Formal Institutions and the Trust Formation Process: A Psychological Approach to Explain the Relationship between Institutions and Interpersonal Trust

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Author Note

Abstract

While formal institutions are recognized as having an effect on trust formation, no theoretical or empirical models exist to formalize this relationship. This study introduces a new conceptual framework to explain trust building by individuals and the role that formal rules and laws may play in this process. Drawing on a social-cognitive theory of psychology, we present trust as composed of internal, interpersonal, and external components with the latter encompassing formal institutions. We further demonstrate that there are three mechanisms – sanction, legitimacy, and autonomy – through which formal institutions may affect trust levels either directly or indirectly. These propositions are tested empirically based on the European Social Survey data (2004) by using a variety of statistical techniques. Our empirical analysis demonstrates evidence of heterogeneity in institutional effects on trust, suggesting that the autonomy dimension of the institutional framework is particularly important for trust formation processes.

Keywords: interpersonal trust, formal institutions, social-cognitive psychology, heterogeneity, trust formation process

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Trust is viewed as the foundation of a nation's political, economic, and social prosperity. While its role is widely recognized, the process of trust formation still remains poorly understood. Current research offers two competing explanations regarding the mechanism through which trust emerges and changes. The first presents trust as a cultural attribute; hence manipulating its levels is regarded as unlikely to occur (Fukuyama 2000; Putnam 1995, 2000). The second emphasizes that trust is a function of environmental contexts (Kumlin and Rothstein 2005; Nooteboom 2007); its levels are therefore expected to rise or fall depending on contextual variations. Studies often refer to institutional arrangements as one such contextual variable, asserting that trust can evolve according to the dynamics of institutional change (Farrell 2005). These two strands however exist independently from one another and no consideration has been given to the possibility of an interaction between them.

The main objective of this research is to provide a new conceptual framework to analyze the effects of formal institutions on trust building by drawing on a social-cognitive theory of psychology. By assuming that trust consists of cultural, interpersonal, and contextual components, with the latter encompassing formal institutions, we demonstrate that formal rules and laws can essentially change trust levels not only by directly encouraging trusting behavior, but also by conditioning the impact of the other two components on trust. This framework is tested empirically using European Social Survey data (2004) and a variety of statistical techniques.

LITERATURE OVERVIEW

The extant knowledge suggests that trust is a complex phenomenon shaped by numerous and often simultaneously interacting forces. The classical approach considers trust as a cultural attribute that is influenced by an individual's internal values, such as altruism or sympathy with others (Fukuyama 2000; Putnam 1995, 2000). Recent studies dissociate trust building from an individual's internal attributes and externalize it by accounting for contexts within which trust formation processes unfold (Nooteboom 2007; Rothstein and Stolle 2001). This strand emphasizes that the quality of institutions, which regulate the interactions of individuals, may be the cornerstone of such contexts, and hence affect trust levels considerably (Farrell 2005; Farrell and Knight 2003).

The concept of formal institutions is usually described by the theory of trust in a twofold manner. On the one hand, the institutional strand refers to institutions as a set of public organizations that individuals interact with over the course of their lives. In this case, trust formation processes can be affected by such organizations when citizens evaluate the quality of their performance (Edlund 2006; Mishler and Rose 2001) or that of elected officials (Thomas 1998). A positive experience with public institutions or public officials is expected to motivate individuals to exhibit more trust not only towards such institutions, but also towards other people. Many scholars go further and assert that this experience can also dampen the negative effect of some conventional determinants of trust. Fair treatment by public authorities may, for instance, cushion the negative impact of having a minority status in establishing trust (Kumlin and Rothstein 2008).

On the other hand, institutions are considered as a set of rules of the game defining legal boundaries within which individuals are allowed – and expected – to operate. Efficient formal institutions are deemed to be conducive to establishing trust since they enforce third-party agreements (Herreros and Criado 2008). They enable individuals to pursue redress and

restitution when cheated, thereby reducing the risk involved in trusting someone (Rothstein and Stolle 2001; Tillmar and Lindkvist 2007). If sanctions and penalties are imposed when a contract is breached, formal institutions may increase the cost of betrayal and hence encourage people to act honestly (Bohnet and Baytelman 2007). Formal rules are thus believed to help overcome the information deficit problem by indicating what the likely actions of others will be (Farrell and Knight 2003) or to serve as a safety net for those who suffer because of others' dishonest behavior (Farrell 2005).

The mere existence of laws and rules does not, however, suffice to encourage the trust formation process. It is equally important that such legal mandates are duly enforced (Oskarsson , Öberg, and Svensson 2009) and perceived by individuals as being fairly applied to various population groups (Oskarsson et al. 2009). This suggests that the second strand is closely linked to the first, since public organizations and their officials handle the formulation and enforcement of legal rules. Formal organizations that are perceived to be fair and competent may elicit confidence among citizens and consequently generate compliance with their rules (Letki 2006; Murphy 2004; Tyler 2006). Public organizations' trustworthiness does not necessarily need to be objectively valid. Rather, what matters is the perception that citizens have regarding such organizations and not their actual quality (Levi 1998; Scholz and Lubell 1998; Steinmo 1993).

