects. This makes a direct comparison of my results to theirs impossible. However, the spatial lag of *Voice* is positive but insignificant whereas mine is negative and significant but only at the 10 percent level. They find the spatial lag for *Effectiveness* significant where I do not and we both find *Rule_Law* positive and significant. The discrepancies between the two results likely results from the different countries studied in the sample.

As shown in **Table 28**, neither *Civil_Lib* nor *Pol_Rights* appear to have spatial dependence. This may be because either an OLS or spatial lag of X (SLX) model is the appropriate model.

It appears that political institutions have show less spatial dependence than economic institutions. *EFW*, the components of economic freedom *Money*, *Trade*, and *Regulation* and the WGI measure *Rule_Law* all have spatial autocorrelations. These institutions showing lagged spatial autocorrelations supports the transmission mechanisms discussed by Simmons et al. (2006). All of these institutions are broadly easy to observe. Because they are easy to observe, institutions may be spreading through Learning or through Emulation. If a particular country successfully alters their trade law or makes small changes to their rule of law, neighbors might see the changes to the institutions and then alter their own institutions after seeing its success. Similarly, the institutions that show spatial autocorrelations could be transmitting institutions because of competition between countries. For example, if a particular country changes its trade law or regulations, neighbors may also change their institutions in order to remain competitive in foreign direct investment or labor markets.

5. Conclusion

The institutional quality of a country affects the country's potential for economic development. Yet, it is not clear what affects institutional quality in a country. One thing that may be influencing

a country's institutional quality is the quality of its neighbors' institutions. For example, the trade policy in neighboring countries may directly affect the trade policy in the home country.

In this paper, I employ spatial econometric techniques to analyze how levels of institutions in one country are affected by the level of institutions in neighboring countries using a panel data framework in the European Union. Institutional quality in one country is likely affected by the economic environment and institutional quality in neighboring countries. I find that the Economic Freedom of the World measure of institutions shows positive institutional spillovers as well as the components that measure access to sound money, the freedom to trade internationally, and the regulations of credit, labor and business. For these measures of institutions, a country's institutions directly affect the institutional quality of the neighboring countries' institutions. The Worldwide Governance Indicator rule of law also shows positive institutional spillovers and the institutions measured by Freedom House do not appear to have spatial spillovers. It appears that economic institutions show more spatial dependence than political institutions.

Table 22. Descriptive Statistics

Variable	*Economic Freedom Index*[1]			*World Governance Indicators*[2]			*Freedom House*[3]		
	N	Mean	Std Dev	N	Mean	Std Dev	N	Mean	Std Dev
EFW	18	6.959	0.889						
Size_Gov	18	4.401	1.116						
Money	18	8.497	1.412						
Trade	18	7.907	1.409						
Regulation	18	6.370	1.055						
Prop_Rights	15	7.841	1.011						
Voice				27	1.137	0.371			
Effectiveness				27	1.173	0.689			
Rule_Law				27	1.077	0.651			
Civil_Lib							20	2.000	1.553
Pol_Rights							20	1.805	1.708
Ethnic	18	0.173	0.153	27	0.229	0.168	20	0.188	0.157
Protestant	18	22.089	32.061	27	18.422	29.044	20	17.875	30.616
Legal_Origin	18	2.111	0.460	27	1.741	0.645	20	1.950	0.591
LnOpenness	18	4.227	0.596	27	4.513	0.443	20	4.090	0.674
LnGDPpc	18	10.064	0.384	27	9.972	0.538	20	9.773	0.582
LnPop	18	15.988	1.583	27	15.889	1.424	20	15.972	1.476

[1] 5 year averages from 1980-2009
[2] 2 year averages from 1996-2009
[3] 5 year averages from 1970-2009

