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Cultural Compatibility: Economic Development in Eastern Europe

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CULTURAL COMPATIBILITY: ECONOMIC

DEVELOPMENT IN EASTERN EUROPE

by

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ABSTRACT

Cultural Compatibility: Economic

Development in Eastern Europe

by

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Recent work in the field of development economics has demonstrated a

correlation between certain cultural traits and economic prosperity, reinforcing the theory

of institutional stickiness. Notable works have served to quantify and clarify the

connection between informal cultural institutions and formal governmental institutions.

Due to a lack of data, however, studies which examine the link between culture and

prosperity have omitted former Soviet countries in Eastern Europe from their data sets.

With the availability of new data, analysis for this region has now become possible,

yielding surprising insights into the sources of economic development. This paper

demonstrates that the cultural indicators established in the literature do not have quite the

same economic impact on former Soviet countries as on other countries of the world,

suggesting that different factors are driving the success or failure of these transitioning

economies.

(43 pages)

PUBLIC ABSTRACT

Cultural Compatibility: Economic Development in Eastern Europe

The objective of Daniel Brilliant's research is to explore the relationship between culture and economic prosperity in the former communist countries of Eastern Europe. Learning why some of these countries do better than others is of interest in discovering what causes a country's economy to grow in general. Knowing the causes of economic growth helps in determining what policies, if any, can be adopted by a country to help promote economic growth. Some have theorized that government policies are at the heart of prosperity. Others have speculated that cultural factors play a large role in determining if such policies will be effective.

This study expands upon research performed in the development economics literature by adding data from countries which have been historically excluded. Earlier studies usually omitted these transitioning economies due to a lack of available data, but as time goes on data becomes more and more accessible. The major contribution of this paper in terms of data collection is the incorporation of measures used to gauge judicial power from the social sciences literature to fill gaps in the economics literature data.

The analysis suggests that certain cultural measures which are used in development economics literature are not significant contributors to the divergence in economic outcomes in Eastern Europe. In light of this, future research should look to other sources to understand what drives economic prosperity in Eastern Europe and perhaps in the world at large.

ACKNOWLEDGMENTS

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INTRODUCTION

The term "Washington Consensus," coined by John Williamson of the Institute for International Economics in 1989, depicts a set of ten policy prescriptions for developing countries to improve their economy. These policies were a conglomeration of the policy advice of major international and Washington based organizations. The original intention of this position was to help developing countries in Latin America escape grinding poverty. It is only natural that when the Soviet Union fell, Washington Consensus policy initiatives, prominent in the world of development economics at the time, would be applied to the newly founded countries of Eastern Europe. The popular phrase of the time was "getting the institutions right," (Williamson, 2009) signifying the idea that it was most important to formulate an appropriate mix of formal governmental rules in order to create a vibrant free market economy. The results of these attempts surprised many experts. The transition from a controlled socialist economy to a liberalized system was difficult for each nation.

Results thus far have varied greatly between countries. For example Poland grew from a GDP per capita of $3,097 in 1990, measured in constant 2000 USD, to $6,570 in 2010, more than doubling in twenty years. Russia, on the other hand, grew from $2,602 in 1990 to only $2,923 in 2010. (World Bank) Although they have all been experiencing generally positive growth for the last two decades, they are all increasing at very different rates. What could explain this difference?

The developmental transition of these formerly socialist economies is of great interest in understanding the determinants of economic development in the rest of the world.

Since the former soviet countries were all subjected to similar command and control economic systems which ensured similar outcomes in terms of GDP per capita and standard of living, it is important to determine how the different institutional structures which have been adopted by each nation since the fall of the Soviet Union have impacted their divergent development. Much of the research in development economics has neglected extensive review of the former Soviet bloc countries due to a lack of reliable data. Now that new data sources have emerged study of this region has become possible.

In part due to the mixed results of the Washington Consensus reforms, a new theory has emerged in the field of development economics which describes how tension between formal institutions and informal institutions determines how well a set of policies will be received. Boettke, et al (2008) lays out the theory of "institutional stickiness" which states that how effective formal government policies are going to be is determined in a large part by the compatibility of those constraints with local informal rules and customs. Formal institutions are considered to be exogenous while informal institutions are endogenous, spontaneous and self-organizing. When formal institutions run counter to local informal institutions, inefficiencies are created and the potential for unrest emerges. Even when formal institutions attempt to replace informal institutions while achieving the same ends (such as encoding into law a rule which is already a social norm) there can be inefficiencies due to misallocations by the government as well.

An extension of this theory supported by Williamson (2009) is that the most economically developed countries are associated with strong informal cultural rules which are conducive to economic growth, such as a trust of others. On the other hand strong formal rules which constrain the power of the government, and thus should be

useful in limiting arbitrary and economically detrimental policies, are actually associated with lower economic development. She suggests that the mismatch of formal and informal institutions is not as important for development as the actual strength of the institutions themselves. Informal institutions simply trump formal institutions, better constraining behavior in a way that benefits development. This theory of institutional stickiness is central to the methods used in my analysis, particularly the additional insights provided by Williamson (2009).

This paper seeks to address how informal institutions, measured by certain aspects of culture (which represent informal institutions) as described by Tabellini (2010), interact with formal institutions in transitional countries, in order to see what impact this interaction has on economic development. I find that these post-communist countries do not follow the same patterns found in the rest of the world, as reported by Williamson (2009), and that the cultural traits described by Tabellini are not significant in explaining the variations in economic wellbeing present in this region of the world. This suggests that there are other forces at work which have a more significant impact on economic outcomes and that more research is required to discover what those forces are.

LITERATURE REVIEW

One strand of the literature in the field of development economics explains the mixed results of the Washington Consensus efforts with the theory of institutional stickiness as described by Boettke, et al (2008). This theory postulates a vital connection between the informal institutions of a host country and the formal institutions. Specifically, the theory posits that if the formal institutions run counter to the informal institutions then the formal policies will be less likely to take hold or be effective. The theory also allows that formal institutions can affect informal institutions but that this process is slow.

Works such as Tabellini (2010) and Williamson (2009) expand upon this theory of institutional stickiness and seek to flesh out and quantify the nature of the connection between informal and formal institutions. Tabellini's measures of culture, which consist of segments of the World Value Survey: Inglehart et al (2000), are correlated with economic prosperity, controlling for a series of other important indicators.   His work suggests that there is a causal relationship from culture to annual per capita GDP in the regions of Western Europe. This work provides the measures used for informal institutions in subsequent papers such as Williamson (2009) and this paper. It also establishes a list of four specific cultural traits which are correlated with economic prosperity. There are three indicators he uses which are positively correlated with GDP per capita: trust of others, a sense of control over one's life, and the importance of teaching respect and tolerance of others to children. There is also one variable used which is negatively correlated, the importance of teaching obedience to children.

