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ORIGINAL PAPER

Kin networks and quality of government: a regional analysis

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Abstract
This paper examines the relationship between kin-based institutions and quality of government in the regions of Spain, France, and Italy. The results show that the rate of cousin marriage during the twentieth century is a strong predictor of the modern-day quality of government in the regions of these three countries. Regions characterized by a higher prevalence of cousin marriage tend to have on average worse governance outcomes. This finding holds after accounting for country fixed effects and different variables that may be correlated with both consanguinity and regional quality of government, including an extensive array of geographical, historical, and contemporary factors. The observed association between cousin marriage and quality of government persists when I utilize an instrumental variable approach that exploits regional variation in the degree of historical exposure to the marriage laws of the medieval Catholic Church to address potential endogeneity concerns. Furthermore, the paper also provides evidence consistent with the idea that the effect of cousin marriage on the quality of government operates through its impact on a series of cultural traits such as impersonal trust, fairness, and conformity-obedience.

JEL Classification H11 · J12 · R11

1 Introduction

During the last decade, an increasing number of studies have highlighted the importance of the quality of government for regional development in the European Union (EU). For example, Rodríguez-Pose and Garcilazo (2015) and Rodríguez-Pose and Ketterer (2020) document the importance of regional governance, both as a direct determinant of economic growth in the EU and as a moderator of the efficiency of Structural and Cohesion Funds expenditure. In fact, Ketterer and Rodríguez-Pose (2018) reveal that the quality of government, particularly government effectiveness

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and the fight against corruption, is more important than 'first-nature' geography for regional development in the EU. Consistent with these findings, Crescenzi et al. (2016) demonstrate that the quality of government at the regional level impacts the economic returns of transport infrastructure investment, while Rodríguez-Pose and Cataldo (2015) provide evidence of the positive association between government performance and innovative capacity in EU regions. Additionally, Ezcurra and Rios (2019) find a positive relationship between quality of government and regional resilience during the Great Recession, whereas Barbero et al. (2021) report that trade across EU regions is highly influenced by differences in regional government quality. Furthermore, Rodríguez-Pose and Burlina (2021) document that regional institutions played an important role in the impact of the first wave of the COVID-19 pandemic.

In view of these findings, it is crucial to understand why some European regions have better quality of government than others. However, apart from a few exceptions (e.g., Charron et al. 2014; Ketterer and Rodríguez-Pose 2018; Ezcurra and Rios 2020), there is limited research addressing this question. To contribute to this literature and enhance our comprehension of the underlying determinants of government performance in the EU, this paper investigates the impact of kin-based institutions on the quality of government at the regional level.

Kin-based institutions, considered the oldest and perhaps most fundamental of human institutions (Schulz et al. 2019; Bahrami-Rad et al. 2023), encompass the set of culturally transmitted social norms that regulate aspects related to marriage, descent, residence, and other associated domains (Henrich 2020). While kin-based institutions vary along several dimensions, anthropologists have traditionally emphasized the importance of kinship intensity, which reflects the extent to which individuals are part of broad and tight kin networks that demand loyalty and prescribe much of their behavior (Walker et al. 2013; Enke 2019). Intensive kinship systems include practices like cousin marriage (Bittles and Black 2010; Leutenegger et al. 2011), customary inheritance (Bahrami-Rad 2021; Bau 2021), post-marital residence (Lowes 2018; Bau 2021), and polygamy (Tertilt 2006; Fenske 2015), which continue to be relevant in many societies around the world today.

The cultural evolutionary forces that shape the development of intensive kinship systems promote obedience, conformity, and in-group loyalty, while discouraging individualism, independence, impersonal trust, fairness, and cooperation with member outside the kin group (Schulz et al. 2019; Henrich 2020). This aspect is particularly important in our context, as the literature shows that these cultural traits are associated with the quality of government. For example, numerous studies have demonstrated that societies characterized by individualistic values and a higher degree of impersonal trust tend to have better governance outcomes (e.g., Knack and Keefer 1997; La Porta et al. 1997; Licht 2007; Bjørnskov 2010; Kyriacou 2016). This suggests a possible negative relationship between the intensity of kinship networks and government performance. Consistent with this hypothesis, Alesina and Giuliano (2014) document that countries with stronger family ties tend to have on average worse governance outcomes. Against this background, this paper aims to examine the link between the intensity of kinship systems and the quality of government at the regional level. To do so, as is common in the literature

(Woodley and Bell 2013; Akbari et al. 2019; Schulz 2022; Ghosh et al. 2023), I utilize the rate of cousin marriage as a proxy for the intensity of kinship networks, taking advantage of the availability of this information for the regions of Spain, France, and Italy.

The results of the paper show that the rate of cousin marriage during the twentieth century is a strong predictor of the modern-day quality of government in the regions of these three countries. Consistent with the previous discussion, those regions characterized by a higher prevalence of cousin marriage tend to have on average worse governance outcomes. This finding holds after accounting for country fixed effects and different variables that may be correlated with both consanguinity and regional quality of government, including an extensive array of geographical, historical, and contemporary factors. To address potential endogeneity concerns, I utilize several empirical strategies, among which is an instrumental variable approach that exploits regional variation in the degree of historical exposure to the marriage laws of the medieval Catholic Church. Furthermore, the paper also provides evidence consistent with the idea that the effect of cousin marriage on the quality of government operates through its impact on a series of cultural traits such as impersonal trust, fairness, and conformity-obedience.

The present paper is related to several strands of literature. First, as mentioned above, this research contributes to the empirical literature on the determinants of the quality of government across the European regions. The scant previous studies on this issue have primarily focused on examining the importance of the "proximate" determinants of government performance, such as the level of development, population size, or the degree of regional autonomy (Charron et al. 2014; Ezcurra and Rios 2020), as well as historical factors (Rodríguez-Pose and Cataldo 2015; Ketterer and Rodríguez-Pose 2018). However, none of these prior studies have investigated thus far the potential influence of the intensity of kinship networks on regional government quality.

Second, this work is also related to a few papers that have highlighted the importance of kin-based institutions for different economic and political outcomes in the European regions. For example, Duranton et al. (2009) show the relationship between medieval family structures and existing disparities across European regions in household size, educational attainment, social capital, labor force participation, sectoral structure, wealth, and inequality. Using data for Spain, France, Italy, and Turkey, Schulz et al. (2019) document the impact of cousin marriage on cultural variation at the regional level, while Schulz (2022) finds that higher consanguinity decreases the degree of political participation. Akbari et al. (2019), for their part, show the existence of a negative relationship between the rate of cousin marriage and corruption across the regions of Spain, France, and Italy, a finding consistent with the results obtained in the present paper.

Third, more broadly, this research also contributes to the extensive literature that emphasizes the endogeneity of culture and the importance of deep historical factors in the adoption of certain cultural values (Rothstein and Stolle 2008; Cappelen et al. 2022; Kammas and Sarantides 2024). For example, Putnam (1993) argues that regional differences in Italy in levels of cooperation, participation, social interaction, and trust—dating back at least as far back as the twelfth century—can be attributed

to the impact of the free city-state experience during the Middle Ages (Guiso et al. 2016). In turn, Tabellini (2010) shows the relevance of the political institutions in place between 1600 and 1850 and the literacy rate at the end of the nineteenth century when explaining the cultural differences across European regions. In the same vein, and in line with Schulz et al. (2019), the findings of the present paper are consistent with the idea that regional variation in certain cultural traits favoring impersonal trust, fairness, and cooperation is the result of the historical processes that contributed to shaping kin-based institutions during the Middle Ages (Henrich 2020; Schulz 2022). In this way, this study would also relate to works that have highlighted the importance of culture and social capital in explaining the current differences in development levels across European regions. For example, Tabellini (2010) documents that several cultural traits, such as interpersonal trust and individualism, are positively associated with present-day regional economic development in Europe. Similarly, Forte et al. (2015) show that higher levels of trust and active associationism lead to more intense regional growth in the EU. Moreover, Muringani et al. (2021) find that bridging social capital is linked to higher levels of economic growth across European regions, while bonding social capital is highly correlated with bridging social capital and is associated with lower growth when controlled for (Beugelsdijk and Smulders 2009).

The remainder of the paper is structured as follows. After this introduction, Sect. 2 presents the conceptual framework of the research, highlighting the reasons why kin-based institutions should influence the quality of government. Following that, Sect. 3 describes the measures used to assess the intensity of kin-based institutions and the quality of government at the regional level. In Sect. 4, I empirically examine the association between the rate of cousin marriage and governance outcomes in the regions of Spain, France, and Italy, paying particular attention to the robustness of the results. To complement the analysis, Sect. 5 provides initial evidence on the role played by certain cultural traits as a potential transmission channel linking kin-based institutions and the quality of government. The final section summarizes the main conclusions of the paper and discusses the key policy implications stemming from the analysis.

