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ORIGINAL PAPER

Political trust and economic development in European regions

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Abstract

This paper examines the complex relationship between political and social trust, government quality, and economic development across 208 regions in the European Union (EU). We use a pooled data generalized structural equation model (GSEM) to show that political trust serves as a fundamental driver of regional economic development in the EU. Political trust is, in turn, influenced by both social trust and government quality. Social trust and government quality have quadratic effects on political trust, showing diminishing returns, while the effect of political trust on economic development is linear. Political trust mediates the relationship between social trust and economic development entirely, while government quality retains a direct relationship with economic development. These findings underscore the fundamental role that political trust plays as a mechanism through which both formal and informal institutions shape regional development.

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1 Introduction

In recent years, scholarly interest in the role of institutions in driving or hindering regional economic development has grown significantly (e.g., Gertler, 2010; Rodríguez-Pose 2013). Numerous studies have explored how both formal and informal institutions shape regional development. Analyses of formal institutions have covered their impact on a wealth of factors, including regional growth (e.g., Charron et al. 2014; Muringani et al. 2019), innovation (Rodríguez-Pose and Di Cataldo 2015), productivity (Rodríguez-Pose and Ganau 2022), diversification (Cortinovis et al., 2017), and the effectiveness of cohesion policy (Rodríguez-Pose and Garcilazo 2015). Meanwhile, informal institutions—particularly trust and social capital (e.g., Putnam 1993)—have been examined in relation to knowledge exchange (Malecki, 2012), collaboration (Murphy, 2006), innovation (Cooke et al. 1998), and economic growth (Beugelsdijk et al. 2004; Tabellini 2010; Forte et al. 2015).

Recent research has delved deeper into these dimensions, focusing on various types of trust, including political trust. Political trust encompasses trust in politicians and the political system (Hooghe 2011; Hooghe et al. 2017; Levi and Stoker 2000; Warren 2006). It is fundamentally influenced by both formal and informal institutions within a region. In societies characterized by high levels of general social trust, this trust often extends to politicians as well. However, the quality and trustworthiness of formal institutions—and more specifically of government—is also important for fostering political trust among citizens.

Notably, political trust has been identified as a significant factor in regional economic development (e.g., Kaasa 2016). The mechanisms through which political trust impacts regional economic development involve two interrelated facets (Rodríguez-Pose and Storper 2006; Trigilia 2001; Trigilia and Burroni 2009). On one hand, it legitimizes the government and engenders acceptance of its actions, leading to greater compliance with the law, improved economic policies, and enhanced third-party enforcement (Bjørnskov 2012; Hetherington and Rudolph 2008; Marien and Hooghe 2011). On the other, political trust promotes conventional political participation, which, in turn, fosters other forms of cooperative behavior (Hooghe and Marien 2013; Newton and Ramón, 2007; Rodríguez-Pose and Storper 2006). The amalgamation of these top-down and bottom-up processes creates a favorable organizational ecology or social contract in which the government and other economic actors collaborate, facilitating economic activities and, subsequently, economic development (Boschma 2005; Farole et al. 2011; Pike et al. 2017; Rodríguez-Pose 1998; Rodríguez-Pose 2020; Rodríguez-Pose and Storper 2006; Tomaney 2014; Trigilia 2001; Trigilia and Burroni 2009).

Nevertheless, the precise manner in which political trust triggers regional economic development remains largely unresolved. Apart from the work of Kaasa (2016), which demonstrates the positive relationship between political trust and productivity, little attention has been paid to this question in previous scholarly literature. Kaasa (2016) compared the effects of political trust on productivity with those of social trust and government quality but did not examine the structural relationship between these variables. This study addresses this gap and makes three key

contributions. First, we explore how social trust and government quality contribute to the formation of political trust at the regional level and how this relationship acts as a driver of divergent regional economic trajectories. Second, we empirically examine this relationship within European regions using a generalized structural equations model, enabling us to explore the structural connection between these variables. Third, we investigate whether these relationships are non-linear. Overall, the study enhances our understanding of the interplay between formal and informal institutions and their influence on economic development by placing various forms of trust at its core.

To analyze this complex relationship, we employ a generalized structural equation model (GSEM) with pooled data from 208 regions across 21 EU countries, spanning eight waves of the European Social Survey from 2002 to 2016. The findings reveal a positive association between political trust and economic development. Additionally, social trust and government quality are linked to political trust and thus indirectly shape economic development through this mechanism. Government quality is also directly related to economic development. We identify non-linear relationships between social trust and political trust, as well as between government quality and political trust, both displaying diminishing returns to institutional improvements. However, political trust itself exerts a linear effect on economic development. These findings underscore the intricate, interdependent, and at times winding relationship between various types of formal and informal institutions that influence economic development. Importantly, they assert the significance of political trust in regional economic development and highlight its role as a mechanism that facilitates the impact of social trust and government quality on regional economic development. Consequently, interventions aimed at enhancing the quality of government and civil society, thereby fostering social capital, can improve political trust and promote economic development.

The rest of the paper follows this structure: In Sect. 2, we examine existing research on political and social trust, government quality, and economic development, before developing the hypotheses. Section 3 provides an overview of the data and presents the empirical approach. In Sect. 4, we discuss the results. Section 5 concludes.

2 Political trust, social trust, and government quality

Building on Bjørnskov (2012), Kaasa (2016), and Tabellini (2010), we explore the impact of political and social trust on regional economic development. Scholarly literature has repeatedly demonstrated that regional government quality matters for economic development (e.g., Crescenzi et al. 2016; Rodríguez-Pose and Di Cataldo 2015; Muringani et al. 2019; Rodríguez-Pose and Ketterer 2020). This study extends this discussion by delving into the interplay between these three institutional variables and economic development. Specifically, we propose that social trust (e.g., Keele 2007; Newton and Zmerli 2011) and government quality (Newton et al. 2018) foster the emergence of political trust at the regional level. The theoretical framework is illustrated in Fig. 1.

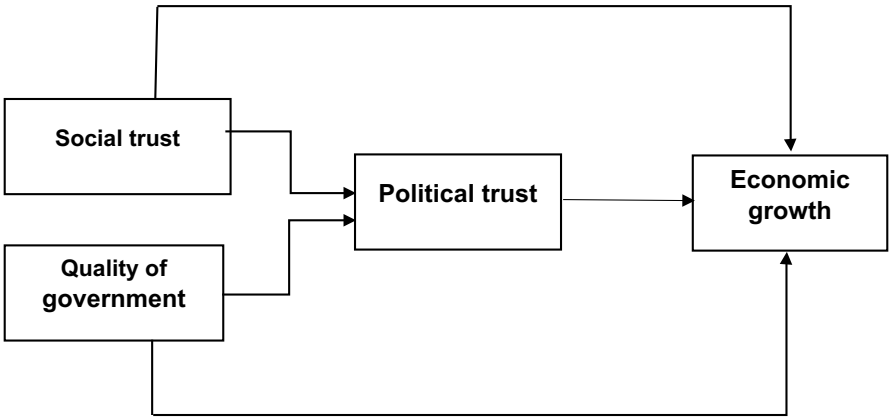

Fig. 1 Relationship between political trust, social trust, the quality of government and economic growth

2.1 Political trust and economic development

Political trust comprises two components: a rational element (Hardin 2002; Van der Meer 2017) and a normative dimension (Hooghe et al. 2017; Warren 2006). Both are necessary but not sufficient conditions for political trust to materialize. Levi and Stoker (2000) posit that political trust involves a commitment rooted in moral values or normative expectations and the trustworthiness demonstrated by the object of trust. While both dimensions matter, Hooghe (2011) contends that normative expectations hold greater significance, especially when citizens lack sufficient information about political actors or the system. Hooghe et al. (2017) suggest that this explains the relatively stable nature of political trust despite changes in the rational components that constitute citizens' assessments of government performance.

Previous literature has conceptualized political trust in various ways, with some authors (e.g., Rothstein and Stolle 2008) considering it a multidimensional construct with distinct components tied to different types of institutions. Others (e.g., Christensen and Lægreid 2005; Hooghe 2011) adopt a unidimensional approach, demonstrating that a single underlying variable can account for political trust. André (2014), in an empirical study using exploratory factor analysis (EFA) on European Social Survey (ESS) data, found both perspectives plausible, leaving the choice of conceptualization to the researcher. Following Hooghe (2011), we use a unidimensional concept, as our primary interest lies in examining the underlying drivers of political trust as a whole and its implications for economic development.