Williamson (2009) takes data from a broader set of countries than Tabellini

(2010). Her results suggest that certain arrangements of informal and formal institutions are better for economic performance than others. Specifically, the average performance was highest for those countries which had well developed informal institutions. Also, strong formal institutions had a negative effect, both for those countries with weak and strong informal institutions. These results show that the formalization of informal rules can be detrimental to economic development and that informal institutions are better at inducing economically beneficial behavior.

As a guide for how to measure formal institutions I follow Glaeser, La Porta, Lopees-De-Silanes, & Shleifer (2004). They posit that in order to truly measure institutions, as defined by North (1981), many of the more commonly used institutional metrics in the development economics literature are not adequate. Since they are constructed using de facto outcomes, not de jure rules, they are biased by short term events, such as election results and the capricious but economically beneficial policies of dictators which are not necessarily reflective of more sustained institutional trends and constraints.

For the measurement of formal institutions I also defer to La Porta, López-de-Silanes, Pop-Eleches, & Shleifer (2004), who establish the importance of judicial independence and constitutional review as institutional indicators of economic prosperity. Their data has since been widely used in the literature. Because their indicators were based on data available in 1995, they overlook countries in Eastern Europe which were considered transitional at the time. Due to this gap in the data I look to works in the political science literature for a suitable proxy, specifically Smithey & Ishiyama (2000).

The indicators used in Smithey & Ishiyama (2000) were used to construct a dependent variable in order to determine the factors which affect judicial formation in

post-socialist countries. The variables that they use for determining judicial power combine measures of judicial independence and constitutional review. These variables are constructed very similarly to those in La Porta, et al (2004) in that they are de jure measures based on constitutional provisions. Though they do not measure exactly the same aspects of each country's constitution, they are close enough that a reasonable comparison can be made.

Another work from the social sciences literature, Johnson & Berrett (2011), which lays out a practical framework for strategic cultural analysis for the intelligence community, suggests that the relationship between culture and institutions may be too complicated to be sufficiently described quantitatively. The results of this paper coincide with this idea, and there are likely other cultural factors which have a strong impact on economic outcomes. Indeed the same cultural traits which create a positive environment for growth in one region may not have the same effect in another region. The cultural measures employed in Tabellini (2010) only measure certain norms among the population, and neglect other important factors. For example, there may be a cultural norm that places a taboo on ambition or the accumulation of profit. Similarly there may be a perceptual lens that labels any western institution or business as untrustworthy, damaging the potential for foreign trade. These sorts of issues are not sufficiently addressed by current metrics of informal institutions present in the literature. As the findings of this paper suggest, future endeavors would be benefited by looking at the broader spectrum of cultural indicators present in the social sciences literature to measure informal institutions.

DATA

The nineteen countries in my data set are not present in the related literature, so it is worth explicitly mentioning them. They include: Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine. All of these countries are conspicuous for having been subject to a relatively uniform centrally planned socialist economic system for several decades. The notable exception is Slovenia, which enjoyed a comparatively high degree of economic autonomy and was exempt from many of the rules which governed other nations in this sample. Due to this outlier effect, Slovenia is excluded from some portions of my analytical work so that conclusions can be drawn about the nature of institutional change in the aftermath of a planned economy. The general results, however, remain unchanged with or without Slovenia. Since the data for Slovenia may be of use in future works by others, it is included in table 3 of appendix A along with my complete data set. The associated descriptive statistics are located in table 2 of the same appendix.

The method for quantifying formal and informal institutions in this paper follows those used in Williamson (2009). Formal institutions are measured using four indicators recommended by Glaeser, et al (2004),[1] since they measure legal constraints and are not bias by short run outcomes. The Database of Political Institutions (DPI)[2] provides the information for proportional representation and plurality. Both of these are dummy

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[1] These include plurality, proportional representation, constitutional review and judicial independence.
[2] Beck, Clarke, Groff, Keefer, & Walsh (2001)
[3] The 2004 referendum was focused on the reelection of Alexander Lukashenko and executive constraints, not legislative ones.
[2] Beck, Clarke, Groff, Keefer, & Walsh (2001)
[4] Waves included are 1981, 1983, 1990, 1991, 1992, 1993, 1999, 2000, 2001, 2008, and 2009.
[5] Specifically it measures whether the partial correlations among variables are small.

variables where 1 represents the presence of the trait in question and 0 its absence. In the case of plurality, this measures the presence of a "winner takes all" election system. A country is considered to have proportional representation if candidates are elected based on the percent of votes received by their party. The variables *proportional representation* and *plurality* are created by averaging the scores for each country from 1996 to 2009. Since these are measures of constitutional provisions they aren't likely to change over time. There are, however, some notable exceptions. In the case of Latvia, Poland and Romania, which joined the European Union in 2007, their governmental structure was changed the year that they obtained membership. Russia, Ukraine and Macedonia also changed their constitutions during the sample period. In the case of Ukraine the scores reflect the ratification of the Ukrainian constitution in 1996 and the major reforms implemented by Victor Yanukovich in 2004. For Russia, these changing scores are the result of political reforms during the Putin presidency. Macedonia's scores for these variables changed due to laws passed in 2004-2005 which changed the political landscape as part of a power sharing agreement. In one case, Belarus, there was a section of years for which data was not available from 1998-2004. Since the numbers remain the same for the period before the gap as after, and since there were no notable changes regarding the variables of interest in the constitution of Belarus during this time [3] the average is simply taken using the available data, excluding the missing years.

The data used in the literature for constitutional review and judicial independence were generated by La Porta, et al (2004) using de jure measures present in each country's

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[3]The 2004 referendum was focused on the reelection of Alexander Lukashenko and executive constraints, not legislative ones.

constitution. Since their data set excludes the countries of Eastern Europe, an alternative source is used to construct these variables. Smithey & Ishiyama (2000) employs a series of six de jure measures of various aspects of judicial power in their analysis. The first two (as well as another indicator which is used as an independent variable in their paper) encompass aspects of constitutional review powers granted to the judiciary, the average of which constitutes my variable *constitutional review*. The remaining four address judicial independence and the average of their measures make up my variable *judicial review*. For a more detailed explanation of how these variables are constructed and how they compare to those used in La Porta, et al (2004) see Appendix B. All four formal constraints represent constitutional measures designed to constrain government, and, therefore, higher scores imply stronger formal institutions.

Informal institutions are measured using the method laid out by Tabellini (2010) which uses four measures from the World Values Survey, Inglehart, et al (2009).[4] The first of these measures is the percentage of respondents which answered the question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" with the response "Most people can be trusted." The other possible response was, "You can never be too careful." This variable is called *trust*.