2 Kin-based institutions and quality of government: conceptual framework

Kin-based institutions consist of a set of culturally transmitted norms that regulate marriage and family relations, endowing individuals with a series of responsibilities, obligations, and privileges vis-á-vis other members of their community (Schulz et al. 2019). This type of institution is perhaps the oldest and most relevant of human institutions, constituting the primary framework for organizing social life in most societies throughout history (Lévi-Strauss 1969; Bahrami-Rad et al. 2023). Their universality and enduring presence are connected to various aspects of our species' evolved psychology, including our innate inclinations for incest aversion, kin altruism, and pair bonding (Chapais 2009; Henrich 2016).

The type of kin-based institutions adopted by a society is influenced by a variety of ecological, climatic, geographic, and historical factors that interact with each other in a complex way (Kaplan et al. 2009; Hernich 2020). While kin-based institutions vary along several important dimensions, anthropologists have long emphasized the importance of kinship intensity, which reflects the degree to which individuals are part of broad and tight kin networks that demand their loyalty and determine relevant aspects of their behavior (Enke 2019; Schulz et al. 2019). Intensive kinship norms favor the development of compact, dense, and overlapping kin-based networks that result in clans or lineages isolated relationally from other groups. These networks provide their members with mechanisms of mutual aid, business partners, and political alliances. Among the characteristic practices of societies with intensive kinship networks is cousin marriage, which contributes to reinforcing kin bonds with additional ties, ensuring that these relationships endure across generations. Moreover, intensive kinship systems often include norms that favor co-residence in extended families and unilineal descent, promoting internal cohesion and loyalty among group members. In contrast, extensive kinship systems are characterized by marriages to non-kin, bilateral descent, and flexible residential norms, resulting in more diverse and non-exclusive kin networks (Bahrami-Rad et al. 2023).

Cultural evolutionary forces shaping the development of intensive kinship networks promote obedience, conformity, and in-group loyalty, while discouraging individualism, independence, impersonal trust, fairness, and cooperation with those outside the kin group (Schulz et al. 2019; Henrich 2020). This is particularly important in our context, as there is abundant evidence demonstrating that these cultural traits are related to the quality of government. For example, Licht et al. (2007); Kyriacou (2016), or Ezcurra (2021) show that individualistic countries tend on average to have better governance outcomes. These findings are consistent with Tanzi (1994), who points out that in collectivist societies, public activity is often characterized by the existence of clientelistic networks that operate based on reciprocity rules originating from kinship networks, leading to lower levels of bureaucratic quality and greater corruption. According to Tanzi (1994), this contrasts with the situation in individualistic societies, where it is more likely that public administrators are hired and promoted based on merit, and their activities follow rational procedures and universalistic principles. As a result, the quality of public policies and governance outcomes tend to be greater in individualistic societies.

In a similar vein, Greif (2006) argues that in individualistic societies, their members show less in-group favoritism and are more prone to interact with strangers compared to collectivist societies. This emphasis on the principles of generalized morality in individualistic societies makes it more likely to establish effective formal institutions to enforce cooperative behavior in social dilemmas such as public good provision or trade exchanges characterized by asymmetric information (Enke 2019; Cappelen et al. 2022). On the contrary, in collectivist societies, the principles of limited morality (or amoral familism according to Banfield 1958) tend to prevail, implying greater in-group favoritism and fewer incentives for the development of these types of institutions (Tabellini 2008; Akbari et al. 2019).

Starting with the seminal work of Putnam (1993), numerous studies have linked the degree to which people believe that strangers can be trusted with the quality

of government, both across countries (e.g., Knack and Keefer 1997; La Porta et al. 1997; Tabellini 2008; Bjørnskov 2010) and within countries (e.g., Putnam 1993; Helliwell and Putnam 1995; Knack 2002; Charron et al. 2014). Among the mechanisms that explain this association, the literature has emphasized the positive impact of trust on "civicness," whereby more civically minded citizens are better at holding politicians accountable, and consequently politicians "are more inclined to temper their worst impulses rather than face public protests" Putnam (2000, p. 43). Likewise, trust leads to better governance outcomes by providing a greater supply of quality decisions in the bureaucracy and political processes (Bjørnskov 2010).

The preceding discussion suggests the likely existence of a negative relationship between the intensity of kin-based institutions and government quality. Consistent with this idea, Alesina and Giuliano (2014) report that countries with stronger family ties are characterized by lower quality of government, while Akbari et al. (2019) find that cousin marriage is negatively correlated with corruption both across and within countries. Moreover, Woodley and Bell (2013) and Schulz (2022) show that consanguinity is detrimental for the development of democratic political institutions. In fact, the existence of a negative association between the intensity of kinship networks and government performance aligns with a long tradition in social sciences scholarship that over the last century has highlighted the potential of kin-based institutions to undermine the development of strong and effective states (e.g., Weber 1915; Migdal 1988; Fukuyama 2011).

3 Data and preliminary evidence

To quantify the intensity of kin-based institutions across European regions, I utilize a measure of the relevance of cousin marriages taken from Schulz et al. (2019).[1] This measure reflects the percentage of kin marriages up to and including first-cousin marriages, as well as uncle-niece marriages. The data on this type of marriages are based on the information provided by the marital dispensation records of the Catholic Church throughout the twentieth century and are only available for the regions of Spain (average of years 1911 to 1943), France (average of years 1926 to 1958), and Italy (average of years 1910 to 1964).[2] Overall, I have data on the rate of cousin marriage for 57 NUTS-2 regions belonging to these three countries (see the online Appendix for further details).[3]

[1] The employment of cousin marriage as a proxy for the intensity of kinship networks is common in the literature. See, for example, Woodley and Bell (2013), Akbari et al. (2019); Schulz et al. (2019); Schulz (2022) or Ghosh et al. (2023). As pointed out by Greif (2006, p. 309), consanguineous marriages have "historically provided one means of creating and maintaining kinship groups."

[2] Schulz et al. (2019) also provide data for Turkey, but the measure of quality of government used in the paper is not available for the regions of this country.

[3] NUTS is the French acronym for "Nomenclature of Territorial Units for Statistics," a hierarchical classification of sub-national territorial units established by Eurostat according to administrative criteria. In this classification, NUTS-0 corresponds to the country level, while increasing numbers indicate increasing levels of spatial disaggregation.

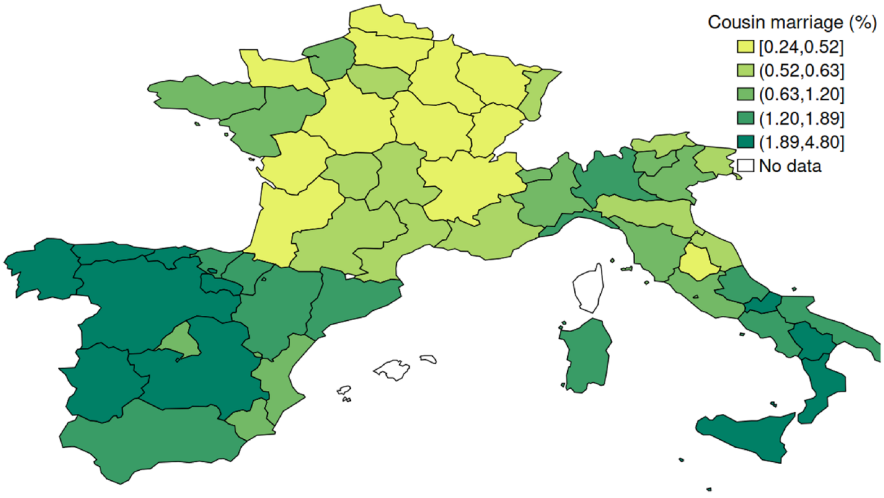

Fig. 1 Cousin marriage across the regions of Spain, France, and Italy

Figure 1 shows the spatial distribution of the rate of first-cousin marriage across regions in Spain, France, and Italy. According to the map, there is considerable regional variation in the rate of cousin marriage in these three countries. Specifically, the regions where cousin marriages during the twentieth century were more common are located in southern Italy, as well as in central and northwestern Spain. Indeed, the three regions with the highest presence of this type of marriage are Sicily (4.8%), Calabria (3.5%), and Asturias (3.2%). In contrast, regions in France generally tend to have a lower number of cousin marriages. Consistent with this, the lowest percentage of first-cousin marriages corresponds to Bourgogne (0.24%), Champagne-Ardenne (0.26%), and Poitou-Charentes (0.33%).

