

Governing Complexity: How Trust in Government Is Associated with Productive Capabilities

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Abstract

This article examines the association between trust in government and countries' productive capabilities, as measured by economic complexity. Using an unbalanced panel of 105 countries covering the period 2004–2019, we investigate whether higher levels of institutional trust are associated with structural transformation toward more diversified, sophisticated, and knowledge-intensive productive structures. To address selection on observables, we employ Entropy Balancing for Continuous Treatments (EBCT), which reweights observations so that the distribution of observable covariates is orthogonal to treatment intensity, and estimates dose-response functions linking trust to economic complexity. Our results show that institutional trust is positively and significantly associated with economic complexity, in its commercial, technological, and scientific dimensions. This association is robust to several sensitivity tests and is stronger in countries with higher-quality infrastructure, more democratic institutions, and better governance frameworks. These findings suggest that trust may complement state capacity in supporting structural transformation, though results should be interpreted as evidence of a robust conditional association rather than a causal effect.

Keywords: Institutional trust; Economic complexity; Structural transformation; democracy; Development.

JEL Classification: O11, O14, O43, D72, F14, C14.

1. Introduction

Understanding why some countries manage to diversify into sophisticated, knowledge-intensive productive activities, while others remain persistently specialized in simple, ubiquitous production, is a central question in development economics (Hidalgo and Hausmann, 2009; Hausmann et al., 2014; Hartmann et al., 2017; Stojkoski et al., 2023). Recent literature emphasizes that an economy's productive structure, beyond its income level, determines its long-term growth trajectory, its resilience to shocks, and its adaptive capacity (Hausmann and Hidalgo, 2011; Felipe et al., 2012; Poncet et al., 2013). However, while existing research has extensively documented the technological and commercial determinants of economic complexity, it has explored far less the institutional and political conditions that enable economies to accumulate, combine, and mobilize the capacities necessary for the production of complex goods.

Institutions are recognized as fundamental determinants of economic development (North, 1990; Acemoglu and Robinson, 2012; Rodrik, 2007; Besley and Persson, 2011). Yet, institutional quality is most often understood through formal rules, legal frameworks, or governance indicators (La Porta et al., 1998; Kaufmann et al., 2010), while the role of informal institutions and citizens' beliefs remains relatively understudied. In particular, institutional trust, understood as citizens' confidence in the credibility, effectiveness, and legitimacy of public action, is likely to play a central role in economic dynamics (Putnam, 1993; Fukuyama, 1995; Algan and Cahuc, 2010; Guiso et al., 2006). Trust influences investment decisions, the credibility of public policies, coordination among economic agents, and the propensity to engage in risky, long-term activities such as innovation and technological upgrading (Arrow, 1972; Williamson, 1985; Guriev et al., 2021; Bloom et al., 2013). However, the link between institutional trust and structural transformation remains largely unexplored empirically.

This article examines whether, and how, trust in government contributes to the development of productive capacities, as measured by economic complexity. It builds upon previous work linking institutions, productive capacities, and development (Acemoglu et al., 2005; Hausmann et al., 2014; Hartmann et al., 2017), while focusing on a specific dimension of institutions: citizens' trust. We pose three main questions. First, does a higher level of institutional trust foster more diversified and sophisticated productive structures? Second, does this effect extend to the technological and

scientific dimensions of complexity (Stojkoski et al., 2023)? Third, through which institutional and political channels does trust exert its influence (North, 1990; Rodrik et al., 2004; Acemoglu and Robinson, 2012)?

To answer these questions, we construct an unbalanced panel of 105 countries covering the period 2004–2019, combining measures of trust in government from the Gallup World Poll (Helliwell et al., 2020) and multidimensional indicators of economic complexity (Hidalgo and Hausmann, 2009; Stojkoski et al., 2023). A key empirical challenge is that institutional trust is not randomly distributed: countries are selected at different levels of trust based on economic, social, and institutional characteristics that also influence their productive structure (Algan and Cahuc, 2010; Guriev et al., 2021). To correct this endogeneity, we use the Entropy Balancing method for continuous treatments (Hainmueller, 2012; Vegetabile et al., 2021; Tübbicke, 2022), which allows us to reweight observations so that the distribution of observable covariates is orthogonal to treatment intensity, and to estimate dose-response functions linking trust to economic complexity (Imbens, 2000; Hirano and Imbens, 2004). We emphasize that EBCT addresses only selection on observables; reverse causality and time-varying unobservables remain potential sources of bias.

Our results show that trust in government is positively and significantly associated with economic complexity, in its commercial, technological, and scientific dimensions. These associations are robust to numerous sensitivity tests, including socio-cultural controls (Alesina and La Ferrara, 2005; Desmet et al., 2012), an analysis of heterogeneity across income levels, and alternative specifications. We further show that the association between trust and complexity is stronger when the quality of infrastructure, institutional performance, and policy credibility are higher (Acemoglu et al., 2005; Besley and Persson, 2011; Rodrik, 2007)—a pattern consistent with institutional complementarity rather than identified transmission channels.

This article contributes to the literature in three ways. First, it connects the economic complexity literature with the political economy of development by examining trust—a subjective, demand-side dimension of institutional performance—as a correlate of productive capabilities, conceptually distinct from standard governance-quality indicators. Second, it offers one of the first systematic cross-national analyses of the association between institutional trust and structural transformation across multiple dimensions of complexity. Third, it demonstrates the value of EBCT as a tool for correcting selection on observables in comparative institutional analysis, while being transparent about its identification limits.

The remainder of the article is organized as follows. Section 2 presents the literature review and conceptual framework. Section 3 describes the data and empirical strategy. Section 4 presents the results and robustness tests. Section 5 concludes.

2. Trust in Government and Economic Complexity: Conceptual Framework and Empirical Background

This section develops the conceptual and empirical foundations of the analysis. We begin by distinguishing trust in government from broader institutional quality indicators, a distinction that motivates our empirical approach (subsection 2.1). We then review the theoretical mechanisms through which trust may be associated with productive capabilities (subsection 2.2) and summarize the relevant empirical literature (subsection 2.3), before identifying the gap this paper addresses (subsection 2.4).

2.1 Trust in Government versus Institutional Quality: A Conceptual Distinction

Despite being closely related concepts, trust in government and institutional quality are analytically distinct and should not be treated as interchangeable. Institutional quality refers to the formal and informal rules that structure economic and political interactions — the laws, enforcement mechanisms, regulatory frameworks, and administrative capacities that define the operative environment for firms and citizens (North, 1990; Kaufmann et al., 2010). It describes the performance of institutions as observed from the outside, typically through expert assessments or administrative data. Trust in government, by contrast, is a subjective perception held by citizens: it reflects their belief that public institutions are credible, effective, and acting in the general interest (Putnam, 1993; Fukuyama, 1995; Algan and Cahuc, 2010). In other words, institutional quality captures what institutions do; trust captures what citizens believe institutions will do.

This distinction matters for economic behavior. Even in countries with formally adequate institutions, low trust can prevent those institutions from producing their intended economic effects. If firms and households do not believe that government commitments will be honored, investment horizons shorten, long-term contracts become difficult to sustain, and the take-up of public programs falls. Conversely, high trust can partially compensate for formal institutional weaknesses by reducing the perceived risks of long-term economic engagement in contexts where formal enforcement is limited. The economic consequences of trust are therefore not simply redundant with those of institutional quality: they operate through a distinct channel — the subjective credibility of public action — that standard governance indices do not fully capture (Guiso et al., 2006; Guriev et al., 2021).

It is important, however, to acknowledge a potential overlap: high-quality institutions tend to generate trust over time, and trust may partly reflect institutional performance. This means that trust and institutional quality are correlated, even if they are not identical. Our empirical strategy accounts for this by including governance indicators as covariates in the balancing procedure and by examining interactions between trust and institutional quality explicitly. We are nonetheless explicit that our identification approach addresses observable confounding and does not fully resolve the endogeneity that may arise from this overlap. This limitation is discussed in detail in Sections 3.2 and 5.

2.2 Theoretical Mechanisms

Two main theoretical frameworks illuminate how trust in government may be associated with the development of productive capabilities.

The first is North's (1990) institutionalist framework, which posits that credible governance reduces uncertainty, secures property rights, and improves the predictability of public policies. When citizens and firms believe that rules will be enforced and that public commitments will be honored, investment horizons lengthen, coordination becomes easier, and resources can be reallocated toward more productive and knowledge-intensive activities. From this perspective, structural transformation — the reallocation of resources toward higher-productivity sectors — is unlikely to be sustained without the institutional credibility that trust helps to generate. Trust reinforces the effectiveness of industrial and innovation policies by increasing their perceived legitimacy and by reducing the costs of non-compliance monitoring.

