Hey judge: how cultural traits affect efficiency of justice and development across regions *

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Abstract

This paper aims at identifying the channel through which inherited cultural traits affect current economic development in the long run. The study, carried out using data on 102 Italian provinces, establishes a strong effect of inherited cultural traits on the different quality of current formal institutions, measured by the length of civil trials, whereby different levels of development are determined. Those effects are robust to the inclusion of accumulation of human capital, past economic development, geographical characteristics, and current civic capital.

Jel classification: O10, N13, Z10

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1   Introduction

Where do differences in cultural traits originate? How differences are related to economic outcomes? In the last fifty years a large body of literature in social science (Banfield 1967; Coleman 1988; Putnam et al. 1994) has discussed these questions. More recently, economics has focused on the sources and origins of different cultures (Bisin and Verdier, 2001; Guiso et al., 2006; Spoalore and Warcziag, 2013) and on their effects on growth and development (Tabellini, 2010). However, the transmission mechanism from culture to development is still widely debated. In this respect, the missing link might lie in institutions because culture shapes the society's institutional profile which in turn changes or solidify cultural traits (Alesina and Giuliano *forthcoming*). Both institutions and culture are the result of a long historical setting that makes them embedded in a society to some extent persistently over time.

Differently from the usual chain of transmission of historical facts that assumes a causal link from past institutions to current culture (Guiso et al. 2004; Akçomak and Ter Weel, 2009; Tabellini, 2010; Algan and Cahuc, 2010; Buggle 2016) or that looks at how past culture affects current culture (Voigthlander and Voth, 2012), our paper explores whether cultural traits inherited from a distant past influence the quality and efficiency of formal institutions today, which in turn contributes to explain the different levels of development across areas.

To test our hypothesis we focus on Italy because its history and present days are a valuable laboratory for three reasons. First, after more than 150 years since the unification (1861), South of Italy has not yet converged to the North and none of other European countries has experienced larger and more persistent within-country gap than Italy. Second, in spite of same legal structure and rules, the protection of property rights is weaker in the South, as it experienced lengthier trials and slower execution of decisions. Third, there is a well-established evidence that from the North to the South of Italy, cultural traits are highly variable and their differences traced back to a distant past (Putnam et al., 1994; Guiso et al., 2013; Bigoni et al., 2014).

The judicial system determines how much property rights are secured by law enforcement and how much the legal framework protects potential investors and consumers. The European Commission for the Efficiency of Justice (CEPEJ, 2014) considers the excessive length of civil trials as a sign of institutional inefficiency. We observe both unconditional and conditional strong correlation between the level of development and the length of civil trials when the Italian administrative districts are taken into consideration.

However, because both the quality of institutions and the level of development are correlated each other to unobserved factors, the association we find cannot be interpreted as causal relation. In addition, the reverse causality stands typically as a source of endogeneity in this context because more developed areas could channel more resources to build more efficient institutions . To cope with omitted variable, and reverse causality issues we propose a mechanism of identification based on the effects played by past culture. Because the judicial system in Italy is the same from North to South in terms of rules and very similar in terms of personnel endowment (compared to inhabitants), how can we explain the different trials duration? We argue that the degree of infighting among citizens and the improper use of legal tools can affect the work of judicial courts, thus generating longer trials. This might occur not only because increasing number of trials affect the workload of courts, but also because the actors involved, judges, lawyers, claimants, and external consultants often use legal formalisms and circumvent best practices to prolong trials for personal interests or simply laxity. In turn,

the attitude to exploit opportunistically legal quibbles and formalisms depends on the general attitude towards cooperation, trust, respect of legality, disingenuous behaviour, and intellectual honesty[1]. Because the previous elements are embedded in the cultural profile of individuals, which is highly persistent over time, we relate provincial differences in the efficiency of civil trials to the cultural traits that each area of Italy inherited from the past.

In economics, both in theoretical and empirical works, the categories used to capture cultural traits are values and beliefs (Alesina and Giuliano, forthcoming[2]). We adhere to this broad definition trying to translate those concepts in measurable historical variables.

As far as values are concerned, signs of past cultural traits can be found in associative bodies known as *Società di mutuo soccorso* (SMS hereafter), voluntary organizations constituted in the early years of the Italian unification, which provided assistance and funding to their affiliates. The spirit of SMSs was particularly consistent with the liberal and democratic ideals which guided the Italian transition toward the new states in the decades before 1861. Members of the SMS shared a common view on the newly born State and their presence and diffusion can be considered as an indirect evidence of the occurrence of some values such as trust, inclusiveness, cooperation and compliance with the rules. The process of Unification had broken out especially in the Northern areas of Italy, and analogously the development of the SMS started and boosted in the same areas. Their diffusion in the rest of the country was a painfully slow process. In 1873, six southern provinces had no SMSs and the rest of the South had not yet developed the network of informal support that emerged in the North and in some areas of Central Italy. Although, differences in values can be traced back to the communal life experience of late Middle Ages (Putnam, 1993), the late medieval heritage explains only a fraction of the civic capital today (Guiso et al. 2013), leaving space for other historical sources of variability in culture. Thus, the centuries between the establishment of the "communes" and the Unifications testify to important historical events that may have altered the stock of values in each area of the country.