The second and third variables are constructed from the 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." The potential responses include: tolerance and respect for others, leadership, self-control, thrift, determination, religious faith, unselfishness, obedience, and loyalty. The percentage of respondents which

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[4] Waves included are 1981, 1983, 1990, 1991, 1992, 1993, 1999, 2000, 2001, 2008, and 2009.

included tolerance and respect for others in their answer is coded as *tolerance*. The

percentage of respondents which included obedience in their answer is coded as

obedience.

 The final metric is derived from 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 variable *control* is the

unweighted average of the responses from each country. Trust, Respect, and Control,

according to the prevailing theory present in the literature, should be positively correlated

with economic performance. Obedience is meant to be negatively correlated with

economic performance.

 From the four measures for formal institutions a composite indicator is constructed

using an unconditional average. An identical approach is used to create a composite

score for informal institutions. Williamson (2009) employs principal component analysis

to derive these composite indicators, but this method appears to be inappropriate for my

data set. The results of the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of

Sphericity indicate that factor analysis is not well suited for construction of either

composite variable. Specifically, the KMO test measures the sampling adequacy.[5] As a

rule of thumb, test results should be greater than 0.5 for factor analysis to be productive.

For both variable sets, however, the KMO test result was less than 0.5, thus satisfactory

analysis is in question.

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[5] Specifically it measures whether the partial correlations among variables are small.

Bartlett's test of sphericity indicates the level of certainty that the correlation matrix is an identity matrix, which determines if the factor model is appropriate. If the test result is significant (i.e. <0.05) then the null hypothesis that the correlation matrix is an identity matrix can be rejected, which implies that the factor model is appropriate. If the test is not significant (i.e. >0.05) then the null hypothesis that the correlation matrix is an identity matrix cannot be rejected, implying that the factor model is not appropriate. The formal institution composite indicator failed this test as well. Thus I resort to simple averaging, as used by La Porta, et al (2004), Smithey & Ishiyama (2000), and Tabellini (2010) in variable construction.

ANALYSIS AND RESULTS

To determine the nature of the relationship between formal and informal institutions a simple OLS regression is performed using the following specification:

$$Y = \alpha + \beta X + u$$

In this equation Y is the vector of formal institution composite scores, X equals the vector of informal institution composite scores, and u is an independent and identically distributed error term. A positive relationship between X and Y suggests that informal and formal institutions are complementary. A negative relationship, however, lends strength to the idea that there are frictions created when formal constraints displace informal ones. As indicated in figure 1, there is a clear negative relationship.
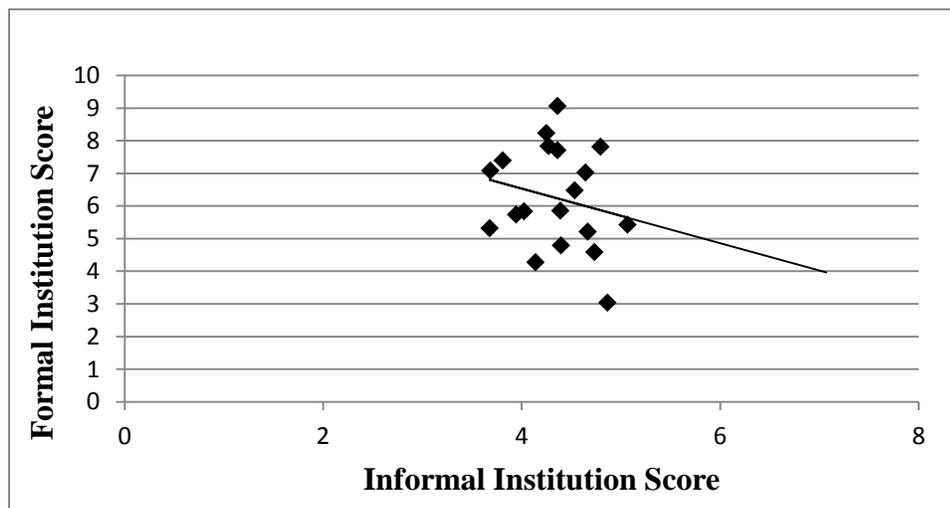
Figure 1: Comparison of formal and informal institutional measures.

Formal Institutions			
	Strong	Mid	Weak
Informal Institutions — Strong			
Informal Institutions — Mid			
Informal Institutions — Weak			

Figure 2a: Williamson (2009) grid.

Formal Institutions		
	Strong	Weak
Informal Institutions — Strong		
Informal Institutions — Weak		

Figure 2b: Quadrant analysis grid.

Composite Analysis

In order to better flesh out the relationship between formal and informal institutions, each country is plotted in a chart. Williamson (2009) employs a three by three grid to separate the countries by relative institutional scores as shown in figure 2a. Williamson designated those countries with an institution composite score above six as "strong" and those below three as "weak." Since all of the countries in my sample have a composite informal institution score between three and six, this method does little to demonstrate the relative effects of informal institutional structures in this case. Therefore, I use a quadrant system to compare relative institutional strengths as shown in figure 2b. The median is used as the point of demarcation between quadrants due to the relative lack of variability in the data set. Countries with a formal institution score above the median appear in the northern sectors; countries with an informal institution score above the median appear in the western sectors. This method is justified for two reasons. First, the

criteria by which the strength of a set of institutions is determined are arbitrary. Second,

the composite score is unit-less and only useful for relative comparisons.

The average GDP per capita is then taken for the countries in each quadrant, which

allows a general comparison of the relative level of prosperity as it relates to the strength

of their institutions. GDP per capita is measured in constant 2005 USD adjusted for

purchasing power parity for the year 2010. Figure 3 shows the countries and the average

2010 GDP per capita for each quadrant. In these figures, cells are shaded to make

analysis easier. Darker cells have a higher GDP per capita; lighter cells have a lower

GDP per capita. As mentioned before, Slovenia is excluded from the averages due to the

autonomy which it enjoyed during the Soviet period. For reference, figure 4 is a

reproduction of the results found in Williamson (2009). In order to compare these results

it is again important to point out that the four sectors present in the reproduction figure

from Williamson (2009) represent the four corners of a nine sector grid. Though our

methods differ enough that a direct comparison is not appropriate, the general direction of

the results are notably distinctive.

Formal Institutions			
		Strong	Weak
Informal Institutions	Strong	Hungary, Russia, Ukraine ($12,238)	Belarus, Estonia, Latvia, Macedonia, Poland ($12,446)
	Weak	Armenia, Croatia, Czech Republic, Georgia, Lithuania, Romania ($12,398)	Azerbaijan, Bulgaria, Moldova, Slovakia ($12,096)

Figure 3: Relative comparison of formal and informal interaction and the resulting average GDP per capita.