Table 23. OLS Regressions, EFW

VARIABLES	(1) *EFW*	(2) *Size_Gov*	(3) *Money*	(4) *Trade*	(5) *Regulation*	(6) *Prop_Rights*
Ethnic	0.094	-0.231	-0.294	1.689**	0.222	-0.775
	(0.481)	(1.442)	(0.538)	(0.671)	(0.849)	(0.662)
Protestant	0.006**	-0.009	0.005	0.009**	0.015***	0.011**
	(0.002)	(0.006)	(0.004)	(0.003)	(0.004)	(0.004)
Legal_Origin	0.624***	1.089***	0.074	0.788**	0.929**	0.189
	(0.097)	(0.241)	(0.199)	(0.345)	(0.391)	(0.206)
LnOpenness	0.932***	0.740	1.385***	1.042**	0.940**	0.555
	(0.228)	(0.463)	(0.277)	(0.477)	(0.443)	(0.362)
LnGDPpc	0.985***	-0.391	1.692***	1.309***	0.579	1.595**
	(0.240)	(0.549)	(0.355)	(0.255)	(0.472)	(0.558)
LnPop	0.288***	0.119	0.469***	0.524***	0.204	0.116
	(0.066)	(0.162)	(0.087)	(0.143)	(0.167)	(0.095)
Observations	108	108	108	108	108	90
Countries	18	18	18	18	18	15
Adj R^2	0.750	0.356	0.623	0.607	0.573	0.485

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 24. OLS Regressions, WGI data

VARIABLES	(1) *Voice*	(2) *Effectiveness*	(3) *Rule_Law*
Ethnic	-0.317	0.031	-0.500*
	(0.193)	(0.263)	(0.266)
Protestant	0.004***	0.008***	0.006***
	(0.001)	(0.001)	(0.001)
Legal_Origin	0.076	0.256***	0.152*
	(0.056)	(0.072)	(0.080)
LnOpenness	0.072	0.066	-0.022
	(0.111)	(0.170)	(0.159)
LnGDPpc	0.426***	0.790***	0.816***
	(0.051)	(0.133)	(0.106)
LnPop	0.006	0.009	-0.039
	(0.030)	(0.037)	(0.039)
Observations	189	189	189
Countries	28	28	28
Adj R^2	0.770	0.833	0.850

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 25. OLS Regressions, Freedom House data

VARIABLES	(1) *Civil_Lib*	(2) *Pol_Rights*
Ethnic	1.566**	1.972**
	(0.701)	(0.742)
Protestant	-0.004	-0.000
	(0.003)	(0.003)
Legal_Origin	-0.668***	-0.872***
	(0.164)	(0.224)
LnOpenness	-0.672	-0.57*
	(0.415)	(0.493)
LnGDPpc	-1.302***	-1.254***
	(0.376)	(0.354)
LnPop	-0.102	-0.207
	(0.147)	(0.172)
Observations	160	160
Countries	20	20
Adj R^2	0.600	0.556

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Robust standard errors are in parentheses. Constants, though not reported, are included in all regressions.