Despite the fact that both strands find empirical evidence for a positive relationship between the quality of formal institutions and trust levels, they exhibit two deficiencies. The first is the problem of uni-dimensionality regarding formal institutions. Institutional economics distinguishes between several types of institutions (Lim and Decker 2007; Persson and Tabellini 1994), while theoretical and empirical studies on trust rarely provide a precise definition concerning the kinds of institutions they analyze, thereby implying that all formal institutions are equally important to interpersonal trust. This is not necessarily true since

particular formal institutions often only regulate certain aspects of societal arrangements and each of them can affect only specific features of an individual's behavior. The institutional impact on trust is therefore likely to be highly heterogeneous across different formal institutions, and ignoring this may lead to the false conclusion regarding which institutions actually matter in eliciting interpersonal trust and to what extent each of them does so.

The second shortcoming is that a clear formalization of the process of trust formation is lacking. Several competing theories describe how trust emerges but none offers a clear conceptual framework integrating cognitive, affective, psychological, and contextual determinants into a single regression. Instead, most empirical studies either solely examine whether associations exist between trust levels and institutional scores while controlling for the socio-demographic characteristics of respondents (Herreros and Criado 2008). Or, they offer mathematical models, derived from the rational choice perspective (Zak and Knack 2001), which do not, however, account for psychological forces beyond rational thinking that may underlie an individual's decision-making regarding whether or not to trust. This may impair establishing the complete set of channels through which formal institutions affect trust, thereby subjecting the regression results to the problem of model misspecification.

This study's main contribution is to analyze trust formation by applying social-cognitive theory from psychology. We use a psychological approach to introduce a comprehensive theoretical framework to explain how trust may emerge and how cultural forces interact with contextual characteristics that are measured by various formal institutions in the process of trust building. We intend to demonstrate that the effects of culture on trust can be dampened by formal institutions but only to a limited extent. Trust should therefore be considered as both a cultural variable and a function of institutional arrangements that exist in a country.

THEORETICAL MODEL

Psychology asserts that people's behavior is determined by (1) values and norms, (2) others-regarding, and (3) duty-driven motivations/context within which individuals act (Feldman and Perez 2009). Literature acknowledges that personal values shaped by culture and socialization processes are a starting point for behavioral action, but it denies that these values produce the same behavior in every situation (Seidler 2011; Smith and Thornberry 1995; White 2002; Williamson 2000). Behavior can actually deviate from an individual's values to some extent depending on many factors, one of which is the properties of the context.

By introducing the concept of moral identity, the social-cognitive perspective of psychology provides a comprehensive explanation for the existence of such behavioral deviations from values. The theory's point of departure is that every individual defines their own behavior based on their moral identity (Bandura 1991, 2001; Higgins 1996; Narvaez et al. 2006; Shao, Aquino, and Freeman 2008), described as an organized mental representation (scheme) of how an individual with certain values is likely to think, feel, and act (Shao et al. 2008). People can possess multiple and sometimes competing value identities corresponding to each particular situation. However, only one of them can be activated for processing social information at any given moment (Markus and Kunda 1986). Which one is activated depends on the level of accessibility that different moral identities have (Markus and Kunda 1986). The one which is more accessible exerts a stronger influence on behavior (Higgins 1996), while less accessible ones remain poor regulators of behavior. The theory further asserts that situational cues may influence the level of accessibility of moral identities and hence lead to their activation or deactivation (Bargh et al. 1986). Cues are defined as environmental factors that are connected to records and can cause mental representations to shift from a state of low activation to a state of higher activation (Byrnes 2001). Various contextual characteristics

may represent such cues and hence play a central role in shaping behavior (Bargh et al. 1986; Shao et al. 2008).

An overview of available theories on contextual cues allows us to distinguish between three key mechanisms through which contextual variables related to formal institutions can affect the activation of certain value identities: (1) a sanction mechanism, (2) a legitimacy mechanism, and (3) an autonomy mechanism. The sanction mechanism assumes that the law has an expressive function: The public perceives stronger sanctions in legal instruments as a signal that dishonest behavior deserves greater moral condemnation (Feldman and Perez 2009; White 2002). Strong sanctions will likely cause people to feel that the prohibited act is morally problematic (Bandura 1999; Paternoster and Simpson 1996), as a result of which the mental representations relating to honest behavior may be activated, and hence good values will be enacted in behavior.

Psychology further suggests that laws are an external factor designed and implemented by the government and hence the public. However, the understanding, interpretation, and enforcement of such laws in practice are personal (White 2002). The legitimacy of such institutions and the level of autonomy they promote may influence people's interpretation of legal rules (Kohlberg 1981; White 2002). The legitimacy mechanism asserts that individuals tend to comply with the law and will act in a trustworthy way if they consider a particular law legitimate (Feldman and Perez 2009), even if individuals have not yet internalized the relevant values promoted by the law (Stone 2011). In the long run, individuals might even revise their own values and beliefs in the presence of legitimate formal institutions (Shao et al. 2008). The required legitimacy is usually achieved through enhanced citizen participation in creating formal rules and norms (Feldman and Perez 2009) or enabling information to be available about the formation of such rules.