We stress that culture is not only made of civic capital. Education is highly correlated with trust (Alesina and Giuliano *forthcoming*, Alesina and La Ferrara 2000). The idea is that relatively more educated people participate to the social life of their own community in a well-informed way. Joining constraint-less the community life, more educated persons are less affected by stereotypes and prejudices and are more prone to absorb social norms and sentiments delivered by the diffusion of formal and informal education. Thus, in our context, literacy rates coeval with the emergence of SMSs capture the set of beliefs that, jointly with values, build up the full picture of cultural set-up within the society. Our choice is therefore consistent with Tabellini (2010), who uses past illiteracy rate to explain the effect of today culture on current economic development.

Our main result suggests that inherited culture can explain differences in the length of civil trials. In other words, it is shown the extent to which property rights are protected in Italian provinces whereby providing insights on the variation in income disparities. Notwithstanding, in our structure there is still room for concerns about the exclusion restrictions we propose. In particular, it might be considered that the omission of current

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[1]Cultural factors are explicitly indicated by OECD (2013) as possible source of litigation whose rate positively affects the length of trials: *"if the litigation rate in Italy decreased to the OECD average level (corresponding to a reduction of 35%), average trial length would decrease by 10%"*.

[2]The authors extensively survey and discuss the different concepts of culture in section 2.1 of their work.

measures of culture could bias our estimations invalidating the mechanism at stake. Afterwards, culture is long term persistent and the stock of culture accumulated in the past may still influence through unobserved factors current cultural traits. Controlling for aggregated measures of culture today, and of trust and cooperation in particular, the past stock of culture does not lose efficacy in explaining the length of trials.

Moreover, in the attempt to mitigate omitted variable bias by including historical and current control variables, our findings are not altered by the inclusions of geographical characteristics, past level of development and current human capital accumulation.

Hence, our paper aims at contributing to the literature on the role played by culture in the economic of social life. Compared to the existing literature that emphasizes that past cultural traits have permanent effect on current culture (Algan and Cahuc,2010; Guiso et al. 2010 and 2013; Voigthlander and Voth, 2012; Borowiecki, 2015) we establish an alternative channel that runs from the inherited cultural traits to the quality of current formal institutions. Although the mechanism has been already suggested by Alesina and Giuliano (forthcoming), we are the first, to our best knowledge, to study this mechanism within a single country. We have also found robust evidence that the effects of past cultural traits cannot be mixed up with current civic capital. This last result is consistent with the findings of Guiso et al. (2004) who distinguish between inherited and acquired social capital, and it contributes to document and explain the puzzle raised by Bigoni et al. (2015). Those authors show that the intra-group pattern of cooperation cannot be explained by proxies of current social capital, yet it should be found in the inherited norms that are slowly to change over time.

This study contributes also to the extensive literature on income divergence, specifically to that on North-South disparities in Italy. Empirical results support uncontroversially that history matters in the territorial divergence and that past cultural traits are still playing a crucial role.

The rest of this paper discusses differences in the historical cultural heritage in section 2. The quality of justice within Italy is presented in section 3 while the association with the level of development is discussed in section 4. Section 5 contains our main results, i.e. the effects of cultural traits on the quality of justice whereby differences in value added per capita are determined. In section 6 , the mechanism we propose undergoes some robustness checks. Section 7 concludes.

2 Cultural traits from the past

Cultural traits inherited from the past are rooted in the different historical heritage of the provinces of Italy that still influences the degree of infighting and litigation today. Past cultural traits cannot be directly measured using surveys, such as World Value Survey or national surveys, because they are obviously unavailable for a very distant past. We consider the SMSs that emerged in Italy in the nineteenth century in each province as a proxy of trust and cooperation in the past. The SMSs were voluntary organizations among citizens constituted in order to provide mutual assistance in case of adverse events, such as physical disease and poverty, and to support widows and sons of deceased members. They were diffused in Europe since the Middle Ages, but their institutional profile evolved mainly during the eighteenth and nineteenth centuries. The medieval and early modern period congregations were charitable associations organized according to hierarchical roles of members.

The sympathetic behavior was to some extent vertical and the membership was restricted to a particular profession. In turn, the associations constituted after the eighteenth century were free from any hierarchical relationship among their members and mostly open to all citizens.

Besides being more efficient than the early modern association in providing assistance and mutuality, the SMSs in Italy testify to the existence of cooperation and trust in the areas where they developed. Hence, being a member of SMS was not a source of direct economic pay-off. Instead, it entailed to support other members in event of sickness, widowhood, unemployment and orphanhood. Nobody at the moment of application could know if he/she would be likely to fit one of those situations. If economic rational expectations were to inspire the membership, we expect that subscriptions would be lower in Northern than Southern Italy, which experienced higher mortality rate, lower life expectancy and lower per capita income than in the North. Interestingly, cooperative behavior in Southern Italy was lower than in the North, indicating that joining a SMS was more of a civic attitude rather than the result of a rational economic behavior. Moreover, in 1873 SMSs were not regulated by any law yet thereby they conveyed the genuine attempt to organize and provide assistance to members. In 1862, in the aftermath of Unification, there were 443 organizations, 234 of which dated back to the Unification period. Before the Italian Unification, only 13 SMSs were active in the South. Between the Unification and 1873, 146 societies were created in the South and 1053 in the Central-North of Italy.