The second framework is transaction cost theory (Coase, 1937; Williamson, 1985). In complex economies, value chains are fragmented, technological relationships are specialized, and contractual relationships are numerous and often difficult to verify. Trust in government lowers the costs of these interactions by providing a stable legal framework that reduces opportunism and uncertainty. A government perceived as credible limits the need for costly private safeguards, facilitates dispute resolution, and enhances the predictability of the regulatory environment. This, in turn, reduces the friction associated with specialization and coordination across firms and sectors, thereby creating conditions more favorable to the emergence of complex productive structures.

Both frameworks suggest that the economic benefits of trust are not unconditional: they are likely to be larger when trust is embedded in an environment with adequate infrastructure, functional institutions, and effective governance. This conditional logic motivates the interaction analysis in Section 4.3.

2.3 Related Empirical Literature

The empirical literature most relevant to this paper spans three bodies of work: institutions and economic complexity, trust and economic outcomes, and governance and structural transformation.

On institutions and complexity, Vu (2022) provides the closest existing analysis, showing that institutional quality — measured by the Global Economic Freedom Index — is positively associated with economic complexity across 115 countries. His results suggest that stronger institutions foster complexity by improving incentives for entrepreneurship, human capital accumulation, and productive resource allocation. Hartmann et al. (2017) similarly show that countries with more complex export structures tend to have lower income inequality, and argue that this relationship is partly mediated by institutional quality. Njangang and Nvuh-Njoya (2023) document a positive association between democracy and economic complexity. Our paper builds on this line of research by focusing on trust — a subjective, demand-side dimension of institutional performance — that these studies do not directly examine.

On trust and economic outcomes, Algan and Cahuc (2010) show that inherited trust is a strong predictor of long-run income growth across countries. Guiso et al. (2006) document that social capital, including interpersonal and institutional trust, shapes financial market participation and economic cooperation. Guriev et al. (2021) demonstrate that access to information via mobile

internet significantly affects confidence in government, suggesting that trust responds to citizens' perceptions of government performance and transparency. These studies collectively support the view that trust carries independent informational content over and above formal institutional indicators.

On governance and structural transformation, Bouhlef (2024) shows across 53 African countries that stable governance and strong institutions are key predictors of structural transformation. McMillan and Rodrik (2011) highlight that productivity gains from structural change depend on the institutional environment. Djeunankan et al. (2023) document a reverse relationship: economic complexity is associated with improved governance in Africa, underscoring the importance of interpreting trust-complexity relationships with caution regarding directionality. Stojkoski et al. (2023) extend the complexity literature by decomposing the ECI into trade, technology, and research dimensions, enabling a more granular analysis of productive capabilities than the standard ECI-Trade index alone.

2.4 Research Gap and Contribution

Despite these advances, three gaps remain in the literature. First, institutional trust as a direct correlate of economic complexity has not been systematically examined across multiple dimensions of complexity in a global cross-national panel. Existing studies focus on composite governance indices rather than on the subjective, demand-side dimension of institutional credibility captured by survey-based trust measures. Second, the conditioning role of institutional quality, infrastructure, and democratic accountability in the trust-complexity relationship has not been formally tested. Third, the methodological challenge of non-random variation in trust levels has not been adequately addressed in prior work.

This paper addresses all three gaps. It examines trust in government as a distinct explanatory variable, separate from standard governance indicators, and assesses its association with economic complexity across three dimensions: trade sophistication, technological capacity, and research intensity. It tests the hypothesis that this association is stronger when the institutional environment is of higher quality, providing evidence of institutional complementarity. And it uses Entropy Balancing for Continuous Treatments (EBCT) to correct for selection on observables, while being explicit about the limits of this identification strategy. Together, these contributions offer a more complete empirical account of the institutional correlates of productive capabilities than is currently available in the literature.

3. Data and Methodologies

3.1. Data

To examine the impact of institutional trust on economic complexity, we construct an unbalanced panel of 105 countries worldwide over the period 2004–2019. This time window is determined by the joint availability of data on confidence in government, economic complexity, and the set of control variables included in the analysis. Countries for which information on the key variables is

systematically missing are excluded from the sample in order to preserve the consistency and reliability of the estimations.

Data on confidence in government are drawn from the Gallup World Poll (GWP), as reported in the *World Happiness Report*, which provides a harmonized and internationally comparable measure of institutional trust. Information on economic complexity and its multidimensional components (trade, technology, and research) is obtained from the *Observatory of Economic Complexity* and related sources. Additional control variables are collected from standard international databases, including the *World Development Indicators*, the *Worldwide Governance Indicators*, and *Varieties of Democracy*.

The resulting panel is unbalanced due to differences in data availability across countries and years, but it offers sufficient cross-sectional and temporal variation to identify the relationship between institutional trust and productive capabilities. Descriptive statistics for the main variables are reported in Table A1 in the Appendix, the correlation matrix is presented in Table A2, and the full list of countries included in the sample is provided in Table A3. Regional fixed effects follow World Bank regional groupings: Europe and Central Asia, Sub-Saharan Africa, Latin America and the Caribbean, East Asia and the Pacific, Middle East and North Africa, South Asia, and North America. All control variables are measured annually and lagged one period ($t-1$). Sample sizes differ across complexity dimensions: ECI-Trade is available for all 1,348 weighted observations; ECI-Technology covers 969–984 observations due to missing patent-based data; ECI-Research covers 1,312–1,375 observations. These differences reflect data availability for each dimension and not changes in the balancing procedure.

3.1.1. Dependent variables

The dependent variable in this study is economic complexity, which measures the amount of productive knowledge embedded in a country's economic structure. As emphasized by Hidalgo and Hausmann (2009, 2011), economic complexity reflects both the diversity of products a country is able to produce and export and the sophistication of the capabilities required to produce them. Unlike simple measures of export diversification or technological intensity, economic complexity captures the joint distribution of productive capabilities across countries and products, and therefore provides a synthetic indicator of an economy's underlying productive structure (Hausmann et al., 2014; Hartmann et al., 2017).

The conceptual foundation of economic complexity lies in the idea that producing any good requires a specific combination of non-tradable and often tacit capabilities such as skills, institutions, infrastructure, organizational routines, and technological know-how (Hidalgo and Hausmann, 2009; Hausmann and Hidalgo, 2011). Countries that are able to combine a larger and more sophisticated set of such capabilities can produce and export a wider range of complex products, while countries with fewer capabilities remain specialized in ubiquitous and low-value-added goods. Economic complexity therefore reflects not only what a country produces, but also

how difficult those products are to produce and how rare the associated capabilities are in the global economy (Hartmann et al., 2017).

Formally, economic complexity is derived from the bipartite network linking countries to the products they export with revealed comparative advantage. Let M_{cp} be a binary country–product matrix such that $M_{cp} = 1$ if country c exports product p with a revealed comparative advantage greater than or equal to one, and $M_{cp} = 0$ otherwise. The revealed comparative advantage is defined as:

$$RCA_{cp} = \frac{X_{cp} / \sum_{p'} X_{cp'}}{\sum_{c'} X_{c'p} / \sum_{c',p'} X_{c'p'}}.$$

where X_{cp} denotes the export value of product p by country c ; the numerator is country c 's share of product p in world exports, and the denominator is the world share of product p across all countries. Based on this matrix, the diversity of a country and the ubiquity of a product are given by the row and column sums:

$$k_{c,0} = \sum_p M_{cp}, k_{p,0} = \sum_c M_{cp}.$$

Using the method of reflections proposed by Hidalgo and Hausmann (2009), and further refined by Hausmann et al. (2014), the economic complexity index is obtained as the eigenvector associated with the largest non-trivial eigenvalue of the normalized country–country matrix linking countries that export similar products. The index is then standardized to have mean zero and unit variance.

Recent contributions have emphasized that economic complexity is a multidimensional concept that cannot be fully captured by a single aggregate indicator (Stojkoski et al., 2023). Building on this insight, we decompose economic complexity into three complementary dimensions: trade complexity (ECI-Trade), technological complexity (ECI-Technology), and research complexity (ECI-Research), which reflect different layers of productive capabilities.

The first dimension, ECI-Trade, captures the sophistication and diversity of a country's export basket. It reflects the extent to which a country is able to export a wide range of products that are themselves exported by few other countries, indicating that these products require rare and advanced productive capabilities (Hidalgo and Hausmann, 2009; Hausmann et al., 2014). ECI-Trade therefore measures the degree of embedded knowledge in a country's tradable production structure and reflects its position in global value chains.

