

Informal institutions rule: institutional arrangements and economic performance

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Abstract Institutions are widely believed to be important for economic development. This paper attempts to contribute to our understanding of how institutions matter by examining the effect of formal and informal institutional arrangements on economic progress. Formal institutions represent government defined and enforced constraints while informal institutions capture private constraints. The findings suggest that the presence of informal institutions is a strong determinant of development. In contrast, formal institutions are only successful when embedded in informal constraints, and codifying informal rules can lead to negative unintended consequences. This suggests that institutions cannot be easily transplanted in order to spur economic development.

Keywords Informal institutions · Formal institutions · Development · Codification

JEL Classification F55 · O17

1 Introduction

The phrase “Getting the Institutions Right” emerged in development economics from a body of literature demonstrating that institutions matter significantly for economic progress (Scully 1988; North 1990; Boettke 1994; Leblang 1996; Hall and Jones 1999; de Soto 2000; Acemoglu et al. 2001, 2002; Rodrik et al. 2004; Kerekes and Williamson 2008). This phrase suggests an active voice in which, once correctly identified, the “right” institutions can be transplanted to replace the “wrong” institutions that currently are in place.

This literature tells us that particular institutions, such as well defined and secure property rights, rule of law, and political constraints matter for economic development. It does not, however, tell us exactly *how* institutions matter. Boettke et al. (2008: 332) provide a framework for understanding this missing link. They propose that “institutional ‘stickiness’—the ability or inability of new institutional arrangements to take hold where

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they are transplanted—is central to understanding how history matters for institutions.” In short, they argue that formal rules must map onto the informal, existing institutions in order to be successful for economic development.

This essay builds on Boetke, Coyne, and Leeson’s framework and examines the mapping process empirically. The analysis investigates the relationship between different institutional structures and economic development. Institutional arrangements are the combination of formal constraints, informal rules, and their enforcement characteristics (North 2005). Formal institutions are defined as political constraints on government behavior enforced by legal institutions.¹ Formal rules encompass constitutional constraints, statutory rules, and other political constraints. In the paper, I focus on constitutional rules as these constraints satisfy the definition and are quantified in the existing literature (Beck et al. 2001). In contrast, informal institutions are private constraints stemming from norms, culture, and customs that emerge spontaneously. They are not designed or enforced by government.² The key difference between formal and informal is that informal institutions remain in the private realm, whereas formal constraints are centrally designed and enforced.³

This paper attempts to understand the interaction between formal and informal institutions and how that interaction can affect development. Previous literature unbundles different institutions in order to determine which types are significant for economic performance.⁴ Instead of separating out the effects of various institutions, I attempt to establish the interplay between different formal and informal arrangements. In order to do so, I define four institutional categories and empirically investigate how these different structures affect economic development.

The results can be summarized as three main points. First, the existence of well-developed informal institutions is a strong determinant of economic development. Second, formal institutions are beneficial if grounded in previously established informal constraints. Third, formalization of institutions can actually hurt economic performance as this process can become rife with public choice concerns. Overall, this suggests that institutions promoting economic development are not necessarily based on formal rules and constraints. Therefore, the “right” institutional mix may not be identifiable and transportable from country to country.

2 Institutional framework

The framework for my analysis can be captured in the following Fig. 1.

I simplify the various combinations of formal and informal institutional arrangements into four distinct categories. This classification involves sorting institutions based on

¹My category of formal institutions includes both foreign-imposed and self-imposed formal rules. I am ignoring the origin, evolution, and importation of formal institutions. For example, a proposed change in the legal system introduced by a foreign government or by the domestic government is treated in the same manner.

²A more specific example is that of Putnam’s social capital defined as social networks, shared values, and norms of reciprocity. Social capital provides constraints on behavior, builds trust and cooperation among groups, and shapes human interaction (North 1981; Putnam 1995; Knack and Keefer 1997; Fukuyama 1999; Putnam 2000; Carden et al. 2009).

³For example, a contract between two firms enforced by a government court system is relying on a formal institution; however, a contract between two firms that is enforced by a private court is utilizing an informal institution.

⁴For example, see Acemoglu and Johnson (2005) and Williamson and Kerekes (2008).

Fig. 1 Strength of formal and informal institutions

(1) Strong formal Strong informal	(2) Weak formal Strong informal
(3) Strong formal Weak informal	(4) Weak formal Weak informal

strength. Conceptually, the strength of an institution implies either well-developed (strong) constraints or a lack of constraints (weak).⁵ It should be stressed that this classification system does not predict or imply anything specific about the resulting effects of these different institutional arrangements. It also does not rely on the frequency, use, or effectiveness of the institution, but rather on its existence. The framework is designed as a way to classify institutions in order to analyze and understand their effects.