The first comprehensive census of SMSs dates back to 1873 (MAIC, 1875), after the last defeat of what remained of the Papal State. The census reports important information on the SMSs, and in particular on their exact location, the number of members and their gender composition. In 1873, 1448 SMSs and 220818 members were recorded, among which men were 199816 and women were 21002. The exact location of each society allows us to track changes in the provincial boundaries and to relocate societies according to the current boundaries of Italian provinces. This permit us to obtain a distribution of membership in the past, which is comparable to the distribution of current quality of justice and of per capita income. Bolzano, Trento, Gorizia and Trieste, that joined the Kingdom of Italy after World War I, are excluded from our sample of provinces since there are no available data for them.

Two measures of values from the past are here proposed. The first one is given by the number of members registered in SMSs per ten thousand inhabitants, indicating the possible degree of cooperation and trust. The second one is obtained as the female members to male members ratio. A higher value of such a ratio may indicate a higher degree of inclusiveness of a community.

However, the definition of culture is subject to different interpretations. In economics, culture is thought of as the set of beliefs and values acquired by each generation and transmitted to the descendants. In practice, it is arduous to measure culture choosing one single aspect such as beliefs or values. Therefore, using more than one measure capturing both aspects is a sensible choice.

In the light of the previous considerations, the measures of cultural traits drawn by the membership to SMSs are complemented with the level of literacy rate in the past. Although literacy rate can be viewed as a proxy of human capital accumulation, it takes an active part in the formation of cultural traits. Tabellini (2010) includes past literacy rate as a key determinant of current cultural traits, meaning that a fraction of past culture is due to the diffusion of basic formal education. Cipolla (1969, p.102) argued that "*widespread literacy meant not*

Figure 1: Cultural traits in the early 1870s. Source: our computation on MAIC (1875a and 1875b)

(a) *Members of the SMS each 10000 inhabitants.*

(b) *Female members to male members ratio in the SMS.*

(c) *Illiteracy rate.*

(d) *Compound measure of inherited culture.*
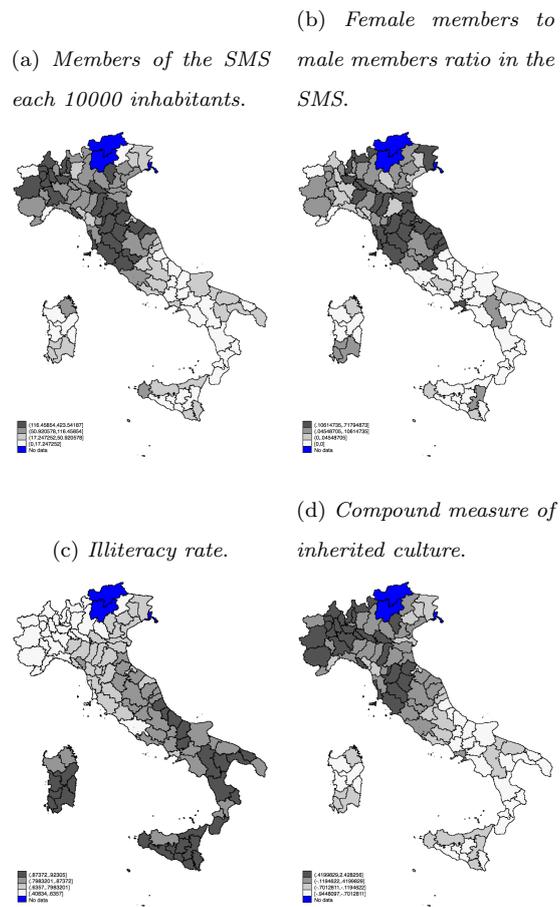
only an elastic supply of literate workers but also a more rational and more receptive approach to life on the part of the population". This is true for the acquisition of techniques and professional skills, as well as attitudes and beliefs delivered by the formal education. In the absence of access to formal education, individuals acquire cultural traits typically from parents, and carry them in a life-long time frame (Bisin and Verdier, 2001). The imperfect empathy is responsible for the persistence, given that parents transfer cultural traits to children and have a preference for their own cultural beliefs. Yet, many historical studies argue that changes in cultural beliefs are also possible. For example, the feeling about Jewish population, though persistent in Germany, evaporated in the German Hanseatic cities because of their particular geographical and economic development (Voigtlhander and Voth, 2012). Hence, cultural traits are malleable under some circumstances. The inclusion of literacy rate is in turn a potential predictor of future changes in cultural traits that we do not observe.

Given the imperfect measurement of the different indicators of cultural traits, we suggest a continuous latent variable to capture the inherited cultural traits (IC) as the results of three components: the number of members of SMS per ten thousand inhabitants in each province ($Members$), the associated female to male membership ratio ($FtoM$) and the historical illiteracy rate ($Illrate$), which is expressed by the following relation:

$$IC = f(Members, FtoM, Illrate) \tag{1}$$

The factor analysis carried out returns a clear pattern on how the above mentioned measures combine in the formation of cultural traits. The number of members of SMSs and the female to male ratio contribute positively to cultural traits formation, whereas the illiteracy rate has a negative effect. The latent variable pattern mapped in panel d of Figure 1 is clear: moving from North to South cultural traits worsen. It is interesting to notice that areas with the best cultural traits match provinces that Putnam emphasized in his celebrated book in 1993 as well as Turin, Vercelli, Milan, Lecco, and La Spezia, in the North. Many areas in the rich North have a level of culture fairly similar to some areas in the poor South.