Table 26. Spatial Durbin Model (SDM) results for EFW data

Dependent Variable		*EFW*	*Size_Gov*	*Money*	*Trade*	*Regulation*	*Prop_Rights*
Ethnic	Direct	1.057 **	2.620 ***	0.313	1.004	0.100	0.070
		(0.252, 2.033)	(1.424, 3.876)	(-1.051, 1.792)	(-0.142, 2.217)	(-0.827, 1.091)	(-1.438, 1.534)
	Indirect	4.430 **	4.065 **	2.066	2.193	3.512 ***	7.869 **
		(1.696, 7.985)	(0.451, 8.039)	(-1.095, 5.032)	(-0.826, 4.794)	(1.838, 5.314)	(2.400, 13.582)
	Total	5.487 **	6.684 ***	2.379	3.198 *	3.612 ***	7.940 **
		(1.970, 10.131)	(2.276, 11.473)	(-1.467, 6.202)	(-0.230, 6.277)	(1.507, 5.856)	(1.288, 14.951)
Protestant	Direct	0.009 ***	0.011 ***	0.006	0.017 ***	0.014 ***	0.016 ***
		(0.006, 0.013)	(0.005, 0.017)	(-0.002, 0.014)	(0.01, 0.024)	(0.008, 0.020)	(0.01, 0.021)
	Indirect	0.014 **	-0.021 **	0.025 *	0.024 *	0.041 ***	0.041 ***
		(0.002, 0.028)	(-0.037, -0.004)	(-0.002, 0.052)	(0.002, 0.048)	(0.026, 0.060)	(0.018, 0.064)
	Total	0.024 ***	-0.010	0.030 **	0.041 ***	0.055 ***	0.056 ***
		(0.011, 0.038)	(-0.024, 0.006)	(0.004, 0.055)	(0.019, 0.065)	(0.041, 0.075)	(0.033, 0.081)
Legal_Origin	Direct	0.503 ***	0.776 ***	-0.010	0.851 ***	0.768 ***	-0.139
		(0.338, 0.666)	(0.486, 1.043)	(-0.468, 0.427)	(0.442, 1.307)	(0.486, 1.046)	(-0.591, 0.288)
	Indirect	0.004	-0.248	-0.079	3.214 ***	0.610	0.661
		(-0.653, 0.618)	(-1.137, 0.580)	(-1.961, 1.534)	(1.582, 5.207)	(-0.407, 1.623)	(-0.832, 2.168)
	Total	0.507	0.528	-0.089	4.065 ***	1.377 **	0.522
		(-0.244, 1.181)	(-0.498, 1.437)	(-2.257, 1.746)	(2.151, 6.429)	(0.207, 2.508)	(-0.863, 1.925)
LnOpenness	Direct	0.550 **	0.011	1.429 ***	2.636 ***	1.072 ***	0.866 *
		(0.181, 0.940)	(-0.610, 0.616)	(0.501, 2.311)	(1.822, 3.459)	(0.492, 1.602)	(0.038, 1.661)
	Indirect	0.499	0.589	2.082 *	2.061 **	2.557 ***	0.526
		(-0.549, 1.531)	(-0.889, 2.049)	(0.129, 4.090)	(0.387, 4.157)	(1.442, 3.897)	(-1.410, 2.363)
	Total	1.048	0.600	3.511 **	4.697 ***	3.629 ***	1.392
		(-0.167, 2.284)	(-0.979, 2.212)	(1.105, 5.891)	(2.629, 7.200)	(2.326, 5.217)	(-0.816, 3.659)
LnGDPpc	Direct	0.260	-1.205 ***	0.610	0.659 *	-0.732 ***	-0.389
		(-0.208, 0.636)	(-1.840, -0.611)	(-0.186, 1.371)	(0.001, 1.281)	(-1.216, -0.287)	(-1.239, 0.455)
	Indirect	-2.178 ***	-2.738 ***	-2.710 **	-5.716 ***	-3.602 ***	-2.787 **
		(-3.809, -0.881)	(-4.649, -0.965)	(-5.020, -0.208)	(-8.230, -3.691)	(-5.407, -2.294)	(-4.914, -0.909)
	Total	-1.919 **	-3.943 ***	-2.100	-5.057 ***	-4.334 ***	-3.176 **
		(-3.950, -0.354)	(-6.327, -1.864)	(-4.908, 0.663)	(-7.850, -2.693)	(-6.357, -2.835)	(-5.506, -1.098)
LnPop	Direct	0.258 ***	-0.041	0.466 **	0.994 ***	0.350 ***	0.291 **
		(0.125, 0.398)	(-0.248, 0.173)	(0.132, 0.789)	(0.708, 1.287)	(0.143, 0.552)	(0.049, 0.516)
	Indirect	0.556 ***	0.376	0.393	0.848 **	1.506 ***	0.818 **
		(0.217, 0.954)	(-0.045, 0.847)	(-0.511, 1.263)	(0.110, 1.653)	(1.014, 2.185)	(0.271, 1.443)
	Total	0.814 ***	0.335	0.860	1.842 ***	1.856 ***	1.109 ***
		(0.380, 1.297)	(-0.177, 0.915)	(-0.301, 1.946)	(0.900, 2.812)	(1.266, 2.646)	(0.498, 1.821)
ρ		0.320***	0.099	0.416***	0.432***	0.276***	-0.088
t-stat		3.157	0.936	4.554	4.953	2.734	-0.730
p-value		0.002	0.349	0.000	0.000	0.006	0.465
Time Effects		Y	Y	N	N	N	Y
LR		18.905	22.607	9.618	9.060	7.225	27.657
p-value		0.004	0.009	0.142	0.170	0.301	0.000
Adj R^2		0.881	0.758	0.661	0.748	0.730	0.786
$Corr^2$		0.766	0.698	0.602	0.691	0.695	0.711

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Lower and upper 95% confidence intervals for the effects estimates are underneath the estimates within parentheses.