Formal Institutions		
	Strong	Weak
Strong Canada, New Zealand ($23,452)		Denmark, Finland, Iceland, Netherland, Norway, Sweden ($28,659)
Weak Pakistan, Philippines, Uganda, Zimbabwe, Singapore ($6,662)		Columbia, Nigeria, Peru, Portugal, South Africa, Turkey ($7,672)

Figure 4: Relative comparison of formal and informal interaction and the resulting average GDP per capita, reproduced from Williamson, (2009).

These results are close to those of Williamson (2009), but with one prominent exception. Williamson finds that countries with strong informal institutions are the leaders in economic performance. For any given level of informal constraints, a higher formal institution composite score had a negative effect. Thus, the best performing sector is the Northeast one, representing strong informal and weak formal institutions. This is followed closely by the Northwest sector (strong formal and strong informal institutions) and then less closely by the Southeast sector (weak formal and weak informal institutions) and the Southwest sector (weak formal and strong formal institutions). Her results indicate that there are frictions created by formalizing informal constraints and that informal constraints are a much better way to ensure economic prosperity.

In my analysis, however, on average the two strongest performing quadrants are the Northeast (weak formal and strong informal institutions) and Southwest (weak informal and strong informal institutions) quadrants. This would imply that the mismatch of institutional strengths is indeed beneficial. This could mean that informal and formal institutions are fair substitutes for each other. When both are strong there are

inefficiencies due to conflicting institutions. When both are weak, performance suffers even more due to a lack of institutional support.

Also, the difference between average GDP per capita scores for each quadrant is much smaller than in Williamson (2009), with the top quadrant only outperforming the lowest by about three percent. This is not surprising since all of the countries in this sample are far more similar than those in Williamson (2009).

It is worth pointing out that the sector which had the greatest variability of GDP per capita in Williamson's analysis was the mid-informal, strong formal sector. This cohort included some of the richest and poorest countries of all. If a comparison is to be made using Williamson's metrics and those in this paper, half of the nations in my data set fall into this volatile category. About the countries which lie in this range Williamson said:

> This category {mid informal, strong formal} suggests that an institutional arrangement can promote economic progress in one country but not in another, making it difficult to predict success.

Indeed, this seems to be the case with the countries examined in this paper. This sort of ambiguity only serves to highlight the need for more research into this area. It may also be possible that in this region the four cultural traits defined by Tabellini have a distinctly different effect than they do in other regions.

Component Analysis

To further explore this result, each measure of culture is examined separately to better determine how each variable affects the result. The average culture score has

surprisingly low variability, but it is not due to a lack of variation for any given

component variable. Indeed figure 5,[6] figure 6,[7] and figures 7-10[8] show that this

particular set of variables happen to cancel out each other's effects in such a way as to put

the averages in a small range close to the mean. Comparison of each culture
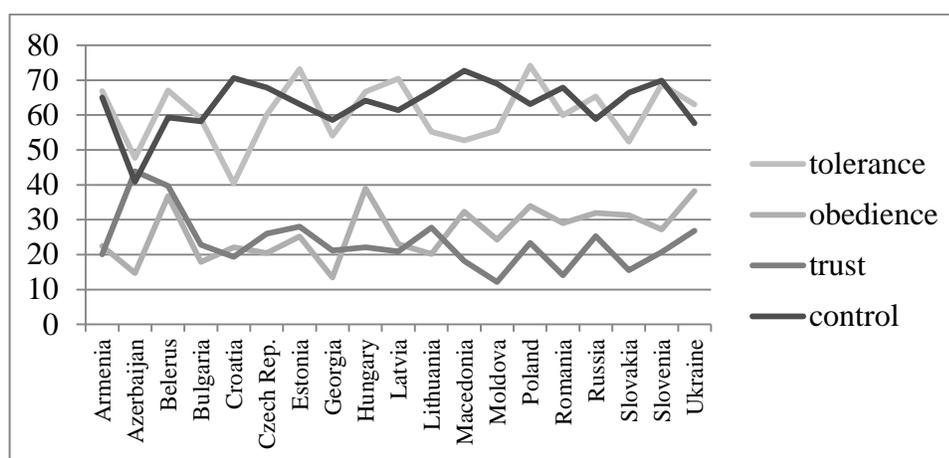
Figure 5: The relationship between culture measures for each country.

	Tolerance	Obedience	Trust	Control
Tolerance	1.000	0.424	0.063	0.013
Obedience	0.424	1.000	-0.080	0.243
Trust	0.063	-0.080	1.000	-0.744
Control	0.013	0.243	-0.744	1.000

Figure 6: The correlation matrix of the informal institution measures.

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[6] Figure 5 - a graph showing the relationship of the four culture measures for each country, demonstrating that each country has very different component scores which tend to cancel each other's variance. This pulls the composite score closer to the mean.

[7] Figure 6 - the correlation matrix of the culture variables. This reinforces the information found in figure 5.