While political trust has been extensively studied at the national level by political scientists, primarily using economic performance to explain political trust (Kroknes et al. 2015; van Erkel and van der Meer 2016), subnational analyses have been relatively sparse. However, the region is where trust often develops through regular interpersonal interactions, and it is the scale where the mechanisms linking trust to economic development unfold (Pike et al. 2017; Rodríguez-Pose 1998; Trigilia 2001; Trigilia and Burroni 2009). This applies to political trust as well. While political trust is

often directed towards national or international institutions, citizens' experiences with politicians and political institutions at the local and regional levels significantly shape their trust in the broader political system. This is particularly true in decentralized contexts where regional governments hold substantial authority to implement their own policies (Hooghe et al. 2016). Decentralization also empowers citizens by expanding opportunities for inclusive political participation, which fosters political trust (Putnam 1993; Rodríguez-Pose and Di Cataldo 2015). Thus, the manifestation of political trust, through acceptance of government policies and active participation in politics, often occurs at the regional level (Rodríguez-Pose 1998; Rodríguez-Pose and Storper 2006).

The regional studies literature has increasingly recognized the importance of political conditions for economic development, particularly in the context of decentralization. However, these studies have rarely explored the role of political trust (e.g., Putnam 1993; Rodríguez-Pose and Di Cataldo 2015). Political trust influences economic development through both top-down and bottom-up mechanisms (Rodríguez-Pose and Storper 2006; Trigilia 2001; Trigilia and Burroni 2009). From a top-down perspective, political trust legitimizes government, leading citizens to accept its authority in implementing policies and programs (Levi and Stoker 2000; Marien and Hooghe 2011; Hooghe et al. 2017). This reduces enforcement and transaction costs, freeing resources for productive economic activities (Farole et al. 2011; Kaasa 2016). It also enables governments to effectively implement policies and mobilize citizen and organizational participation. Thus, regions need a certain level of political trust to ensure broad acceptance of the government's legitimacy and the rules governing the system. However, when political trust is at a satisfactory level, the top-down perspective suggests diminishing returns to further improvements.

From a bottom-up perspective, political trust encourages political engagement and, consequently, other forms of participation (Newton and Ramón 2007; Hooghe and Marien 2013). This is helpful for the development of vertical links (or linking social capital) between citizens and elites, cumulatively broadening existing networks (Fukuyama 1995; Wollebaek and Selle 2002) and moderating their quality (Boschma 2005; Wollebaek and Selle 2002; Woolcock 2002; Rodríguez-Pose and Storper 2006). Conversely, a lack of political trust can lead to citizens withdrawing from cooperative activities, fostering clientelism and rent-seeking behaviors that undermine economic development. This perspective suggests constant returns, as citizen involvement gradually increases with higher levels of political trust.

However, empirical studies examining the significance of political trust for economic development have been scarce, with recent studies primarily focusing on its effects on productivity (e.g., Kaasa 2016). Previous research has not explored whether the returns to political trust remain constant or whether there are diminishing returns.

Building upon the rationale presented above, we anticipate a positive association between political trust and economic development and propose the following hypothesis:

H1 Political trust is positively associated with economic development.

2.2 Social trust, political trust, and economic development

Social trust refers to the trust individuals have in other people not familiar to them (Fukuyama 1995; Newton and Zmerli 2011; Tabellini 2010; Uslaner 2008). A general sense of trust within society affects economic development by resolving collective action dilemmas, enabling societies to reach more productive equilibria. It also reduces transaction costs, redirecting resources from contract enforcement toward productive purposes. In essence, organizations in high-trust societies allocate more resources to production and fewer to legal expenses. Trust additionally curbs opportunistic behavior, facilitates information sharing, aids knowledge exchange, and fosters innovation (Beugelsdijk and Van Schaik 2005; Bjørnskov 2012; Fukuyama 1995; Whiteley 2000). In addition, it promotes tolerance, signaling a welcoming culture and attracting human capital to a region (Florida 2002). In summary, social trust facilitates productive economic activities, thereby increasing economic development (Beugelsdijk and Van Schaik 2005; Feldman 2014; Shearmur 2011; Stam and Bosma 2014).

Despite the perceived positive economic impact of trust (Bjørnskov 2012), empirical research on the link between social trust and economic development remains inconclusive, with results ranging between negative and significant associations (Schneider et al. 2000), non-significant associations (e.g. Akçomak and Ter Weel 2009; Beugelsdijk and Van Schaik 2005; Neira et al. 2009), and positive and significant connections (Tabellini 2010). Some suggest that the relationship is non-linear and heterogeneous for different types of regions (Peiró-Palomino 2016). Notably, the mechanisms driving this relationship have not been extensively explored, and empirical studies on the topic remain scarce. Despite the variability of empirical findings, we hypothesize, in line with the theoretical arguments, that:

H2a Social trust is positively associated with economic development.

Secondly, we explore the connection between social trust and political trust. Drawing on theoretical arguments about the relational aspect of political trust (Warren 2006), we theorize that political trust builds upon social trust. In societies with a high general sense of trust, this trust often extends to individuals within the government and the political system (Fukuyama 1995; Putnam 1993; Schneider et al. 2000; Newton et al. 2018). Therefore, individuals who exhibit social trust tend to be cooperative and accept the legitimacy of political institutions (Dellmuth and Tallberg, 2020). At the very least, a reasonable level of social trust is necessary for political trust to develop, while there may be diminishing returns once this level has been reached. Nevertheless, the mechanisms underlying this process remain insufficiently understood (Newton and Zmerli 2011; Newton et al. 2018).

Social capital theory (e.g., Tocqueville, 2000; Putnam 1993) offers a bottom-up perspective on political trust. Voluntary associations are viewed as democratic training grounds where citizens learn to trust political institutions. This theory also posits that the social trust generated by these associations extends to the political system. In contrast, socio-psychological theories, such as Uslaner

(2002), argue that, beyond indirect mechanisms based on social capital theory, social trust directly influences political trust, as individuals transfer their general sense of trust in others to the political system.

Empirical studies (e.g., Newton and Zmerli 2011; Newton et al. 2018) reveal a strong correlation between social trust and political trust, indicating that social trust is a necessary but not sufficient condition for political trust. Prior work by Keele (2007) suggests that social trust precedes political trust, although some studies identify the reverse relationship (e.g., Dinesen et al. 2022). These studies primarily focus on national-level or individual-level analyses. We anticipate that the same relationship holds at the subnational level, as social trust arises from local interactions (Newton and Ramón, 2007; Putnam 1993). In a similar regional-level study, Kaasa (2016) identified a high correlation between social trust and political trust but did not delve into the mechanisms governing this relationship. Additionally, the potential for diminishing returns, where a certain level of social trust is required for political trust to flourish, remains unexplored. Accordingly, we propose the following hypothesis:

H2b Social trust is positively associated with political trust.

2.3 Quality of government, political trust, and economic development

Quality of government refers to the extent to which governments deliver public goods efficiently, impartially, and free from corruption (Charron et al. 2010, 2014; Muringani et al. 2019; Rodríguez-Pose and Di Cataldo 2015). Government quality exhibits significant regional variation, even within countries, influencing the efficiency with which different regions provide public goods (Putnam 1993; Treisman 2002). High-quality regional governments mitigate opportunism and rent-seeking behaviors, fostering cooperation and effectiveness. Several empirical studies (e.g., Crescenzi et al. 2016; Muringani et al. 2019; Rodríguez-Pose and Di Cataldo 2015; Rodríguez-Pose and Garcilazo 2015; Rodríguez-Pose and Ketterer 2020; Rodríguez-Pose and Ganau 2022) have uncovered a positive association between regional government quality and economic development. This applies both to government quality as a whole and its individual components (efficiency, impartiality, and lack of corruption). At the country level, studies have also shown a non-linear relationship (e.g., Swaleheen 2011; Kim et al. 2018; Ochi et al. 2022), but this has not been examined at the regional level. Building on this body of work, we propose the following hypothesis:

H3a Quality of government is positively associated with economic development.

Logically, higher-quality governments are likely to be trusted more, given their competence, effective economic management, and impartiality (Kumagai and Iorio 2020; Norris 2022). At a minimum, a satisfactory level of government quality may be required to gain public trust, while there may be diminishing returns also in this

case. Empirical studies have identified specific dimensions of government quality, such as corruption or procedural fairness, as correlated with political trust (e.g., Wang 2016; Grimes 2017; Uslaner 2017). Khan (2016) reports a similar relationship for an integrated measure of government quality. Wang (2016) suggests that increased corruption reduces the effects of government performance on political trust, but government performance does not affect the relationship between corruption and political trust. In addition, there is evidence to suggest that political trust can enhance government performance (van de Walle and Bouckaert 2003).

However, the focus of this research has primarily been at the national level, leaving us with limited knowledge about how these dynamics manifest at the regional level. In contexts involving devolution, individuals have more interaction with regional government services, and their assessment of the quality of these services affects political trust. If a regional government is perceived as untrustworthy, citizens' trust in politicians and the broader political system may decline, even in a high-trust society. While Kaasa (2016) identified a strong correlation between government quality and political trust at the regional level, the mechanisms underlying this connection have not been thoroughly examined. Furthermore, the potential for a non-linear relationship has been largely unexplored. Drawing from insights from national-level research, we propose the following hypothesis:

H3b Quality of government is positively associated with political trust.