Quadrant (1) represents the category with strong formal and informal institutions. In this scenario, strong political constraints and strong informal constraints exist. Quadrant (2) describes an arrangement of less developed formal institutions and a higher existence of informal constraints. This institutional arrangement consists of rules stemming from social norms, rather than from the political arena. Quadrant (3) captures the situation where formal institutions are strong but the informal institutions are weak. This quadrant may represent those countries attempting to adopt certain western style institutions currently not in place within the country. That country would therefore be classified as having a strong formal institution, regardless of how well it performs. Quadrant (4) represents countries with weak formal and informal institutions. In this scenario, the presence of strong political constraints and strong informal constraints is lacking.

3 Data

In order to quantify and measure formal and informal institutions, I defer to the benchmarks established in the literature. I follow Glaeser et al. (2004) to measure formal institutions and Tabellini (2007) to quantify informal institutions. Other conventional measures of institutions are not appropriate for the analysis.⁶ These measures do not accurately capture permanent constraints. Instead, they are outcome variables, reflecting both informal and formal components of current institutions and policies (Glaeser et al. 2004). Due to these concerns, I do not rely on these standard measures of institutions to quantify either formal or informal institutions.

⁵For example, a strong formal institution demonstrates the presence of well-developed political constraints, whereas weak formal institutions indicate a lack of political constraints. Strong informal institutions imply the existence of private rules constraining behavior, whereby weak informal institutions indicate less-developed private rules.

⁶These measures include ICRG's average protection against risk of expropriation, Polity IV's constraint on executives, an index of government effectiveness collected by Kaufmann et al. (2003), and both economic freedom indices (Heritage Foundation and the Fraser Institute).

Glaeser et al. (2004) identify four constitutional rules designed to constrain government: plurality, proportional representation, judicial independence, and constitutional review. Plurality represents the election of a legislator by a winner take all strategy. Proportional representation captures whether a candidate in the upper and lower houses of parliament is elected based on the percentage of votes received by their party (Beck et al. 2001).⁷ Both measures are dummy variables (0, 1) averaged over the time period 1975–2000 in order to expand the number of countries.

Judicial independence measures the term length of the Supreme Court judges. Constitutional review captures both the extent of judicial review and the rigidity of the constitution. Judicial review is measured by whether judges have the power to review the constitutionality of laws. The rigidity of the constitution quantifies how hard it is to change the constitution by counting the number of steps necessary (La Porta et al. 2004). Both judicial independence and constitutional review are available in 1995 and are normalized to range between zero and one. All four formal constraints are defined as objective constitutional measures of political rules constraining government.⁸ Therefore, higher scores for each measure necessarily implies stronger formal institutions.

In order to construct one comprehensive measure of formal institutions, the first principal component is extracted from all four constitutional rules to create an overall formal institutional index. The index is normalized to range between zero and ten, with a score of ten representing a country that exhibits strong formality. A high score on the formal index indicates that governments in these countries should be more constrained via formal rules than those countries with low scores.

To measure informal institutions, I rely on a culture variable first identified by Tabellini (2007) and later expanded on by Williamson and Kerekes (2008). This variable is constructed by identifying four distinct categories of culture that should constrain behavior. These four components are trust, respect, individual self-determination, and obedience. These traits serve as rules governing interaction between individuals, including market production and entrepreneurship.⁹ Therefore, culture is capturing one form of informal institutions.

Data from the 1995–1997 and 1999–2000 World Values Surveys and the European Values Surveys is utilized to quantify each component. These surveys capture individual beliefs and values, reflecting local norms and customs. In order to correctly capture each component, one question from the survey is identified that is most closely correlated with each trait. For example, trust is measured by the question, “Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?” Individual responses from each of the four questions are aggregated for each country.¹⁰

A comprehensive culture measure is achieved by extracting the first principal components of all four traits. The index is normalized between zero and ten, with ten representing strong informal institutions. A country with a higher score on the informal index has stronger

⁷Countries are not restricted to one system or the other. It is possible for a country to have both types of systems in place (for example, Australia and Brazil).

⁸There are many aspects that contribute to formal constraints on government. A country’s type of legal system is not included in the analysis due to the focus on the constitutional measures constraining government, not a country’s legal origin.

⁹Tabellini finds that these cultural traits encourage economic development. Williamson and Kerekes (2008) find that these cultural traits encourage secure property rights institutions.

¹⁰For more detailed discussion surrounding the process, see Williamson and Kerekes (2008).

informal constraints relative to countries with lower scores. Appendix 1 presents all countries used in the analysis with their corresponding informal and formal index scores. Due to limited availability of both the formal and informal measures, the number of observations is restricted to 45 countries.

4 Empirical analysis

In order to investigate the interaction between formal and informal institutions, I plot the relationship between both institutions. Next, specific countries and their level of economic performance are put in each quadrant from Fig. 1. This allows suggestive conclusions to be drawn about the ability to transport institutions and provides insight into the significance of both types of institutions. Several other straightforward analytical tools are implemented to reinforce the previous results providing robustness.