The distribution of cultural traits in the past seems to be largely independent from the level of past development. If we consider the urbanization rate in 1871 as a proxy for economic development, its correlation with our IC latent variable is virtually zero. Nonetheless, in the empirical analysis carried out in the next sections we control for urbanization rates in the past to mitigate possible mutual effects between inherited cultural traits and past economic development.

3   The quality of justice

The European Commission for the Efficiency of Justice (CEPEJ, 2014) suggests that the length of trials is by far among the major determinants of the quality of protection of property rights. The CEPEJ claims that the length of proceedings and the non-execution of judgments remain one of the principal concerns of individuals, as well as being a major problem for the smooth functioning of the Court itself.' (CEPEJ, 2014).

> *The European Court of Human Rights has on several occasions held that one of the ways of guaranteeing the effectiveness and credibility of judicial systems is to ensure that a case is dealt with in a reasonable time (H. v. France, No. 10073/82, of 24 October 1989). More recently, the Court held that the significant and*

recurring delays in the administration of justice were a matter of particular concern and likely to undermine public confidence in the effectiveness of the judicial system, and that in exceptional cases, the unjustified absence of a decision by the courts for a particularly prolonged period could in practice be regarded as a denial of justice (Glykantzi v. Greece, No. 40150/09, of 30 October 2012)

Turning our attention to Italy, we follow the procedure implemented by the Italian Statistical Office (ISTAT) in order to compute the length of trials at year t, using the following relationship:

$$Length_t = \frac{Pending_{t-1} + Pending_t}{Closed_t + New_t} * 365 \qquad (2)$$

which depends on the pending processes between time t and $t-1$, the closed trials and the new ones. Figure 2 shows the geographical distribution of the average length of the civil trials in 2006-2007, prior to the economic crisis. The average length is 466 days with a standard deviation of 177.2 days. The maximum value of 926.6 days was registered in Bari (Puglia), whereas the lowest one, i.e. 182.8 days, was registered in Mantua (Lombardy). Southern courts take a longer time to close a trial than northern courts do. This affects the contracts enforcement and the protection of property rights in a negative way, thereby determining a lower quality of the institutional set-up in the South. A wider period to close a trial makes property rights less secure and increases uncertainty, transaction costs increase and economic exchanges are discouraged.

Figure 2: The efficiency of civil justice in Italy. Source: our computation on data provided by the Ministry of Justice.
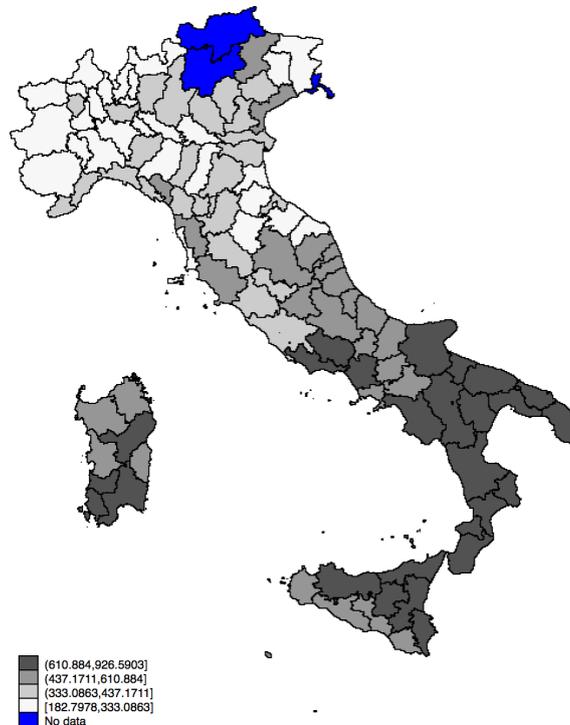
Figure 3 portrays a clear pattern of the link between the length of trials and per capita value added. The unconditional association suggests that development and efficiency of institutions are closely and negatively linked, although causal relationship cannot be inferred, because the geographical distribution of the length of civil trials is affected by several unobserved factors. One possible reason is that in more prosperous areas the

Figure 3: Length of trials, appointed judges and value added per capita (average 2006-2007). Source: see data appendix.