3 Variables and data

To investigate the relationships between political and social trust, government quality, and regional economic development, we compiled a comprehensive dataset. We integrated eight waves of data from the European Social Survey (ESS) spanning from 2002 to 2016 for 208 regions in 20 European countries: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Slovakia, Spain and Sweden and the United Kingdom.[1] We enlarged this dataset with information from the European Quality of Government Index (EQI) surveys and Eurostat.

The EQI survey data is designed to be representative at the regional level (Charron et al. 2015). In contrast, the ESS is primarily a national survey, and in some countries, including Italy, Germany, the UK, Portugal, Denmark, and Poland, the survey is not designed to be representative at the regional level. Nonetheless, the survey has around 1500–2500 respondents per country, which translates into reasonable sample sizes at the regional level in most countries. Appendix Table A1 shows

[1] We exclude Romania and overseas territories for Spain, Portugal, and France from our analysis due to partial data availability. The same data limitations apply to the Åland Islands in Finland and two specific regions in Italy (Valle d'Aosta and Molise). Additionally, countries with only one region at NUTS 2 level—Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta—have also been omitted from the analysis.

the average number of respondents per region and year in each of the 20 countries included. Furthermore, the ESS provides sampling weights which help to make it more regionally representative. To derive subnational variables, we aggregate the individual-level data using the weights provided to create regional-level indicators. This method has been previously used by many studies that employ ESS data for comparative research on regional public opinion or the examination of regional informal institutions (e.g., Dettori et al. 2012; Rodríguez-Pose and Burlina 2021; Hoogerbrugge et al. 2022). Kaasa et al. (2013) also highlight its utility for cross-cultural comparisons at the sub-national level in Europe. Although there will still be sampling error due to small regional samples, which could affect estimate precision, we do not anticipate this error to be connected to the variables of interest. Consequently, we have no reason to suspect bias in the estimates, although we do acknowledge the lack of regional representativeness of the data as a limitation of this study.

Since our focus is on regions as political entities, we define regions as meso-level administrative units in the political system. Depending on the country, these units are either at the first or second level of the Nomenclature of Territorial Units for Statistics (NUTS), the classification system used by Eurostat. We rely on Hooghe et al. (2010; 2016) to determine the appropriate NUTS 1 or NUTS 2 level in each country. We use NUTS1 regions for Germany and Belgium, and NUTS2 for the rest of the countries considered. In cases where multiple regional government levels exist, we follow the approach of Muringani et al. (2019) and choose the level with the most autonomy, as determined by Hooghe et al.'s (2016) regional authority index. The panel data set's variables are assembled from four independent data sources, as detailed in Appendix Table A2 and explained in the subsequent sections.

The dependent variable, economic development, is measured using Eurostat data on GDP per capita. To mitigate skewness, we apply a logarithmic transformation.

We derive the key explanatory variables, political and social trust, from the eight waves of the European Social Survey (ESS)—an ongoing biennial survey—covering the period between 2002 and 2016. Political trust is a composite measure, constructed from individual responses regarding trust in various political institutions, such as the United Nations, European Parliament, national parliament, politicians, political parties, the legal system, and the police. Respondents rate their trust on a 0–10 scale, where 0 signifies no trust, and 10 represents complete trust. The ESS does not provide data on trust in regional political institutions, which is a limitation. However, our interest lies in the broader concept of political trust and its regional distribution, irrespective of specific institutions. We conceptualize political trust as an informal institution at the regional level, influencing trust in political institutions at all government levels.

Social trust is an aggregate measure derived from responses to three trust-related questions: (a) "would you say that most people can be trusted, or that you can't be too careful in dealing with people?" (*trust in people or generalized trust*); (b) "do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?" (*fairness*); and (c) "would you say that most of the time people try to be helpful, or that they are mostly looking out for themselves?" (*helpfulness*). Responses to these questions are rated on a scale from 1 to 10.

We employ factor analysis to construct composite variables. Appendix Table A3 presents the results of this analysis, showing that social and political trust form two distinct dimensions. Key statistics include a Cronbach's alpha coefficient of 0.88, a significant Bartlett's test of sphericity, and an overall KMO test score of 0.86, confirming the reliability of the measures. Moreover, the factor analysis verifies that the indicators load on to two distinct dimensions, alleviating concerns of common method bias. We then aggregate individual responses into measures of political trust and social trust using weighted averages, followed by aggregating regional measures by calculating the average score for respondents within each region of residence.

The quality of government is assessed using a composite index appraising citizens' perceptions of their regional government's performance across four dimensions: (i) control of corruption; (ii) rule of law; (iii) government effectiveness; and (iv) voice and accountability (Charron et al. 2010, 2014). This index is based on metadata from the European Quality of Government (EQI) surveys conducted in 2010, 2013, and 2017. To extend the dataset from three to eight waves spanning 2002 to 2016, we follow the approach by Rothstein et al. (2013), Rodríguez-Pose and Di Cataldo (2015), and Muringani et al. (2019) and use Worldwide Governance Indicators (WGI)[2] at the national level as a trend line for this extension.

The control variables are extracted from the Eurostat database and follow a Cobb–Douglas endogenous growth model framework frequently employed in regional economic development studies. These variables encompass a) physical capital, represented by the natural logarithm of road accessibility, calculated as kilometers of roads per 1000 inhabitants; b) human capital, measured by the share of the tertiary-educated population; c) innovation, captured by research and development expenditure (R&D) as a percentage of GDP; d) industry structure, reflected in the level of employment in manufacturing; e) agglomeration, quantified through the natural logarithm of population density. To account for unobserved heterogeneity, we also control for region and time fixed effects.

Table 1 shows the descriptive statistics for all independent and control variables based on 208 regions in 21 EU countries. We observe each region eight times, corresponding to the waves of the ESS, for a total of 1664 observations. The quality of government, social trust, and political trust measures are standardized. The measures of R&D, human capital, and employment in manufacturing are percentages.

[2] The WGI survey was initiated in 1996 and conducted biennially until 2002, after which it transitioned to an annual frequency. Scholars such as Rothstein et al. (2013), Rodríguez-Pose and Di Cataldo (2015), and Muringani et al. (2019) have employed a two-year lag from the WGI to construct a corresponding panel for extrapolating EQI survey indicators. This calculation method follows this approach: $QoG_{r,c} = WGI_c + \left(Rqog_{r,c} - \overline{Rqog_c}\right)$. $QoG_{r,c}$ is the final QoG index for region r in country c. It is obtained as the distance from the regional QoG country mean ($\overline{Rqog_c}$) of the regional score ($Rqog_{r,c}$), added to WGI score for country c (WGI_c).

Table 1 Descriptive statistics

VARIABLES	N	Mean	St. deviation	Min	Max
Quality of government	1,664	0.202	0.935	−2.809	2.039
Social trust	1,664	−0.0682	0.402	−2.530	1.840
Political trust	1,664	−0.0894	0.417	−3.816	1.124
Research & development	1,664	1.433	1.192	−5.384	17.47
Human capital	1,664	24.91	8.989	6.800	57.10
Employment in manufacturing	1,664	16.43	6.681	2.900	39.40
Population density	1,664	4.993	1.160	1.194	8.910
Road accessibility	1,664	14.55	0.814	11.62	16.00
Economic development	1,664	10.02	0.391	8.497	11.06

GDP per capita, population density, and road accessibility are log-linearized for easy interpretation and to avoid skewness of data.

Table 2 presents a correlation matrix. Most variables exhibit positive correlations at a moderate level. Notably, there is a strong positive correlation of 0.68 between social trust and political trust, as anticipated from a theoretical standpoint. To assess multicollinearity, we calculate variance inflation factors (VIF), all of which fall within acceptable limits (see Appendix Table A4), with the highest value being 2.61.

3.1 The distribution of social trust, government quality, and political trust across EU regions

The maps in Figs. 2 and 3 display the average intensity of social and political trust across EU regions from 2002 to 2016. Figure 2 shows that social trust is considerably higher in Western Europe than in Eastern Europe. Within Western Europe, it is also higher in Northern Europe compared to Southern Europe. The highest levels of social trust are found in Scandinavia and parts of the Benelux, the British Isles, and Germany, while the lowest levels are in the Balkans, Poland and Southern Italy. However, there is also considerable heterogeneity within many countries and most notably in Italy and Germany.

Figure 3 depicts the geographical distribution of political trust in the EU. It mirrors the patterns seen for social trust. Political trust is highest in Western Europe, especially in Northern regions. Scandinavia, the Benelux, and Germany are prominent for their high levels of political trust. Conversely, political trust is far lower in Eastern Europe, notably in the Balkans, Greece and Poland.