[8] Figures 7-10 - a series of scatter plots which show the relationship between each culture measure and the formal institution composite score. Each scatterplot demonstrates far greater variability for the scores of each component culture measure than is present in the composite variable. Compare to figure 1.
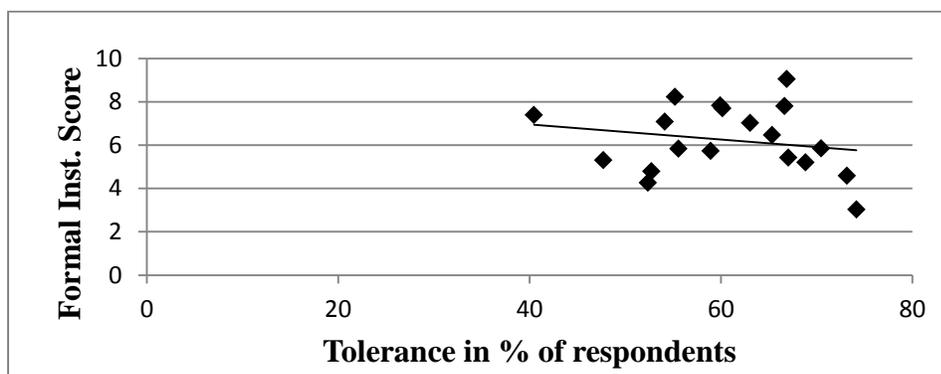
Figure 7: Comparison of formal institutions and tolerance.
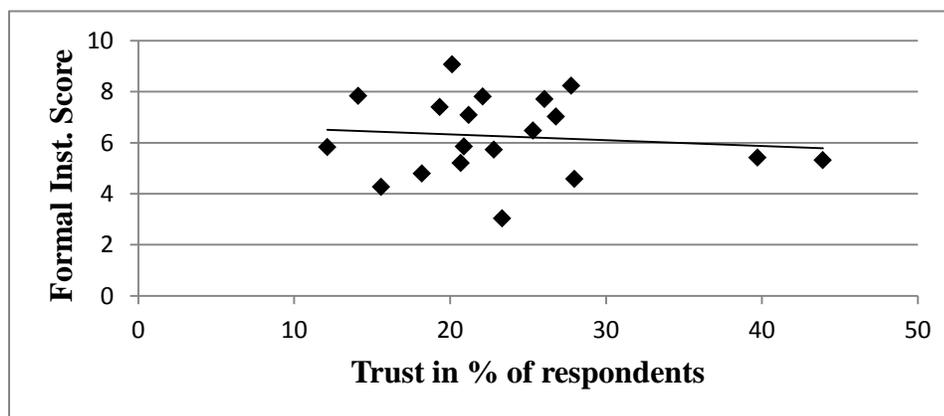
Figure 8: Comparison of formal institutions and trust.
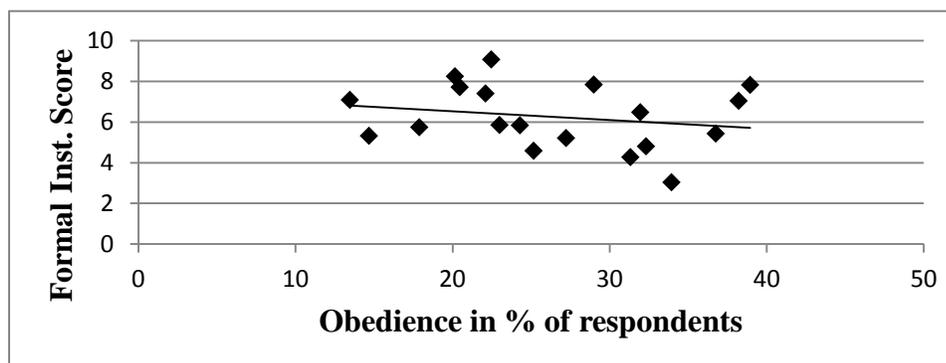
Figure 9: Comparison of formal institutions and obedience.
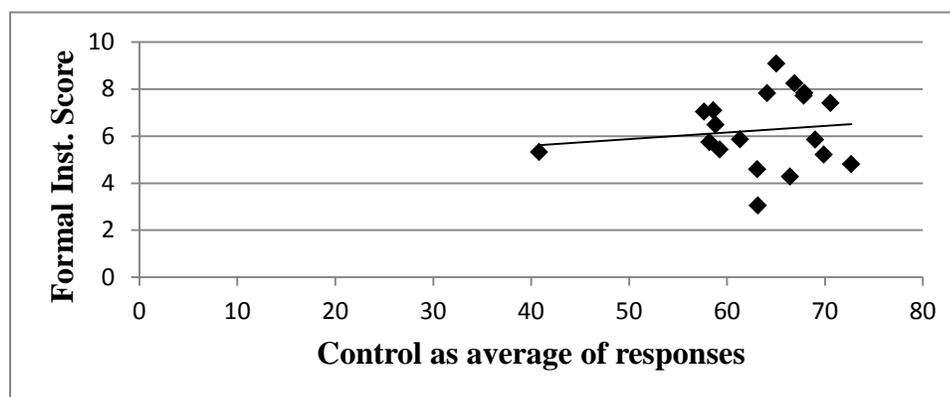
Figure 10: Comparison of formal institutions and control.

Formal Institutions		
	Strong	Weak
Strong	Armenia, Croatia, Czech Republic, Lithuania, Romania ($13,968)	Macedonia, Moldova, Slovakia ($10,256)
Weak	Georgia, Hungary, Russia, Ukraine ($10,316)	Azerbaijan, Belarus, Bulgaria, Estonia, Latvia, Poland ($13,308)

Figure 11: Relative comparison of the variable control and informal composite score and the resulting average GDP per capita.

measure to the formal institution score reveals that each variable has a different, sometimes countervailing effect. Figures 11-14 show the quadrant based analysis for each informal institution measure, one at a time.

These results suggest that there are other exogenous forces, beyond this model's specification, which modify the effect of each variable, effectively changing the impact of each cultural trait. Tabellini's work focuses on Western Europe, where the

Formal Institutions		
	Strong	Weak
Informal Institution - Tolerance / **Strong**	Armenia, Hungary, Russia, Ukraine ($10,388)	Belarus, Estonia, Latvia, Poland ($14,860)
Informal Institution - Tolerance / **Weak**	Croatia, Czech Republic, Georgia, Lithuania, Romania ($13,910)	Azerbaijan, Bulgaria, Macedonia, Moldova, Slovakia ($10,234)

Figure 12: Relative comparison of the variable tolerance and informal composite score and the resulting average GDP per capita.

Formal Institutions		
	Strong	Weak
Informal Institution - Obedience / **Strong**	Hungary, Romania, Russian, Ukraine ($11,911)	Belarus, Macedonia, Poland, Slovakia ($13,046)
Informal Institution - Obedience / **Weak**	Armenia, Croatia, Czech Republic, Georgia, Lithuania ($12,692)	Azerbaijan, Bulgaria, Estonia, Latvia, Moldova ($11,686)

Figure 13: Relative comparison of the variable obedience and informal composite score and the resulting average GDP per capita.

Formal Institutions		
	Strong	Weak
Informal Institution – Trust / **Strong**	Czech Republic, Lithuania, Russia, Ukraine ($14,537)	Azerbaijan, Belarus, Bulgaria, Estonia, Poland ($13,382)
Informal Institution – Trust / **Weak**	Armenia, Croatia, Georgia, Hungary, Romania ($10,591)	Latvia, Macedonia, Moldova, Slovakia ($10,926)

Figure 14: Relative comparison of the variable trust and informal composite score and the resulting average GDP per capita.

cultural traits which he designates have the effect which he lays out. My results suggest

that in different cultural contexts, the same cultural traits might not have the same effect

on economic performance.

While the variables *tolerance* and *obedience* follow the same pattern as is present

in the composite analysis, the other variables, *trust* and *control*, both follow their own

sequence. This indicates that a strong informal ethic of tolerance and respect for others

benefits economic performance when formal institutions are weak. In the absence of

strong informal tolerance, formal institutions benefit development.

Obedience, according to Tabellini (2010), negatively correlated with economic

prosperity, but those quadrants with a strong obedience score outperform those with a

weak score on average. In Tabellini (2010) *obedience* was used as a proxy for the degree

of hierarchy in society. According to his theory, the more hierarchical a society, the less

prosperous it was likely to be. Using this interpretation, more hierarchical societies

perform better when constraints on government are weaker. Less hierarchical societies

do better when there are more constraints on government. This result seems to accord

with the idea that when cultural traits mismatch institutions there are losses due to

frictions, but when they coincide, there are benefits. A hierarchical society would tend to

do well when the hierarchy is codified into law, whereas a more horizontally integrated

society does better with a more constrained government and greater flexibility to self-

organize.