(a) *Correlation between value added per capita and civil trials .*

(b) *Correlation between the length of trials and the appointed judges.*
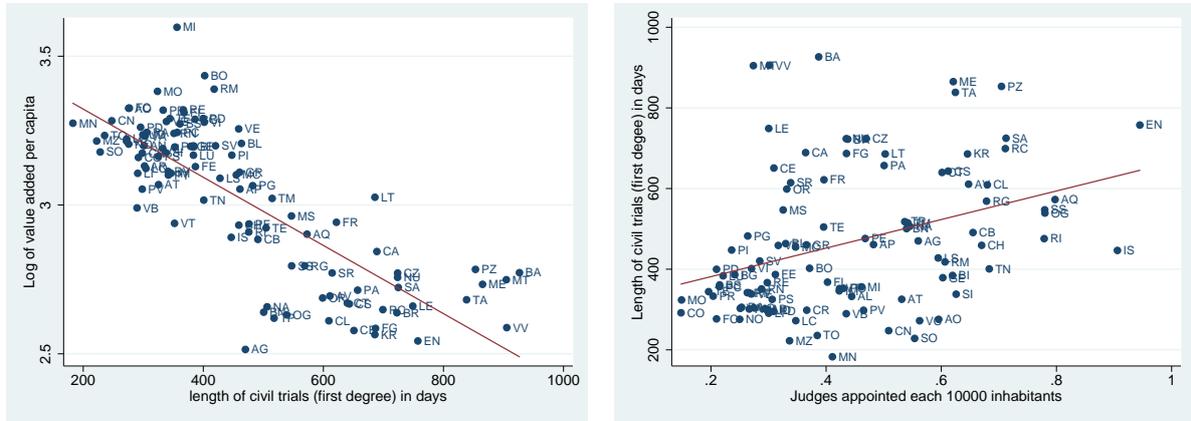
potential sources of litigation are mitigated by a wider availability of resources. If the pie is larger, there is less probability that judicial conflicts might emerge, implying relaxation of the pressure on the courts. Yet in turn, in the richer areas the number of the economic transactions is larger and the number of controversies is potentially higher than in the more backward areas, where less transactions occur. If this is the case, we would expect that judicial claims could clog the job of courts. The last consideration recall a common conundrum when institutions and income level are considered, namely the direction of the causality nexus. We explore this issue in section 4.

Nonetheless, because the judicial system is governed by national rules, differences in the length of trials can be related to the efficiency of the human capital in courts (judges and auxiliary personnel). Because judges and auxiliary personnel are selected according to a standardized quality at national level through a competitive selection process it is hard to believe that levels of individual efficiencies are dramatically different across the country. An obvious concern is that the number of judges in courts accounts for the differences in the length of trials. In particular, the southern courts could be refused by the appointed judges because the living standards in the South are less attractive than northern and central Italy. In practice, we tend to exclude this explanation for two distinct reasons. First, on each year the number of judges is predetermined by the Ministry of Justice who replaces the retired judges or those appointed to other services through a competitive selection process. Second, the available data show that the length of trials and the number of judges relative to population in each court are positively correlated. This might mean that the Ministry, observing the length of trials or other information on the degree of litigation, reacts by appointing more judges. Yet, the reverse is not true. The different length of trials is not the result of understaffed courts.

Table 1: Effects of the quality of justice on per capita value added.

	Log of value added per capita			
	(1)	(2)	(3)	(4)
QJ	-0.00115***	-0.000746***	-0.000266***	-0.000487***
	(8.53e-05)	(6.87e-05)	(8.00e-05)	(9.79e-05)
Urbanization 1871		0.0903*	0.128**	0.0829*
		(0.0528)	(0.0524)	(0.0494)
Y. of schooling		0.194***	0.168***	0.139***
		(0.0360)	(0.0345)	(0.0366)
Org. Crime		-0.208***	-0.141***	-0.137***
		(0.0322)	(0.0281)	(0.0307)
Department dummy variables	N	N	Y	N
South dummy variable	N	N	N	Y
Constant	3.551***	1.513***	1.636***	1.972***
	(0.0394)	(0.359)	(0.337)	(0.360)
Observations	102	102	102	102
R-squared	0.623	0.812	0.896	0.836

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

4 The effects of the quality of justice on the level of development

This section aims at estimating the impact of quality and effectiveness of formal institutions on territorial disparities in Italy in terms of income per capita. We measure per capita income at provincial level using the chained per capita Gross Value Added (GVAPC) and we take the average of this measure over the period 2006-2007 to avoid both business cycle and major shocks such as the Great Recession. The model specified as first has a very simple structure:

$$GVAPC_i = \alpha + \delta * QJ_i + \beta * y_{0i} + \gamma * S_i + \delta * \mathbf{D}_i + \epsilon_i, \tag{3}$$

where $i = 1, \ldots, 102$ are the Italian provinces, QJ_i is a measure of the quality of justice reviewed in section 3, i.e. the average length of civil trials for the years 2006 and 2007, y_{0i} is a measure of development in the far past (urbanization rate in 1871), S_i is an indicator of human capital accumulation, i.e. years of schooling, and $\mathbf{D}$ is a set of deterministic elements. In all the specifications we used a dummy variable to control for the presence of large scale organized crime ($OrgCrime$) that is widely believed to influence economic outcomes in three Italian regions, i.e. Campania, Basilicata, and Calabria. Moreover, to control for some unobserved factors, we introduce five dummy variables that replicate the division of Italy used by the Italian Statistical Office (ISTAT) in almost all the statistical publications (North-West, North-East, Centre, South, Islands). For robustness purposes, we alternatively control for the membership to the Southern group (1 if the province is in the South, zero otherwise). Finally, ϵ_i is the error term.

Table 1 displays the association between the measures of quality of justice and the per capita value added. Per capita value added is in logs, whereas the length of trials and the years of schooling are in levels.

The OLS coefficient estimates in Table 1 indicate that the level of per capita income is negatively associated to the length of trials. As expected, the years of schooling and the past development have a positive effect on the per capita value added. The effect of the quality of justice has a powerful economic meaning. A reduction in the length of trials of one standard deviation (177.2 days) is associated with an increase in the per capita value added by barely 20% in column 1; controlling for several other regressors, the effect of a reduction in one standard deviation decreases to 4.71%.