The autonomy mechanism presupposes that if formal institutions promote autonomy and independence, then individuals are encouraged to use good moral values in their behavior. Conversely, authoritarian rules or regimes with rigidly hierarchical organizations are believed to retard values enactment and development (Kohlberg 1981). The rationale behind this effect stems from personal ego theories which assume that more autonomy may strengthen the personal ego, and people with strong egos rarely develop poor values or deviate from good beliefs and morals in their behavior (White 2002).

Formal institutions that introduce one or more of the three mechanisms can therefore be regarded as situational cues which lead to the activation of good moral identity and predefine the extent to which good values possessed by the individual are enacted in behavior. Psychology further asserts that one's personal experiences lead an individual to expect that others may hold similar views or act in a similar way as a result of a similar experience (Lewis and Weigert 1985; Jones 1996; Nooteboom 2007). As such, we can assume that an individual affected by the situational cues measured by the three mechanisms may generalize their own experiences to the behavior of others. This suggests that individuals are more likely to perceive others as honest and law-obedient when the three contextual mechanisms are in place, since they will expect that their effects on others' behavior will be similar to what they themselves experienced.

This overview of psychological theories allows us to derive three important nuances that are utilized to build a comprehensive model which formalizes the relationship between formal institutions and trust. First, trusting as an actual behavior is a function of several components that include one's own values, one's perception of others, and one's perception of the existing institutional context.

Second, the three mechanisms through which the institutional context affects behavior can be used to derive three types of formal institutions that might influence the trust

formation process. We associate the sanction mechanism with economic institutions, such as contract enforcement and the protection of property rights, since these institutions achieve their main objectives by detecting and sanctioning improper behavior. Political institutions are linked to the legitimacy mechanism since they reflect the quality of the political system and democratic principles and hence measure the extent to which citizens can participate in creating rules. Regulatory institutions link to the autonomy mechanism, since they set constraints on an individual's economic decision-making in the labor market, credit markets, etc., and may therefore influence an individual's perception of how much autonomy is permitted regarding economic behavior. These three types of formal institutions are expected to be the situational cues that affect information processing and thereby the individual's behavior.

Third, formal institutions are expected to relate to behavior not only directly, but also indirectly by conditioning the role which values and others-regarding play in defining the individual's conduct. The three mechanisms, on the one hand, predefine the extent to which individuals' values are enacted in practice: Individuals who share the same values are expected to behave differently when faced with formal institutions of varying qualities. By extrapolating personal experiences with formal institutions to the behavior of others, individuals may, on the other hand, re-consider their regarding of, or attitude towards, other people. Their perception of the trustworthiness of the same person is expected to vary depending on the quality of the institutional context in which the decision about others' trustworthiness occurs.

If we assume that trust is a behavior, the nuances derived from the social-cognitive theories of psychology can be applied to formalizing the process of trust formation. Nuance one implies that trusting others is a function of the three components: (1) the internal component encompassing an individual's internal values that are relevant to trust, (2) the

interpersonal component reflecting an individual's perception of the trustworthiness of others, and (3) the external component that shapes an individual's perception of the contexts relevant to trust building.

The internal component (IC) includes the relatively stable psychological features of an individual that directly affect trust levels which he or she exhibits towards others, irrespective of the context within which this individual operates. We assume that moral values measure the internal component of trust since trust has a moral foundation (Uslaner 1999). In evaluating others' trustworthiness in the course of establishing trust, individuals inevitably need to decide what is right and wrong in others' behavior, which is internally linked to their own values. Moral values are considered here to be an internal component since they belong to an individual's personality trait which cannot be easily changed (Colby and Damon 1992; Smith and Thornberry 1995) and are in fact subject to substantial variation among individuals, even those who live in the same context.

The interpersonal component (IPC) refers to an individual's evaluation of others' trustworthiness in the course of deciding which level of trust to exhibit, if any. This is a conscious process of assessing observable and unobservable characteristics about the other party to estimate the likelihood that promises made will be kept. The activation of this component is based on cognitive mechanisms and depends on an individual's personal values and ability to derive another individual's level of trustworthiness from the available information.

The external component (EC) reflects the perceived quality of the environment or context within which the decision about whether or not to trust is made. This component of the trust building process relies on rational mechanisms and conscious considerations to evaluate the quality of the institutional context, to assess one's own experiences with this context, and to extrapolate these experiences' effects on one's own behavior to the behavior of

others. The quality of formal institutions may represent such an external component since the same individual has varying levels of trust given different institutional frameworks, as experiments with immigrants demonstrate (Kumlin and Rothstein 2008).

Following the logic of nuance two, we can identify three types of formal institutions that influence the decision of whether or not to trust, with each relating to one of the three mechanisms: (a) economic institutions, (b) political institutions, and (c) regulatory institutions. Our analysis hence suggests that better economic, political, or regulatory institutions should be associated with higher levels of trust.

Nuance three reveals that formal institutions affect trust both directly and indirectly. By changing the level of accessibility of good moral identities, the three mechanisms, on the one hand, affect the extent to which good values possessed by the individual are enacted in practice and hence utilized in the trust building process. Good moral values begin to generate more trust when good formal institutions are in place. On the other hand, the individual's personal experience with formal institutions may change their perception of others. With a good institutional context, the individual's perception of other's trustworthiness becomes less instrumental in generating a certain level of trust. The functional form of this relationship assumes that the effects of both the internal and the interpersonal components on trust are dependent on the value of the external component.