The second dimension, ECI-Technology, captures the technological content of a country's productive system. It reflects the extent to which production relates on advanced technologies and knowledge-intensive processes rather than on simple or resource-based activities (Stojkoski et al.,

2023). A higher value of ECI-Technology indicates that a country's productive structure is more technologically sophisticated and more dependent on complex technological capabilities.

The third dimension, ECI-Research, captures the upstream component of productive capabilities, namely the capacity to generate new knowledge and transform it into economically valuable applications. It reflects a country's research intensity, innovation capacity, and ability to produce and absorb new technological knowledge (Stojkoski et al., 2023). ECI-Research therefore measures the knowledge-generating foundation upon which technological upgrading and export sophistication are built.

By jointly considering these three dimensions, the analysis allows us to identify whether institutional trust primarily affects export sophistication, technological upgrading, or knowledge generation, or whether it operates simultaneously across these different layers of productive complexity. This multidimensional approach therefore provides a more nuanced understanding of the relationship between institutions and structural transformation than a single aggregate index.

All three indicators are standardized with mean zero and unit variance, which facilitates comparison across specifications and allows the estimated coefficients to be interpreted as the effect of a one standard deviation change in institutional trust on the corresponding dimension of economic complexity.

3.1.2. Independent Variables

The key explanatory variable is confidence in government, which captures citizens' trust in political institutions. In the social sciences, political confidence is commonly measured using survey questions that ask respondents whether they trust specific institutions such as the government, the judiciary, or the parliament. While such questions are widely used in cross-national surveys, their comparability is often limited by differences in questionnaire design, timing, and country coverage, which complicates systematic cross-country and intertemporal analysis (Ji et al., 2024). To ensure consistency and comparability, we use a harmonized measure of confidence in government from the Gallup World Poll, as reported in the World Happiness Report. This indicator is based on a standardized question administered annually across countries and measures the share of respondents who report having confidence in their national government. Its uniform design, broad coverage, and time consistency make it particularly well suited for comparative panel analysis. This measure captures citizens' perceptions of institutional credibility and effectiveness, which are central to the theoretical mechanisms linking trust in government to economic behavior and productive upgrading.

Control variables

The selection of control variables is guided by the need to account for observable factors that jointly influence both institutional trust and productive capabilities, and therefore generate selection into different levels of trust. These variables serve as pre-treatment covariates in the first

step of the entropy balancing procedure and as standard controls in the second-step outcome equation.

Income per capita (GDP per capita) is included as a proxy for the overall level of economic development. Economic development is strongly associated with institutional performance and political trust, as higher-income societies tend to exhibit better state capacity, more effective public services, and higher institutional legitimacy (Inglehart and Welzel, 2005; Algan and Cahuc, 2010). At the same time, income levels are a major determinant of productive capabilities, since richer economies can invest more in education, infrastructure, and innovation, which is associated with economic complexity (Acemoglu et al., 2005; Hausmann et al., 2014). GDP per capita therefore captures a central source of selection into trust and a key determinant of economic complexity.

Internet penetration is included to capture digital infrastructure and information diffusion. Digital connectivity facilitates access to knowledge, technological adoption, and participation in global value chains, all of which promote productive sophistication (Czernich et al., 2011; Forman et al., 2012). Simultaneously, access to information affects citizens' perceptions of government transparency and accountability, thereby influencing trust in public institutions (Norris, 2001; Guriev et al., 2021). Internet penetration therefore affects both treatment assignment and the outcome and is an important confounder to control for.

Total natural resource rents (TNR) are included to account for the degree of resource dependence. Resource-rich economies tend to exhibit lower diversification and complexity due to specialization in extractive activities, consistent with the resource curse hypothesis (Sachs and Warner, 2001; van der Ploeg, 2011). Resource rents also shape institutional quality and political trust through rent-seeking, corruption, and distributive conflicts (Mehlum et al., 2006; Bhattacharyya and Hodler, 2010). TNR thus represents a key structural factor affecting both trust and complexity.

Trade openness is included to capture integration into the global economy. International trade facilitates access to foreign technologies, intermediate inputs, and knowledge spillovers, which foster productive upgrading and economic complexity (Grossman and Helpman, 1991; Hausmann and Hidalgo, 2011). At the same time, globalization can influence political trust through its effects on income distribution, economic volatility, and perceptions of government performance (Rodrik, 1998; Autor et al., 2020). Trade openness therefore influences both trust formation and productive structure.

Population size is included to capture scale effects and demographic constraints. Larger countries benefit from larger internal markets and greater diversification opportunities, which may facilitate complexity, but they also face greater governance and coordination challenges that can affect institutional performance and trust (Alesina and Spolaore, 2003; Henderson, 2003). Population size therefore constitutes a relevant confounder for both treatment and outcome.

Together, these variables form a set of pre-treatment covariates that capture the main observable sources of selection into institutional trust and key determinants of productive capabilities. By balancing on these covariates in the first step of the EBCT procedure, we remove systematic

differences in observable characteristics across countries with different levels of trust. Including the same variables in the second-step outcome regression further controls for their direct effects on economic complexity and improves estimation efficiency. This two-stage use of control variables ensures that the estimated effect of institutional trust is not driven by observable heterogeneity in economic development, infrastructure, resource dependence, trade integration, or demographic scale.

3.2. Empirical Strategies

This study investigates the association between institutional trust and countries' productive capabilities, proxied by economic complexity. Let ECI_{it} denote the economic complexity index of country i at time t , and $Trust_{it}$ the level of trust in government. The structural relationship of interest can be written as:

$$ECI_{it} = \beta Trust_{it} + \theta Z_{it} + u_{it}, \quad (1)$$

where Z_{it} is a vector of economic, institutional, and socio-demographic determinants of productive capabilities, and u_{it} captures unobserved factors such as latent state capacity, historical institutional persistence, and political culture. A central concern is that $Trust_{it}$ is endogenous because it is jointly determined with Z_{it} and correlated with u_{it} , implying that $E[Trust_{it}u_{it}] \neq 0$ (Wooldridge, 2010; Angrist and Pischke, 2009).

We therefore adopt the following reduced-form specification:

$$ECI_{it} = \alpha + \beta Trust_{i,t-1} + \phi' X_{i,t-1} + \mu_i + \lambda_t + \varepsilon_{it}, \quad (2)$$

where $X_{i,t-1}$ includes observable proxies for Z_{it} , μ_i capture time-invariant country heterogeneity, and λ_t control for common shocks. Lagging the regressors mitigates simultaneity and reflects the gradual adjustment of productive structures to institutional changes (Arellano and Bond, 1991; Wooldridge, 2010).

Nevertheless, countries self-select into different levels of institutional trust based on observable characteristics. We model this selection process as:

$$Trust_i = h(X_i) + \eta_i, \quad (3)$$

with η_i representing unobserved determinants of trust that may also affect economic complexity. This form of non-random treatment assignment motivates the use of reweighting methods to correct for selection on observables (Rosenbaum and Rubin, 1983; Imbens, 2000).

To address this issue in a continuous treatment setting, we employ entropy balancing for continuous treatments (EBCT), following the extension of Hainmueller's (2012) entropy balancing framework by Vegetabile et al. (2021) and Tübbicke (2022). EBCT constructs a reweighted sample in which the joint distribution of covariates is independent of treatment intensity up to a specified order of moments.

Let $T_i = Trust_i$, and define centered variables $\tilde{T}_i = T_i - \bar{T}$ and $\tilde{X}_i = X_i - \bar{X}$. The balancing constraints are imposed on the moment vector:

$$g(\tilde{X}_i, \tilde{T}_i) = (\tilde{X}_i', \tilde{T}_i, \tilde{T}_i^2, \tilde{X}_i' \tilde{T}_i, \tilde{X}_i' \tilde{T}_i^2)'. \quad (4)$$

The EBCT weights w_i are obtained by solving:

$$\min_{w_i} \sum_i w_i \ln\left(\frac{w_i}{q_i}\right) \text{ s.t. } \sum_i w_i g(\tilde{X}_i, \tilde{T}_i) = 0, \sum_i w_i = 1, \quad (5)$$

with uniform base weights $q_i = 1/N$. The solution has the closed-form expression:

$$w_i = \frac{q_i \exp(\gamma' g(\tilde{X}_i, \tilde{T}_i))}{\sum_j q_j \exp(\gamma' g(\tilde{X}_j, \tilde{T}_j))}. \quad (6)$$

These weights ensure that observable characteristics are balanced across the distribution of trust, removing linear dependence between covariates and treatment intensity (Hainmueller, 2012; Vegetabile et al., 2021). This is a pre-processing step that addresses selection on observables; it does not provide causal identification in the presence of time-varying unobservables or reverse causality.