4.1 The core specification

The core of my empirical analysis is centered on the relationship between formal and informal institutions captured through the basic but insightful graph below. A positive relationship implies that formal institutions are built off of informal rules and are codifying preexisting practices. This supports the idea that formal and informal institutions are complementary and allow for another round of informal practices to develop (North 1990). A negative relationship suggests substitution between formal and informal constraints and a mismatching of institutional strengths.¹¹

A negative relationship emerges from the data indicating institutional mismatch and the possibility of a substitution effect. Relative strengths between formal and informal institutions may become mismatched for several reasons. If a country currently lacks both formal and informal institutions, government may attempt to construct formal constraints in order to fill the gap. This would lead to a mismatch between the relative strengths of formal and informal and thus a negative relationship. Another possibility is when a government has formal political constraints but fails to actually abide by those institutional rules. These actions could lead to different informal beliefs and customs being adopted and thus a mismatching of the institutions.

4.2 Institutional mix and economic performance

The relationship between formal and informal institutions is mapped out. However, this mapping alone does not indicate what this relationship implies for development or the ability of institutions to actually substitute for one another. I attempt to shed light on this by identifying those countries plotted in Fig. 2 and categorizing each into their respective quadrants, identified by Fig. 1. Recall that both institutional indices are measured from zero to ten, with ten representing stronger relative institutions. To be consistent, a country is classified as having a strong institution if its institutional index score is greater than six. A country is classified as having a weak institution if its institutional score is less than three. I capture economic performance using Gross Domestic Product per capita in 2000 corrected for

¹¹ A match or a mismatch of the institutions simply refers to the varying strengths of each type. For example, a mismatch is a situation where you have strong formal institutions but weak informal institutions or vice versa.

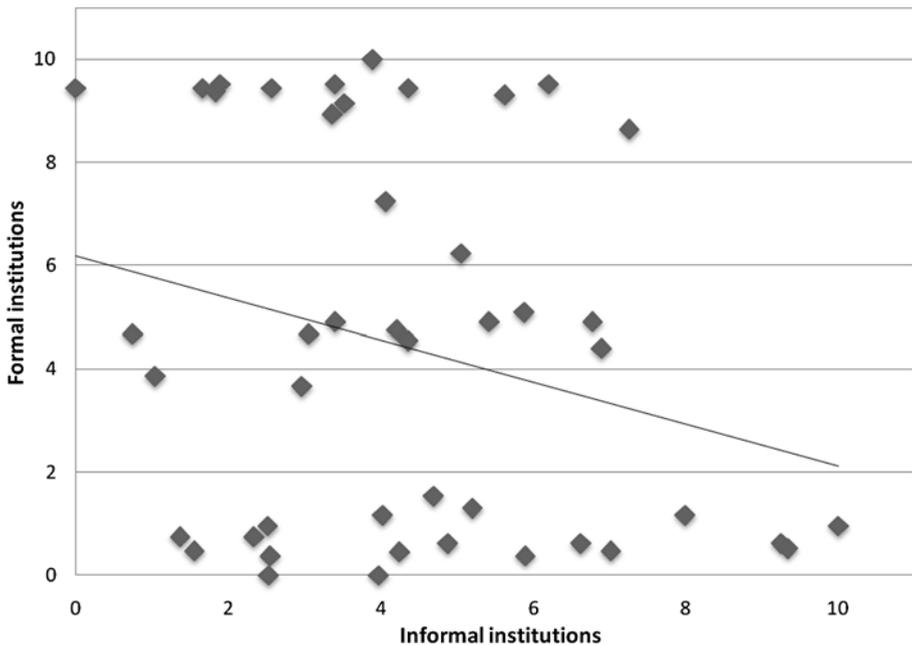


Fig. 2 Relationship between formal and informal institutions

purchasing power parity taken from the 2006 World Development Indicators (World Bank 2006). The specific quadrants are (1) strong formal and strong informal, (2) weak formal and strong informal, (3) strong formal and weak informal, and (4) weak formal and weak informal.

The following figure (Fig. 3) provides a snapshot of economic performance arranged by these four quadrants identified above.¹²

Those countries that fall into quadrants (1) and (2) clearly outperform those countries in quadrants (3) and (4).¹³ Countries that have weak formal institutions and strong informal institutions have the highest GDP per capita at \$28,659, while countries with strong formal and strong informal rank second with \$23,452 GDP per capita. Sweden, The Netherlands, and Denmark fall into the category of weak formal but strong informal institutions.¹⁴ These countries are able to successfully impose constraints conducive for economic development without the reliance on government creation or enforcement. Countries that fall into quadrant (1) also generate constraints that encourage development by relying on both strong formal and informal institutions. For example, Canada falls into this category. Canada utilizes both formal rules, such as judicial independence, and informal constraints, including trust and respect, to encourage development. Both types of institutional arrangements found

¹²Appendix 2 details the specific data for each of the countries in the four quadrants.