The analysis also requires data on the quality of government in the regions of Spain, France, and Italy. To that end, I rely on the European Quality of Government Index (EQI), a comparable and homogeneous measure of governance at the regional level that is widely used to make comparisons within and across countries in Europe (e.g., Rodríguez-Pose and Cataldo 2015; Ketterer and Rodríguez-Pose 2018; Ezcurra and Rios 2019, 2020; Rodríguez-Pose and Ketterer 2020; Rodríguez-Pose and Burlina 2021). The EQI was developed by Charron et al. (2014, 2015, 2019) and is based on survey data that capture the average citizens' perceptions on the quality and impartiality of public services in their region of residence, as well as their experiences with corruption. In order to generate the EQI score for the different regions, the survey data are combined with four of the six World Bank's Worldwide Governance Indicators (WGI) constructed by Kaufmann et al. (1999): Voice and accountability, Government effectiveness, Rule of law, and Control of corruption.

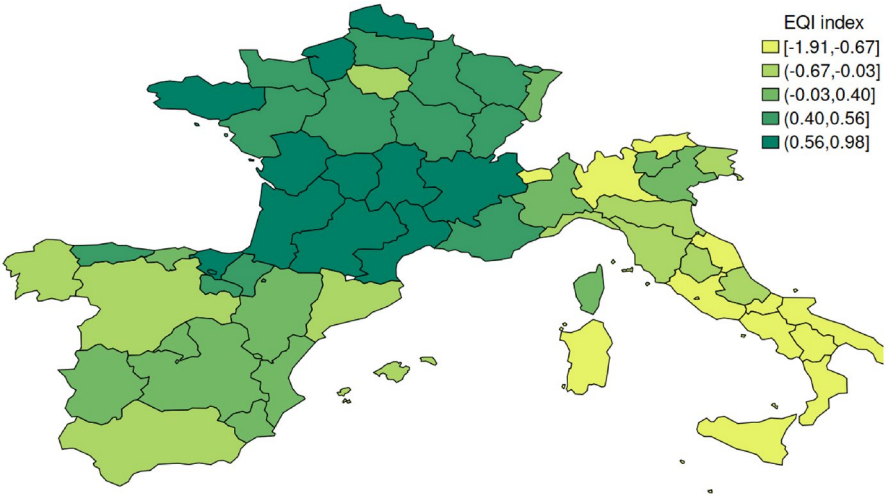

Fig. 2 Quality of government across the regions of Spain, France, and Italy

To date, the EQI is available for years 2010, 2013, 2017, and 2021. As long as the quality of government at the regional level tends to be persistent and changes slowly over time (Charron et al. 2019), I utilize the mean value of the EQI for these years in the analysis below.[4]

Figure 2 displays the spatial distribution of the EQI in the regions of Spain, France, and Italy. As can be observed, the majority of regions with the highest levels of quality of government are located in France, while the lowest values of the index are found in the regions of central and southern Italy. In addition to the differences between countries, the map also reveals the existence of considerable within-country disparities, which is especially evident in the cases of Spain and Italy. This is consistent with the trend observed in the EU as a whole, where countries with lower EQI values tend to have wider divergence of EQI scores at the sub-national level (Charron et al. 2019; Ezcurra and Rios 2020).

As outlined in the introduction, this paper aims to investigate the link between the intensity of kin-based institutions, as proxied by the rate of cousin marriage, and quality of government at the regional level. To initially explore this relationship, the regions of Spain, France, and Italy are divided into two and three groups according to their rates of cousin marriage. The definitions of the various groups are based on the median (classification into two groups), and the first and third quartiles (classification into three groups) of the regional distribution of first-cousin marriage rates. As depicted in Fig. 3, regions where cousin marriage is more prevalent tend to exhibit lower levels of

[4] The correlation coefficient between the EQI in 2010 and 2021 is 0.91 (see Table A1 in the online Appendix for further details). This suggests that the results of the analysis are unlikely to depend on using an average of the measure of government quality. In order to provide further evidence on this issue, Table A2 in the online Appendix shows that the relationship between the rate of cousin marriage and the quality of government remains unaltered when I alternatively utilize the EQI for each available year.

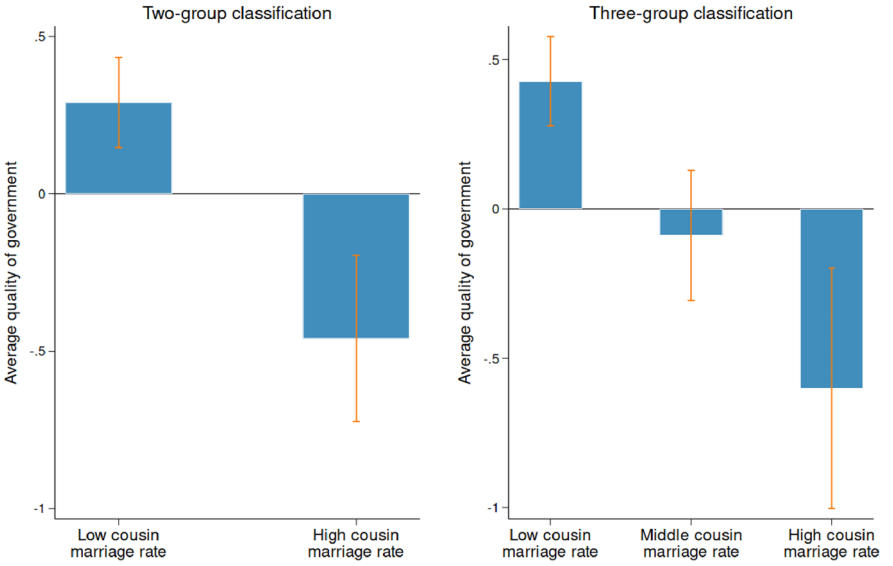

Fig. 3 Cousin marriage and quality of government: Preliminary evidence. Note: The bars represent the average level of quality of government in each group, along with the corresponding 90% confidence interval

government quality. Conversely, regions with fewer consanguineous marriages have on average higher values of the *EQI*. Indeed, the observed differences in government performance between the various groups are statistically significant at the 1% level. When considering these findings, however, it is important to note that this analysis is merely descriptive, and the results just discussed may ultimately be sensitive to the specific number of groups used to perform the regional classification. More importantly, omitted variables may be driving the apparent link between cousin marriage and the quality of government at the regional level. In view of this, in the next section I conduct a more appropriate statistical analysis to investigate this issue.

4 The relationship between consanguinity and quality of government

4.1 Model specification

In order to explore the reduced-form relationship between consanguinity and quality of government in the regions of Spain, France, and Italy, I use the following model:

$$QG_{ic} = \alpha + \beta C_{ic} + X'_{ic}\varphi + \lambda_c + \varepsilon_{ic} \tag{1}$$

where QG_{ic} represents the average value of the *EQI* in region i of country c over the period 2010-2021, C_{ic} is the first-cousin marriage rate in the twentieth century,

and X_{ic} stands for a vector of variables controlling for additional factors assumed to influence on the quality of government and consanguinity. λ_c is a vector of country fixed effects used to control for country-specific characteristics related to historical, cultural, or institutional factors, thereby reducing the potential influence of unobserved heterogeneity on the results. Finally, ε_{ic} is the error term. The coefficient of interest throughout this section is β, which captures the impact of the rate of cousin marriage on the quality of government. According to the discussion in Sect. 2, I expect $\beta < 0$.

The control variables in vector X have been selected in an attempt to minimize the risk that the estimate of β is capturing the influence from other determinants of the quality of government that may also be correlated with the rate of cousin marriage. Following this strategy, I control for a host of geographic factors, including latitude, temperature, precipitation, ruggedness, distance to coast, the presence of rivers or lakes, elevation, and agricultural suitability.[5] These variables are potentially important for various reasons. For example, factors like latitude, ruggedness, distance to coast, the presence of rivers or lakes, and elevation capture the degree of remoteness of a region, which may negatively impact the quality of government by increasing the costs associated with adopting institutional innovations aimed at improving the way regional governments exercise authority (Ezcurra and Rios 2020). By learning from the successes of others, a region can compete more effectively, thereby avoiding the costs of policy innovation (Mukand and Rodrik 2005; Ward and John 2013). However, geographically isolated regions would have more difficulties in copying those policies that have yielded good results in other areas and avoiding those that have failed. Likewise, Jimenez-Ayora and Ulubaşoğlu (2015) argue that rugged terrains tend to increase the costs of cooperation among members of society, complicating the solution of collective action problems, which is likely to negatively affect governance outcomes. Geographic isolation also influences consanguinity, decreasing the probability of finding an unrelated marriage partner and reinforcing kin-based institutions (Schulz et al. 2019; Henrich 2020).

Agriculture is another factor that may jointly impact consanguinity and quality of government. As evidenced by anthropologists, reliance on agricultural activity as a subsistence mode traditionally tends to foster the intensity of kinship networks, favoring cousin marriages (Jones 2011; Henrich 2020). At the same time, this activity has historically played a significant role in shaping the institutional development of pre-industrial societies (Ang et al. 2020, 2021). For these reasons, the geographic controls include various variables related to agricultural conditions such as latitude, temperature, precipitation, or elevation, as well as an index of land suitability for agriculture.