The results for *trust* suggest that trust for others has a positive impact on

prosperity, but that the relationship with formal institutions is more nuanced than with

tolerance. It would appear that countries whose citizens possess a strong sense of trust for others benefit more from strong formal institutions, while those nations whose citizens do not trust others do not derive such a benefit from strong formal constraints. It is possible that citizens of those countries with strong formal institutions find it easier to prosper thanks to the constraints on government which help prevent cronyism. Whereas those who trust others less tend to do better in an environment where there are fewer constraints on the government and interactions with others are more likely to be constrained by the state. This result seems quite counter intuitive unless one is familiar with some of the cultures and governments in this region of the world.

In the case of *control* the results are polarized in the opposite direction from *trust* and *obedience*. Countries with citizens who have a strong sense of control over their lives perform best in a system with strong formal constraints on government, since such a system tends to help remove formal barriers to entrepreneurism. For those citizens who feel they have little control over their lives, a system with fewer checks on government power is more beneficial.

Robustness Checks

Due to the relatively simple nature of this analysis, and following Williamson's methods, I perform a series of robustness checks. First, a new variable is created which is the ratio of formal and informal scores. A score less than one implies stronger formal institutions relative to informal. A score greater than one suggests the opposite is true. This new variable is then regressed on GDP per capita to demonstrate the relationship between formalization of society and economic performance. Figure 15 shows, in

accordance with the findings of Williamson (2009), a negative relationship. This

suggests that as formal institutions displace informal ones, there are losses due to

inefficiency.
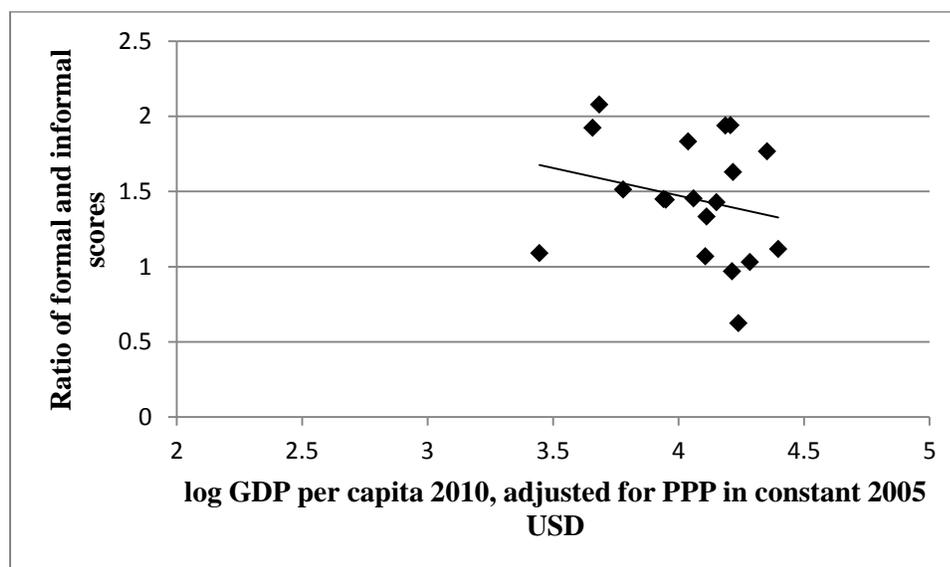
Figure 15: Relative institutional strength and economic performance.

Next, several OLS specifications are run to check robustness which are

represented in table 1. The log of GDP per capita in 2010 is regressed on the formal

composite index, the informal index, the ratio variable, an interaction term,[9] and a vector

of control variables. These variables include: the average growth in GDP from 1991-

2010, the percentage of urbanized population in 2010,[10] inequality,[11] government

consumption,[12] the corruption perception score from transparency international's 2010

rankings, geography as measured by the log of the distance from the capital to

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[9] The interaction term consists of the formal score multiplied by the informal score.

[10] Data for urbanization is gathered from the World Bank: World Development Indicators.

[11] Inequality is proxied by the GINI coefficient of income inequality for 2010 and retrieved from the World Bank: World Development Indicators.

[12] Government consumption measures are gathered from the 2008 Fraser Institute index, Gwartney, Hall, & Lawson (2008).

Copenhagen, Denmark,[13] and average years of schooling in 1960 as estimated by Barro

& Lee, (2010).   Williamson had included a dummy variable for English legal origin as

well, but since none of the countries in my sample derived their legal system from the

common law tradition this variable is omitted.   The composite scores used to measure

formal and informal institutions are only meant to be used as relative measures of

institutional strength. Since there is no common unit of measure only the ordinal

relationship is of any significance. The coefficients are therefore not to be interpreted as

representing marginal effects; only the signs and significance levels are of interest.

Column [1] only controls for formal institutions and shows that formal institutions

are negatively correlated with GDP per capita. The relationship, however, is not

significant. Column [2] only controls for informal institutions and is positively correlated

but also not significant. Column [3] controls for both formal and informal indices. Both

retain the same relationship with GDP per capita, and neither is significant. Column [4]

introduces a vector of control variables. None of the institutional measures emerge as

significant. Columns [5] and [6] control for the interaction term, with column [6]

including a vector of controls. In columns [7] and [8] the ratio term is regressed, both

with and without controls. Columns [9] and [10] breakout the component cultural

measures to see if each measure individually has any significance in predicting GDP per

capita performance. It is interesting to point out that the signs in column [9] correspond

with the directions laid out by Tabellini (2010), but when the controls are introduced in

[10] the signs change. This supports the idea that other regional factors might change

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[13] This measure of geography controls for both the latitudinal effects, which are well established in the literature, but also for the beneficial historical and geographic effects of proximity to more developed western nations which is unique to this region. Copenhagen, Denmark represents a point to the northwest, the farther from which a country is, the lower its GDP per capita.