We use this basic understanding to build our empirical model. Let us assume that there are an infinite number of identical individuals who only differ in the quality of their moral values. While interacting, they evaluate others' trustworthiness and the quality of the context to decide which level of trust to display. Their trust formation process does not follow a conventional linear relationship, but a Cobb-Douglas production function:

$$T = IC^\alpha\, IPC^\beta\, EC^\gamma, \tag{1}$$

where T is trust, α is the share of trust attributed to the internal component, IC is the value of the internal component, β is the share of trust attributed to the interpersonal component, IPC is the value of the interpersonal component, γ is the share of trust attributed to external component, and EC is the value of the external component.

We further assume that displaying one unit of trust brings A units of monetary reward. The individual displays the correct level of trust towards others with the probability p. If the individual chooses the wrong level of trust and overestimates the trustworthiness of the other party - which happens with the probability $(1 - p)$, he or she experiences a loss of q monetary units from each unit of trust actually displayed.

We also assume that the three components—internal, interpersonal, and external—are exogenous to the individual. The external component is defined by the government and is taken as a given by the individual. The internal component is a cultural attribute which cannot easily be changed by the individual. A person's perception of another party depends on the other party's characteristics, which are beyond the individual's influence. He or she can only affect the probability of exhibiting the right level of trust, p, and maximize the utility from trusting with respect to p:

$$\max u = pTA + (1 - p)Tq \tag{2}$$

The first-order condition is then:

$$AT - Tq = 0 \tag{3}$$

By replacing trust, T, in the first case with the trust production function, we obtain:

$$IC^{\alpha}IPC^{\beta}EC^{\gamma}A - Tq = 0 \tag{4}$$

This can alternatively be expressed as:

$$T = [IC^{\alpha}IPC^{\beta}EC^{\gamma}A]/q \tag{5}$$

Taking the natural logarithm of both sides provides a linear regression equation that enables calculating the effects of each component on trust including those of formal institutions:

$$lnT = \alpha lnIC + \beta lnIPC + \gamma lnEC + (lnA - lnq) \qquad (6)$$

By incorporating the two indirect channels of the external component, we have a new regression equation:

$$lnT = lnIC + lnIPC + lnEC + lnIC*lnEC + lnIPC*lnEC + (lnA - lnq) \qquad (7)$$

The model therefore suggests that trust levels increase when one's own morality, one's perception of others' trustworthiness, and one's perception of formal institutions improve. The final effect of moral values and others' trustworthiness will depend on the quality of formal institutions in the country, as the interaction terms indicate. Trust also increases the greater the reward for trusting is, and it declines the greater the monetary loss that trusting leads to is. Based on this model, we derive the following hypotheses:

*Hypothesis 1***:** An improvement in the internal component is associated with an increase in trust levels among individuals.

*Hypothesis 2***:** An improvement in the interpersonal component is associated with an increase in trust levels among individuals.

*Hypothesis 3***:** An improvement in the quality of the external component in any form is associated with an increase in trust levels among individuals.

*Hypothesis 4***:** The overall effect of the internal component on trust depends on the values of the external component.

Hypothesis 5: The overall effect of the interpersonal component on trust depends on the values of the external component.

Hypothesis 6: Countries with better formal institutions are associated with better moral values among their citizens.

Hypothesis 7: Countries with better formal institutions are associated with better

perceptions of other people's trustworthiness.

DATA AND METHODS DESCRIPTION

Our empirical analysis is based on the European Social Survey (ESS) for the year 2004. It

contains questions on trust, the perception of others' trustworthiness, and moral values. We

restrict the sample to people aged between 16 and 65 to primarily obtain active economic

agents for our analysis. A total of 25 countries are included in the analysis, with total

observations numbering 43,737.

The variables are operationalized as follows.

Dependent Variable

Interpersonal trust is measured through the conventional question: "Generally speaking,

would you say that most people can be trusted or that you cannot be too careful in dealing

with people?" The answer to each question is measured on a ten point scale ranging from 1

"*cannot be trusted at all*" to 10 "*can be fully trusted.*"

Independent Variables

The internal component variable is constructed based on responses to five questions about

people's attitudes towards: (1) paying cash without a receipt to avoid tax, (2) making an

exaggerated/false insurance claim, (3) public officials who ask for a bribe in return for

service, (4) acting dishonestly to make money, and (5) occasionally ignoring the law and

doing what you want. Each item is measured on a four or five point scale ranging from "*not

wrong at all*" to "*totally wrong.*" A factor analysis shows that the five items load on the same

construct, and hence we can combine them into one measure of morality by averaging out their values.