The modernization theory popularized by Lipset (1981) implies that economic growth fosters institutional improvement. According to this argument, as the scale of economic activity expands, better institutions become affordable, and hence, the quality of government should improve (North 1990; La Porta et al. 1999). This

[5] The online Appendix provides a detailed description of all these control variables, as well as their sources.

suggests that the possible existence of a negative relationship between consanguinity and quality of government could, in principle, be the result of the weakening of kin-based institutions due to advances in the process of economic development. As economies grow over time, increasing urbanization and migration processes generate greater interactions with non-kin, which is likely to pose challenges in sustaining the close bonds and fulfilling the characteristic obligations of intensive kinship networks, including cousin marriage preferences (Bittles and Black 2010; Shenk et al. 2016). This underscores the importance of considering in our analysis the potential impact of past economic prosperity on the modern-day quality of government. Therefore, I also include in the list of controls of model (1) two proxies for the level of regional development around the beginning of the twentieth century: GDP per capita in 1900 and literacy rate around 1880.

While the rate of cousin marriage is highly correlated with the intensity of kinship networks (Schulz et al. 2019; Henrich 2020; Schulz 2022),[6] it is possible that it does not capture all aspects of kin-based institutions that could influence the quality of government. In relation to this, it is important to note that Alesina and Giuliano (2014) document that countries with strong family ties, measured using data from the World Values Survey, tend to have lower quality of institutions. The strength of family ties depends on the type of family (Galasso and Profeta 2018), which is in turn correlated with attitudes toward kin marriages (Henrich 2020; Bahrami-Rad et al. 2023). This raises the possibility that our measure of consanguinity could be capturing the effect of family type on the quality of government. To address this potentially important concern, I include in the list of controls of model (1) a set of dummy variables based on Todd (1990) classification of medieval European family systems to identify the historically predominant family type in each region, differentiating between absolute nuclear family, egalitarian nuclear family, stem family, incomplete stem family, and communitarian family (see Todd (1990) for further details).

4.2 Results

Table 1 shows the results obtained when various versions of model (1) are estimated by OLS. The possible existence of spatial spillover effects in the regional distribution of quality of government (Ezcurra and Rios 2019, 2020), and the recognition that cultural practices and shared histories may extend beyond contemporary regional borders (Klasing 2013; Schulz 2022), cast doubt on the independence of the error term in model (1). To account for this potential spatial autocorrelation, I utilize the Conley (1999) correction of the standard errors with a Bartlett kernel and a cutoff distance of 500 kms above which spatial interactions between regions are assumed to be negligible. This cutoff distance was chosen after evaluating different

[6] In a sample of 71 countries from around the world, the correlation coefficient between the percentage of consanguineous marriages at the country level and an index of kinship intensity constructed by Schulz et al. (2019) from ethnographic data incorporating additional elements of kin-based institutions such as unilineal descent, polygyny, co-residence of extended family, or community organization is 0.75.

Table 1 Cousin marriage and quality of government: Baseline results

	Quality of government				
	(1)	(2)	(3)	(4)	(5)
Cousin marriage	−0.440***	−0.303***	−0.233***	−0.241***	−0.233***
	(0.152)	(0.092)	(0.058)	(0.063)	(0.062)
Country fixed effects	No	Yes	Yes	Yes	Yes
Geographic controls	No	No	Yes	Yes	Yes
Historical controls	No	No	No	Yes	Yes
Family-type fixed effects	No	No	No	No	Yes
Observations	57	57	57	57	57
R-squared	0.291	0.779	0.904	0.907	0.914

OLS estimates. The dependent variable is the mean value of the EQI for the years 2010, 2013, 2017, and 2021. The geographic controls include latitude, temperature, precipitation, ruggedness, distance to coast, the presence of rivers or lakes, elevation, and agricultural suitability. The historical controls include the log of GDP per capita in 1900 and the literacy rate around 1880. The family-type fixed effects identify the historically predominant family type in each region according to the Todd (1990) classification of medieval European family systems, differentiating between absolute nuclear family, egalitarian nuclear family, stem family, incomplete stem family, communitarian family, and indeterminate family type. Conley standard errors are reported in parentheses. The Conley standard errors were calculated using a Bartlett kernel and a cutoff distance of 500 kms above which spatial interactions between regions are assumed to be negligible

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

cutoffs ranging from 300 to 1,500 kms, with increments of 100 kms, and, following Colella et al. (2019), selecting the largest standard error across these cutoffs in the full specification of model (1) (see Figure A1 in the online Appendix for further details).[7]

Focusing on the main aim of the paper, the estimates in Table 1 reveal that the coefficient on the measure of consanguinity is negative and statistically significant at the 1% level in all cases. This implies that regions with higher rates of cousin marriage during the twentieth century tend to have lower levels of government quality today, which is consistent with the arguments discussed in Sect. 2. The bivariate estimate in column 1 of Table 1 indicates that the rate of cousin marriage alone accounts for 29% of the variation in modern-day quality of government, which is a remarkable finding for a cross-sectional analysis. The inclusion of country fixed effects and the various controls outlined in Sect. 4.1 diminishes somewhat the magnitude of the estimated coefficient on the rate of cousin marriage. However, it does not change the observed relationship between consanguinity and government quality, showing the robustness of this result and ruling out the possibility of a spurious

[7] Tables A3 and A4 in the online Appendix show that the results in Table 1 remain unaltered when I use the conventional heteroskedasticity-consistent standard errors with the small-sample correction proposed by MacKinnon and White (1985) due to the relatively low cross-sectional dimension, and an alternative version of standard errors that assigns higher weight to residuals of observations with higher leverage (Imbens and Kolesár 2016).

correlation due to the omission of these covariates. This is particularly important given that, as pointed out above, the different geographic and historical controls may be correlated with both the quality of government and consanguinity. Figure 4 illustrates the relationship between the rate of cousin marriage and the quality of government through a partial regression plot based on all covariates and country fixed effects.

The regression coefficient from the preferred specification in Table 1 (column 5) indicates that an increase of 1% in the rate of cousin marriage is associated with a 0.233 unit decrease in the measure of quality of government (equivalent to 30% of one standard deviation). To get a more accurate idea of the magnitude of this effect, let us consider the case of the Spanish region of Galicia. Compared to the rest of regions in Spain, Galicia has a high rate of cousin marriage ($C = 2.67$) and a low quality of government ($QG = -0.14$). The estimates in Table 1 indicate that if Galicia had a rate of cousin marriage equal to that of the Spanish region of Murcia ($C = 1.1$), its governance score would increase by 0.368 points, placing it above the Spanish mean ($QG = 0.13$). These figures suggest that consanguinity exerts a quantitatively relevant impact on the quality of government.

4.3 Robustness tests

The online Appendix includes the results of various additional robustness tests that confirm the observed relationship between consanguinity and quality of government in the regions of Spain, France, and Italy.

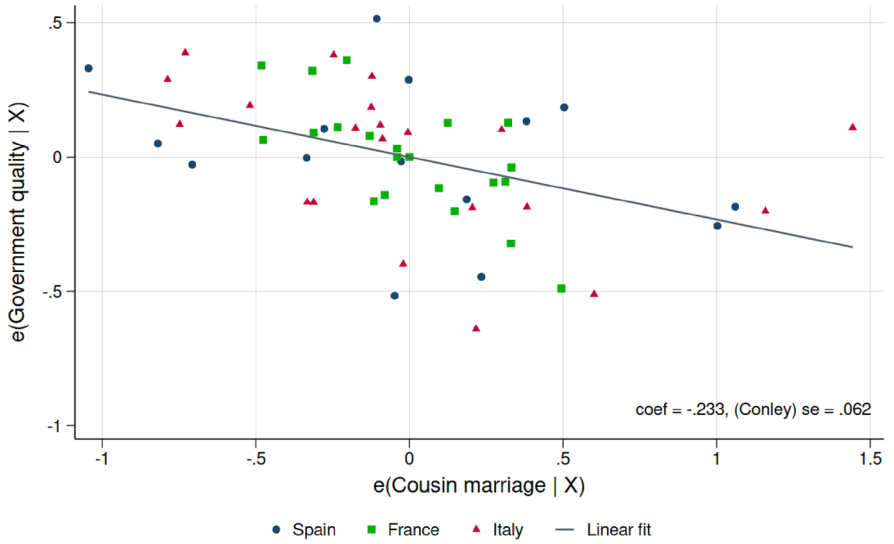

Fig. 4 Cousin marriage and quality of government: Partial regression plot. Note: Partial regression plot conditional on the full set of controls described in section 4.1 and country fixed effects

Given the relatively limited number of observations, there is a possibility that a few extreme cases could be driving the results. However, the information provided by columns 2–7 of Table A5 indicates that the link between the rate of cousin marriage and the quality of government still holds after removing outliers and influential observations identified through the following procedures: studentized residuals, DFBETA and DFITS statistics, leverage, and Cook's and Welch's distances. Furthermore, column 8 of Table A5 also reveals that the effect of consanguinity on governance outcomes remains unchanged when excluding the regions that host national capitals from the analysis.