Research on regional government quality in the EU (e.g., Charron et al. 2019) also reveals a divide between in Western and Eastern Europe. Scandinavia and the Netherlands exhibit the highest government quality scores. Within Western Europe, Northern regions outperform Southern regions in government quality, although both fare relatively well compared to most of Eastern Europe and, in particular, the south-eastern corner of Europe, as well as southern Italy. Considerable regional variation persists within many countries, most notably in Italy.

Table 2 Pairwise correlations

Variables	1	2	3	4	5	6	7	8	9
GDP per capita (natural log)	1.000								
Quality of government	0.550***	1.000							
Social trust	0.541***	0.735***	1.000						
Political trust	0.433***	0.663***	0.680***	1.000					
Research & development	0.500***	0.459***	0.414***	0.341***	1.000				
Human capital	0.557***	0.512***	0.443***	0.317***	0.452***	1.000			
Employment in manufacturing	−0.335***	−0.246***	−0.139***	−0.119***	−0.136***	−0.455***	1.000		
Population density(natural log)	0.409***	0.169***	0.118***	0.132***	0.222***	0.313***	−0.201***	1.000	
Road accessibility (natural log)	0.457***	0.284***	0.252***	0.191***	0.281***	0.260***	0.040*	0.717***	1.000

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

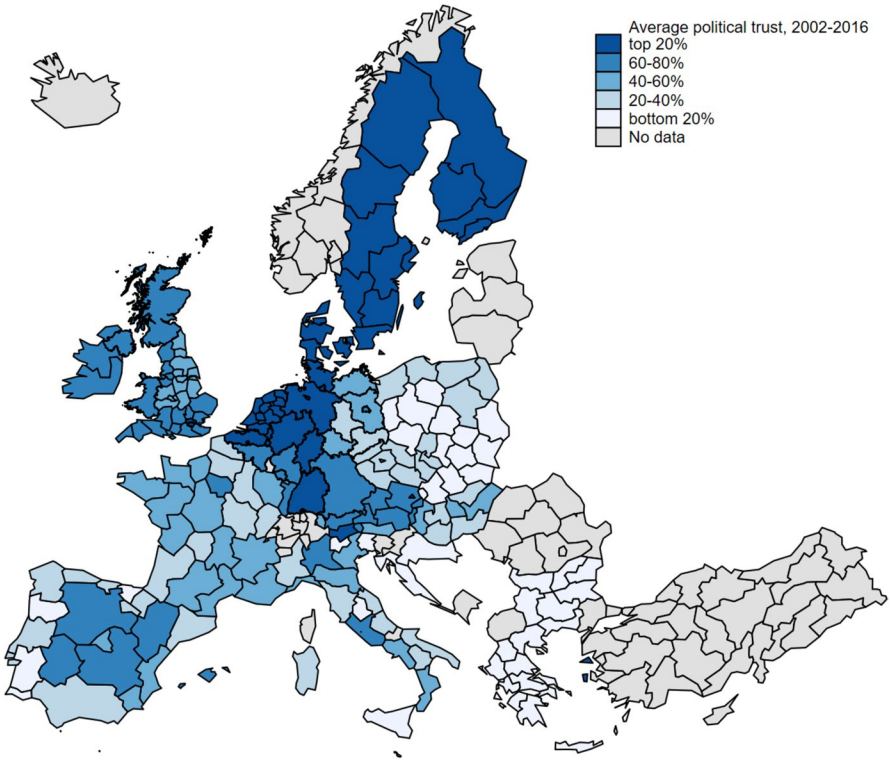

Fig. 2 Social trust across EU regions, average for 2002–2016

Over time, both trust and government quality exhibit relative stability, although with some gradual changes. Charron et al. (2022) note improvements in government quality in Eastern Europe and declines in Western Europe between 2010 and 2017. Other studies find no consistent patterns of change in political trust (Glatz and Eder 2020; Hooghe et al. 2017).

Overall, there is considerable overlap in the geographical incidence of these variables. However, it is not always the case that regions with high political trust show high levels of social trust and government quality. This observation aligns with findings at the individual level, as reported by Newton et al. (2018), indicating that high political trust does not necessarily imply high social trust, and the same holds true for government quality. This dynamic is evident in certain Italian regions, such as Lazio, where political trust is relatively high while social trust remains comparatively low. According to this perspective, social trust serves as the foundation for political trust, not vice versa. A similar rationale applies to government quality.

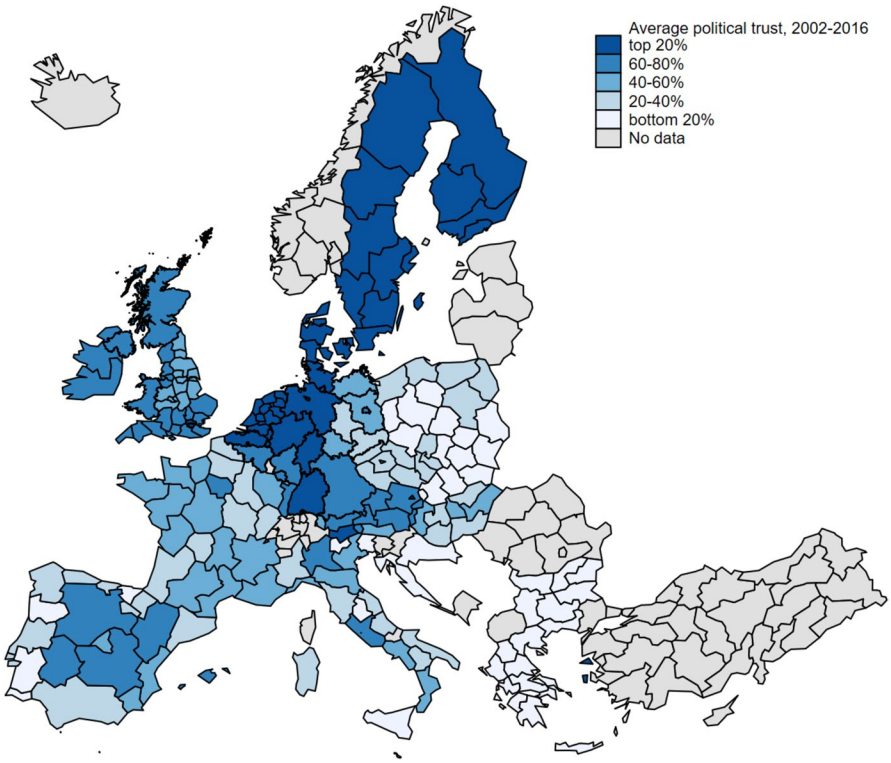

Fig. 3 Political trust across EU regions, average for 2002–2016

3.2 Empirical model

In the empirical analysis, we resort to a generalized structural equation model (GSEM). Unlike simple regression analysis, structural equation modelling allows for exploring the structural relationships between variables (Alesina and Giuliano 2015). It accounts for variances and covariances among disturbance terms across multiple equations (Sabatini 2008; 2009). Our primary focus is on the structural model, excluding measurement models because the variables are either precisely observed (economic development and control variables) or derived at the regional level from individual-level data obtained from other datasets (explanatory variables). As extensive research has previously discussed the scale development and validation of the explanatory variables of interest, including social trust and political trust (e.g., Jowell et al. 2007), and the EQI (e.g., Rothstein et al. 2013), we do not consider the measurement models a central contribution of this paper. Instead, our emphasis is on the structural relationships among the four main variables. We use a generalized SEM model to allow for the incorporation of time and region fixed effects.

The GSEM model comprises two equations:

$$EconomicDevelopment_{i,t} = \alpha + \beta_1 SocialTrust_{i,t} + \beta_2 GovernmentQuality_{i,t} + \beta_3 PoliticalTrust_{i,t} + \beta_4 Controls_{i,t} + \gamma_{1i} + \tau_{1t} + \varepsilon_1 \quad (1)$$

$$PoliticalTrust_{i,t} = \alpha + \beta_5 SocialTrust_{i,t} + \beta_6 GovernmentQuality_{i,t} + \gamma_{2i} + \tau_{2t} + \varepsilon_2 \quad (2)$$

In the first equation, we investigate the relationship between economic development and political trust (H1), social trust (H2a), and government quality (H3a). The second equation examines the relationship between political trust and social trust (H2b) and government quality (H3b). We model economic development and political trust as endogenous variables, as they are influenced by other variables. Conversely, social trust, government quality, and the control variables are modelled as exogenous variables, meaning they are not influenced by other variables in the model.[3] β_1 to β_6 are the coefficients, while γ_1 and γ_2 are the region fixed effects, τ_1 and τ_2 stand for time fixed effects, and ε_1 and ε_2 for the disturbance terms.