Table 1: GDP Regressions

Dependent variable: log GDP per capita 2010 adjusted for PPP (in constant 2005 dollars)

	[1]	[2]	[3]	[4]	[5]	[6]
Formal institutions	-0.027		-0.018	0.017	0.046	-0.093
	(0.039)		(0.040)	(0.045)	(0.574)	(0.763)
Informal institutions		0.178	0.164	-0.007	0.249	-0.167
		(0.149)	(0.156)	(0.211)	(0.779)	(1.128)
Ratio formal/informal						
Interaction formal/informal					-0.014	0.025
					(0.129)	(0.170)
Tolerance						
Obedience						
Trust						
Control						
Growth				-0.007		0.003
				(0.068)		(0.099)
Urban Population				-0.007		-0.006
				(0.011)		(0.014)
Inequality				0.016		0.015
				(0.018)		(0.025)
Government consumption				-0.000		-0.000
				(0.012)		(0.014)
Corruption				0.026		0.031
				(0.068)		(0.083)
Geography				-0.905		-0.874
				(0.602)		(0.705)
Education				0.070		0.057
				(0.083)		(0.128)
Coefficient	4.220***	3.278***	3.453***	6.173*	3.071	6.844
	(0.251)	(0.649)	(0.772)	(1.731)	(3.509)	(5.004)
Observations	19	19	19	15	19	15
R-squared	0.03	0.08	0.09	0.73	0.09	0.74
Adj. R-squared	-0.03	0.02	-0.03	0.25	-0.09	0.07

Standard errors are in parentheses.

Significance level: *** at 0.1%; ** at 1%; * at 5%; ~ at 10%

Table 1: GDP Regressions (continued)

Dependent variable: log GDP per capita 2010 adjusted for PPP (in constant 2005 dollars)

	[7]	[8]	[9]	[10]
Formal institutions				
Informal institutions				
Ratio formal/informal	-0.150	0.066		
	(0.150)	(0.132)		
Interaction formal/informal				
Tolerance			0.007	-0.003
			(1.143)	(0.009)
Obedience			-0.003	0.014
			(0.010)	(0.012)
Trust			0.012	-0.008
			(0.012)	(0.021)
Control			0.015	0.027
			(0.014)	(0.028)
Growth		-0.006		-0.032
		(0.059)		(0.081)
Urban Population		-0.007		0.004
		(0.007)		(0.013)
Inequality		0.016		0.023
		(0.013)		(0.018)
Government consumption		0.000		-0.008
		(0.011)		(0.015)
Corruption		0.028		0.058
		(0.058)		(0.091)
Geography		-0.882~		-0.749
		(0.446)		(0.470)
Education		0.068		0.068
		(0.064)		(0.078)
Coefficient	4.271***	6.073**	2.488*	3.279
	(0.226)	(1.532)	(1.143)	(3.000)
Observations	19	15	19	15
R-squared	0.06	0.73	0.13	0.84
Adj. R-squared	-0.00	0.38	-0.11	0.26

Standard errors are in parentheses.

Significance level: *** at 0.1%; ** at 1%; * at 5%; ~ at 10%

the innate effect of these cultural traits on economic performance.

Clearly the formal and informal composite scores are not significant in explaining variations in GDP per capita. Despite the information which the quadrant analysis provides about the association of the various cultural measures and formal institutions, it is clear that the relationships are not helpful in explaining the divergent economic development in Eastern Europe. Since neither the composite scores for either cultural indicators or formal institutions nor the interaction term are significant, I conclude that there are other factors which explain the difference in outcomes among these transitioning nations.

The final robustness check that Williamson performs is to examine the average GDP per capita for the countries which lie in between her strong and weak boundaries to see if they follow the same general trend as those in the extreme sectors. This check is not relevant to my analysis since this paper uses quadrants to subdivide the cohorts according to institutional strength.

CONCLUSION

The results of the quadrant analysis suggest that in Eastern Europe the cultural aspects measured in this paper have a different effect than in the world at large. Expanding those results to examine each culture measure reveals that the interplay between informal and formal institutions is much more nuanced than they appear to be on the surface. Unfortunately, though some relative comparisons can be made regarding the effectiveness of one institutional arrangement over another, the lack of statistical significance in any of the robustness specifications implies that relative institutional relationships are not significant in explaining the divergent economic development in Eastern Europe.

There may be value in performing a more nuanced cultural analysis, taking into account the specific regional complexities of Eastern Europe, but then any cross cultural analysis becomes difficult. My results suggest that in different cultural contexts, the same cultural traits might not have the same effect on economic performance, further complicating any transnational comparison.

There are likely other factors which are of greater importance than the cultural measures used by Tabellini (2010) in determining the success of a transitioning economy. Further research is required to determine what these factors are and how transitional economies evolve. Many of the former communist states still have legacies of the Soviet Union present in their institutional composition. For instance, command and control economic planning generated inefficient allocations of human and physical capital, which in turn had an impact on the informal institutions in the region. A well-documented

example is the thriving black market in the Soviet Union generated by the tight regulation of commodities markets. A set of informal institutions evolved in order to regulate the barter of goods and favors which remained even after the formal regulation of goods was discontinued. These legacy institutions are not accurately reflected in the formal institutional measures used in this paper and may have a significant impact on productivity depending on the other informal institutions in the region.

For some of the sample countries similar formal and informal institutional arrangements seem to generate highly variable outcomes, suggesting that there is much more at play here. This is further supported by the fact that nations with a similar institutional mix to those in my sample had a much higher variance of outcomes in GDP per capita than other nations in the world according to Williamson (2009). This variance might be symptomatic of this particular institutional structure.

With all this complexity it is little wonder that the idea of simply "getting the institutions right" would have such a widely variable success rate. These sorts of interactions must be studied in greater depth if any conclusions are to be made regarding why these transitional economies are defying consensus when it comes to the determinants of economic growth.

REFERENCES

Barro, R., & Lee, J.-W. (2010). A new data set of educational attainment in the world, 1950-2010. *NBER working paper no. 15902* .

Beck, T., Clarke, G., Groff, A., Keefer, P., & Walsh, P. (2001). New tools in comparative political economy: The Database of Political Institutions. *World Bank Economic Review , 15* (1), 165-176.

Boettke, P., Coyne, C., & Leeson, P. (2008). Institutional stickiness and the new development economics. *American Journal of Economics and Sociology , 67* (2), 331-358.

Glaeser, E., La Porta, R., Lopees-De-Silanes, F., & Shleifer, A. (2004). Do institutions cause growth? *Journal of Economic Growth , 9*, 271-303.

Gwartney, J. D., Hall, J. C., & Lawson, R. (2008). Economic Freedom of the World: 2008 Annual Report. Vancouver, BC: The Fraser Institute.

Inglehart, et al. (2009). World Values Survey. *1981-2008 Official aggregate v. 20090901, 2009* . Aggregate File Producer: ASEP/JDS, Madrid.

Johnson, J. L., & Berrett, M. T. (2011). Cultural Topography: A New Research Tool. *Studies in Intelligence , 55* (2).

La Porta, R., López-de-Silanes, F., Pop-Eleches, C., & Shleifer, A. (2004). Judicial Checks and Balances. *Journal of Political Economy , 112* (2), 445-470.

North, D. (1981). *Structure and change in economic history.* New York: W.W. Norton & Co.