In equation 3, it appears that the quality of justice is likely to be correlated with the error term ϵ, and that the conditional association may be affected by serious problems of endogeneity. Potential sources of endogeneity are the reverse causality between per capita value added and quality of justice and the omission of important variables. These issues are extensively discussed in the introduction. A way to handle the endogeneity problem is to model the length of trials as a function of some elements that jointly with the regressors in (3) are responsible for the exogenous variation of the different quality of the judicial system across provinces. The observed longer trials and the resulting poor quality of property rights protection in the South might be the outcome of the poor endowment of cultural traits. We relate the length of civil trials to the degree of infighting and litigation, since a society endowed with a sufficiently high level of trust, inclusiveness, cooperation or, in a broad sense, culture generates less judicial controversies than societies in which citizens do not enjoy good cultural traits.

5   Inherited culture and quality of justice

Our main argument is that quality of the judicial system is potentially influenced by the degree of litigation of a community. If we observed it at provincial level we could be confident to capture a plausible effect of justice. The idea is that societies endowed with enough culture have a lower degree of infighting among citizens reducing situations of litigation. In fact, the civic and culturally well-shaped behaviors matter also when a dispute is formally presented to a tribunal. The judicial controversy is solved quickly if the parties do not try to circumvent the legal procedures or to cheat using the legal instruments improperly. However, it is not possible to observe the degree of infighting among citizens at provincial level and, if we could, the concerns of endogeneity and omitted variable bias would still stand out. Because cultural traits are long term persistent, we expect that those traits acquired in a distant past still influence the behavior of economic agents today that we do not observe. Thus, the chain of effects runs from inherited cultural traits to today formal institutions, proxied by the quality of the judicial system, which in turns determine different development paths across the areas of Italy. Simple association between quality of justice today and inherited cultural traits is supported by the correlation in Figure 4.

Indeed, bearing in mind that the judicial system is the same in Mantua as in Bari, the better and the worst examples in our story, the quality of justice can be modelled as:

$$QJ_i = a + d * IC_i + g * \mathbf{X}_i + \eta_i, \tag{4}$$

where IC_i is the inherited cultural traits and $\mathbf{X}_i$ includes the same set of regressors of equation (3) for province $i = 1, \ldots, 102$.

Figure 4: Length of trials and inherited culture.

Combining equations (4) and (3), we are able to capture the reliable effect of the formal institutions on the level of development today, using as *excluded* instruments the inherited cultural traits. Our focus here is on the role of formal institutions in influencing income divergence, and not on current cultural traits. In a later section we will include current measures of civic capital which are close to, although different from, the current cultural traits to control for possible accumulation of culture in the recent years. Table 2 displays the model coefficient estimates. Panel A reports the Instrumental Variable (IV) regression results, while Panel B shows only the coefficient estimates of inherited culture in the first stage regression.

Compared to OLS estimation, the coefficient of the quality of justice is systematically higher and indicates that without tempering the endogeneity concerns, the effect of the length of trials is downward biased. In our preferred specification (column 3), a one standard deviation reduction in the length of trials increases the per capita value added by 19.8%, which is barely five times larger than the effect shown in column 3 of Table 1. Schooling maintains its positive and significant effect on per capita value added as well as the past urbanization rate. The presence of organized crime depresses income by barely 16%. Indeed, an excessively long time elapsing between submission and a first decision about a judicial controversy is a symptom of institutional inefficiency which is partly related to the inherited culture of a society. From Panel B (column 3) we learn that if the inherited culture in the sample increased by one standard deviation, the length of civil trials would reduce by 49 days, all other things being equal.

6   Robustness checks

Cultural traits from the past represent an invalid instrument for length of trials in our attempt of causal identification step, if they affect income through other channels such as the accumulation of civic capital. In

Table 2: Effects of the quality of justice on per capita value added. IV regressions.

Panel A	Log of value added per capita			
	(1)	(2)	(3)	(4)
QJ	-0.00144***	-0.00104***	-0.00112***	-0.00106***
	(0.000132)	(0.000131)	(0.000381)	(0.000291)
Urbanization 1871		0.0972	0.116*	0.0977
		(0.0592)	(0.0694)	(0.0610)
Y. of schooling _bc		0.161***	0.170***	0.164***
		(0.0349)	(0.0408)	(0.0413)
Org. Crime		-0.155***	-0.162***	-0.159***
		(0.0440)	(0.0487)	(0.0479)
Department dummy variables	N	N	Y	N
South dummy variable	N	N	N	Y
Constant	3.688***	1.951***	1.906***	1.929***
	(0.0605)	(0.359)	(0.434)	(0.374)
Observations	102	102	102	102
R-squared	0.582	0.784	0.796	0.780
Panel B: first stage	**Length of trials**			
	(1)	(2)	(3)	(4)
IC	-163.2***	-137.7***	-63.05***	-76.53***
	(19.72)	(22.01)	(19.06)	(19.70)
Department dummy variables	N	N	Y	N
South dummy variable	N	N	N	Y
Regressors in Panel A	Y	Y	Y	Y
Observations	102	102	102	102

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

this case, a possible source of bias would be the omission of current measures of civic capital. This happens if civic capital today captures the degree of infighting that we are trying to measure using the length of civil trials. Under this circumstance, the effect of the duration of legal trials on per capita value added would vanish or, at least, substantially shrink. Moreover, the effect of inherited culture on the quality of justice would disappear or reduce whenever the current civic capital captures the accumulation of culture including the inherited cultural traits. Table 3 reports coefficient estimates when current civic capital is included in model (3). At the provincial level, the series of Cartocci (2007), the most popular in this field, captures under only one variable four proxies of civic capital: the diffusion of newspaper, the political participation, the blood donations and the membership to sport association. In columns 5 we add also the usual indicator of openness.