In the second step, we estimate the dose-response function:

$$f(t) = E[ECI_i(t)], \quad (7)$$

which describes how productive capabilities respond to different levels of institutional trust (Imbens, 2000; Hirano and Imbens, 2004). This function is estimated parametrically using weighted least squares based on equation (2), and nonparametrically using local polynomial regression with an Epanechnikov kernel to allow for nonlinear effects (Fan and Gijbels, 1996). Standard errors are clustered at the country level.

The identification assumption underlying this strategy is conditional unconfoundedness :

$$ECI_i(t) \perp Trust_i \mid X_i, \quad (8)$$

which is standard in the potential outcomes framework (Rosenbaum and Rubin, 1983; Imbens and Wooldridge, 2009). While this assumption rules out bias from observable confounders, it does not eliminate endogeneity arising from time-varying unobservables or reverse causality. The estimated coefficients should therefore be interpreted as conditional associations in a reweighted sample, not as structural causal effects.

Finally, we examine whether the trust-complexity association varies with institutional quality, infrastructure, and democratic accountability, by estimating interaction models between trust and these contextual variables. These models identify conditional heterogeneity—that is, whether the association differs across institutional contexts—rather than causal transmission channels.

4. Results and discussion

4.1. Basic Results Analysis

Table 1 presents the results of the regression of the treatment for trust in government across all covariates before and after applying the Entropy Balancing procedure for continuous treatments. Before balancing, the regression of the treatment on the covariates is highly significant, with an R^2 of 0.361, an F-statistic of 10.109, and a p-value of zero. This indicates that, in the raw sample, the level of trust in government is strongly predicted by observable country characteristics, confirming the existence of selection bias on observables. In other words, countries are not randomly exposed to different levels of institutional trust: it is systematically linked to the level of development, infrastructure, trade openness, dependence on natural resources, and population size.

After applying entropy balancing, the relationship between the treatment and the covariates disappears completely. The R^2 falls to zero, the F-statistic is zero, and the p-value is equal to 1, indicating that the covariates no longer explain any variation in the treatment within the weighted sample. This means that the balancing procedure has fully achieved its objective: it has neutralized the correlation between trust in the government and the observable characteristics used for weighting.

This result confirms that the EBCT procedure has successfully removed observable confounding. After weighting, countries with different levels of trust are comparable in terms of observable economic, structural, and demographic characteristics. The associations estimated in subsequent regressions therefore reflect variation in trust that is orthogonal to observable covariates—though they cannot be interpreted as causal effects due to potential reverse causality and time-varying unobservables.

In summary, Table 1 confirms the quality of the balancing and the value of EBCT as a tool for correcting selection on observables in cross-national institutional analysis.

Table 1. Results from a (weighted) regression of the treatment variable on covariates

R-squared	F-statistic	p-value
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before balancing	0.361	10.109	0.000
after balancing	0.000	0.000	1,000

Source: Authors. Note: The table reports the results of a regression of the treatment variable (trust in government) on all the covariates used in the first step of the Entropy Balancing for Continuous Treatments (EBCT) procedure, before and after weighting. All covariates are measured with $t - 1$ a one-period lag to limit simultaneity issues and ensure their status as pre-treatment variables. The covariates include: the logarithm of GDP per capita, the internet penetration rate, total natural resource rents (as a percentage of GDP), trade openness (exports + imports as a percentage of GDP), and the total population. The "before balancing" row corresponds to the regression estimated on the unweighted sample; the "after balancing" row corresponds to the same regression estimated on the sample reweighted using the EBCT weights. A zero R^2 and a non-significant F-statistic after weighting indicate that the covariates no longer explain any variation in treatment, confirming the quality of the balancing. Robust standard deviations are grouped at the country level. Significance levels are indicated by *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Table 2 presents the results of the association between trust in government and economic complexity as measured by the trade dimension (ECI-Trade), estimated using the Entropy Balancing method for continuous treatments. The six specifications allow for an assessment of the robustness of this effect to the progressive introduction of covariates and time and regional fixed effects. Across all specifications, the coefficient associated with the trust variable is positive and statistically significant at the 1% level. This indicates that a higher level of trust in government is consistently associated with a more complex export structure, i.e., greater diversification and sophistication of exported goods. This result is stable and robust, regardless of the specification used. The magnitude of the effect decreases slightly when covariates are introduced in the second stage, from approximately 0.28 units in the simplest specification to approximately 0.20 units in the full specifications. This development suggests that part of the gross association of trust is accounted for by observable economic and institutional characteristics, but a substantial portion of the association remains after conditioning on these controls to institutional trust itself. The persistence of a significant effect after control reinforces the interpretation that trust plays an autonomous role in productive upgrading. The introduction of temporal and regional fixed effects does not qualitatively alter the results. The stability of the coefficient in specifications including fixed effects suggests that the estimated relationship is not simply a reflection of common temporal trends or unobserved regional specificities, but rather is based on relevant intra-regional and intertemporal variation.

Furthermore, the model's explanatory power increases significantly with the introduction of controls and fixed effects. The R^2 rises from 0.594 in the simplest specification to 0.766 in the most comprehensive specifications, indicating that the introduced variables explain a substantial portion of the observed heterogeneity in economic complexity across countries and over time. Finally, the negative constants in the comprehensive specifications reflect the fact that, conditional on the controls and fixed effects, the average level of complexity is lower than the normalized mean of the index, which is consistent with the prior standardization of the variables and the sample structure.

Overall, the results in Table 2 document a robust, positive, and statistically significant association between trust in government and the economic complexity of exports. They suggest that higher institutional trust correlates with greater diversification and sophistication of productive structures,

consistent with theoretical arguments linking trust to coordination, policy credibility, and long-horizon investment. To give a sense of economic magnitude: a one-standard-deviation increase in trust (approximately 19 percentage points in the share of respondents reporting confidence) is associated with a 0.205 standard-deviation increase in ECI-Trade in the most comprehensive specification. This finding is consistent with institutionalist and neo-institutionalist theoretical frameworks. According to North (1990), trust in institutions reduces uncertainty, secures property rights, and improves the predictability of public policies, thereby promoting productive investment and innovation. Similarly, transaction cost theory (Coase, 1937; Williamson, 1985) suggests that a high level of trust reduces the costs of coordination and contracting, which is particularly crucial in complex economies characterized by fragmented value chains and interconnected production relationships. Increased trust thus facilitates the emergence and spread of sophisticated productive activities. These findings are consistent with existing empirical research. Hartmann et al. (2017) demonstrate that economic complexity is closely linked to institutional quality and the coordination capacity of economies. Similarly, Hausmann and Hidalgo (2011) emphasize that the production of complex goods relies on networks of collective capabilities that require a stable and credible institutional environment. Trust in government therefore appears as a key mechanism for supporting coordination among economic actors, the credibility of industrial policies, and the social acceptance of structural reforms.

Table 2. Entropy Balancing for Continuous Treatments

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	ECI Trade					
Trust	0.282*** (0.091)	0.262*** (0.081)	0.267*** (0.078)	0.206*** (0.069)	0.206*** (0.069)	0.205*** (0.069)
Covariates in the second step	No	No	Yes	Yes	No	Yes
Year fixed-effect in the second step	No	Yes	No	Yes	Yes	Yes
Regional fixed-effect in the second step	No	Yes	Yes	No	Yes	Yes
Constant	0.177*** (0.047)	-0.367*** (0.051)	-0.424*** (0.050)	-0.187*** (0.045)	-0.207*** (0.051)	-0.219*** (0.055)
Observations	1,348	1,348	1,348	1,348	1,348	1,348
R- squared	0.594	0.680	0.700	0.766	0.766	0.766

Source: Authors. Note: The tables report the results of estimations obtained using the Entropy Balancing for Continuous Treatments (EBCT) method. In a first step, balancing weights are calculated to make the joint distribution of the covariates orthogonal to the treatment variable (trust in the government) and its second-order terms. In a second step, the effect of trust is estimated by weighted least squares in a panel model with fixed time and regional effects. All explanatory variables are lagged by one period to limit simultaneity problems and to reflect gradual adjustments in production structures. Robust standard deviations are shown in parentheses and are grouped at the country level. Significance levels are indicated by *** p<0.01; ** p<0.05; * p<0.10.