Smithey, S. I., & Ishiyama, J. (2000). Judicious choices: designing courts in postcommunist. *Communist and Post-Communist Studies , 33*, 163–182.

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association* , 677–716.

Transparency International. (2010). Corruption Perceptions Index 2010.

Williamson, C. R. (2009). Informal institutions rule: institutional arrangements. *Public Choice , 139* (3), 371-387.

World Bank. (2010). World development indicators. Washington: World Bank.

APPENDICES

APPENDIX A. DATA

Table 2: Descriptive Statistics

Variables	Mean	Minimum	Maximum
2010 GDP pc ppp in const 2005 dollars	12984.126	2789.438	24982.474
log 2010 GDP pc ppp in const 2005 dollars	4.054	3.446	4.398
Tolerance	60.670	40.467	74.157
Obedience	26.500	13.467	38.952
Trust	23.582	12.121	43.920
Control	63.238	40.838	72.707
Plurality	0.508	0.000	1.000
Proportional Representation	60.670	40.467	74.157
Constitutional Review	26.500	13.467	38.952
Judicial Independence	23.582	12.121	43.920
Cultural Composite Score	63.238	40.838	72.707
Formal Composite Score	0.508	0.000	1.000
Ratio of Formal and Informal Scores	0.914	0.000	1.000

Table 3: Master Data Table

Country	2010 GDP pc ppp in const 2005 dollars	log 2010 GDP pc ppp in const 2005 dollars	Tolerance	Obedience	Trust	Control	Plurality	Proportional Representation	Constitutional Review	Judicial Independence	Cultural Composite Score	Formal Composite Score	Ratio of Formal and Informal Scores
Armenia	4838.932	3.685	66.867	22.467	20.133	65.041	1.000	1.000	0.750	0.875	4.363	9.063	2.077
Azerbaijan	8918.713	3.950	47.708	14.684	43.920	40.838	1.000	0.000	0.750	0.375	3.679	5.313	1.444
Belarus	12813.547	4.108	67.040	36.760	39.720	59.274	0.000	1.000	1.000	0.168	5.070	5.419	1.069
Bulgaria	11486.358	4.060	58.913	17.883	22.807	58.221	0.000	1.000	0.500	0.793	3.946	5.731	1.453
Croatia	16121.263	4.207	40.467	22.112	19.343	70.569	1.000	1.000	0.500	0.458	3.812	7.394	1.939
Czech Rep.	22557.463	4.353	60.158	20.469	26.053	67.835	1.000	1.000	0.500	0.583	4.363	7.706	1.766
Estonia	16353.208	4.214	73.152	25.177	27.981	63.107	0.000	1.000	0.500	0.333	4.735	4.581	0.967
Georgia	4550.186	3.658	54.133	13.467	21.200	58.602	1.000	1.000	0.500	0.333	3.685	7.081	1.922
Hungary	16514.333	4.218	66.657	38.952	22.096	64.099	1.000	1.000	0.500	0.625	4.795	7.813	1.629
Latvia	12938.018	4.112	70.456	22.998	20.894	61.355	0.214	1.000	0.500	0.625	4.393	5.848	1.331
Lithuania	15390.818	4.187	55.202	20.153	27.771	66.914	1.000	1.000	0.500	0.793	4.251	8.231	1.936
Macedonia	2789.438	3.446	52.733	32.333	18.200	72.707	0.500	0.500	0.000	0.918	4.399	4.794	1.090
Moldova	8733.745	3.941	55.577	24.307	12.121	69.015	0.000	1.000	0.500	0.833	4.025	5.831	1.449
Poland	17336.670	4.239	74.157	33.956	23.334	63.176	0.214	1.000	0.000	0.000	4.866	3.036	0.624
Romania	10929.433	4.039	59.925	28.999	14.098	67.919	0.214	1.000	1.000	0.918	4.274	7.829	1.832
Russia	14182.558	4.152	65.335	31.968	25.325	58.832	0.714	1.000	0.500	0.375	4.536	6.473	1.427
Slovakia	19244.154	4.284	52.364	31.338	15.568	66.442	0.000	1.000	0.500	0.208	4.143	4.269	1.030
Slovenia	24982.474	4.398	68.829	27.238	20.693	69.906	0.000	1.000	0.500	0.583	4.667	5.206	1.116
Ukraine	6017.082	3.779	63.064	38.231	26.795	57.665	0.786	0.857	0.750	0.418	4.644	7.026	1.513

APPENDIX B. DATA DESCRIPTIONS FROM SMITHEY & ISHIYAMA (2000)

Table 4: Conversions of Smithey & Ishiyama (2000) Variables

Composite Variable	Source Variable	Data Description
Constitutional Review	Can judicial decision be overturned	Answers the question, "Can the judicial body responsible for determining constitutionality have its decisions overturned by other actors?" and is coded as 0 if the court's decisions can be overturned and 1 if not.
Constitutional Review	Presence of a priori review	Measures the extent of a priori review by the judiciary, namely can the judiciary challenge the constitutionality of statutes before they are applied. If the judiciary has broad a priori review then that country is assigned a 1. If a priori review is restricted to certain policy areas such as treaties then they are assigned a 0.5. Those countries which have only incidental review are coded as 0.
Constitutional Review	Previous Judicial Review	Dummy variable which is used as an independent variable which is coded as 1 if there had been constitutional review under the previous communist regime and 0 if there had been no tradition of judicial empowerment. Since the objective of these variables is to measure the institutions of each country, it stands to reason that a tradition of constitutional review would have an impact on the strength of constitutional review in the current period.
Judicial Independence	Judge's term relative to other political actors	Determined by the relative length of a judicial term of office to the terms of other actors in the government. When a constitutional court judge's term is less than or equal to one term of the actor with the longest term a 0 is assigned, 0.33 when less than or equal to two parliamentary sessions, 0.66 when more than two parliamentary sessions (but had constitutionally specified limit in the number of terms), and 1 when the term ends with death or voluntary retirement.

Judicial Independence	How many actors are involved in selection of judges	Number of actors involved in the nomination and confirmation process. Coded as 0 when there was only one actor involved in the process, as 0.5 for two actors, and as 1 for when three or more institutional actors were involved in the process of nomination and confirmation.
Judicial Independence	Who establishes court procedures	Judicial control of judicial procedure; who sets the rules which determine the proceedings of court cases? Coded as 0 if procedures were established outside of the court and as 1 if procedures were established by the court itself.
Judicial Independence	Conditions for judicial removal	Degree of difficulty in removing judges from office. Country cases received a score of 0 if judges may be removed for any reason loosely described as violations of the law. Country cases were scored a 0.5 if judges may only be removed under specific conditions listed under the constitution (such as for treason). The case was scored a 1 if the constitution either guarantees that judges cannot be removed for any reason, or if there are no provisions for removal at all.