¹³A *t*-test, assuming unequal variance, is implemented to test the difference in means for each of the four quadrants. All quadrants are significantly different at the 5% level from one another except for quadrants (3) and (4) when the outliers are included, as would be expected.

¹⁴It is important to note here that institutions imply constraints, not necessarily policies that may be adopted in different countries.

		Formal	
		Strong	Weak
Informal	Strong	(1) 23,452 (Canada, New Zealand)	(2) 28,659 (Denmark, Finland, Iceland, Netherland, Norway, Sweden)
	Weak	(3) 6,662 (Pakistan, Phillipines, Uganda Zimbabwe, Singapore) 2,424 (Without Singapore)	(4) 7,672 (Columbia, Nigeria, Peru, Portugal, South Africa, Turkey) 5,556 (Without Portugal)

Note: Singapore and Portugal can be considered outliers and, therefore, the averages are calculated with and without them.

Fig. 3 Economic performance and the institutional mix

in quadrants (1) and (2) positively effects development.¹⁵ Consistent in both arrangements are strong informal institutions.

Quadrant (3) represents those countries that score high on the formal index and low on the informal scale. These countries are among the poorest with \$6,662 GDP per capita. However, Singapore is included in this average, but clearly is an outlier (see Appendix 2). If we omit Singapore, then GDP per capita for this group is significantly reduced to \$2,424. Another country found in this quadrant is Pakistan. Pakistan has adopted formal institutions similar to those found in the United States. This gets reflected in the formal index score. However, these formal constraints do not appear to be effective as Pakistan records a GDP per capita of \$1,925. What appear to be lacking are the informal constraints. This quadrant suggests that strong informal institutions may be necessary in order for the formal institutions to be effective.

Quadrant (4) describes those countries with both low formal and informal scores. These are mainly middle income countries with an average GDP per capita of \$7,672 (\$5,556 excluding Portugal). South Africa is an example of a country that fits this description. South Africa does not maintain well-established formal constraints, nor does it have strong informal institutions governing behavior. Despite the lack of constraints, South Africa achieves a modest level of development (\$9,419).

Overall, countries that have stronger informal institutions, regardless of the strength of formal institutions, achieve higher levels of economic development than those countries with lower informal institutional scores. The emerging result that informal institutions are an important contributor to economic progress is supported by recent conceptual literature and empirical research (Anderson and Hill 1979; Benson 1989a, 1989b; Greif 1993; Greif et al. 1994; Knack and Keefer 1997; Pejovich 2003; Nenova and Harford 2004; Acemoglu and Johnson 2005; Leeson 2007a, 2007b, 2007c; Tabellini 2007; Williamson and Kerekes 2008.)

The above results also suggest that it is not necessarily the mismatching of institutions that determines economic performance. Instead, it is the actual strength of the institutions that matter for development. An institutional match occurs when a country has the same strength for both types of institutions, either strong formal and informal or weak formal and

¹⁵Both quadrants (1) and (2) are classified as highly developed, but there still exists significant variation across these two groups, over \$5,000 per capita.

informal. If the divergence of strength between institutions determines economic progress, then quadrants (2) and (3) should perform in basically the same manner. However, this is not the case as quadrant (2) outperforms quadrant (3) by over \$26,000 per capita (when Singapore is excluded).

Another interesting implication from these results is that formal and informal institutions do not necessarily interact in the same way. Specifically, they are not always acting as substitutes or complements to one another. In some instances, they are complementary and at other times they are substitutes. This implication should be taken with caution because the result suggested is asymmetric. Quadrant (1) represents countries with strong formal and informal institutions. This quadrant also performs well economically at \$23,452 per capita, suggesting that formal and informal institutions are complementary to one another producing high levels of development. However, quadrant (4) does not support this claim. From this quadrant, we cannot say if the institutions act as substitutes or complements.

Examining quadrant (2), it appears that formal and informal institutions may act as substitutes. However, quadrant (3) does not exhibit the same implication. Strong informal institutions exist in quadrant (2), suggesting that informal rules can substitute for formal institutions and achieve economic progress. This positive effect does not hold when formal institutions substitute for a lack of informal constraints, the situation depicted in quadrant (3). In this scenario, the combination of strong formal and weak informal leads to the worst economic performance possible.