As pointed out in Sect. 3, the indicator of quality of government used in the paper, the EQI, is an aggregate measure derived from three indices that assess the quality and impartiality of public services at the regional level, as well as citizens' experiences with corruption. While these three indices are highly correlated (see Table A6 in the online Appendix for further details), it is not evident a priori that consanguinity affects these three aspects of government quality in the same way. To explore this issue, I now repeat the previous analysis using each of these dimensions of governance as the dependent variable when estimating model (1). The results presented in Table A7 indicate that the coefficient on the rate of cousin marriage is in all cases negative and significant at the 1% level. This means that regions with lower rates of cousin marriages tend to have higher-quality and more impartial public services and experience lower levels of corruption, confirming that the results in Table 1 are not driven by a specific dimension of government quality.

Furthermore, I examine the effect on the previous results of controlling for a set of contemporary factors that may affect the quality of government at the regional level, such as GDP per capita, population size, the stock of human capital, the degree of regional autonomy, innovation activity, and whether a region hosts the capital of the country (Charron et al. 2014, 2019; Ezcurra and Rios 2019, 2020).[8] However, before discussing the results of this analysis, it is important to note that the majority of these proximate determinants of the quality of government can be considered outcomes of the intensity of kinship networks and would, therefore, be bad controls in this context (Angrist and Pischke 2009, p. 64). Nevertheless, Table A8 shows that their inclusion in the analysis does not affect the observed relationship between the rate of cousin marriage and the quality of government. The estimated coefficient on the measure of consanguinity continues to be negative and statistically significant at the 1% level in all cases, confirming our previous findings. That said, the estimates show that most of the additional controls considered are not significant at conventional levels. The only exception is the level of GDP per capita and population size. According to the results in Table A8, governance outcomes tend to be better in regions with higher GDP per capita and lower population, which corroborates earlier findings (Charron et al. 2014; Ezcurra and Rios 2020).

As is common in the literature, the previous analysis utilizes the Conley (1999) correction of the standard errors to account for spatial dependence across regions. I

[8] I take the average value of these variables over the period 2000-2010 to minimize any potential reverse causality problem between these additional controls and the measure of government quality.

now examine whether the results hold when I alternatively employ a spatial autoregressive model with autoregressive disturbances of order (1,1), which is known in the spatial econometrics literature as a SARAR(1,1) model (Anselin and Florax 1995). This SARAR(1,1) model is estimated using a spectral-normalized inverse-distance weighting matrix and a quasi-maximum likelihood (QML) estimator (Lee 2004). Table A9 in the online Appendix presents the results of this additional robustness test. As can be observed, the results are consistent with our previous findings, confirming the observed association between the rate of cousin marriage and the quality of government. Interestingly, the estimates reveal a negative and significant direct effect of consanguinity in a region on its own quality of government, with a magnitude very similar to that reported in Table 1. However, the indirect effect on the governance outcomes of the rate of cousin marriage in the neighbouring regions is non-significant.

4.4 Addressing potential endogeneity concerns

The fact that the rates of cousin marriage were obtained using data from the twentieth century rules out simple reverse causality between them and modern-day quality of government attributable to omitted factors that only emerged subsequently, independently of any geographical or historical deep factor. Nevertheless, the observed association between consanguinity and quality of government may be affected by an omitted variable that could be correlated with both the rate of cousin marriage and regional governance. In the previous analysis, I have addressed this issue by controlling for country fixed effects and an extensive set of geographic and historical variables that, according to the literature, might be relevant in this context. The robustness of the coefficient estimates on the measure of consanguinity to the inclusion of these additional controls provides a first piece of evidence that omitted variables alone are not driving the observed relationship between cousin marriage and quality of government. However, it is practically impossible to identify all potentially confounding variables and control for them in a regression analysis. For this reason, and in an effort to bolster the strength of the previous findings, I now adopt the approach proposed by Oster (2019) to evaluate the potential impact of omitted variables on my results.

Building on the earlier work of Altonji et al. (2005), Oster (2019) employs coefficient stability and R-squared movements when the observed controls are introduced into the model to assess the robustness of estimation results to potential omitted variable bias. In my analysis, I utilize the δ and β^* statistics proposed by Oster (2019). The δ statistic indicates how strongly correlated the unobservables need to be with the rate of cousin marriage, relative to observables, in order to account for the full size of the coefficient on the measure of consanguinity. The β^* statistic reflects the estimated value of the coefficient on cousin marriage rate if unobservables were as correlated with the measure of consanguinity as the observables. Oster (2019) shows that if the interval between the estimated coefficient on the rate of cousin marriage and β^* does not include zero, then one can reject the null hypothesis that the coefficient of interest is exclusively driven by

unobservables. To calculate these statistics, I compare the model with the full set of controls (column 5 of Table 1) with a restricted version which only includes the measure of consanguinity as explanatory variable (column 1 of Table 1). The Oster's δ statistic is in our case 1.32, indicating that the correlation of unobservables with the rate of cousin marriage needs to be greater than the correlation of the measure of consanguinity with observables in order to drive the estimate down to zero. Assuming that the unobservables are equally correlated with the rate of cousin marriage as are the observables, and that these correlations have the same sign, the estimated coefficient for our measure of consanguinity, if one were able to control for all unobservables, would be $\beta^* = -0.090$. Therefore, the interval between the actual coefficient estimate from the full specification of model (1) ($-$ 0.233) and β^* does not include zero. Overall, these results suggest that it is unlikely that the observed association between consanguinity and quality of government could be explained away by omitted variables.

However, despite these findings, the possible presence of some omitted variable bias in the analysis cannot be ruled out beyond all doubt. In addition to this concern, the rate of cousin marriage is based on data from the marital dispensation records of the Catholic Church during the twentieth century and is susceptible to measurement error, which could bias the OLS estimates downward. To address these potential problems and deal with the possible endogeneity of the rate of cousin marriage, I now adopt an instrumental variable approach by exploiting plausibly exogenous variation in the degree of historical exposure to the marriage laws of the medieval Catholic Church. Starting from the sixth century, the medieval Catholic Church implemented a series of prescriptions and prohibitions concerning cousin marriage, polygyny, bilateral inheritance, and other practices related to marriage and the family (Goody 1983; Ubl 2008). This led to the destruction of existing European clan-based kin networks (Schulz et al. 2019; Henrich 2020) and gave rise to a distinctive European family system characterized by a low prevalence of marriage among blood relatives compared to other parts of the world (Bittles 2001; Alesina and Giuliano 2010, 2014).

Although all regions of Spain, France, and Italy have remained under the sphere of influence of the Catholic Church for at least 500 years, there are relatively important differences in some cases in their exposure to ecclesiastical regulations related to cousin marriage during the Middle Ages. This circumstance is especially evident in the cases of Spain and Italy. In Spain, the southern regions of the country were under Muslim control for much of the medieval period (Oto-Peralías and Romero-Ávila 2016). Likewise, in southern Italy there were several areas under Muslim or Byzantine rule over the Early Middle Ages, which led to a substantially lower influence of the Church in those zones compared to the northern part of the country for several centuries (Wickham 2016). In view of this, I consider as a first potential instrument a measure that captures the degree of Church exposure of the different regions between 550 and 1500 based on the spatial distribution of bishoprics during the Middle Ages (see the online Appendix for a detailed description of this variable). Furthermore, the close association between the Church and the Frankish kings led the Carolingian Empire to support through its secular power the implementation of ecclesiastical regulations (Wickham 2007, 2016; Ubl 2008). As a result, the

Table 2 Church exposure, Carolingian influence, and cousin marriage

	Cousin marriage				
	(1)	(2)	(3)	(4)	(5)
Church exposure	−0.265***	−0.171	0.014	0.013	0.054
	(0.081)	(0.119)	(0.048)	(0.047)	(0.052)
R-squared	0.336	0.481	0.710	0.714	0.744
Carolingian influence	− 1.557***	− 1.487***	− 0.935***	− 0.947***	− 1.053***
	(0.251)	(0.342)	(0.197)	(0.185)	(0.289)
R-squared	0.599	0.672	0.764	0.769	0.783
Country fixed effects	No	Yes	Yes	Yes	Yes
Geographic controls	No	No	Yes	Yes	Yes
Historical controls	No	No	No	Yes	Yes
Family-type fixed effects	No	No	No	No	Yes
Observations	57	57	57	57	57

OLS estimates. The dependent variable is the rate of first-cousin marriage in the twentieth century. The geographic controls include latitude, temperature, precipitation, ruggedness, distance to coast, the presence of rivers or lakes, elevation, and agricultural suitability. The historical controls include the log of GDP per capita in 1900 and the literacy rate around 1880. The family-type fixed effects identify the historically predominant family type in each region according to the Todd (1990) classification of medieval European family systems, differentiating between absolute nuclear family, egalitarian nuclear family, stem family, incomplete stem family, communitarian family, and indeterminate family type. Conley standard errors are reported in parentheses. The Conley standard errors were calculated using a Bartlett kernel and a cutoff distance of 500 kms above which spatial interactions between regions are assumed to be negligible

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

Carolingian Empire experienced the most stringent enforcement of Church prohibitions regarding marriage between relatives (Schulz et al. 2019). For this reason, I also consider as a possible instrument an alternative proxy for Church exposure that reflects the share of a region's surface that belonged to the Carolingian Empire in the year 814, the date of Charlemagne's death.