As a second step, we introduce quadratic product terms to assess non-linearity:

$$\begin{aligned} EconomicDevelopment_{i,t} = {} & \alpha + \beta_1\, SocialTrust_{i,t} + \beta_2\, SocialTrust^2_{i,t} \\ & + \beta_3\, GovernmentQuality_{i,t} + \beta_4\, GovernmentQuality^2_{i,t} + \beta_5\, PoliticalTrust_{i,t} \\ & + \beta_6\, PoliticalTrust^2_{i,t} + \beta_7\, Controls_{i,t} + \gamma_{1i} + \tau_{1t} + \varepsilon_1 \end{aligned} \quad (3)$$

$$PoliticalTrust_{i,t} = \alpha + \beta_8\, SocialTrust_{i,t} + \beta_9\, SocialTrust^2_{i,t} + \beta_{10}\, GovernmentQuality_{i,t} + \beta_{11}\, GovernmentQuality^2_{i,t} + \gamma_{2i} + \tau_{2t} + \varepsilon_2 \quad (4)$$

To address endogeneity concerns, we conduct robustness tests in two ways. First, we incorporate spatial lags into the GSEM model. One model includes lags for all independent and control variables over a two-year period, while the other includes lags for all independent variables except political trust. However, these lagged variables may not fully address endogeneity concerns due to potential dynamic relationships among unobservable variables (Bellemare et al. 2017).

As a more rigorous step from an econometric perspective, we employ a two-stage least squares instrumental variables (2SLS IV) regression to tackle endogeneity. Integrating this approach within GSEM estimation presents complexities since some regressors in GSEM are endogenous. In our case, political trust—the main variable of interest—is itself an endogenous regressor influenced by social trust and government quality. Thus, we can only instrument for one component of the structural

[3] In the social sciences, truly exogenous variables are a rarity. As mentioned earlier, there exist bodies of literature that argue for the reversal of causality in these relationships. They explore how economic development might promote political trust or how political trust can enhance government quality. To tackle these endogeneity concerns, we employ both time lags and an instrumental variables regression approach. However, it is important to acknowledge that these methods also come with their own set of limitations.

equation. We choose to instrument for political trust using an instrument previously used for both government quality and social trust, as these factors logically influence political trust within the model. Specifically, we use literacy rates from the 1880s as the instrument. This instrument has been used to proxy for social trust by Tabellini (2010) and for government quality by Charron and Lapuente (2013). Historical literacy rates are associated with higher levels of social trust due to their role in facilitating communication with strangers. They also correlate with improved government quality, as literacy is essential for government transparency and public accountability. These combined mechanisms are expected to result in higher political trust. In the IV regression, we employ literacy rates from the 1880s as an instrument for political trust and exclude social trust and government quality, as these variables are also influenced by the instrument. Consequently, this model permits an examination of the causal effect of political trust on economic development.

4 Results

In this section, we present the findings of the GSEM analysis in Table 3 and illustrate the structural relationships through a path diagram in Fig. 4.

Table 3 Generalised SEM model results

Variables	Direct effect on economic development	Indirect effect on economic development	Direct effect on political trust
Political trust	0.072***		
	(0.007)		
Social trust	−0.004	0.029***	0.406***
	(0.010)	(0.004)	(0.036)
Quality of government	0.078***	0.022***	0.306***
	(0.006)	(0.002)	(0.021)
Research and development	0.006**		
	(0.003)		
Human capital	0.002**		
	(0.001)		
Employment in manufacturing	0.010***		
	(0.001)		
Population density	−0.281***		
	(0.038)		
Road accessibility	0.191***		
	(0.035)		
Region fixed effects	Included		Included
Time fixed effects	Included		Included
Observations	1664		
Number of regions	208		

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.10$

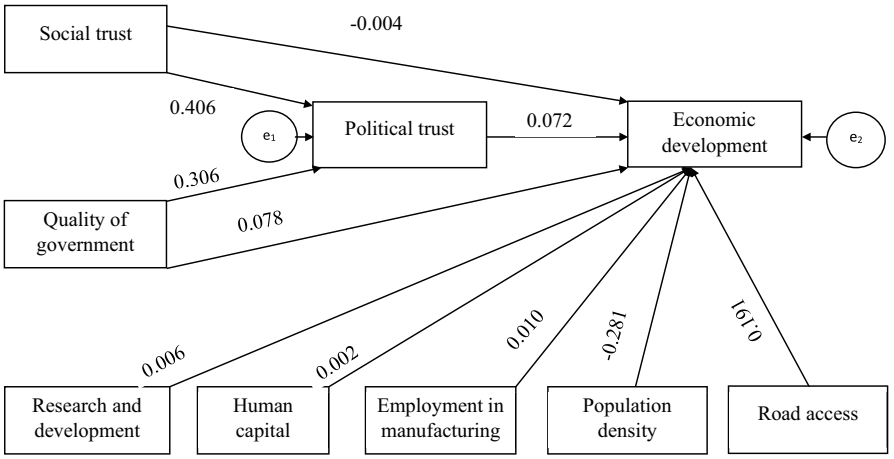

Fig. 4 Path diagram showing relationship between variables

The results reveal the existence of both an indirect effect of social trust and government quality on economic development, mediated by political trust, as well as a direct effect of political trust and government quality on economic development. Social trust and government quality significantly contribute to the formation of political trust, making political trust a crucial mechanism through which other institutional factors—specifically, social trust and government quality—impact economic development in European regions.

These results support four out of the five hypotheses. First, there is clear support for H1: political trust exerts a strong and positive influence on economic development. Second, a robust direct positive relationship exists between the quality of government and economic development (H3a). Interestingly, the effects of both variables are similar. This contradicts Kaasa (2016), suggesting that political trust does not outperform quality of government as a predictor of economic development; instead, both variables reveal comparable independent effects.

However, we do not observe a significant relationship between social trust and economic development (H2a). This might be attributed to the close connection between this variable and political trust. In fact, when political trust is excluded from the model and a regular OLS regression is conducted to examine the relationship between the other variables, a positive and significant relationship between social trust and economic development emerges.

Third, a strong positive relationship exists between social trust and political trust (H2b), as well as between government quality and political trust (H3b). When combined, social trust and government quality account for roughly 50 percent of the variance in political trust. These results align with prior studies on the correlation between social trust (Keele 2007; Newton and Zmerli 2011; Newton et al. 2018), government quality (Khan 2016; Newton et al. 2018), and political trust. Social trust holds a stronger effect than government quality, but the latter also exhibits a robust and positive impact on political trust.

Consequently, political trust encompasses not only the general societal trust level but also an assessment of government trustworthiness.

Fourth, the results in Table 3 suggest that political trust acts as a mediator in the relationship between social trust and economic development, as well as between government quality and economic development. These findings underscore the intricate interdependence of social trust, government quality, and political trust, as they collectively and individually influence economic development.

To test for non-linearity, quadratic terms are introduced in the GSEM model and presented in Table 4. Focusing on their effects on economic development, the results denote a positive and significant coefficient for political trust but not for its squared term, implying a linear relationship between political trust and economic development. Conversely, government quality exhibits a non-linear effect: the primary effect is positive and significant, while the squared term is negative and significant. This indicates diminishing returns to government quality, suggesting that improvements in government quality have a more substantial impact on regions with weaker government quality. Social trust and its quadratic term exhibit no direct relationship with economic development.

Regarding their effects on political trust, both social trust and government quality display non-linear relationships. In both cases, diminishing returns are observed: as social trust and government quality increase, political trust levels rise until reaching a threshold where further increases yield considerably smaller effects. Figure 5

Table 4 Non-linear effects

Variables	Direct effect economic development	Indirect effect economic development	Direct effect political trust
Political trust	0.063***		
	(0.009)		
Political trust^2	−0.0006		
	(0.005)		
Social trust	0.012	0.007***	0.120***
	(0.009)	(0.002)	(0.024)
Social trust^2	0.003	−0.026***	−0.419***
	(0.011)	(0.004)	(0.024)
Quality of government	0.070***	0.013***	0.207***
	(0.006)	(0.002)	(0.019)
Quality of government^2	−0.021***	−0.007***	−0.111***
	(0.003)	(0.001)	(0.009)
Controls	Included		
Time fixed effects	Included		Included
Region fixed effects	Included		Included
Observations	1664		
Number of regions	208		

Standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.10$

shows what this means in substantive terms by plotting the marginal effects of increases at different values of the variables. The first panel shows the effect of quality of government on economic development. It has a strong and significant effect at low levels of government quality, which gradually decreases and eventually becomes insignificant at the very highest levels of government quality. Compare this with political trust (panel 2), where the marginal effects remain the same at all levels of political trust. The bottom panels show the marginal effects of government quality and social trust on political trust. In both cases, there are diminishing returns, with positive effects at low and medium levels of government quality and social trust. These vanish at higher levels and even turn slightly negative at the very top of the distribution.