4.2. Robustness and sensitivity analyses

4.2.1. Robustness: Alternative Dimensions of Economic Complexity

Table 3 examines the robustness of the association between trust in government and economic complexity using two alternative dimensions: ECI-Technology and ECI-Research. The results show that trust in government is positively and significantly associated with both dimensions. For ECI-Technology, the coefficient on trust is 0.233 without covariates and 0.163 with covariates (both significant at 5%), indicating that higher trust is associated with greater technological sophistication of the productive structure. For ECI-Research, the association is 0.363 in the baseline (significant at 1%) and 0.122 with covariates (significant at 10%), suggesting that trust is also associated with economies' capacity to generate and absorb new knowledge. The reduction in N for ECI-Technology (969–967 observations) and ECI-Research (1,312) relative to ECI-Trade reflects missing data on patent and scientific indicators, not changes in the balancing procedure.

Furthermore, the theory of national innovation systems (Freeman, 1987; Nelson, 1993) emphasizes that innovation relies on complex interactions between firms, universities, and public institutions. Institutional trust facilitates this coordination by reducing transaction costs, fostering cooperation, and strengthening the credibility of public innovation support mechanisms. The reduction in coefficient magnitude when covariates are introduced indicates that observable economic and institutional characteristics account for part of the association. Nevertheless, the persistence of a positive and significant coefficient confirms that the trust-complexity association is not simply a reflection of development levels or overall institutional quality. Finally, the high R^2 values indicate that the models explain a significant portion of the observed variation in the technological and scientific dimensions of economic complexity. Overall, these results confirm that trust in government is not limited to influencing the structure of exports, but also plays an important role in the deeper processes of technological accumulation and knowledge production, thus reinforcing the interpretation of institutional trust as a lever for structural transformation.

Table 3. Entropy Balancing for Continuous Treatments – Alternative dimensions of economic complexity

	(1)	(2)	(3)	(4)
VARIABLES	Eci technology	Eci technology	Eci research	Eci research
Trust	0.233** (0.111)	0.163** (0.082)	0.363*** (0.113)	0.122* (0.073)
Covariates in the second step	No	Yes	No	Yes
Year fixed-effect in the	Yes	Yes	Yes	Yes

second step

Regional fixed-effect in the second step	Yes	Yes	Yes	Yes
Constant	-0.015 (0.056)	-0.512*** (0.079)	-0.047 (0.057)	-0.716*** (0.069)
Observations	969	967	1,312	1,312
R- squared	0.794	0.897	0.731	0.898

Source: Authors. Note: The tables report the results of estimations obtained using the Entropy Balancing for Continuous Treatments (EBCT) method. In a first step, balancing weights are calculated to make the joint distribution of the covariates orthogonal to the treatment variable (trust in the government) and its second-order terms. In a second step, the effect of trust is estimated by weighted least squares in a panel model with fixed time and regional effects. All explanatory variables are lagged by one period to limit simultaneity problems and to reflect gradual adjustments in production structures. Robust standard deviations are shown in parentheses and are grouped at the country level. Significance levels are indicated by *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

4.2.2. Heterogeneity across Income Levels

Table 4 examines whether the effect of trust in government on economic complexity varies according to a country's level of development, distinguishing four groups: high-income, low-income, lower-middle-income, and upper-middle-income countries. This analysis helps identify potential non-linearities or asymmetries in the relationship between institutional trust and structural transformation. The results show that the effect of trust is positive and statistically significant in high-income and lower- and upper-middle-income countries, while it is negative in low-income countries. Specifically, in high-income countries, a one-unit increase in trust is associated with an increase of approximately 0.234 units in the economic complexity of exports. Comparable effect sizes are observed in lower-middle-income countries (0.256 units) and upper-middle-income countries (0.234 units), both statistically significant.

In contrast, in low-income countries, the coefficient is negative, at 0.454 units, and significant at the 10% level, indicating that increased confidence is associated with decreased economic complexity in this group of countries. This result suggests that the mechanisms by which institutional confidence influences structural transformation are highly dependent on the development context.

This heterogeneity is consistent with structural development theories. In more advanced economies, where productive capacities, human capital, and infrastructure are already relatively developed, trust in institutions strengthens the effectiveness of public policies, reduces uncertainty, and promotes long-term investment in sophisticated sectors. In this context, trust is associated with productive upgrading in a manner consistent with the theoretical analyses of North (1990) and Hausmann and Hidalgo (2011). The negative association in low-income countries is intriguing. One possible interpretation is that trust in these settings may reflect personalized or clientelistic relationships rather than confidence in impersonal institutions, and that such trust may not translate into productive investment (Acemoglu and Robinson, 2012; Khan, 2010). However, we caution that this interpretation is speculative and not directly tested. The small sample size for this group (103 observations across 14 countries) further limits the reliability of this coefficient. Future work with richer micro-level data and larger low-income samples would be needed to investigate this

pattern rigorously.

These results suggest the existence of a threshold effect in the relationship between institutional trust and economic complexity. Trust becomes economically productive when it is embedded in a sufficiently developed institutional and structural environment to allow the transformation of political credibility into productive investment and innovation. Below this threshold, trust can be absorbed by redistribution or social stabilization mechanisms that do not necessarily promote productive upgrading.

Finally, the high R^2 values indicate that the models explain a significant portion of the variation in economic complexity within each income group, particularly in upper-middle-income countries. Overall, Table 4 shows that institutional trust does not have a uniform effect on structural transformation. Its impact depends on the level of development and institutional capacity, highlighting the importance of differentiated policy approaches aimed at building trust and promoting productive upgrading.

Table 4. Entropy Balancing for Continuous Treatments-Income-Heterogeneity

	(1)	(2)	(3)	(4)
	High income	Low income	Lower middle income	Upper middle income
VARIABLES	Eci_trade			
Trust	0.234** (0.101)	-0.454* (0.265)	0.256* (0.135)	0.234** (0.104)
Covariates in the second step	Yes	Yes	Yes	Yes
Year fixed-effect in the second step	Yes	Yes	Yes	Yes
Regional fixed-effect in the second step	Yes	Yes	Yes	Yes
Constant	0.427*** (0.107)	-1.896*** (0.347)	-1.156*** (0.112)	-0.671*** (0.118)
Observations	487	103	327	430
R- squared	0.710	0.672	0.657	0.839

Source: Authors. Note: The tables report the results of estimations obtained using the Entropy Balancing for Continuous Treatments (EBCT) method. In a first step, balancing weights are calculated to make the joint distribution of the covariates orthogonal to the treatment variable (trust in the government) and its second-order terms. In a second step, the effect of trust is estimated by weighted least squares in a panel model with fixed time and regional effects. All explanatory variables are lagged by one period to limit simultaneity problems and to reflect gradual adjustments in production structures. Robust standard deviations are shown in parentheses and are grouped at the country level. Significance levels are indicated by *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

4.2.3. Robustness: Socio-Cultural Controls

Table 5 examines the robustness of the effect of trust in government on economic complexity (ECI Trade) by progressively introducing socio-cultural variables that can influence both the formation of institutional trust and the productive structure of economies. These variables include ethnic, linguistic, and religious heterogeneity, as well as the origin of the legal system.

Across all specifications, the coefficient associated with trust remains positive, statistically significant at the 1% level, and remarkably stable, fluctuating between 0.201 and 0.272. This indicates that a one-unit increase in trust in government is associated with an increase of between 0.20 and 0.27 units in economic complexity, even after controlling for a wide range of deep-rooted socio-cultural characteristics. This result demonstrates that the effect of institutional trust is not simply an artifact of cultural or historical differences between countries.

The ethnic fragmentation index is positively and significantly associated with economic complexity across all specifications. This result may seem counterintuitive given some of the literature that links ethnic heterogeneity to coordination and governance problems (Easterly and Levine, 1997). However, in a context of globalization and productive specialization, greater ethnic diversity can also reflect greater diversity of skills, networks, and know-how, fostering innovation and productive differentiation (Alesina and La Ferrara, 2005). The observed positive sign is therefore consistent with an interpretation based on complementary skills and economic openness. Conversely, linguistic fragmentation is negatively associated with economic complexity. Greater linguistic diversity can increase communication costs, reduce the fluidity of information exchange, and limit coordination among economic actors, which can hinder the emergence of complex productive structures (Desmet et al., 2012).

Religious fragmentation is positively associated with economic complexity, which may reflect greater institutional and normative plurality promoting tolerance, openness and innovation, as suggested by some approaches in cultural economics (Guiso, Sapienza and Zingales, 2006).