The interpersonal component is measured by two questions that evaluate an individual's perception of others: "Would you say that people try to take advantage of you or that they are fair most of the time?" and "Would you say that people try to be helpful or that they look out for themselves most of the time?" The final construct is created by averaging out the responses to the two questions and has values ranging from 0 "*poor trustworthiness of others*" to 10 "*great trustworthiness of others.*"

The external component is operationalized through three institutional scores. Political institutions are measured through the average of three World Bank Group institutional indexes reflecting the properties of a country's political system: voice and accountability, government effectiveness, and corruption control in government. Economic institutions are operationalized through a contract enforcement and property rights protection index taken from various issues of Economic Freedom of the World. Regulatory institutions are measured by a regulation of labor, credit, and business index constructed by Economic Freedom of the World. The values for all institutional indexes are measured on a continuous scale. We record and re-scale them so that the final constructs have values between 0 "*poor formal institutions*" and 1 "*good formal institutions.*"

Control Variables

The set of control variables includes the conventional determinants of trust: education level, religious denomination, age, gender, and household income. The respondent's education level is operationalized through the total number of years completed in full-time education. Religious denomination is described by four dummies. The Protestant dummy takes the value of one when the respondent belongs to a Protestant denomination. The Orthodox dummy

takes the value of one when the respondent is Orthodox. The Catholic dummy takes the value of one when the respondent is Catholic. The dummy "others" takes the value of one when the respondent adheres to any other religion not mentioned above. We use atheists as a reference category. Religiosity is measured by asking about the frequency that religious services are attended apart from special occasions. The responses vary from 1 "*every day*" to 7 "*never.*" Age is measured by the respondent's actual age at the time the survey was conducted. The respondent's gender is described by a dummy which takes the value of one if the respondent is female and zero if the respondent is male. Household income is operationalized by asking how satisfied the respondent is with his or her household income. The responses range from 1"*not at all*" to 12 "*fully satisfied.*"

We test our hypotheses at both individual and country levels. The individual-level analysis seeks to reveal associations between the three trust components and the respondents' trust scores (Hypotheses 1-3). The main method of analysis is multilevel modeling which allows us to explain variations in trust levels with both upper and lower level factors. Formal institutions represent the upper level in all models. Accounting for such a hierarchical structure of our data is necessary to prevent the un-modeled country information from ending up being entirely pooled into the single individual error term and to recognize the fact that the regression coefficients on individual-level variables may not apply equally to all countries (Kreft and Leeuw 1998; Luke 2004; Snijders and Bosker 1999). The basic empirical model takes the following form:

$$lnT = \gamma_{00} + \gamma_{10}lnIC_{ij} + \gamma_{20}lnIPC_{ij} + \gamma_{01}lnEC_j + \gamma_{30} X_{ij} + m_{oj} + \varepsilon_{ij} \tag{8}$$

Here, IC_{ij} and IPC_{ij} are measures of the internal and interpersonal components, respectively. EC_j consists of relevant measures of the three types of formal institutions that will sequentially be included in the model, X is a set of control variables, m_{oj} is the variance at the country level, and ε_{ij} is the variance at the individual level. We use STATA command

GLLAMM for calculating the parameters of the model. We also include interactions between the external component (formal institutions) and the two other components to see whether the institutional context conditions the impact that the internal and interpersonal components have on the respondents' sense of trust (Hypotheses 4 and 5).

The country-level analysis aims to determine if formal institutions not only condition the effects of the internal and the interpersonal components, but also lead to their change (Hypotheses 6 and 7). To disentangle the institutional mechanisms' direct impact from their indirect effects, we employ a simultaneous equation model which can run several regressions simultaneously assuming that there is a certain cross-equation correlation.

We run two sets of equations: one for trust and one for the interpersonal component. The need to omit the interpersonal component from the first set of equations with the trust variable is justified by the high correlation (around .9) found between the two variables for the aggregated data and the difficulty of empirically separating trust from trustworthiness. More specifically, the first set of equations includes a cross-country trust equation and a channel equation for the respondent's internal component. Similarly, the second set of equations includes a cross-country equation for the interpersonal component and the channel equation for the respondent's internal component. The measures of informal institutions are included in the main equation and in the channel equation. We also consider institutions to be an endogenous variable here since laws and rules are believed to be embedded within the existing informal norms and are a function of the local culture (Seidler 2011; Williamson 2000). We hence add an institutional equation to both simultaneous equation models.

Since two of these variables (the internal and the external components) appear endogenous in the system, we consider it necessary to use instrumental variables estimation to ensure that our structural parameters are identified. The instruments were selected based on their strong correlation with the correspondent variables (the internal component or formal

institutions), while ensuring that they are theoretically or statistically unrelated to the main dependent variable (trust scores and the interpersonal component). The internal component is instrumented with peer pressure measured by the question: "In the last five years, how often did a plumber/builder/mechanic/repairer overcharge you?" The responses vary from 1"*never*" to 5 "*more than five times.*" The choice of this instrument is based on the theory which asserts that people's morals usually conform to those of others and that people are rarely willing to oppose a group even if their own beliefs and values are very different. For example, witnessing others adhere to the law frequently may activate similar behavior in people, even among those for whom it is not chronically self-important to comply with the law or if one's beliefs contradict a particular law (Shao et al. 2008). The correlation coefficient measuring the association between the peer pressure variable and the internal component is around .70, while it only weakly relates to trust, the interpersonal component or institutional scores (.15 – .20).

We follow Fidrmuc (2003) and Mauro (1995) in choosing instruments for institutional variables. They argue that institutional measures can be instrumented with the index of civil liberties. The correlation between the civil liberties index and institutional variables varies between .80 and .85, depending on the type of institutions, while it remains relatively weak with the trust and components variables.