Table 27. Spatial Durbin Model (SDM) results for Kaufmann data

Dependent Variable		*Voice*	*Effectiveness*	*Rule_Law*
Ethnic	Direct	-0.810 ***	0.079	-0.394
		(-1.079, -0.563)	(-0.326, 0.480)	(-0.868, 0.152)
	Indirect	0.502 **	2.428 ***	2.832 ***
		(0.037, 0.957)	(1.549, 3.410)	(1.621, 4.244)
	Total	-0.308	2.506 ***	2.438 **
		(-0.959, 0.301)	(1.372, 3.776)	(0.726, 4.308)
Protestant	Direct	0.000	0.005 ***	0.004 ***
		(-0.002, 0.002)	(0.003, 0.007)	(0.002, 0.007)
	Indirect	0.007 ***	0.002	-0.001
		(0.004, 0.010)	(-0.003, 0.006)	(-0.007, 0.005)
	Total	0.007 ***	0.007 ***	0.003
		(0.005, 0.008)	(0.004, 0.009)	(-0.002, 0.008)
Legal_Origin	Direct	-0.086 **	0.117 **	0.027
		(-0.151, -0.022)	(0.011, 0.217)	(-0.078, 0.135)
	Indirect	0.168 **	-0.776 ***	0.088
		(0.010, 0.324)	(-1.084, -0.532)	(-0.249, 0.413)
	Total	0.083	-0.659 ***	0.115
		(-0.073, 0.228)	(-0.983, -0.393)	(-0.245, 0.466)
LnOpenness	Direct	0.158 ***	-0.108	-0.181 *
		(0.052, 0.265)	(-0.270, 0.051)	(-0.370, 0.012)
	Indirect	-0.180	-0.826 ***	-1.147 ***
		(-0.407, 0.050)	(-1.265, -0.456)	(-1.691, -0.624)
	Total	-0.022	-0.934 ***	-1.328 ***
		(-0.267, 0.211)	(-1.428, -0.520)	(-1.949, -0.742)
LnGDPpc	Direct	0.519 ***	0.917 ***	0.850 ***
		(0.439, 0.598)	(0.799, 1.030)	(0.734, 0.971)
	Indirect	-0.095	0.772 ***	0.177
		(-0.250, 0.053)	(0.520, 1.059)	(-0.212, 0.574)
	Total	0.424 ***	1.689 ***	1.027 ***
		(0.270, 0.584)	(1.411, 2.008)	(0.577, 1.449)
LnPop	Direct	0.050 ***	0.018	-0.086 ***
		(0.018, 0.081)	(-0.029, 0.064)	(-0.139, -0.030)
	Indirect	0.038	0.140 ***	-0.166 ***
		(-0.007, 0.086)	(0.056, 0.228)	(-0.260, -0.070)
	Total	0.088 ***	0.157 ***	-0.252 ***
		(0.042, 0.139)	(0.066, 0.254)	(-0.359, -0.140)
ρ		-0.193*	0.005	0.321***
t-stat		-1.964	0.055	4.334
p-value		0.050	0.956	0.000
Time Effects		Y	Y	N
LR		15.475	20.98	2.856
p-value		0.017	0.002	0.827
Adj R^2		0.856	0.909	0.852
$Corr^2$		0.849	0.909	0.840

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Lower and upper 95% confidence intervals for the effects estimates are underneath the estimates within parentheses.

Table 28. Spatial Durbin Model (SDM) results for Freedom House data

		Civil_Lib	*Pol_Rights*
Ethnic	Direct	1.847 ***	2.311 ***
		(0.577, 2.983)	(1.031, 3.486)
	Indirect	5.132 **	5.803 **
		(1.696, 8.929)	(1.938, 10.097)
	Total	6.979 ***	8.114 ***
		(2.784, 11.495)	(3.612, 13.254)
Protestant	Direct	-0.001	-0.001
		(-0.008, 0.006)	(-0.009, 0.007)
	Indirect	0.005	0.001
		(-0.018, 0.027)	(-0.024, 0.026)
	Total	0.004	0.000
		(-0.020, 0.026)	(-0.025, 0.024)
Legal_Origin	Direct	-0.879 ***	-1.113 ***
		(-1.219, -0.534)	(-1.478, -0.750)
	Indirect	-1.160 *	-2.334 ***
		(-2.522, 0.107)	(-3.978, -0.982)
	Total	-2.039 ***	-3.447 ***
		(-3.500, -0.690)	(-5.082, -1.963)
LnOpenness	Direct	-0.573 *	-1.152 ***
		(-1.137, -0.040)	(-1.724, -0.598)
	Indirect	-0.624	-1.392 **
		(-1.763, 0.443)	(-2.661, -0.248)
	Total	-1.197	-2.543 ***
		(-2.702, 0.192)	(-4.116, -1.060)
LnGDPpc	Direct	-0.764 ***	-0.740 ***
		(-1.163, -0.364)	(-1.169, -0.302)
	Indirect	0.297	1.772 **
		(-1.204, 1.989)	(0.104, 3.443)
	Total	-0.467	1.032
		(-2.180, 1.356)	(-0.784, 2.893)
LnPop	Direct	0.157	-0.106
		(-0.064, 0.370)	(-0.339, 0.114)
	Indirect	0.691 ***	0.518 **
		(0.235, 1.136)	(0.025, 0.993)
	Total	0.848 ***	0.412
		(0.232, 1.418)	(-0.229, 1.042)
ρ		0.442	0.448
t-stat		6.366	6.561
p-value		0.000	0.000
Time Effects		N	N
LR		3.493	5.62
p-value		0.745	0.467
Adj R^2		0.687	0.699
$Corr^2$		0.626	0.620