Variables related to the origin of the legal system also show significant effects. Countries with a German legal tradition exhibit a higher level of economic complexity, which is consistent with the literature highlighting the role of coordinated and stakeholder-oriented legal systems in supporting industrial innovation (Hall and Soskice, 2001). Conversely, French, socialist, and British legal traditions are negatively associated with economic complexity in this sample, which may reflect differences in investor protection, regulatory flexibility, or the capacity for public-private coordination (La Porta et al., 1998; Djankov et al., 2003).

The gradual increase in R^2 , from 0.769 to 0.792, indicates that the introduction of these variables marginally improves the explanatory power of the model, without altering the main effect of trust. Overall, these results show that, although socio-cultural and historical factors significantly influence the productive structure of economies, they neither negate nor dominate the effect of

institutional trust. Trust in government thus appears as a robust and independent determinant of economic complexity, beyond the cultural, linguistic, and legal legacies of countries.

Table 5. Entropy Balancing for Continuous Treatments - Controls for socio-cultural factors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	eci_trade						
Trust	0.201*** (0.069)	0.202*** (0.070)	0.213*** (0.069)	0.213*** (0.069)	0.209*** (0.068)	0.224*** (0.067)	0.272*** (0.068)
Ethnic	0.008*** (0.002)	0.008*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.007*** (0.002)	0.009*** (0.002)
Language		-0.109* (0.060)	-0.202*** (0.061)	-0.202*** (0.061)	-0.163*** (0.061)	-0.146** (0.061)	-0.133** (0.060)
Religion			0.419*** (0.064)	0.402*** (0.068)	0.354*** (0.069)	0.445*** (0.069)	0.407*** (0.069)
legor_uk				0.028 (0.040)	-0.132** (0.054)	-0.426*** (0.070)	-0.262*** (0.079)
legor_fr					-0.200*** (0.046)	-0.498*** (0.064)	-0.346*** (0.073)
legor_so						-0.467*** (0.072)	-0.315*** (0.080)
legor_ge							0.515*** (0.117)
Covariates in the second step	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effect in the second step	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed-effect in the second step	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.228*** (0.054)	-0.172*** (0.060)	-0.292*** (0.062)	-0.286*** (0.062)	-0.133* (0.071)	0.175** (0.085)	0.049 (0.089)
Observations	1,348	1,326	1,326	1,326	1,326	1,326	1,326
R- squared	0.769	0.772	0.779	0.779	0.782	0.789	0.792

Source: Authors. Note: The tables report the results of estimations obtained using the Entropy Balancing for Continuous Treatments (EBCT) method. In a first step, balancing weights are calculated to make the joint distribution of the covariates orthogonal to the treatment variable (trust in the government) and its second-order terms. In a second step, the effect of trust is estimated by weighted least squares in a panel model with fixed time and regional effects. All explanatory variables are lagged by one period to limit simultaneity problems and to reflect gradual adjustments in production structures. Robust standard deviations are shown in parentheses and are grouped at the country level. Significance levels are indicated by *** p<0.01; ** p<0.05; * p<0.10.

4.3. Conditional Heterogeneity: Does the Institutional Context Shape the Trust-Complexity Association?

Table 6 examines whether the association between trust in government and economic complexity varies with the institutional and political environment, by estimating interaction models between trust and eight contextual variables: social infrastructure quality (socinf), democracy (democ), control of corruption (CC), government effectiveness (GE), political stability (PS), regulatory quality (RQ), rule of law (RL), and voice and accountability (Voice). These models identify conditional heterogeneity—that is, whether the trust-complexity association is stronger in better-governed contexts—rather than causal transmission channels.

Across all specifications, the interaction coefficients are positive and statistically significant at the 1% level, indicating that the association between trust and economic complexity is stronger when the institutional and political environment is of higher quality. This pattern is consistent with institutional complementarity: in better-governed contexts, trust may amplify the effectiveness of public policies and reduce coordination costs; in weaker institutional environments, trust alone appears insufficient to generate productive upgrading. The interaction between trust and social infrastructure quality (socinf) yields the largest coefficient (approximately 0.386), suggesting that the trust-complexity association is particularly strong in countries with more developed education, healthcare, and digital infrastructure—consistent with models of institutional complementarity (Acemoglu, Johnson, and Robinson, 2005). The interaction with democracy is positive but smaller in magnitude (0.031), indicating that democratic accountability modestly strengthens the association, without being sufficient on its own (Besley and Persson, 2011). The interactions with governance indicators—control of corruption (0.132), government effectiveness (0.209), political stability (0.251), regulatory quality (0.218), rule of law (0.161), and voice and accountability (0.174)—are all positive and significant, confirming that the trust-complexity association is consistently stronger in better-governed contexts. These patterns are consistent with the neo-institutional view that institutional quality shapes the environment in which trust translates into productive behavior (North, 1990; Rodrik, 2007). Figure 1A and Figure 1B display the full conditional marginal effects of trust at percentiles of each moderating variable, confirming that the marginal association of trust with ECI-Trade is positive and increasing across the distribution of institutional quality, and crosses zero at intermediate values for most governance indicators.

The very high R^2 values (around 0.93) reflect the strong explanatory power of institutional variables and fixed effects. We emphasize that positive interaction terms demonstrate conditional heterogeneity, not identified causal channels. Whether trust operates through governance quality, or whether both are jointly driven by deeper structural factors, cannot be determined from these interaction estimates alone. Establishing causal mechanisms would require a more explicit mediation framework or quasi-experimental variation in both trust and institutional quality.

Table 6. Entropy Balancing for Continuous Treatments – Conditional heterogeneity across institutional contexts

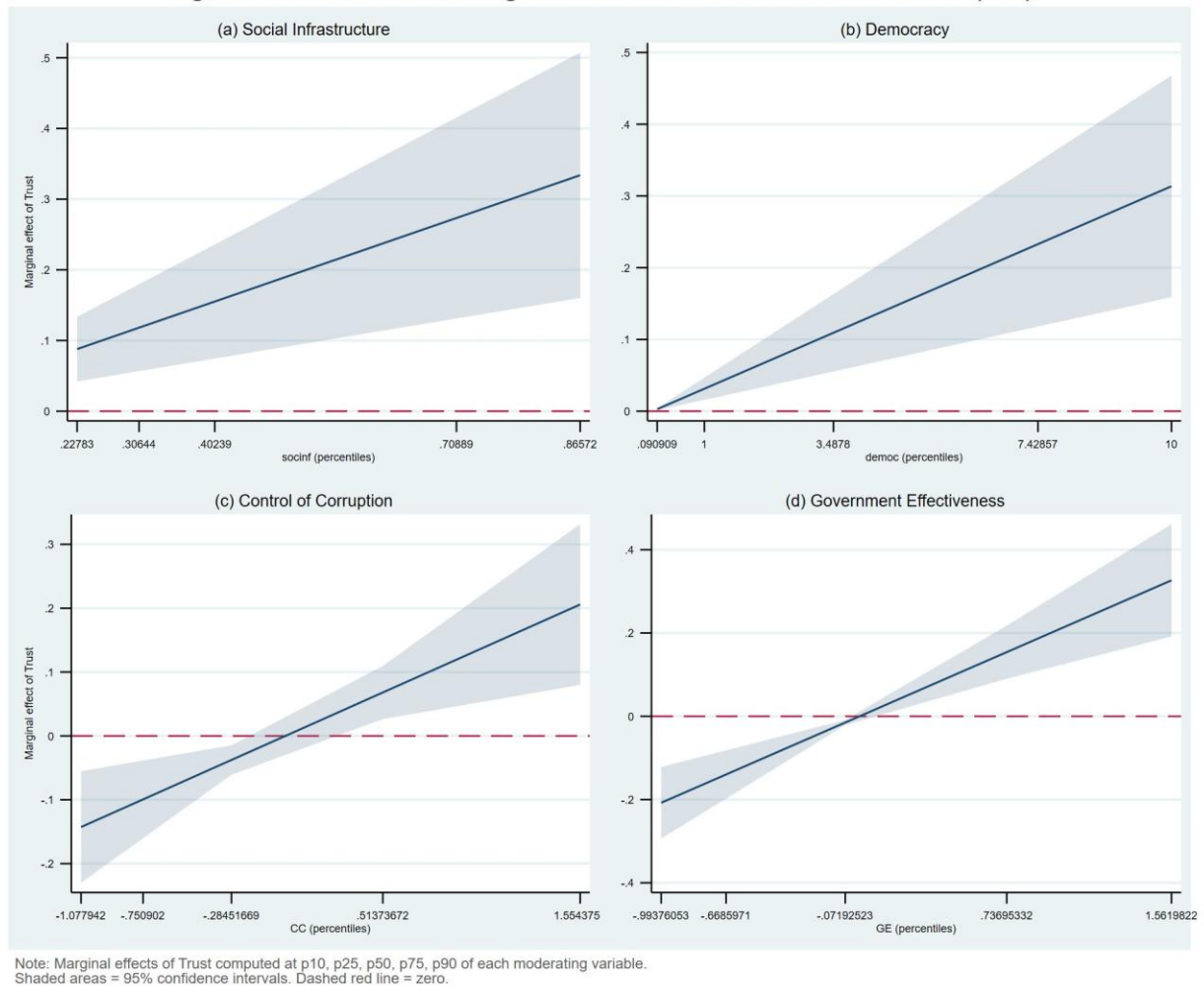
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
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VARIABLES	eci_trade							
c.Trust# c.socinf	0.386*** (0.102)							
c.Trust# c.democ		0.031*** (0.008)						
c.Trust#c.CC			0.132*** (0.041)					
c.Trust#c.GE				0.209*** (0.044)				
c.Trust#c.PS					0.251*** (0.038)			
c.Trust# c.RQ						0.218*** (0.045)		
c.Trust#c.RL							0.161*** (0.044)	
c.Trust# c.Voice								0.174*** (0.038)
Covariates in the second step	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed-effect in the second step	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed-effect in the second step	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.832*** (0.044)	-0.854*** (0.043)	-0.757*** (0.045)	-0.740*** (0.044)	-0.735*** (0.043)	-0.755*** (0.043)	-0.746*** (0.045)	-0.798*** (0.042)
Observations	1,068	1,330	1,346	1,346	1,346	1,346	1,346	1,346
R- squared	0.932	0.927	0.927	0.927	0.928	0.927	0.927	0.927