The inclusion of current social capital does not change the results either in the IV or in the first stage regression model. The length of trials are still positive and significant in explaining the value added. Inherited cultural traits do not vanish in the first stage regression and have similar effect in magnitude and sign on the quality of justice, as displayed in Table 2. Interestingly, the current civic capital, included in both stages, has no direct effect on the value added, with the exception of column 1, yet it could affect economic outcomes via quality of justice. In fact, civic capital is not significant in the IV regression, but it is highly significant in the first stage equation. If the current civic capital reflected the past cultural traits we would expect that the latter is no longer significantly affecting the quality of the judicial system. Moreover, the results are robust to the inclusion of the openness degree as an additional regressor (columns 5) [3]. However, our exercise shows that both inherited culture and current civic capital may affect the today quality of justice. This finding figures out two sources of potential accumulation of culture: one coming from the past and another accumulated in recent years that jointly determine the attitude of a community in using properly judicial services.

A further robustness check controls for possible effects induced by unobservable behaviour that we could assimilate to laxity. A common stereotype assumes that Southern people are lazier than Northern individuals because the higher temperature and the longer summer discourage the propensity to work and to accomplish professional tasks. Therefore, temperature by itself seems a reductive and simplistic way to look at attitude towards hard working. One reason, beyond cultural traits, could be that climate conditions and high temperature can influence directly the economic activity. There is substantial evidence that temperature in poor country reduces the agricultural and industrial output and weaken political stability (Dell et al. 2012). Temperatures in the South are on average 30% higher than in the North. Columns 1 and 2 of Table 4 show what happens when the average temperatures are included in the model. The effect of cultural traits on the length of trials is not altered by the inclusion of the average temperature which in turn does not affect either the efficiency of justice or the per capita value added. Conversely, when absolute latitude is included, as in columns 3 ad 4, the effects of inherited culture on the quality of institutions is still at work.

Finally, we consider whether our results are driven by some of the provinces in the sample. In particular, we want to compare provinces that are more similar in terms of the length of trials. Hence, we select those provinces whose trials have length around the average length in a range determined by the standard deviation. In this way we select 79 provinces whose trials take between 289.15 and 643.55 days to be closed. The results

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[3]The degree of provincial openness is calculated as $\frac{import+export}{GVA}$. Data at current prices are from ISTAT

Table 3: Effects of the quality of justice on per capita value added. Inherited culture vs current civic capital.

Panel A	Log of value added per capita				
	(1)	(2)	(3)	(4)	(5)
QJ	-0.00108***	-0.000967***	-0.00116**	-0.00101***	-0.00108**
	(0.000217)	(0.000178)	(0.000490)	(0.000331)	(0.000445)
Current civic capital	0.0250**	0.00863	-0.00383	0.00851	-0.00242
	(0.00992)	(0.00948)	(0.0120)	(0.00989)	(0.0112)
Urbanization 1871		0.0782	0.122	0.0795	0.107
		(0.0654)	(0.0768)	(0.0689)	(0.0732)
Y. of schooling		0.154***	0.174***	0.159***	0.175***
		(0.0351)	(0.0430)	(0.0441)	(0.0404)
Org. Crime		-0.124***	-0.175***	-0.131**	-0.168***
		(0.0456)	(0.0663)	(0.0610)	(0.0619)
Openess					0.0487*
					(0.0290)
Department dummy variables	N	N	Y	N	Y
South dummy variable	N	N	N	Y	N
Constant	3.524***	1.992***	1.899***	1.951***	1.829***
	(0.103)	(0.351)	(0.433)	(0.381)	(0.394)
Observations	102	102	102	102	101
Panel B: first stage	**Length of trials**				
	(1)	(2)	(3)	(4)	(5)
IC	-103.4***	-105.6***	-51.77***	-67.47***	-53.95***
	(18.98)	(19.33)	(18.63)	(17.41)	(18.66)
Current civic capital	-25.65***	-28.42***	-15.16**	-19.28***	-15.73**
	(4.493)	(5.635)	(6.225)	(5.368)	(6.330)
Department dummy variables	N	N	Y	N	Y
South dummy variable	N	N	N	Y	N
Regressors in Panel A	Y	Y	Y	Y	Y
Observations	102	102	102	102	101

Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Effects of the quality of justice on per capita value added. Geographical and climate controls.