Note: *, **, *** denote, respectively, significance at the 10, 5, and 1 percent levels. Lower and upper 95% confidence intervals for the effects estimates are underneath the estimates within parentheses.

Table 29. Countries included within each dataset

	Economic Freedom[1]	World Governance	Freedom House
Austria	x	x	x
Belgium	x	x	x
Bulgaria		x	x
Croatia		x	
Cyprus	x	x	x
Czech Republic		x	
Denmark	x	x	x
Estonia		x	
Finland	x	x	x
France	x	x	x
Germany	x	x	
Greece	x	x	x
Hungary	x	x	x
Ireland	x	x	x
Italy	x	x	x
Latvia		x	
Luxembourg	x	x	x
Malta	x	x	x
Netherlands	x	x	x
Poland		x	x
Portugal	x	x	x
Romania		x	x
Slovak Republic		x	
Slovenia		x	
Spain	x	x	x
Sweden	x	x	x
United Kingdom	x	x	x

[1] The component Prop_Rights excludes the countries: Cyrus, Hungry, and Malta

Conclusion

In my first essay, "Foreign Aid, Institutional Quality, and Growth", Dr. Andrew Young and I examined how foreign aid affects economic and political institutions. We found that aid flows were associated with the deterioration of both political and economic institutions. Aid flows are associated with deterioration in a recipient's legal system and property rights, all well as its openness to international trade. We then examined how this affected economic growth in recipient countries. After controlling for institutional quality, aid flows were not otherwise significantly related to growth, however, aid flows did potentially harm growth outcomes through harming the economic institutions that are important for countries' growth and development. Finding that foreign aid flows harm institutional quality and thus indirectly economic growth is particularly troubling since aid flows are often meant to help recipient countries improve their institutions and their potential for long term growth. Future research examining how aid flows are altering economic and political institutions should be done. Additionally, examining other flows, such as foreign direct investment and remittances, may help in better understanding aid flows and their impact on recipient countries.

In my second essay, I examined how globalization impacted culture. While many believe that globalization leads to cultural change within a society, how globalization impacts culture is still an active research area. In this paper I empirically investigated how globalization affected culture where culture was defined as the dimensions that are important for entrepreneurship and economic growth. I found that globalization is positively related to this measure of culture. Additional globalization can move a culture towards one more conducive to growth and development. Furthermore, it was the economic and social (rather than the political) dimensions of globalization that appeared to drive the estimated relationship. Informal institutions such as culture are vital to the functioning of formal institutions and thus important to the growth and development in countries. However, informal institutions are persistent and slow to change. Better understanding what can cause informal institutions to change over time is important to better understand the functioning of formal institutions. Empirically measuring and studying culture is difficult due to its multifaceted nature. While using the European and the World Value Survey

allows for an empirical study across time and countries, additional research examining how globalization affects culture using alternative measures of culture would be useful.

My final essay examined if there were institutional spillover effects from one country to another. I examined the possibility of institutional spillovers in countries in the European Union by employing a Spatial Durbin maximum likelihood model since institutional quality in one country is likely affected by the economic environment and institutional quality in neighboring countries. I found that there are spillover effects for both economic and political institutions. It appears that policies and institutions diffuse over country borders. Future research should be aware that neighboring policies, environment, and institutions may affect a country's own institutional quality when studying institutional change.

Institutional quality appears to be an essential ingredient for economic growth. My three essays all add to a better understanding of the different elements that cause institutional change. The study of institutional quality and institutional change remains an important area of research and discussion because of its importance for economic development and this dissertation offers a small contribution to this active area of research.

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