Table 2 shows the association between the two potential instruments and the rate of cousin marriage in the regions of Spain, France, and Italy during the twentieth century.[9] The estimates indicate that the relationship between the measure of Church exposure and cousin marriage becomes non-significant once country fixed effects and the baseline controls are included in the analysis. This is not particularly surprising as, given its nature, this measure is likely to overestimate the Church's capacity to implement its marriage regulations. On the contrary, the estimated coefficient for the variable identifying whether a region belonged to the Carolingian Empire in 814 is negative and significant at the 1% level in all cases, in line with the evidence provided by Schulz et al. (2019). This suggests that this variable is a natural candidate to be used as an instrument in this context. However, for it to be a valid instrument,

[9] Figures A2 and A3 in the online Appendix display the corresponding partial regression plots based on the full set of controls and country fixed effects.

Table 3 Cousin marriage and quality of government: Second-stage regressions

	Quality of government				
	(1)	(2)	(3)	(4)	(5)
Cousin marriage	−0.351*	−0.465***	−0.389***	−0.395***	−0.422***
	(0.213)	(0.133)	(0.128)	(0.132)	(0.156)
Country fixed effects	No	Yes	Yes	Yes	Yes
Geographic controls	No	No	Yes	Yes	Yes
Historical controls	No	No	No	Yes	Yes
Family-type fixed effects	No	No	No	No	Yes
Observations	57	57	57	57	57
R-squared	0.280	0.755	0.894	0.897	0.900

2SLS estimates. The dependent variable is the mean value of the EQI for the years 2010, 2013, 2017, and 2021. The rate of cousin marriage is instrumented using the share of a region's surface that belonged to the Carolingian Empire in 814. The geographic controls include latitude, temperature, precipitation, ruggedness, distance to coast, the presence of rivers or lakes, elevation, and agricultural suitability. The historical controls include the log of GDP per capita in 1900 and the literacy rate around 1880. The family-type fixed effects identify the historically predominant family type in each region according to the Todd (1990) classification of medieval European family systems, differentiating between absolute nuclear family, egalitarian nuclear family, stem family, incomplete stem family, communitarian family, and indeterminate family type. Conley standard errors are reported in parentheses. The Conley standard errors are calculated using a Bartlett kernel and a cutoff distance of 500 kms above which spatial interactions between regions are assumed to be negligible

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

in addition to being correlated with the measure of consanguinity, it is necessary that a region's belonging to the Carolingian Empire does not affect its modern-day quality of government beyond its impact on the rate of cousin marriage. The fulfillment of this exclusion restriction cannot be formally tested in the absence of other valid instruments. Nevertheless, considering that the baseline controls include the historically predominant type of family in the region, and various proxies for its level of economic development at the beginning of the twentieth century, I consider this assumption to be plausible.

Table 3 shows the second-stage regressions when the rate of cousin marriage is instrumented using the share of a region's surface that belonged to the Carolingian Empire in 814.[10] As can be checked, the estimated coefficient on the measure of consanguinity is in all cases negative and statistically significant, confirming the OLS results in Table 1. According to the estimate in the specification with country fixed effects and the full set of controls (column 5 of Table 3), an increase of 1% in the rate of cousin marriage is associated with a 0.422 unit decrease in the measure of quality of government at the regional level (55 % of one standard deviation). Interestingly, the magnitude of this effect is larger than in the OLS estimates, indicating a potential attenuation bias due to measurement error in the rates of cousin marriage.

[10] The corresponding reduced-form results can be found in Table A10 in the online Appendix.

5 A potential mechanism: consanguinity and cultural psychology

The analysis conducted thus far indicates that regions with higher rates of cousin marriage during the twentieth century tend to have on average lower quality of government today. As discussed in Sect. 2, this result could be attributed to the influence of cousin marriage on certain cultural and psychological characteristics that affect the quality of government. To explore the empirical relevance of this potential mechanism, in this section I undertake an analysis at the individual level using data from the European Social Survey (ESS) for Spain, France, and Italy. This analysis is similar to that performed by Schulz et al. (2019),[11] and utilizes data from multiple waves of the ESS to maximize the number of observations. Importantly, the ESS provides information on the region of residence of each survey respondent, which allows us to investigate the impact of the regional rate of cousin marriage on various cultural traits of individuals residing in the respective region. Moreover, this type of analysis also allows us to control for individual characteristics of the respondent.

According to the discussion in Sect. 2 and following Schulz et al. (2019), I focus on four cultural variables that capture different aspects of impersonal prosociality, as well as the importance of conformity-obedience and individualism-independence.

Generalized trust. This cultural trait is an essential part of what has come to be known as social capital (Rothstein and Stolle 2008; Sarracino and Mikucka 2017). As is common in the literature, I measure the level of generalized trust using the ESS question that asks, "Generally speaking would you say that most people can be trusted, or that you can't be too careful in dealing with people?". Individual answers to this question vary on an 11-point scale ranging from 0 ("you can't be too careful") to 10 ("most people can be trusted").

Generalized fairness. This variable is based on the ESS question that asks "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?". As in the previous case, individual answers to this question are ordered on an 11-point scale ranging from 0 ("Most people would try to take advantage of me") to 10 ("Most people would try to be fair").

Conformity-obedience. This variable is based on the individual answers to four ESS questions: "Please [...] tell me how much each person is or is not like you. (i) It is important to her/him always to behave properly. She/he wants to avoid doing anything people would say is wrong. (ii) She/he believes that people should do what they are told. She/he thinks people should follow rules at all times, even when no-one is watching. (iii) It is important to her/him to be humble and modest. She/he tries not to draw attention to herself/himself. (iv) Tradition is important to her/him. She/he tries to follow the customs handed down by her/his religion or her/his family." Individuals answer these four questions on a 6-point scale ranging from "Not like me at all" to "Very much like me." The measure of conformity-obedience used is based on the average of the four questions. Following Schwartz (2012) recommendation, to avoid capturing perceptions of closeness, the mean answers given by

[11] Unlike the present paper, Schulz et al. (2019) include Turkey in their analysis. Furthermore, there are differences in the control variables included in both studies.

Table 4 Cousin marriage and cultural values

	(1)	(2)	(3)	(4)	(5)
Generalized trust					
Cousin marriage	−0.068***	−0.054***	−0.065***	−0.065***	−0.055**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.022)
Observations	16,361	16,361	16,361	16,361	16,361
R-squared	0.015	0.052	0.054	0.054	0.055
Generalized fairness					
Cousin marriage	−0.069***	−0.059***	−0.078***	−0.078***	−0.078***
	(0.016)	(0.017)	(0.020)	(0.018)	(0.018)
Observations	16,308	16,308	16,308	16,308	16,308
R-squared	0.036	0.056	0.057	0.058	0.058
Conformity-obedience					
Cousin marriage	0.088***	0.045**	0.054*	0.052**	0.044**
	(0.029)	(0.022)	(0.029)	(0.022)	(0.022)
Observations	16,388	16,388	16,388	16,388	16,388
R-squared	0.028	0.284	0.285	0.287	0.288
Individualism-independence					
Cousin marriage	−0.027	0.006	0.002	0.004	0.006
	(0.036)	(0.030)	(0.036)	(0.023)	(0.023)
Observations	16,388	16,388	16,388	16,388	16,388
R-squared	0.013	0.064	0.065	0.067	0.067
Wave fixed effects	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes	Yes
Geographic controls	No	No	Yes	Yes	Yes
Historical controls	No	No	No	Yes	Yes
Family-type fixed effects	No	No	No	No	Yes
Regions	56	56	56	56	56

OLS estimates. The dependent variables are the standardized measures of generalized trust, generalized fairness, conformity-obedience, and individualism-independence described in section 5. The individual controls include age, age squared, gender, education, labor market status, religious affiliation, and religiousness. The geographic controls include latitude, temperature, precipitation, ruggedness, distance to coast, the presence of rivers or lakes, elevation, and agricultural suitability. The historical controls include the log of GDP per capita in 1900 and the literacy rate around 1880. The family-type fixed effects identify the historically predominant family type in each region according to the Todd (1990) classification of medieval European family systems, differentiating between absolute nuclear family, egalitarian nuclear family, stem family, incomplete stem family, communitarian family, and indeterminate family type. Robust standard errors clustered at the regional level are reported in parentheses

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

a respondent to all 21 human value questions included in the ESS were subtracted from the respondent's mean conformity-obedience answers.