Source: Authors. Note: The tables report the results of estimations obtained using the Entropy Balancing for Continuous Treatments (EBCT) method. In a first step, balancing weights are calculated to make the joint distribution of the covariates orthogonal to the treatment variable (trust in the government) and its second-order terms. In a second step, the effect of trust is estimated by weighted least squares in a panel model with fixed time and regional effects. All explanatory variables are lagged by one period to limit simultaneity problems and to reflect gradual adjustments in production structures. Robust standard deviations are shown in parentheses and are grouped at the country level. Significance levels are indicated by *** p<0.01; ** p<0.05; * p<0.10. Column (1) includes 1,068 observations due to the more limited coverage of the social infrastructure variable (socinf); all other columns use 1,330–1,346 observations.

Figure 1A. Conditional Marginal Effects of Trust on ECI-Trade (1/2)

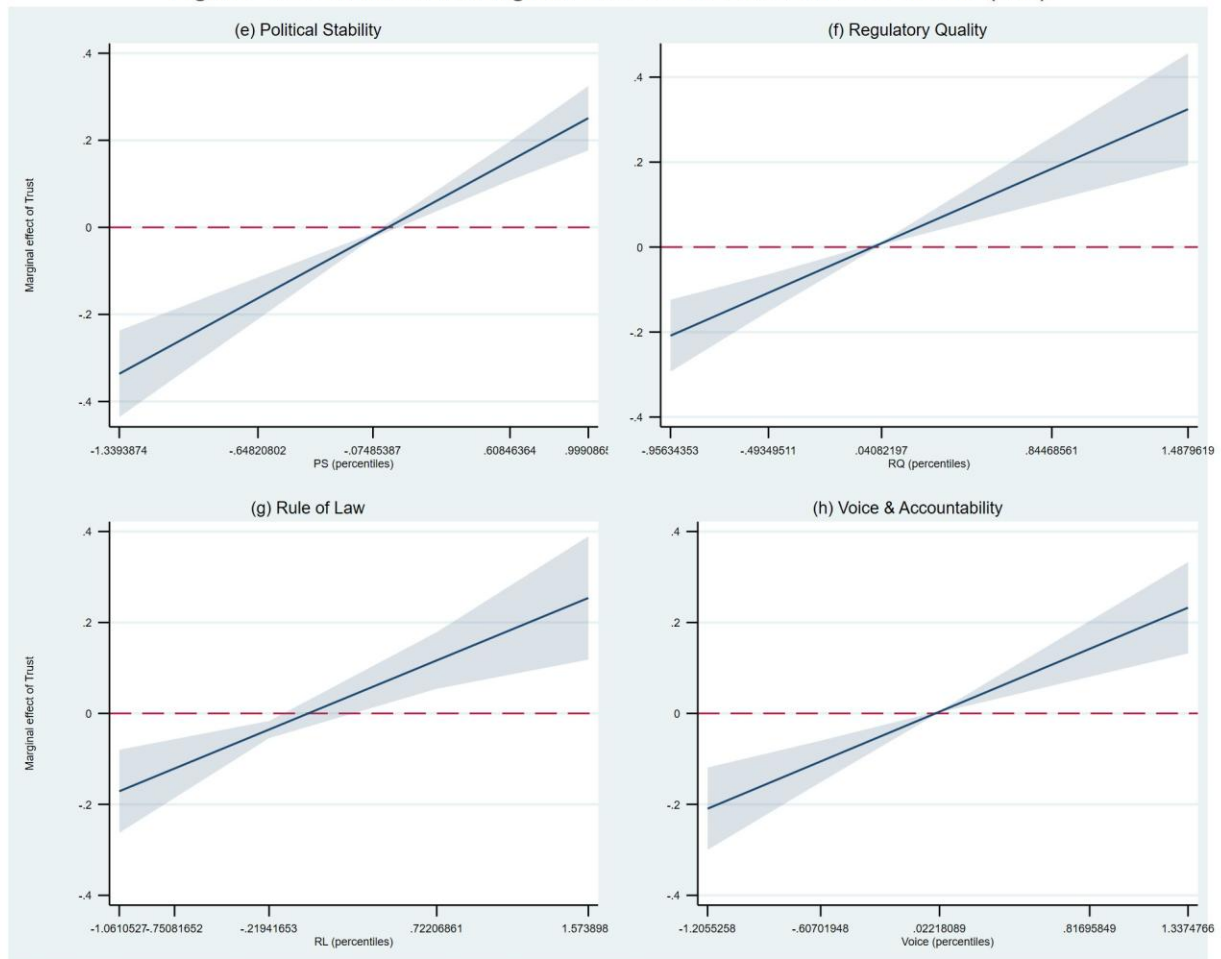
Figure 1. Conditional Marginal Effects of Trust on ECI-Trade (1/2)



Note: Marginal effects of Trust on ECI-Trade computed at the 10th, 25th, 50th, 75th, and 90th percentiles of each moderating variable using margins after reghdfe with EBCT weights. Shaded areas represent 95% confidence intervals. Dashed red line = zero. (a) Social Infrastructure; (b) Democracy; (c) Control of Corruption; (d) Government Effectiveness.

Figure 1B. Conditional Marginal Effects of Trust on ECI-Trade (2/2)

Figure 1. Conditional Marginal Effects of Trust on ECI-Trade (2/2)



Note: Marginal effects of Trust computed at p10, p25, p50, p75, p90 of each moderating variable. Shaded areas = 95% confidence intervals. Dashed red line = zero.

Note: Continued from Figure 1A. (e) Political Stability; (f) Regulatory Quality; (g) Rule of Law; (h) Voice and Accountability. Positive slopes indicate that the marginal association of Trust with ECI-Trade strengthens as institutional quality improves. The association crosses zero at intermediate values of most governance indicators, confirming that trust is positively associated with complexity primarily in better-governed contexts.

4.4. Sensitivity Analysis: Oster (2019) Bounds

To assess the sensitivity of our results to potential omitted-variable bias, we implement the bounding procedure proposed by Oster (2019). This approach asks: how strong would selection on unobservables need to be, relative to selection on observables, to fully explain away the estimated association? Formally, it computes a proportionality coefficient δ such that, if unobservables are δ times as important as observables in driving trust, the true coefficient on trust would equal zero. A value of $\delta \geq 1$ indicates that the result is robust: unobservables would need to be at least as important as observables to overturn the finding. We implement this test using the `psacalc` command (Oster, 2019), setting $R_{\max} = 1.3 \times R^2$ of the fully controlled model. Results are reported in Table 7.