In addition, we include other control variables in the channel equations. The number of inclusions is sufficient to satisfy the order condition for identification. We estimate the full set of equations jointly using a three-stage least square. The estimation is conducted by applying the STATA command reg3 to the aggregated data-set, which is obtained by calculating the countries' mean values for the aforementioned variables. The first model can be described as follows:

$$lnT = \alpha_0 + \alpha_1 lnIC + \alpha_2 Educat + \alpha_3 lnEC + \varepsilon \quad\quad\quad (9)$$

$$lnIC = \beta_0 + \beta_1 Catholic + \beta_2 Peer\_pressure + \beta_3 Inequality + \beta_4 lnEC + \phi \qquad (10)$$

$$lnEC = \lambda_0 + \lambda_1 Educat + \lambda_2 Civil\_libert + \lambda_3 Protestants + \lambda_4 Language\_fract + \xi \quad (11)$$

The second model takes the following form:

$$lnIPC = \alpha_0 + \alpha_1 lnIC + \alpha_2 Educat + \alpha_3 lnEC + \varepsilon \qquad (12)$$

$$lnIC = \beta_0 + \beta_1 Catholic + \beta_2 Peer\_pressure + \beta_3 Inequality + \beta_4 lnEC + \phi \qquad (13)$$

$$lnEC = \lambda_0 + \lambda_1 Educat + \lambda_2 Civil\_libert + \lambda_3 Protestants + \lambda_4 Language\_fract + \xi, \quad (14)$$

where *T* is the respondents' trust scores. *IC* and *IPC* are measures of the internal and the interpersonal components, respectively. *EC* consists of relevant measures of the three types of formal institutions that are sequentially (one by one) included in the models. *Educat* is an average number of years that respondents from the same country completed in full-time education. *Catholic* stands for the percentage of the population who adhere to the Catholic faith. The *Peer_pressure* variable is an instrument for the internal component. *Inequality* measures a country's level of inequality and is operationalized through the ratio of the total income received by the 20 percent of the population with the highest income (top quintile) to that received by the 20 percent of the population with the lowest income (lowest quintile). *Civil_libert* describes the quality of civil liberties as measured by Freedom House's index of civil liberties. *Protestants* operationalizes the percentage of people who are Protestants. *Language_fract* measures the extent of language fractionalization in the countries included in the analysis.

EMPIRICAL ANALYSIS

Our individual-level analysis suggests that the three components are important for the trust formation process (Table 1). People with good moral values are more likely to trust others, which is in line with Hypothesis 1. Similarly, trust increases when the respondents' perception of others' trustworthiness improves, which is commensurate with Hypothesis 2.

Models with random effects for the internal and especially for the interpersonal components point out that the effects of both variables vary across countries, thereby suggesting that the context may matter in defining the direction and strength of their impact on trust. One should also note that the model fit improves substantially when replacing the linear trust function with the non-linear Cobb-Douglas function.

Table 1 near here

Controlling for the context by including the institutional measures provides evidence that formal institutions relate to trusting behavior (Model 2 in Tables 2, 3, and 4). People who live in countries with better political, economic, and regulatory institutions usually exhibit greater trust scores, which supports Hypothesis 3. The results also indicate that the regression coefficients for the economic and political institutional variables have relatively similar values, which suggests that legitimacy and sanction mechanisms are equally important for economic agents' decision-making in terms of whether or not to trust. The regulatory mechanism, however, has a stronger impact on trust levels, implying that the autonomy dimension of formal institutions is indispensible for developing interpersonal trust in society. This may partially explain why people living in liberal economies where the welfare state provides limited support but formal institutions allow citizens a great degree of autonomy have relatively higher levels of trust compared to other societies.

Table 2 near here

In addition, we find interaction effects between the external component and the internal - cultural - component of trust (Model 3 and 4 in Tables 2, 3, and 4). The positive

association between moral values and trust is enhanced as the quality of formal institutions improves in a country, which is in line with Hypothesis 4. The interaction term with moral values is found to be particularly strong in the case of political institutions, implying that these types of formal institutions are highly likely to interact with cultural forces in the trust building process. In the case of regulatory and economic institutions, the interaction term is relatively weak and does not allow us to draw robust conclusions.

Table 3 near here

Similarly, there is a strong interaction between the three institutional indexes and the interpersonal component (Model 5 and 6 in Tables 2, 3, and 4). The effect of the respondents' perception of how trustworthy others are on their own level of trust can be widely regarded as a function of the quality of the institutional context, which is commensurate with Hypothesis 5. People tend to exhibit higher levels of trust at the given level of others' perceived trustworthiness when the quality of formal institutions improves. The interaction effect is found to be particularly strong in the case of regulatory institutions.

Table 4 near here

Overall, the individual-level analysis supports our hypotheses and indicates that the trust formation process is strongly influenced by formal institutions. Moreover, the institutional effects on trust are found to be heterogeneous across institutional types. Regulatory institutions that reflect the level of individual autonomy in economic decision-making show a stronger relationship with trust levels. In addition, the role of formal institutions in trust formation is not limited to a direct influence; rather, it is expanded to

condition the impact of the internal and interpersonal components on trust. People with certain morals tend to show more trust when living in countries with better institutions. Similarly, when individuals perceive even the slightest signs of trustworthiness, this generates more trust in countries with good formal institutions. However, whether formal institutions merely condition the effects of the two other components of trust, or if they actually lead to positive alterations in them, should be verified. The latter objective is achieved by running simultaneous equation models.