Individualism-independence. This variable is derived from the following two ESS questions which emphasize individual freedom and independence: "Please […] tell

me how much each person is or is not like you. (i) It is important to her/him to make her/his own decisions about what she/he does. She/he likes to be free and not depend on others. (ii) Thinking up new ideas and being creative is important to her/him. She/he likes to do things in her/his own original way." As in the case of the measure of conformity-obedience, individuals answered these four questions on a 6-point scale varying from "Not like me at all" to "Very much like me." The variable of individualism-independence is constructed using the same procedure adopted to obtain the measure of conformity-obedience.

Table 4 presents the results of regressing the cultural variables defined above on the rate of cousin marriage using robust standard errors clustered at the regional level. In addition to the measure of consanguinity, the analysis also includes individual-level controls such as age, age squared, gender, education, labor market status, religious affiliation, and religiousness. I also add the geographic and historical controls at the regional level described in section 4.1. Furthermore, all regressions include survey wave fixed effects and country fixed effects. Importantly, country fixed effects allow us to exploit within-country variation in our analysis, controlling for country-level unobservable factors such as national institutions, social security systems, or cultural and social norms that are shared by individuals within each country.

Table 4 shows that a higher rate of cousin marriage is associated with lower generalized trust and fairness, and greater conformity-obedience, confirming the evidence provided by Schulz et al. (2019).[12] These results are robust to the inclusion in the analysis of country fixed effects, ruling out the possibility that the estimations are biased by country-level omitted variables. Similarly, the observed relationships between the rate of cousin marriage and these cultural variables remain significant in those specifications that include both individual and regional controls. However, the link between consanguinity and individualism-independence is not statistically significant at conventional levels. Taking into account potential endogeneity concerns, I now repeat the analysis using 2SLS and instrumenting the rate of cousin marriage with the share of a region's surface that belonged to the Carolingian Empire in the year 814. The results of this additional robustness test are presented in Tables A11 in the online Appendix and generally confirm the OLS findings. The main difference is that while the sign of the estimated coefficients goes in all cases in the expected directions, the precision of the estimates decreases somewhat for the measures of generalized trust and conformity-obedience.

Taken together, these results provide a possible explanation for the reduced-form relationship between consanguinity and quality of government observed in the paper. Consistent with the arguments presented in Sect. 2, the estimates in Tables 4 and A11 show that the rate of cousin marriage is associated with various cultural traits that, by altering people's psychology, affect the development and functioning of formal economic and political institutions (Enke 2019; Henrich 2020). Indeed, as detailed in Sect. 2, there exist numerous studies highlighting the influence of these cultural traits on the quality of government (e.g., Putnam 1993; Knack and Keefer

[12] The analysis rests on 56 regions due to the lack of data in the ESS for the Italian region of Molise.

1997; La Porta et al. 1997; Licht et al. 2007; Bjørnskov 2010, Kyriacou 2016; Ezcurra 2021).

6 Concluding remarks

In order to enhance our understanding of the deep determinants of quality of government in the EU, this paper has examined the effect of kin-based institutions on governance outcomes across the regions of Spain, France, and Italy. The results of the analysis show that the rate of cousin marriage is a strong predictor of the quality of government in the regions of these three countries. Regions characterized by a greater prevalence of cousin marriage in the twentieth century tend to have on average worse governance outcomes today. This finding holds after accounting for country fixed effects and different variables that may be correlated with both consanguinity and regional quality of government, including an extensive array of geographical, historical, and contemporary factors. The observed association between cousin marriage and quality of government remains unaltered when I utilize an instrumental variable approach that exploits regional variation in the degree of historical exposure to the marriage laws of the medieval Catholic Church to address potential endogeneity concerns. Furthermore, the paper provides evidence consistent with the idea that the effect of cousin marriage on government performance operates through the impact of kin-based institutions on a series of cultural traits such as impersonal trust, fairness, and conformity-obedience.

Given the importance of quality of government for economic growth, there is increasing interest in the EU in designing strategies for regional development that reduce corruption levels and introduce measures aimed at making government decisions more transparent and efficient. This is particularly relevant for lagging regions, which are often characterized by poor government performance. In this context, the results of the paper offer a series of potentially important policy implications. Specifically, the findings discussed above show that a significant proportion of the variation in government quality at the regional level can be attributed to the intensity of kin-based institutions, a deeply rooted cultural factor. This is something that policymakers should consider when determining how to strengthen the quality of government in regions with poor governance outcomes, especially in societies with a historical tradition of strong kinship networks. At the same time, our results also suggest that public interventions aimed at reducing the intensity of kinship networks would help promote interpersonal trust and other cultural traits that, according to the literature, are positively associated with regional growth in Europe.

In any case, the findings of the paper imply that limiting to mimetically reproducing the same type of policies across the less developed regions of Europe to improve their institutional framework is very likely not to achieve the expected results, confirming once again that there are no one-size-fits-all policies in this context. On the other hand, although the analysis conducted in the paper implies that the effect of kin-based institutions on the quality of government tends to be enduring over time, it is likely that the ongoing process of globalization may foster greater convergence of

cultural values across the European regions, thus facilitating the spatial diffusion of institutional innovations.

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References

Akbari M, Bahrami-Rad D, Kimbrough EO (2019) Kinship, fractionalization and corruption. J Econ Behav Org 166:493–528

Alesina A, Giuliano P (2010) The power of the family. J Econ Growth 15(2):93–125

Alesina A, Giuliano P (2014) Family ties. In: Aghion P, Durlauf SN (eds) Handbook of Economic Growth. North-Holland, Amsterdam, pp 177–215

Altonji JG, Elder TE, Taber CR (2005) Selection on observed and unobserved variables: assessing the effectiveness of catholic schools. J Polit Econ 113(1):151–184

Ang JB, Fredriksson P, Gupta S (2020) Crop yield and democracy. Land Econ 96(2):265–290

Ang JB, Madsen JB, Wang W (2021) Rice farming, culture and democracy. Eur Econ Rev 136:103778

Angrist JD, Pischke JS (2009) Mostly harmless econometrics: an empiricist's companion. Princeton University Press, Princeton

Anselin L, Florax R (1995) New Directions in Spatial Econometrics. Springer, London

Bahrami-Rad D (2021) Keeping it in the family: Female inheritance, inmarriage, and the status of women. J Dev Econ 153:102714

Bahrami-Rad D, Beauchamp J, Henrich J, Schulz JF (2023) Kin-based institutions and economic development. Mimeo

Banfield EC (1958) The moral basis of a backward society. The Free Press, Glencoe (IL)

Barbero J, Mandras G, Rodríguez-Crespo E, Rodríguez-Pose A (2021) Quality of government and regional trade: evidence from European Union regions. Region Stud 55(7):1240–1251

Bau N (2021) Can policy change culture? Government Pension Plans Tradit Kinship Practices, Am Econ Rev 111(6):1880–1917

Beugelsdijk S, Smulders S (2009) Bonding and bridging social capital and economic growth. CentER Discussion Paper, 2009-27. Tilburg University

Bittles AH (2001) Consanguinity and its relevance to clinical genetics. Clin Gene 60:89–98

Bittles AH, Black ML (2010) Consanguineous marriage and human evolution. Annu Rev Anthropol 39:193–207

Bjørnskov C (2010) How does social trust lead to better governance? Attempt Separate Elector Bureaucratic Mech, Public Choice 144:323–346

Cappelen AW, Enke B, Tungodden B (2022) Moral universalism: global evidence. National Bureau of Economic Research (NBER), Working Paper. 30157

Chapais B (2009) Primeval kinship: how pair-bonding gave birth to human society. Harvard University Press, Cambridge