4.3 Potential explanations

Given the wide range of success and failure of the formal institutions, this section attempts to explain how the formalization of institutions can influence development. Boettke et al. (2008) suggest that in order for formal institutions to “stick,” and thus promote economic development, formal institutions must map onto the informal rules. This proposal is supported by my results. Those countries that fall into the strong formal and informal category experience much higher levels of development than those that fall into the strong formal, weak informal quadrant. The countries that built their formal institutions off of their informal rules are achieving a much higher level of economic development. The countries in which governments have imposed formal institutions without consideration for informal institutions are the poorest.

Such a divergence in the success of formalization may be at least partially explained by the idea that the process of codifying is rife with public choice problems. Governments can choose to optimize social welfare or to pursue the interests of bureaucrats. In practice, the process of formalizing informal institutions is not always in the interest of the public. Instead, governments may choose to formalize in such a way that is inefficient and suboptimal as long as it benefits the state. For example, McChesney (1990) highlights this concept by arguing that the US government chose to allocate Native American rights to reservation land from 1887 to 1934 by creating a large complex system that defined land in an inefficient manner in order to maximize bureaucrats’ budgets. This illuminates why we observe countries where the formal institutions do not map onto the informal rules, thus resulting in a mismatch of formal and informal institutions.

Not only might formalization miss the mark of informal institutions, but it is possible that the formalization process may lead to a worse off economic position, as suggested when comparing Quadrants (1) and (3). Leeson (2005) explains how the imposition of formal institutions not in line with informal norms in precolonial Africa resulted in a fractionalized continent. Colonial institutions created noise in pre-established signaling devices, inhibiting

widespread cooperation. By stifling trade between diverse groups, formal, colonial institutions contributed to Africa's poor economic growth.

In both of these examples, the formal institutions were tools of government extortion rather than tools of government constraint. Governments do not always make decisions based on public interest. Instead, they sometimes choose policies more in line with their own interest. This may explain the strong formal, weak informal institutional arrangement where the mismatching of institutional strengths lead to countries with low economic development (quadrant (3) in the above figure).

To explain Quadrant (1), where both formal and informal institutions are strong, the formal institutions are themselves constrained by strong informal rules. These formal institutions cannot impose substantial harm due to preexisting informal constraints. In Quadrant (2), informal institutions are sufficient to provide constraints that permit the highest level of economic development making the formal institutions unnecessary. Quadrant (4) represents countries where both formal and informal institutions are weak. These countries are the middle income countries. When formal institutions are weak or absent, they are not interfering with the small, informal arrangements that arise. Therefore, we do not observe the negative results previously associated with strong formal and weak informal. Instead, in the absence of strong, formal rule, these countries may be able to focus on cultivating their informal institutions and possibly achieving increases in economic development.

4.4 Robustness checks

Due to the straightforward nature of the empirical analysis, I employ several different robustness checks that support the previous results.

To provide a different perspective, I calculate a new variable that is equal to the formal index score divided by the informal index score. By looking at the ratio between the two types of institutions, I create a relative measure of the strength of formal versus informal institutions. As explained above, there is a potential importance of the mismatching of institutions for economic development. This mismatching exhibits an asymmetrical nature that is potentially dangerous when we have strong formal and weak informal but the mismatch between weak formal and strong informal possibly supports development. By analyzing the ratio, we can further evaluate the effect of mismatched institutions for development. A score greater than one indicates a more formal structure of institutional arrangements, while a score less than one indicates higher relative amounts of informal institutions. Appendix 1 lists all countries in the analysis along with their respective formal, informal, and ratio scores.

Figure 4 shows that as the institutional mix becomes more formalized, economic performance decreases. This suggests that countries scoring higher on the informal index relative to the formal index, or those countries with a mismatch of higher informal versus formal, exhibit higher levels of development. As the ratio between the two types of institutions become smaller, GDP per capita decreases. This decrease in GDP per capita continues as we move towards those countries with higher levels of formal institutions relative to their informal institutions, or those countries mismatched with high formal, low informal. These results not only support the claim that informal institutions are an important contributor to economic development, but also that the mismatching between informal and formal institutions exhibit an asymmetrical influence on economic development.