Table 5 suggests that formal institutions affect trust directly as well as indirectly by primarily influencing the perception of others, which is in line with Hypothesis 7. Individuals ascribe more trustworthiness to others in the presence of better formal institutions. We find that regulatory institutions have the strongest impact on the perception of others' trustworthiness, while the two other types of institutions do so to a lesser extent.

Table 5 near here

An improvement in formal institutions of any kind is not however associated with an improvement in moral values. These results are consistent with earlier findings asserting that moral values should be regarded as a stable trait rather than a variable (Colby and Damon 1992; Smith and Thornberry 1995). As such, only compliance with morality can be influenced. Combining the results from the individual and macro-levels of analysis allows us to infer that the impact of the cultural variable on trust can to some extent be conditioned by formal institutions, but these formal institutions are highly unlikely to trigger any changes in such values. Hence, our findings did not substantiate Hypothesis 6.

CONCLUSION AND DISCUSSION

Overall, our study supports the new conceptual framework of the trust formation process that is derived from social-cognitive theories of behavior. Trust should be considered as composed of people's internal values, their perception of others' trustworthiness, and the properties of the context in which they act. Formal institutions are an important part of this context and may influence trust in a threefold manner: by (1) imposing sanctions on those who deviate from rules, (2) ensuring the legitimacy of rules introduced, and (3) allowing citizens some degree of autonomy in their decision-making. The institutional effects on trust are found to be heterogeneous across formal institutions. Regulatory institutions that reflect the level of individual autonomy in economic decision-making show a stronger relationship with trust levels and the individual's perception of others' trustworthiness.

In addition to the direct effect, formal institutions may impact trust indirectly by interacting with the two other components. Nonetheless, this external component is highly unlikely to lead to any change in the cultural component of trust and hence ease cultural constraints imposed on the trust formation processes. This suggests that trust is both a cultural attribute and a result of particular arrangements created by the institutional context. Our empirical analysis provides evidence supporting this complex relationship between formal institutions and trust at both micro and macro levels.

Further research is, however, needed to confirm the validity of our results by eliminating two major drawbacks in our study. On the one hand, the percentage attributed to each component in the trust building process should be analyzed. It is highly likely that the composition of trust, in terms of the three components and variations in their structure across countries, can be a cultural variable in itself. In this case, culture would constrain trust formation not only through the value variable, but also through the role that the value variable is allowed to play in defining trust levels. On the other hand, more analysis is needed to

clarify the causal links between the components of trust. The direction of causality in the

relationship between moral values and formal institutions may be reverse from what is

actually thought. As such, formal institutions might not constrain the effect of morals on

trust. In contrast, the effect of formal institutions on trust might be restricted by the existing

moral values.

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Table 1. The Trust Equation: Linear Models versus the Cobb-Douglas Production Function

Variables	Dependent variable					
	Trust				lnTrust	
IC	.275***	.074*	.110*	.103*		
	(6.35)	(2.15)	(1.76)	(2.51)		
IPC		.731***	.297***	.292***		
		(79.87)	(67.48)	(18.65)		
lnIC					.195***	.065***
					(13.22)	(5.38)
lnIPC						.664***
						(142.11)
Random effects for IC[a]			-.082†			
			(.077)			
Random effects for IPC				-.039*		
				(.016)		
Rsq	.001	.130			.004	.336
Number of observations at level 1	43737	43346	43737	43737	40971	40505
Number of observations at level 2	25	25	25	25	25	25

Note: t values are reported in parentheses.

[a] We report variance for the random slope and its p-value (in brackets).

†p < .10; *p < .05; **p < .01; ***p < .001 (two-tailed tests).

Table 2. The Impact of Formal Institutions on Trust: The Case of Political Institutions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
lnIC	.065***	.060***	.143***	.094***	.056***	.057***	.123***
	(5.38)	(4.97)	(7.08)	(3.81)	(4.62)	(3.78)	(6.04)
lnIPC	.664***	.637***	.635***	.622***	.706***	.666***	.702***
	(142.11)	(129.97)	(129.68)	(103.70)	(79.62)	(62.21)	(78.61)
lnEC		.203***	-.113†	-.030	-.092**	-.076†	-.333***
		(18.09)	(-1.80)	(-.41)	(-2.75)	(-1.90)	(-4.92)
lnIC*lnEC			.276***	.113†			.222***
			(5.12)	(1.79)			(4.10)
lnIPC*lnEC					.197***	.119***	.187***
					(9.37)	(4.92)	(8.85)
Religious denomination							
Catholic				-.025***		-.024 ***	
				(-3.41)		(-3.23)	
Protestant				.028***		.025**	
				(3.31)		(3.00)	
Orthodox				.084***		.084***	
				(6.87)		(6.83)	
Other				-.041***		-.047***	
				(-3.56)		(-4.04)	
Religiosity				-.002		-.002	
				(-1.23)		(-1.22)	
Gender				-.039***		-.039***	
				(-7.42)		(-7.42)	
Age				-.001		-.001	
				(-1.47)		(-1.57)	
Education				.011***		.011***	
				(14.71)		(14.79)	
Income				.010***		.010***	
				(7.90)		(7.54)	
Rsq	.336	.341	.341	.366	.342	.367	.343
Number of observations	40505	40505	40505	26741	40505	26741	40505

Note: t values are reported in parentheses.
†p < .10; *p < .05; **p < .01; ***p < .001 (two-tailed tests).