4.1 Robustness tests

As discussed, a significant concern when estimating these relationships is the potential impact of endogeneity or reverse causality on the findings (e.g., Bargsted et al., 2023; Bjørnskov, 2012; Van de Walle and Bouckaert 2003). To address this issue, we employ two distinct approaches.

First, we incorporate time lags into the analysis, as presented in Appendix Table A5. By introducing time lags, we elucidate how explanatory variables and controls influence GDP per capita in the subsequent period (two years later). The results closely resemble those of the original analysis in Table 3, which lacked time lags. However, this time, the relationship between social trust and economic development emerges as positive and statistically significant. Meanwhile, for political trust, the effect on economic development appears slightly stronger with the inclusion of lags, while for government quality, it appears slightly weaker. In a separate analysis, we also introduce a lag to political trust, allowing social trust and government quality to explain political trust two years later. In this scenario, social trust and government quality maintain their positive and statistically significant relationships with political trust, although with somewhat weaker coefficients. Notably, all three variables remain significantly associated with economic development.

Second, we resort to an instrumental variable regression design, as detailed in Appendix Table A6. Here, we use literacy rates in the 1880s as an instrument to proxy for political trust, following Tabellini (2010). In this 2SLS IV regression design, we exclude social trust and government quality as explanatory variables, as these factors are also influenced by the instrument. The initial two columns of Appendix Table A6 display the results of the first stage of the 2SLS IV regression. Due to a lack of available data on literacy rates in all regions, the analysis is based on a reduced sample of 130 regions. Additionally, region fixed effects cannot be included because literacy rates in 1880 do not exhibit intra-regional variation. To facilitate result interpretation, we present the GSEM results for the same model—one that excludes social trust, government quality, and region fixed effects—for both the full sample of regions and the reduced sample of 130 regions, as a point of comparison.

The Cragg-Donald statistic is 409.447, which is well above the Stock-Yogo critical value (16.38 at 10% maximal IV size), indicating robust instrument strength. The

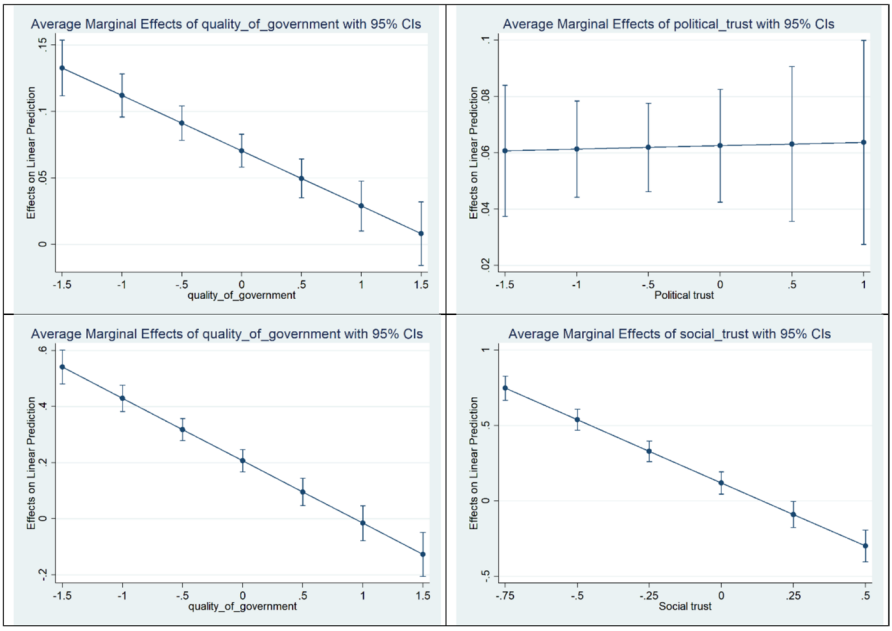

Fig. 5 Marginal effects plots of non-linear effects on economic development (top panels) and political trust (bottom panels)

Kleinbergen-Paap rank LM test is significant, indicating no evidence for underidentification. The results of the IV regression reveal a statistically significant and highly positive effect of political trust on economic development. In summary, we conclude that the impact of political trust on economic development remains robust even when taking into account endogeneity concerns. Table A7 presents a comparison of fit indices for all GSEM models.

5 Conclusion

In this paper, we have delved into the complex dynamics of how political trust, social trust, and government quality collectively shape regional economic development. The findings reveal a multifaceted interplay among these three institutional factors, all of which contribute significantly to economic development.

Specifically, we establish a direct and positive link between economic development and both political trust and government quality. Notably, government quality exhibits diminishing returns, while political trust displays a linear relationship with economic development. This implies that regions with weak institutions may benefit more from improvements in government quality, while for regions with strong institutions there are greater returns to improving political trust. Importantly, the robustness checks using instrumental variables regressions confirm the resilience of the positive relationship between political trust and economic development.

Furthermore, the results expose a direct and positive connection between political trust and both social trust and government quality. These relationships are not linear, demonstrating diminishing returns. This underscores the importance of reaching a certain threshold of both social trust and government quality for political trust to thrive within regions.

The paper contributes to the regional development literature in two significant ways. Theoretically, it delves into how political trust functions as a mechanism through which both formal and informal institutions influence economic development. Empirically, it extends this exploration to a structural model applied to European regions, moving beyond previous studies conducted at the national level to unveil this relationship at a subnational scale. Consequently, the study is the first to identify the structural, and sometimes non-linear, connections among variables that have long aroused the interest of researchers in regional studies and beyond.

However, it is essential to approach the findings with some caution due to several limitations. Firstly, the generalizability of our results is restricted to EU regions. Secondly, we utilize data from the European Social Survey (ESS), which are not regionally representative in all countries. While we apply weighting techniques to mitigate this limitation, improving regional-level data collection is crucial for more precise measurement of informal institutions, such as trust. Lastly, potential for reverse causality exists in all examined relationships. Although we employ time lags and an instrumental variables regression approach to address this concern, the latter method entails departing from the GSEM framework and excludes two independent variables in the structural model. As data availability improves, revisiting these areas will be essential.

In conclusion, the findings advance our comprehension of the central role of political trust in economic development. They underscore the necessity of examining the intricate relationships between political trust, social trust, and government quality when crafting institutions to foster development. Policymakers and stakeholders aiming to promote political trust and regional development should consider employing both top-down and bottom-up strategies, which encompass the role of civil society in generating and transmitting social trust through targeted interventions.

Appendix

See Tables A1, A2, A3, A4, A5, A6, and A7

Table A1 Average no. of respondents per region

Country	No. of regions	NUTS level	ESS rounds/years							
			2002	2004	2006	2008	2010	2012	2014	2016
Austria	9	2	251	251	267				199	223
Belgium	3	1	633	593	599	587	568	623	590	589
Bulgaria	6	2			233	372	406	376		
Czechia	8	2	170	378		252	298	251	267	284
Germany	16	1	182	179	182	172	189	185	190	178
Denmark	5	2	301	297	301	322	315	330	300	
Greece	13	2	197	185		159	208			
Spain	16	2	108	103	117	161	117	118	120	122
Finland	4	2	500	505	474	548	810	425	407	379
France	21	2	72	86	95	99	82	94	91	96
Croatia	2	2				742	824			
Hungary	7	2	241	214	217	221	223	288	243	231
Ireland	2	2	1023	1143	900	882	1288	1314	1195	1379
Italy	19	2	64					51		138
Netherlands	12	2	197	157	157	148	152	154	160	140
Poland	16	2	132	107	108	101	109	119	101	106
Portugal	5	2	302	410	444	473	430	430,2	253	254
Sweden	8	2	250	244	241	228	187	231	224	194
Slovakia	4	2		378	442	452	464	462		
United Kingdom	32	2	64	59	75	74	76	71	71	61

Table A2 Overview of variables

Variable	Definition	Constituent parts/meaning	Source
Dependent variable			
ln_GDP	Natural Log of GDP per capita	GDP at current market prices, PPS per inhabitant	Eurostat
Explanatory variables			
Social trust	Trust in unfamiliar people or strangers	Most people can be trusted, or you can't be too careful (ppltrst)	
		Most of the time people helpful or mostly looking out for themselves (pplhlp)	
		Most people try to take advantage of you, or try to be fair (pplfair)	
Political trust	Trust in political institutions	Trust in politicians (trstplt)	
		Trust in parliament (trstprl)	
		Trust in political party (trstprl)	
		Trust in police	
		Trust in legal system	
		Trust in European Parliament	
		Trust in United Nations	
Quality of government	The extent to which a government delivers public goods in an impartial, efficient and non-corrupt manner	Control of corruption	Muringani et al (2019) based on
		Rule of law	
		Government effectiveness	European quality of government index (EQI) (Charron et al. 2010, 2014)
		Voice and accountability	