Charron N, Dijkstra L, Lapuente V (2014) Regional governance matters: quality of government within European Union member states. Region 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. Social Indic Res 122(2):315–346
Charron N, Lapuente V, Annoni P (2019) Measuring quality of government in EU regions across space and time. Papers Region Sci 98(5):1925–1953
Colella F, Lalive R, Sakalli SO, Thoenig M (2019) Inference with arbitrary clustering, Discussion Paper 12584, Institute of Labor Economics
Conley TG (1999) GMM estimation with cross sectional dependence. J Economet 92(1):1–45
Crescenzi R, Di Cataldo M, Rodríguez-Pose A (2016) Government quality and the economic returns of transport infrastructure investment in European regions. J Region Sci 56(4):555–582
Duranton G, Rodríguez-Posse A, Sandall R (2009) Family types and the persistence of regional disparities in Europe. Econ Geogr 85(1):23–47
Enke B (2019) Kinship, cooperation, and the evolution of moral systems. Q J Econ 134(2):953–1019
Ezcurra R (2021) Individualism and political instability. Eur J Polit Econ 66:101959
Ezcurra R, Rios V (2019) Quality of government and regional resilience in the European Union. Evidence from the Great Recession, Papers Region Sc 98(3):1267–1290
Ezcurra R, Rios V (2020) Quality of government in European regions: do spatial spillovers matter? Region Stud 54(8):1032–1042
Fenske J (2015) African polygamy: past and present. J Dev Econ 117:58–73
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 (2011) The origins of political order: from Prehuman times to the French revolution. Farrar, Straus and Giroux
Galasso V, Profeta P (2018) When the State mirrors the family: the design of pension systems. J EurEcon Assoc 16(6):1712–1763
Ghosh A, Hwang SIM, Squires M (2023) Economic consequences of kinship: evidence from U.S. Bans on Cousin Marriage. Q J Econ 138(4):2559–2606
Goody J (1983) The development of the family and marriage in Europe. Cambridge University Press, Cambridge
Greif A (2006) Institutions and the path to the modern economy: lessons from medieval trade. Cambridge University Press, New York
Guiso L, Sapienza P, Zingales L (2016) Long-term persistence. J Eur Econ Assoc 14(6):1401–1436
Helliwell JF, Putnam R (1995) Economic growth and social capital in Italy. East Econ J 221(3):295–307
Henrich J (2016) The secret of our success: how culture is driving human evolution, domesticating our species, and making us smarter. Princeton University Press, Princeton
Henrich J (2020) *W.E.I.R.D People: how Westerners became individualistic, self-obsessed, guild-ridden, analytic, patient, principled and prosperious*. Princeton University Press, Princeton
Imbens GW, Kolesár M (2016) Robust standard errors in small samples: some practical advice. Rev Econ Stat 98(4):701–712
Jimenez-Ayora P, Ulubaşoğlu MA (2015) What underlies weak states? Role Terr Ruggedness, Eur J Polit Econ 39:167–183
Jones D (2011) The matrilocal tribe: an organization of demic expansion. Human Nat 22(1–2):177–200
Kammas P, Sarantides V (2024) Historical pathogen prevalence and the radius of trust. Eur Econ Rev 162:104658
Kaplan HS, Hooper PL, Gurven M (2009) The evolutionary and ecological roots of human social organization, philosophical transactions of the royal society B - biological. Sciences 364(1533):3289–3299
Kaufmann D, Kraay A, Zoido-Lobatón P (1999) Governance matters. World Bank Policy Research Working Paper 2196, World Bank
Ketterer TD, Rodríguez-Pose A (2018) Institutions versus 'first-nature' geography: what drives economic growth in Europe's regions? Papers Region Sci 97(S1):S25–S62
Klasing MJ (2013) Cultural dimensions, collective values and their importance for institutions. J Comp Econ 41:447–467
Knack S (2002) Social capital and the quality of government: evidence from the States. Am J Polit Sci 46(4):772–785
Knack S, Keefer P (1997) Does social capital have an economic payoff? A cross-country investigation. Q J Econ 112(4):1251–1288

Kyriacou AP (2016) Individualism-collectivism, governance and economic development. Eur J Polit Econ 42:91–104
La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (1997) Trust in large organizations. Am Econ Rev-Papers Proc 87(2):333–338
La Porta R, Lopez-De-Silanes F, Shleifer A, Vishny RW (1999) The quality of government. J Law, Econ Org 15(1):222–279
Lee L-F (2004) Asymptotic distributions of quasi-maximum likelihood estimators for spatial autoregressive models. Econometrica 72(6):1899–1925
Leutenegger AL, Sahbatou M, Gazal S, Cann H, Génin E (2011) Consanguinity around the world: what do the genomic data of the HGDP-CEPH diversity panel tell us? Eur J Human Gene 19(5):583–587
Lévi-Strauss C (1969) The Elementary Structures of Kinship. Beacon Press, Boston
Licht AN, Goldsmith C, Schwartz SH (2007) Culture rules: the foundations of the rule of law and other norms of governance. J Comp Econ 35(4):659–688
Lipset SM (1981) Political Man: the social bases of politics, Expanded Edition. Johns Hopkins University Press, Baltimore
Lowes S (2018) Matrilineal kinship and spousal cooperation: Evidence from the Matrilineal Belt. Mimeo
MacKinnon JG, White H (1985) Some heteroskedasticity-consistent covariance matrix estimators with improved finite sample properties. J Econometr 29(3):305–325
Migdal J (1988) Strong societies and weak states. Princeton University Press, Princeton
Mukand SW, Rodrik D (2005) In search of the holy grail: policy convergence, experimentation, and economic performance. Am Econ Rev 95(1):374–383
Muringani J, Fitjar RD, Rodríguez-Pose A (2021) Social capital and economic growth in the regions of Europe. Environ Plan: Econ Space 53(6):1412–1434
North D (1990) Institutional change and economic performance. Cambridge University Press, New York
Oster E (2019) Unobservable selection and coefficient stability: theory and evidence. J Bus Econ Stat 37(2):187–204
Oto-Peralías D, Romero-Ávila D (2016) The economic consequences of the Spanish Reconquest: the long-term effects of medieval conquest and colonization. J Econ Growth 21(4):409–464
Parkin D (1997) Kinship: an introduction to the basic concepts. Blackwell, Oxford (UK)
Putnam R (1993) Making democracy work. Civic traditions in modern Italy. Princeton University Press, Princeton
Putnam R (2000) Bowling alone. The Collapse and Revival of American Community Simon & Schuster, New York
Rodríguez-Pose A, Burlina C (2021) Institutions and the uneven geography of the first wave of the COVID-19 pandemic. J Region 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, Garcilazo E (2015) Quality of government and the returns of investment: examining the impact of cohesion expenditure in European regions. Region Stud 49(8):1274–1290
Rodríguez-Pose A, Ketterer TD (2020) Institutional change and the development of lagging regions in Europe. Region Stud 54(7):974–986
Rothstein B, Stolle D (2008) The state and social capital: an institutional theory of generalized trust. Comp Polit 40(4):441–459
Sarracino F, Mikucka M (2017) Social capital in Europe from 1990 to 2012: trends and convergence. Soc Indic Res 131(1):407–432
Schwartz SH (2012) An overview of the Schwartz theory of basic values. Online Read Psychol C 2(1):1–20
Schulz JF (2022) Kin networks and institutional development. Econ J 132:2578–2613
Schulz JF, Bahrami-Rad D, Beauchamp J, Henrich J (2019) The Church, intensive kinship, and global psychological variation. Science 366(707):1–12
Shenk MK, Towner MC, Voss EA, Alam N (2016) Consanguineous marriage, kinship ecology, and market transition. Curr Anthropol 57(13):S167–S180
Tabellini G (2008) Institutions and culture. J Eur Econ Assoc 6(2–3):255–294
Tabellini G (2010) Culture and institutions: economic development in the regions of Europe. J Eur Econ Assoc 8(4):677–716
Tanzi V (1994) Corruption, governmental activities and markets. IMF Working Paper 94/99, Washington D.C
Tertilt M (2006) Polygyny, women's rights, and development. J Eur Econ Assoc 4(2–3):523–530

Todd E (1990) L'invention de l'Europe. Seuil, Paris
Ubl K (2008) Inzestverbot und Gesetzgebung. Die Konstruktion eines Verbrechens, Berlin, pp 300–1100
Walker RS, Beckerman S, Flinn MV, Gurven M, von Rueden CR et al (2013) Living with kin in lowland horticultural societies. Curr Anthropol 54(1):96–103
Ward H, John P (2013) Competitive learning in yardstick competition: testing models of policy diffusion with performance data. Polit Sci Res Methods 1(1):3–25
Weber M (1915) (1951): The religion of China. Free Press, New York
Wickham C (2007) Framing the Early middle ages: Europe and the mediterranean, 400–800. Oxford University Press, Oxford
Wickham C (2016) Medieval Eur. Yale University Press, New Haven
Woodley MA, Bell E (2013) Consanguinity as a major predictor of levels of democracy: a study of 70 nations. J Cross-Cult Psychol 44(2):263–280