Table 3. The Impact of Formal Institutions on Trust: The Case of Economic Institutions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
lnIC	.065***	.063***	.119***	.082**	.057***	.059***	.100***
	(5.38)	(5.22)	(5.48)	(3.12)	(4.74)	(3.86)	(4.58)
lnIPC	.664***	.631***	.631***	.621***	.707***	.674***	.705***
	(142.11)	(127.45)	(127.31)	(102.80)	(74.32)	(58.93)	(73.84)
lnEC		.223***	.011	.014	-.083*	-.113**	-.237***
		(19.16)	(.16)	(.17)	(-2.37)	(-2.69)	(-3.18)
lnIC*lnEC			.182**	.069			.138*
			(3.10)	(.99)			(2.34)
lnIPC*lnEC					.200***	.137***	.196***
					(9.24)	(5.48)	(9.02)
Religious denomination							
Catholic				-.024**		-.022**	
				(-3.16)		(-2.93)	
Protestant				.028***		.024**	
				(3.30)		(2.90)	
Orthodox				.080***		.078***	
				(6.61)		(6.48)	
Other				-.040***		-.048***	
				(-3.44)		(-4.03)	
Religiosity				-.003		-.003	
				(-1.35)		(-1.28)	
Gender				-.039***		-.040***	
				(-7.46)		(-7.50)	
Age				-.001		-.001†	
				(-1.59)		(-1.70)	
Education				.011***		.011***	
				(14.51)		(14.56)	
Income				.011***		.011***	
				(8.86)		(8.54)	
Rsq	.336	.341	.342	.366	.343	.367	.343
Number of observations	40505	40505	40505	26741	40505	26741	40505

Note: t values are reported in parentheses.
†p < .10; *p < .05; **p < .01; ***p < .001 (two-tailed tests).

Table 4. The Impact of Formal Institutions on Trust: The Case of Regulatory Institutions

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
lnIC	.065***	.070***	.110**	.004	.065***	.063***	.096*
	(5.38)	(5.80)	(2.68)	(.09)	(5.40)	(4.14)	(2.35)
lnIPC	.664***	.630***	.630***	.616***	.730***	.689***	.730***
	(142.11)	(128.18)	(128.10)	(102.04)	(45.06)	(36.35)	(44.99)
lnEC		.418***	.293*	.443**	.041	-.026	-.054
		(21.31)	(2.35)	(3.01)	(.67)	(-.35)	(-.40)
lnIC*lnEC			.107	-.164			.083
			(1.02)	(-1.33)			(.79)
lnIPC*lnEC					.242***	.174***	.241***
					(6.48)	(4.05)	(6.45)
Religious denomination							
Catholic				-.023**		-.022**	
				(-3.12)		(-2.99)	
Protestant				.032***		.030***	
				(3.85)		(3.58)	
Orthodox				.091***		.087***	
				(7.64)		(7.25)	
Other				-.030**		-.036**	
				(-2.60)		(-3.03)	
Religiosity				-.002		-.001	
				(-.94)		(-.75)	
Gender				-.040***		-.040***	
				(-7.62)		(-7.67)	
Age				-.001†		-.001†	
				(-1.70)		(-1.76)	
Education				.010***		.010***	
				(14.08)		(14.22)	
Income				.011***		.011***	
				(9.83)		(9.60)	
Rsq	.336	.343	.343	.368	.344	.369	.344
Number of observations	40505	40505	40505	26741	40505	26741	40505

Note: t values are reported in parentheses.
†p < .10; *p < .05; **p < .01; ***p < .001 (two-tailed tests).

Table 5. Channels of Institutional Effects on Trust: A Simultaneous Equation Model

	The trust model[a]		The ICP model[a]	
	The trust equation	The IC equation	The IPC equation	The IC equation
Political institutions	.362**	.019	.494***	.017
	(2.84)	(.29)	(3.57)	(.26)
Economic institutions	.463***	-.007	.591***	-.003
	(3.38)	(-.11)	(4.34)	(-.05)
Regulatory institutions	1.294***	-.039	1.587***	-.052
	(4.20)	(-.44)	(4.64)	(-.60)
Number of observations	25	25	25	25

Note: t values are reported in parentheses.
[a] The basic simultaneous equation models took the following form:

lnT = -2.367 + 2.374lnIC +.097Educat (Rsq=.653)
lnIC=1.590 -.048Catholic -.246Peer_pressure -.002Inequality (Rsq=.596)
lnEC =-.033 +.001Educat -.176Civil_libert+.268Protestants+.117Language_fract (Rsq=.744)

and

lnIPC = -2.692+ 2.686lnIC +.095Educat (Rsq=.571)
lnIC=1.599 -.043Catholic -.250Peer_pressure -.002Inequality (Rsq=.595)
lnEC=-.070+.001Educat -.171Civil_libert+.236Protestants+.084Language_fract (Rsq=.742)

[†]$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).