Table A2 (continued)

Variable	Definition	Constituent parts/meaning	Source
Control variables			
Research and development	Research and development	R&D expenditure as a percentage of GDP	Eurostat
Human capital	Human capital measured using education as a proxy	Percentage of population over 25 with a tertiary qualification	
Employment in manufacturing	Share of employment in manufacturing as a percentage of total employment	Percentage of employment in the manufacturing sector	
Population density	Natural log of population density	Population density per 1000 inhabitants per square metres	
Road accessibility	Natural log of road accessibility	Road access per 1000 inhabitants	

Table A3 Factor analysis of social and political trust

Variable	Factor 1	Factor 2	Uniqueness
Trust in people		0.6832	0.5047
Fairness		0.7070	0.5144
Helpfulness		0.6389	0.5951
Trust in parliament	0.7466		0.3711
Legal trust	0.5910		0.4752
Trust in police	0.4845		0.5997
Trust in politicians	0.8439		0.2619
Trust in parties	0.8476		0.2732
Trust in European parliament	0.7799		0.4942
Trust in the United Nations	0.6905		0.5516

Blank represents factor loading < 0.3

Table A4 VIF and tolerance levels for variables

VARIABLES	VIF
Road accessibility	2.52
Population density	2.43
Social trust	2.67
Political trust	2.52
Human capital	1.87
Employment in manufacturing	1.45
R&D	1.43
Quality of government	2.87
Mean VIF	2.17

Variance Inflation Factors without region and year fixed effects

Table A5 Lagging explanatory variables in GSEM models

Variables	Lag all explanatory variables			Lag all except political trust		
	Direct effect economic dev	Indirect effect economic dev	Direct effect political trust	Direct effect economic dev	Indirect effect economic dev	Direct effect political trust
Political trust	0.118***					
	(0.026)					
Political trust_t1				0.057***		
				(0.022)		
Social trust	0.216***	0.036***	0.406***	0.238***	0.013**	0.238***
	(0.027)	(0.008)	(0.036)	(0.027)	(0.006)	(0.044)
Quality of government	0.034***	0.048***	0.306***	0.042***	0.016**	0.281***
	(0.012)	(0.011)	(0.021)	(0.012)	(0.006)	(0.024)
Research and development	0.055***			0.056***		
	(0.006)			(0.006)		
Human capital	0.004***			0.004***		
	(0.001)			(0.001)		
Employment in manufacturing	−0.008***			−0.008***		
	(0.001)			(0.001)		
Population density	0.039***			0.040***		
	(0.009)			(0.009)		
Road accessibility	0.096***			0.092***		
	(0.013)			(0.013)		
Region fixed effects	Included		Included	Included		Included
Observations	1456		1664	1456		
Number of regions	208			208		

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.10$

Table A6 2SLS IV regressions

	2SLS first stage	2SLS second stage	Small GSEM sample	Full GSEM sample
	Political trust	Economic development	Economic development	Economic development
Political trust		0.569***	0.305***	0.217***
		(0.051)	(0.026)	(0.018)
Research and development	0.006	0.025***	0.033***	0.073***
	(0.005)	(0.008)	(0.005)	(0.006)
Human capital	0.001	0.004***	0.007***	0.008***
	(0.001)	(0.001)	(0.0008)	(0.001)
Employment in manufacturing	−0.008***	−0.010***	−0.008***	−0.010***
	(0.002)	(0.001)	(0.001)	(0.001)
Population density	−0.013	0.053***	0.045***	0.012
	(0.008)	(0.011)	(0.008)	(0.009)
Road access	−0.007	0.027*	0.040***	0.133***
	(0.015)	(0.016)	(0.014)	(0.012)
Literacy in 1880	0.006***			
	(0.0003)			
Year fixed effects	Included	Included	Included	Included
Constant	−0.058	9.022***	8.862***	7.805***
	(0.171)	(0.181)	(0.170)	(0.147)
Observations	1,054	1,054	1.054	1664
Number of regions	130	130	130	208
R-squared	0.40	0.40		
Cragg-Donald	409.447			
Kleinbergen-Paap rk LM	180.850***			

Robust standard errors in parentheses

***$p<0.01$, **$p<0.05$, *$p<0.10$

Table A7 Comparison of model fit indices for all GSEM models

Model	AIC	BIC
Table 3: Full sample (All regions)	−3671.663	−1277.358
Table 4: Non-linear effects	−4168.889	−1747.499
Table A5: All lagged explanatory variables	487.3533	1754.927
Table A5: All lagged explanatory variables except political trust	555.6535	1786.697

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References

Akçomak IS, Ter Weel B (2009) Social capital, innovation and growth: Evidence from Europe. Eur Econ Rev 53(5):544–567

Alesina A, Giuliano P (2015) Culture and institutions. J Econ Lit 53(4):898–944

André S (2014) Does trust mean the same for migrants and natives? Testing measurement models of political trust with multi-group confirmatory factor analysis. Soc Indic Res 115(3):963–982

Bargsted M, Ortiz C, Cáceres I, Somma NM (2023) Social and political trust in a low trust society. Polit Behav 45(4):1401–1420

Bellemare MF, Masaki T, Pepinsky TB (2017) Lagged explanatory variables and the estimation of causal effect. J Politics 79(3):949–963

Beugelsdijk S, Van Schaik T (2005) Social capital and growth in European regions: an empirical test. Eur J Polit Econ 21(2):301–324

Beugelsdijk S, De Groot HL, Van Schaik AB (2004) Trust and economic growth: a robustness analysis. Oxford Econ Pap 56(1):118–134

Bjørnskov C (2012) How does social trust affect economic growth? South Econ J 78(4):1346–1368

Boschma RA (2005) Social capital and regional development: an empirical analysis of the Third Italy. In: BRA, KRC (Eds.), Learning from clusters. Springer, Dordrecht. vol. 80, pp. 139–168

Charron N, Lapuente V (2013) Why do some regions in Europe have a higher quality of government? J Politics 75(3):567–582

Charron N, Dijkstra L, Lapuente V (2010) Mapping quality government in the European Union: a study of national and sub-national variation. QoG Working Paper Series, 22.

Charron N, Dijkstra L, Lapuente V (2014) Regional governance matters: Quality of government within European Union member states. Reg Stud 48(1):68–90

Charron N, Dijkstra L, Lapuente V (2015) Mapping the regional divide in Europe: a measure for assessing quality of government in 206 European regions. Soc Indic Res 122(2):315–346

Charron N, Lapuente V, Annoni P (2019) Measuring quality of government in EU regions across space and time. Pap Reg Sci 98(5):1925–1953

Charron N, Lapuente V, Bauhr M, Annoni P (2022) Change and continuity in quality of government: trends in subnational quality of government in EU member states. Investig Reg J Reg Res 2022(53):5–23