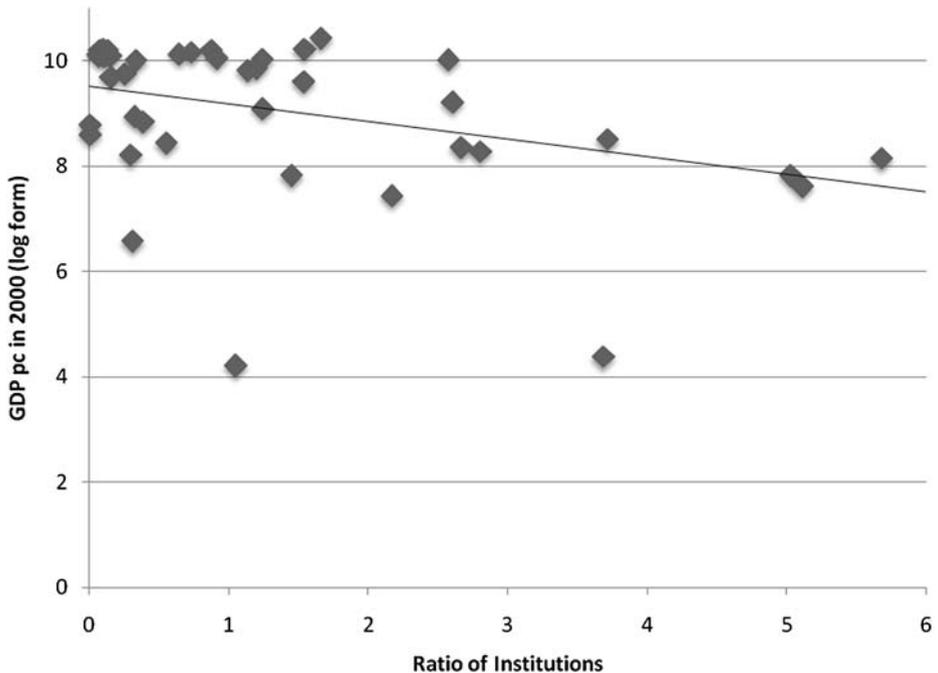


Fig. 4 Relative institutional strength and economic performance

In addition to the figure, I run several different OLS regression specifications.¹⁶

Table 1 reports the results of several regressions where log GDP per capita in 2000 is at least partially explained by the formal index, the informal index, the ratio variable, an interaction term, and a variety of control variables. These controls include average growth from 1960–2000, urban population, inequality, government consumption, legal origin, a corruption index, geography, and educational attainment in 1960.¹⁷ It should be noted that the variables of interest are based on relative indices scores; therefore, I do not rely on the coefficient to give an exact interpretation. Instead, I am mainly interested in the sign and significance of the coefficients for each variable.

Column (1) controls only for the formal index and shows that it negatively and significantly affects development, supporting the findings in quadrant (3) where formal institutions can hamper development. Column (2) only controls for the informal index and reports that it is positive and highly significant, supporting quadrants (1) and (2) that suggest informal institutions are a strong predictor of economic progress. Column (3) controls for both indices simultaneously. Formal institutions are still negative, but are now insignificant while

¹⁶The measures for both informal (culture) and formal (proportional representation, plurality, judicial independence, and constitutional review) institutions are only available for one point in time. Therefore, panel data analysis is not possible.

¹⁷The control vector includes other identified standard determinants of development: growth rate from 1960–2000, percent of urban population in 2000, inequality (proxied with an ethnolinguistic fractionalization index taken from La Porta et al. 1999), government consumption in 2000, English legal origin (collected from La Porta et al. 1999), corruption in 2000 (collected from Transparency International, 2000), geography (measured as latitude and collected from La Porta et al. (1999), and educational attainment in 1960. Growth, government consumption, urban population, and educational attainment are collected from WDI 2006.

Table 1 Types of institutions and economic development

	Dependent variable: log GDP per capita 2000							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Formal institutions	-0.114*	-	-0.061	-0.014	-0.188**	-0.073*	-	-
	(0.058)		(0.047)	(0.021)	(0.088)	(0.043)		
Informal institutions	-	0.345***	0.320***	0.145***	0.214***	0.095*	-	-
		(0.053)	(0.054)	(0.039)	(0.068)	(0.049)		
Ratio formal/informal	-	-	-	-	-	-	-0.33***	-0.085**
							(0.032)	(0.032)
Interaction term formal*informal	-	-	-	-	0.032**	0.016*	-	-
					(0.015)	(0.009)		
Growth 1960–2000	-	-	-	37.294***	-	37.124***	-	16.75**
				(7.325)		(7.682)		(6.364)
Urban population	-	-	-	0.026***	-	0.023***	-	0.006
				(0.005)		(0.004)		(0.004)
Inequality	-	-	-	-0.143	-	-0.062	-	-0.318
				(0.368)		(0.420)		(0.289)
Gov. consumption	-	-	-	-0.004	-	0.009	-	-0.002
				(0.017)		(0.020)		(0.011)
English legal origin	-	-	-	0.113	-	-0.029	-	0.105
				(0.181)		(0.221)		(0.121)
Corruption index	-	-	-	-	-	-	-	0.088**
								(0.041)
Geography	-	-	-	-	-	-	-	0.409
								(0.388)
Log education 1960	-	-	-	-	-	-	-	0.724***
								(0.183)
Constant	9.490***	7.493***	7.867***	6.191***	8.341***	6.458***	9.513***	5.068***
	(0.262)	(0.347)	(0.371)	(0.394)	(0.485)	(0.407)	(0.268)	(0.649)
# Observations	44	44	44	41	44	41	43	35
R-squared	0.09	0.32	0.34	0.83	0.37	0.87	0.13	0.88