Table 7 reports the Oster (2019) bounds for the main specification. The uncontrolled coefficient ($\beta = 0.095$) rises to 0.205 when controls are added, indicating that observable covariates amplify rather than attenuate the estimated association—a pattern inconsistent with simple upward confounding. The resulting $\delta = 0.635$, meaning that unobservables would need to be approximately 64% as important as observables to fully eliminate the estimated association. While this falls below the conventional threshold of $\delta = 1$ (Oster, 2019), the upward movement of the coefficient when controls are added provides additional reassurance. These bounds should be interpreted alongside the EBCT balancing results (Table 1), which confirm that observable confounding has been removed. Taken together, the sensitivity analysis suggests that the association is unlikely to be fully driven by selection on observables, though the possibility of unobserved confounding cannot be entirely ruled out.

Table 7. Oster (2019) Sensitivity Bounds – ECI-Trade

	β Uncontrolled	β Controlled	R^2 Controlled	δ (Oster)
ECI-Trade (main spec.)	0.095	0.205	0.766	0.635
$R_{\max} = 1.3 \times R^2$			0.996	
Critical threshold ($\delta = 1$)				1.000

Note: δ is computed using `psacalc` (Oster, 2019) after a weighted OLS regression with year and regional fixed effects and full controls. $R_{\max} = 1.3 \times R^2$ following Oster's (2019) convention. β Uncontrolled = coefficient on Trust without covariates (0.095, $R^2 = 0.689$); β Controlled = coefficient on Trust with full controls and year and regional fixed effects (0.205, $R^2 = 0.766$). $\delta = 0.635$: unobservables would need to represent approximately 64% of the importance of observables to fully eliminate the estimated association. The upward movement of the coefficient from 0.095 to 0.205 upon adding controls is inconsistent with simple positive confounding.

Source: Authors.

5. Conclusion

This article examines the association between trust in government and the productive capabilities of economies, using economic complexity as a multidimensional indicator of structural transformation. Using a panel of 105 countries over the period 2004–2019 and employing Entropy Balancing for Continuous Treatments to correct for selection on observables, we document a positive, robust, and statistically significant association between institutional trust and the sophistication of productive structures.

This association extends to technological complexity and research capacity, and remains robust to socio-cultural controls, income-level heterogeneity, and alternative complexity measures. The association is stronger in countries with higher institutional quality, better infrastructure, and greater democratic accountability—consistent with institutional complementarity rather than trust acting as an isolated driver.

The interaction analysis reveals that the trust-complexity association is stronger when institutional quality, infrastructure, and democratic accountability are higher. This pattern is consistent with institutional complementarity: trust appears most strongly associated with productive upgrading when embedded in an environment that can translate it into effective coordination and investment. In low-income countries, the association is negative, though this result should be interpreted cautiously given the small sample and the speculative nature of available explanations.

These results have several important implications for public policy. They suggest that development strategies cannot be limited to physical or technological investments, but must integrate an institutional and political dimension aimed at strengthening the credibility, predictability, and legitimacy of public action. Building trust in public institutions appears to be a key lever for stimulating productive investment, innovation, and economic diversification, but only if this trust is supported by credible institutional reforms and by strengthening the state's capacity.

Methodologically, this article contributes to the literature by demonstrating the value of the Entropy Balancing method for continuous treatments in analyzing the institutional determinants of development, particularly when the treatments are non-binary and the selection is non-random. This approach strengthens the credibility of estimates in an international comparative context, while explicitly acknowledging its limitations.

The study is not without its limitations, however. First, the empirical strategy relies on the assumption of selection based on observables, which implies that unobserved factors that vary over time could still bias the estimates. Second, the measurement of confidence is based on subjective perceptions that can be influenced by cyclical shocks or cultural factors that are difficult to fully capture. Finally, the analysis remains essentially macroeconomic and does not allow for the identification of the precise microeconomic mechanisms through which confidence affects investment and innovation decisions.

These limitations open up avenues for future research. Work combining microeconomic data, business surveys, and sectoral analyses could lead to a better understanding of how confidence influences investment decisions, technology adoption, and participation in global value chains.

Similarly, quasi- experimental approaches based on exogenous institutional shocks could allow for further causal identification.

Ultimately, this article highlights that trust in government is not simply a social or political variable, but a fundamental economic determinant of structural transformation. By strengthening the credibility of institutions and the capacity for collective coordination, trust helps create the conditions necessary for the emergence of more diversified, innovative, and resilient economies.

Competing interests statement

The authors declare that they are not aware of any conflict of interest, whether material or financial, in connection with this study.

Data Availability statement

The data used in this study will be made available on request.

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Availability of data and materials

Data are available on request from the authors.

Conflict of interest

“The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.”

Ethics approval

Not applicable

Patient consent

Not applicable

Permission to reproduce material

Not applicable

Clinical trial registration statements

Not applicable

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Appendices

Table A1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Eci trade	1419	-.018	.963	-3.106	2.368
Eci technology	984	.031	.979	-3.092	1.569
ECI research	1375	.066	.973	-2.333	2.628
Trust	1419	.481	.19	.069	.982
GDPR PC	1419	20503.562	18845.659	792.727	99147.288
Internet	1394	40,314	29,434	.242	99.653
Trade	1368	85.712	45,359	1.219	437,327

TNR	1418	7.414	11.32	0	66.06
Population	1419	193.934	709.144	1.657	7965.878
socinf	1157	.489	.236	.113	1
democ	1457	4.291	3.633	0	10
CC	1419	-.014	.992	-1.628	2.459
GE	1419	.084	.947	-2.137	2.426
PS	1419	-.114	.896	-2.81	1.62
RQ	1419	.161	.905	-2.282	2.255
RL	1419	.013	.952	-1.748	2.125
Voice	1419	.053	.917	-1.999	1.801

Sources: Authors

Table A2. Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) eci_trade	1,000																
(2) eci_technology	0.741	1,000															
(3) eci_research	0.657	0.762	1,000														
(4) Trust	-0.058	-0.022	-0.058	1,000													
(5) gdp_pc	0.737	0.598	0.723	-0.016	1,000												
(6) Internet	0.653	0.598	0.621	-0.088	0.758	1,000											
(7) Trade	0.426	0.121	0.221	0.068	0.555	0.331	1,000										
(8) TNR	-0.361	-0.282	-0.236	0.077	-0.094	-0.226	-0.090	1,000									
(9) Pop	0.187	0.023	0.063	0.085	0.381	0.103	0.694	-0.115	1,000								
(10) socinf	0.620	0.501	0.644	-0.022	0.795	0.667	0.448	-0.181	0.190	1,000							
(11) democ	0.504	0.484	0.574	-0.050	0.541	0.506	0.064	-0.409	-0.083	0.617	1,000						
(12) CC	0.687	0.612	0.753	-0.086	0.847	0.739	0.410	-0.230	0.205	0.797	0.664	1,000					
(13) GE	0.783	0.657	0.766	-0.079	0.853	0.755	0.467	-0.297	0.241	0.819	0.673	0.951	1,000				
(14) PS	0.607	0.465	0.507	-0.051	0.723	0.699	0.447	-0.188	0.148	0.718	0.490	0.798	0.781	1,000			
(15) RQ	0.740	0.637	0.745	-0.090	0.834	0.726	0.457	-0.286	0.206	0.759	0.639	0.929	0.934	0.789	1,000		
(16) RL	0.724	0.630	0.774	-0.060	0.852	0.756	0.413	-0.252	0.171	0.807	0.671	0.971	0.959	0.804	0.944	1,000	
(17) Voice	0.565	0.555	0.633	-0.039	0.558	0.559	0.117	-0.527	-0.084	0.599	0.793	0.739	0.725	0.677	0.763	0.756	1,000

Sources: Authors

Table A.3. List of Countries

country
Afghanistan
Albania
Algeria
Angola
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahrain
Bangladesh
Belarus
Belgium
Benign
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Bulgaria
Burkina Faso
Cambodia
Cameroon
Canada
Chad
Chile
China
Colombia
Costa Rica
Croatia
Cyprus
Czech Republic
Denmark
Dominican Republic
Ecuador
El Salvador
Equatorial Guinea
Estonia
Ethiopia
Finland
France
Gabon
Georgia
Ghana
Greece
Guatemala
Guinea
Haiti
Honduras
Hungary
India
Indonesia
Ireland
Israel
Italy
Jamaica
Japan

Jordan
Kazakhstan
Kenya
Kuwait
Latvia
Lebanon
Lesotho
Liberia
Libya
Lithuania
Madagascar
Malawi
Malaysia
Mali
Mauritania
Mauritius
Mexico
Moldova
Mongolia
Morocco
Mozambique
Namibia
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Norway
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Rwanda
Saudi Arabia
Senegal
Sierra Leone
Singapore
Slovenia
South Africa
Spain
Sri Lanka
Sudan
Sweden

Source: Authors