Christensen T, Lægreid P (2005) Trust in government: The relative importance of service satisfaction, political factors, and demography. Public Perform Manag Rev 28(4):487–511
Cooke P, Uranga MG, Etxebarria G (1998) Regional systems of innovation: an evolutionary perspective. Environ plann A 30(9):1563–1584
Cortinovis N, Xiao J, Boschma R, van Oort FG (2017) Quality of government and social capital as drivers of regional diversification in Europe. J Econ Geogr 17(6):1179–1208
Crescenzi R, Di Cataldo M, Rodríguez-Pose A (2016) Government quality and the economic returns of transport infrastructure investment in European regions. J Reg Sci 56(4):555–582
Dettori B, Marrocu E, Paci R (2012) Total factor productivity, intangible assets and spatial dependence in the European regions. Reg Stud 46(10):1401–1416
Dinesen PT, Sønderskov KM, Sohlberg J, Esaiasson P (2022) Close (causally connected) cousins? Evidence on the causal relationship between political trust and social trust. Public Opin Q 86(3):708–721
Farole T, Rodríguez-Pose A, Storper M (2011) Human geography and the institutions that underlie economic growth. Prog Hum Geogr 35(1):58–80
Feldman MP (2014) The character of innovative places: entrepreneurial strategy, economic development, and prosperity. Small Bus Econ 43(1):9–20
Florida R (2002) The economic geography of talent. Ann Assoc Am Geogr 92(4):743–755
Forte A, Peiró-Palomino J, Tortosa-Ausina E (2015) Does social capital matter for European regional growth?. Eur Econ Rev 77:47–64
Fukuyama F (1995) Social capital and the global economy. Foreign Aff 74:89
Gertler MS (2010) Rules of the game: the place of institutions in regional economic change. Reg Stud 44(1):1–15
Glatz C, Eder A (2020) Patterns of trust and subjective well-being across Europe: new insights from repeated cross-sectional analyses based on the European social survey 2002–2016. Soc Indic Res 148(2):417–439
Grimes M (2017) Procedural fairness and political trust. In: Handbook on political trust. Edward Elgar Publishing. pp. 256–269
Hardin R (2002) Trust and trustworthiness. Russell Sage Foundation, New York
Hetherington MJ, Rudolph TJ (2008) Priming, performance, and the dynamics of political trust. J Politics 70(2):498–512
Hoogerbrugge MM, Burger MJ, van Oort FG (2022) Spatial structure and subjective well-being in North-West Europe. Reg Stud 56(1):75–86
Hooghe M (2011) Why there is basically only one form of political trust. The British J Politics Int Relat 13(2):269–275
Hooghe M, Marien S (2013) A comparative analysis of the relation between political trust and forms of political participation in Europe. Eur Soc 15(1):131–152
Hooghe L, Marks GN, Schakel AH (2010) The rise of regional authority: A comparative study of 42 democracies. Routledge, New York
Hooghe L, Marks G, Schakel AH, Osterkatz SC, Niedzwiecki S, Shair-Rosenfield S (2016) Measuring regional authority: A postfunctionalist theory of governance, vol 1. Oxford University Press, New York
Hooghe M, Marien S, Oser J (2017) Great expectations: the effect of democratic ideals on political trust in European democracies. Contemp Polit 23(2):214–230
Jowell R, Roberts C, Fitzgerald R, Eva G (2007) Measuring attitudes cross-nationally: lessons from the European social survey. Sage, New York
Kaasa A (2016) Social capital, institutional quality and productivity: evidence from European regions. Econ Soc 9(4):11
Kaasa A, Vadi M, Varblane U (2013) European social survey as a source of new cultural dimensions estimates for regions. Int J Cross Cultural Manag 13(2):137–157
Keele L (2007) Social capital and the dynamics of trust in government. Am J Political Sci 51(2):241–254
Khan HA (2016) The linkage between political trust and the quality of government: An analysis. Int J Public Adm 39(9):665–675
Kim DH, Wu YC, Lin SC (2018) Heterogeneity in the effects of government size and governance on economic growth. Econ Model 68:205–216
Kroknes VF, Jakobsen TG, Grønning LM (2015) Economic performance and political trust: the impact of the financial crisis on European citizens. Eur Soc 17(5):700–723

Kumagai S, Iorio F (2020) Building Trust in Government through Citizen Engagement. World Bank, Washington
Levi M, Stoker L (2000) Political trust and trustworthiness. Annu Rev Polit Sci 3(1):475–507
Malecki EJ (2012) Regional social capital: why it matters. Reg Stud 46(8):1023–1039
Marien S, Hooghe M (2011) Does political trust matter? An empirical investigation into the relation between political trust and support for law compliance. Eur J Polit Res 50(2):267–291
Murphy JT (2006) Building trust in economic space. Prog Hum Geogr 30(4):427–450
Muringani J, Fitjar RD, Rodríguez-Pose A (2019) Decentralisation quality of government and economic growth in the regions of the EU. Rev De Econ Mundial 51:25–52
Neira I, Vázquez E, Portela M (2009) An empirical analysis of social capital and economic growth in Europe (1980–2000). Soc Indic Res 92(1):111–129
Newton K, Ramón J (2007) 10 Patterns of political and social participation in Europe. Measuring attitudes cross-nationally: Lessons from the European Social Survey, 205.
Newton K, Stolle D, Zmerli S (2018) Social and political trust. The Oxford Handbook of Social and Political Trust, 37
Newton K, Zmerli S (2011) Three forms of trust and their association. Eur Political Sci Rev EPSR 3(2):169
Norris P (2022) Trust in government redux: the role of information environments and cognitive skills. HKS Faculty Research Working Paper Series
Ochi A, Saidi Y, Labidi MA (2022) Non-linear threshold effect of governance quality on economic growth in African countries: Evidence from panel smooth transition regression approach. J Knowl Econ. https://doi.org/10.1007/s13132-022-01084-w
Peiró-Palomino J (2016) Social capital and economic growth in Europe: Non-linear trends and heterogeneous regional effects. Oxf Bull Econ Stat 78(5):717–751
Pike A, Rodríguez-Pose A, Tomaney J (2017) Shifting horizons in local and regional development. Reg Stud 51(1):46–57
Putnam RD (1993) Making democracy work: Civic traditions in modern Italy. Princeton University Press, Princeton
Rodríguez-Pose A (1998) Dynamics of regional growth in Europe: social and political factors. Clarendon Press, New York
Rodríguez-Pose A (2013) Do institutions matter for regional development? Reg Stud 47(7):1034–1047
Rodríguez-Pose A (2020) Institutions and the fortunes of territories. Reg Sci Policy Pract 12(3):371–386
Rodríguez-Pose A, Burlina C (2021) Institutions and the uneven geography of the first wave of the COVID-19 pandemic. J Reg Sci 61(4):728–752
Rodríguez-Pose A, Di Cataldo M (2015) Quality of government and innovative performance in the regions of Europe. J Econ Geogr 15(4):673–706
Rodríguez-Pose A, Ganau R (2022) Institutions and the productivity challenge for European regions. J Econ Geogr 22(1):1–25
Rodríguez-Pose A, Garcilazo E (2015) Quality of government and the returns of investment: examining the impact of cohesion expenditure in European regions. Reg Stud 49(8):1274–1290
Rodríguez-Pose A, Ketterer T (2020) Institutional change and the development of lagging regions in Europe. Reg Stud 54(7):974–986
Rodríguez-Pose A, Storper M (2006) Better rules or stronger communities? On the social foundations of institutional change and its economic effects. Econ Geogr 82(1):1–25
Rothstein B, Stolle D (2008) The state and social capital: an institutional theory of generalized trust. Comp Politics 40(4):441–459. https://doi.org/10.5129/001041508X12911362383354
Rothstein B, Charron N, Lapuente V (eds) (2013) Quality of government and corruption from a European perspective: a comparative study on the quality of government in EU regions. Edward Elgar Publishing, Cheltenham
Sabatini F (2008) Social capital and the quality of economic development. Kyklos 61(3):466–499
Sabatini F (2009) Social capital as social networks: A new framework for measurement and an empirical analysis of its determinants and consequences. J Socio-Econ 38(3):429–442
Schneider G, Plümper T, Baumann S (2000) Bringing Putnam to the European regions: on the relevance of social capital for economic growth. Eur Urban Reg Stud 7(4):307–317
Shearmur R (2011) Innovation, regions and proximity: from neo-regionalism to spatial analysis. Reg Stud 45(9):1225–1243
Stam E, Bosma N (2014) Growing entrepreneurial economies. *The Routledge companion to entrepreneurship*, 325–340

Swaleheen M (2011) Economic growth with endogenous corruption: an empirical study. Public Choice 146:23–41
Tabellini G (2010) Culture and institutions: economic development in the regions of Europe. J Eur Econ Assoc 8(4):677–716
Tomaney J (2014) Region and place I: institutions. Prog Hum Geogr 38(1):131–140
Treisman D (2002) Defining and measuring decentralization: a global perspective. University of California, Los Angeles
Trigilia C (2001) Social capital and local development. Eur J Soc Theory 4(4):427–442
Trigilia C, Burroni L (2009) Italy: rise, decline and restructuring of a regionalized capitalism. Econ Soc 38(4):630–653
Uslaner EM (2002) The Moral Foundations of Trust. Cambridge University Press, Cambridge
Uslaner EM (2008) Where you stand depends upon where your grandparents sat: the inheritability of generalized trust. Public Opin Q 72(4):725–740
Uslaner EM (2017) Political trust, corruption, and inequality. In: Handbook on political trust. Edward Elgar Publishing. pp. 302–315
Van der Meer TW (2017) Political trust and the "crisis of democracy". In: Oxford Research Encyclopaedia of Politics. Oxford University Press, Oxford
Van de Walle S, Bouckaert G (2003) Public service performance and trust in government: the problem of causality. Int J Public Adm 26(8–9):891–913
Van Erkel PFA, van der Meer TWG (2016) Macroeconomic performance, political trust and the great recession: a multilevel analysis of the effect of within-country fluctuations in macroeconomic performance on political trust in 15 EU countries, 1999–2011. Eur J Polit Res 55(1):177–197
Wang CH (2016) Government performance, corruption, and political trust in East Asia. Soc Sci Q 97(2):211–231
Warren ME (2006) Democracy and deceit: regulating appearances of corruption. Am J Political Sci 160–174(50):1
Whiteley PF (2000) Economic growth and social capital. Political Stud 48(3):443–466
Wollebaek D, Selle P (2002) Does participation in voluntary associations contribute to social capital? The impact of intensity, scope, and type. Nonprofit Volunt Sect Q 31(1):32–61
Woolcock M (2002) Social capital in theory and practice: where do we stand. Soc Capital Econ Dev Well-Being Dev Ctries 1(2):18–39