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%

informal institutions remain positive and strongly significant. This result supports the previous conclusion that the presence of informal institutions may help mitigate and offset some of the perverse effects from formalization. Column (4) substantiates this result by including a vector of control variables.¹⁸

Columns (5) and (6) introduce an interaction term equal to the formal index multiplied by the informal index. Column (5) controls for the formal index, the informal index, and the

¹⁸Regressions (4) and (6) control for the growth rate, urban population, inequality, government consumption, and English legal origin. I am unable to control for geography, corruption, and educational attainment in these regression due to the high correlations with informal institutions (0.62, 0.76, and 0.62, respectively).

interaction term. Formal institutions are significantly negative, informal institutions are positive and significant, and the interaction term is positive and significant. This indicates that in countries with well-developed informal institutions, there are positive returns associated with formalizing. Formal and informal institutions can complement one another if there is a minimum level of informal constraints present, supporting the findings from quadrant (1). Column (6) extends regression (5) by adding control variables in the regression. The same result remains.

Columns (7) and (8) report the regression specifications controlling for the ratio variable. Column (7) suggests that as formalization increases relative to informality, income in a country actually decreases. This finding is consistent with the previous figure and is significant at the 1% level. Column (8) adds in the vector of controls and supports the negative and significant relationship.¹⁹

As a third robustness check, I expand the institutional framework to include a mid-level classification. This expansion relaxes the strict categorization of strong and weak institutions and allows more countries to be included in the analysis. In addition, the data appears to be better suited for this classification arrangement (see Fig. 2). The institutional arrangements now considered include weak informal-mid formal, strong informal-mid formal, strong formal-mid informal, and weak formal-mid informal. Recall that an institution is classified as strong if it has an index score greater than six. It is classified as weak if it has an index less than three. A country is classified as mid-level if it has an index score in between three and six. Table 2 presents these results.

According to these institutional arrangements, those countries that have at least mid-level developed informal institutions are among the highly developed countries, with GDP per capita ranging from \$14,863 to \$25,819. The category of strong informal and mid formal are those countries with the highest level of development (\$25,819). We can compare this category to the previous strong formal and informal group (\$23,452). Countries with mid informal and weak formal institutions have an average GDP per capita of \$20,627. This category is similar to the previous breakdown of strong informal but weak formal institutions (\$28,659). The result that informal institutions are an important determinant of development, regardless of the strength of formal institutions persists with the additional mid-level classification.

According to this institutional breakdown, the weak informal and mid formal countries represent the middle income countries with a GDP per capita of \$7,255. This group is most similar to the previous weak formal, informal group (\$7,672). Again, we can interpret this result as suggesting that despite weak informal institutions, enough constraints exists that can encourage development if there is not interference from strong formal institutions.

Strong formal and mid informal countries have an average GDP per capita of \$14,863. However, this category provides an interesting case due to the wide variety of countries that fall into this classification. For example, the United States (\$33,970) and Bangladesh (\$1,479) are both included in this category. In this scenario, countries display mixed results with this institutional arrangement. On one hand, some countries are more comparable to those countries in the strong formal and informal category, while others are more analogous with the strong formal, weak informal group. This category suggests that an institutional arrangement can promote economic progress in one country but not in another, making it difficult to predict success.

¹⁹I am unable to control for either the formal or informal index with the ratio variable; however, the ratio score permits the expansion of the control variables to include geography, corruption, and educational attainment, in addition to the growth rate, urban population, inequality, government consumption, and legal origin.

Table 2 Expansion of institutional framework

Country	Formal index	Informal index	GDP pc 2000 (PPP)
(1) Weak informal and mid formal			
Brazil	4.68	0.75	7,301
Algeria	3.86	1.04	5,418
Mexico	3.67	2.96	9,046
Average	4.07	1.58	7,255
(2) Strong informal and mid formal			
Australia	4.91	6.78	25,417
Japan	4.40	6.89	26,220
Average	4.66	6.84	25,819
(3) Strong formal and mid informal			
France	6.23	5.05	25,698
Egypt	8.94	3.36	3,598
Chile	9.15	3.52	9,116
United States	9.31	5.63	33,970
Bangladesh	9.44	4.36	1,479
Jordan	9.52	3.40	3,847
United Kingdom	10.00	3.89	26,332
Average	8.94	4.17	14,863
(4) Weak formal and mid informal			
Venezuela	0.00	3.97	5,685
Austria	0.38	5.90	28,988
Belgium	0.46	4.24	27,303
Ireland	0.62	4.88	30,532
Indonesia	1.17	4.02	3,028
Israel	1.31	5.20	23,858
Italy	1.54	4.69	24,995
Average	0.78	4.70	20,627

5 Conclusion

Locked-in institutional arrangements could be inefficient and countries might be better off adopting different institutional arrangements. Thus, it is typically argued that in order to obtain the right institutional arrangement, an exogenous shock is required to break a country out of a suboptimal scenario. This belief presently leads development economists to emphasize the role of formal, or government provided institutions in determining economic development.

My findings suggest that the success of formal institutions depends on the ability to map onto informal rules, the mapping process may actually result in damaging unintended consequences, and institutional arrangements may display asymmetric effects. Therefore, pinpointing the “right” mix of institutions and predicting the subsequent impact on development is extremely difficult and often varies across countries.

Given these findings, the popular phrase, “Getting the Institutions Right,” may be more difficult in practice. Informal constraints must exist in order to achieve economic success. It is possible to achieve positive returns from codifying these informal institutions. However, the likelihood of governments in developing countries having the knowledge and incentives to choose the right formal institutions is small. Most importantly, the idea that institutional arrangements are identifiable and transportable should now be taken with serious caution.

Although the findings are robust, I do recognize limitations from the analysis. Future extensions could analyze specific determinants of both formal and informal institutions, including their enforcement mechanisms. In addition, it may be interesting to investigate different aspects of both formal and informal rule, develop a more elaborate empirical model that determines causal mechanisms, and study the feedback mechanisms and evolution between these two types of institutions.

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Appendix 1: Data

Country	Formal	Informal	Ratio
Algeria	3.86	1.04	3.71
Australia	4.91	6.78	0.73
Austria	0.38	5.90	0.06
Bangladesh	9.44	4.36	2.16
Belgium	0.46	4.24	0.11
Brazil	4.68	0.75	6.27
Canada	9.52	6.20	1.54
Chile	9.15	3.52	2.60
Colombia	0.00	2.53	0.00
Denmark	0.62	9.25	0.07
Egypt	8.94	3.36	2.66
Finland	1.17	7.99	0.15
France	6.23	5.05	1.23
Germany	4.91	5.42	0.91
Greece	4.68	3.06	1.53
Iceland	0.47	7.02	0.07
India	4.91	3.40	1.44
Indonesia	1.17	4.02	0.29
Ireland	0.62	4.88	0.13
Israel	1.31	5.20	0.25
Italy	1.54	4.69	0.33
Japan	4.40	6.89	0.64
Jordan	9.52	3.40	2.80
Korea, South	4.55	4.36	1.04
Mexico	3.67	2.96	1.24

Continued

Country	Formal	Informal	Ratio
Netherlands	0.52	9.34	0.06
New Zealand	8.65	7.26	1.19
Nigeria	0.47	1.56	0.30
Norway	0.62	6.62	0.09
Pakistan	9.38	1.84	5.11
Peru	0.75	1.37	0.55
Philippines	9.44	1.66	5.68
Portugal	0.38	2.55	0.15
Singapore	9.44	2.57	3.68
South Africa	0.75	2.34	0.32
Spain	4.75	4.21	1.13
Sweden	0.96	10.00	0.10
Switzerland	5.09	5.88	0.87
Taiwan PR	7.25	4.07	1.78
Turkey	0.96	2.52	0.38
Uganda	9.44	0.00	–
United Kingdom	10.00	3.89	2.57
United States	9.31	5.63	1.65
Venezuela, RB	0.00	3.97	0.00
Zimbabwe	9.52	1.89	5.02

Appendix 2

Country	Informal index	Formal index	GDP pc 2000 (PPP)
(1) Strong formal and strong informal			
Canada	6.20	9.52	27,289
New Zealand	7.26	8.65	19,615
Average	6.73	9.08	23,452
(2) Weak formal and strong informal			
Denmark	9.25	0.62	28,751
Finland	7.99	1.17	25,554
Iceland	7.02	0.47	28,929
Netherlands	9.34	0.52	28,610
Norway	6.62	0.62	34,208
Sweden	10.00	0.96	25,900
Average	8.37	0.73	28,659
(3) Strong formal and weak informal			
Pakistan	1.84	9.38	1,925
Philippines	1.66	9.44	4,028
Singapore	2.57	9.44	23,612

Continued

Country	Informal index	Formal index	GDP pc 2000 (PPP)
Uganda	0.00	9.44	1,244
Zimbabwe	1.89	9.52	2,499
Average	1.59	9.44	6,662
Average (Without Singapore)	1.35	9.44	2,424
(4) Strong formal and weak informal			
Colombia	2.53	0.00	6,244
Nigeria	1.56	0.47	883
Peru	1.37	0.75	4,723
Portugal	2.55	0.38	18,255
South Africa	2.34	0.75	9,419
Turkey	2.52	0.96	6,510
Average	2.14	0.55	7,672
Average (Without Portugal)	2.06	0.59	5,556

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