Panel A	Log of value added per capita			
	(1)	(2)	(3)	(4)
QJ	-0.00108***	-0.00115***	-0.000887**	-0.00152**
	(0.000310)	(0.000399)	(0.000371)	(0.000695)
Urbanization 1871	0.0890	0.0985	0.121*	0.0934
	(0.0657)	(0.0736)	(0.0622)	(0.0889)
Y. of schooling	0.166***	0.172***	0.158***	0.176***
	(0.0421)	(0.0409)	(0.0392)	(0.0485)
Org. Crime	-0.160***	-0.163***	-0.125**	-0.269***
	(0.0484)	(0.0489)	(0.0562)	(0.102)
Av. temperature	0.00252	0.00649		
	(0.00749)	(0.00729)		
Abs. latitude			0.0168	-0.0575
			(0.0168)	(0.0422)
Department dummy variables	N	Y	N	Y
South dummy variable	Y	N	Y	N
Constant	1.895***	1.805***	1.180	4.383**
	(0.396)	(0.452)	(0.828)	(2.118)
Observations	102	102	102	102
Panel B: first stage	**Length of trials**			
	(1)	(2)	(3)	(4)
IC	-72.30***	-61.36***	-54.65***	-42.50**
	(19.95)	(19.61)	(17.59)	(19.33)
temp_media	6.278	6.063		
	(5.595)	(5.564)		
Abs. latitude		-28.12***	-46.91***	
		(8.861)	(13.93)	
Department dummy variables	N	Y	N	Y
South dummy variable	Y	N	Y	N
Regressors in Panel A	Y	Y	Y	Y
Observations	102	102	102	102

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5: Effects of the quality of justice on per capita value added. Restricted sample.

Panel A	Log of value added per capita			
	(1)	(2)	(3)	(4)
QJ	-0.00137***	-0.00143**	-0.00134***	-0.00142**
	(0.000480)	(0.000559)	(0.000446)	(0.000561)
Current civic capital		-0.00480		
		(0.0108)		
Urbanization 1871	0.161*	0.174**	0.185**	0.159*
	(0.0824)	(0.0860)	(0.0794)	(0.0850)
Y. of schooling	0.170***	0.173***	0.171***	0.169***
	(0.0443)	(0.0442)	(0.0442)	(0.0458)
Org. Crime	-0.153**	-0.172**	-0.154**	-0.167**
	(0.0683)	(0.0735)	(0.0680)	(0.0719)
Av. temperature			-0.00787	
			(0.0120)	
Abs. latitude				-0.00768
				(0.0240)
Department dummy variables	Y	Y	Y	Y
Constant	1.961***	1.968***	2.070***	2.307*
	(0.437)	(0.436)	(0.510)	(1.302)
Observations	73	73	73	73
Panel B: first stage	**Length of trials**			
	(1)	(2)	(3)	(4)
IC	-55.56***	-50.33***	-57.15***	-48.58**
	(17.49)	(16.95)	(16.09)	(18.63)
Department dummy variables	Y	Y	Y	Y
Regressors in Panel A	Y	Y	Y	Y
Observations	73	73	73	73

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

provided in Table 5 are in line with those previously delivered. Even if the more similar provinces are considered in terms of length, the results are confirmed either in the IV regression or in the first stage. Again, culture from the past affects the length of trials which in turn influence per capita value added.

7 Conclusions

The analysis of the previous sections has explored whether the inherited culture from a distant past affects the efficiency of formal institutions within country since its political and administrative unifications. Moreover, the efficiency of current formal institutions are taken into account in order to establish a connection with the economic development and income divergence. Our main findings establish a key role of inherited culture in shaping the working of institutions within a unique administrative framework. whereby income disparities are partly explained. Property rights are more protected and secured if cultural traits are better. Nonetheless, our

study shows that two possible sources of culture are at stake. The first is the culture the society inherits from the past and the second is the stock of civic capital accumulated in more recent years. Eventually, they are complementary in explaining the efficiency of current institutions. The mechanism and the various robustness checks we proposed cannot exclude that: (1) the omitted variable problem remains unsolved thereby possible endogeneity issues may still persist in such an analysis; (2) other transmission channels cannot be, in principle, ruled out in the Italian context. A possible concern we have not addressed, which is in our research agenda, is the interplay between past institutions and past culture. Future extensions in this field might discuss the complexity of culture and institutions in the past.

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Data appendix: sources

Table 6: List of the Italian provinces

province	Code Name	province	Code Name
Agrigento	AG	Milano	MI
Alessandria	AL	Modena	MO
Ancona	AN	Monza	MZ
Aosta	AO	Napoli	NA
Aquila	AQ	Novara	NO
Arezzo	AR	Nuoro	NU
Ascoli	AP	Ogliastra	OG
Asti	AT	Oristano	OR
Avellino	AV	Padova	PD
Bari	BA	Palermo	PA
Belluno	BL	Parma	PR
Benevento	BN	Pavia	PV
Bergamo	BG	Perugia	PG
Biella	BI	Pesaro-Urbino	PS
Bologna	BO	Pescara	PE
Brescia	BS	Piacenza	PC
Brindisi	BR	Pisa	PI
Cagliari	CA	Pistoia	PT
Caltanissetta	CL	Pordenone	PN
Campobasso	CB	Potenza	PZ
Caserta	CE	Prato	PO
Catania	CT	Ragusa	RG
Catanzaro	CZ	Ravenna	RA
Chieti	CH	Reggio Calabria	RC
Como	CO	Reggio Emilia	RE
Cosenza	CS	Rieti	RI
Cremona	CR	Rimini	RN
Crotone	KR	Roma	RM
Cuneo	CN	Rovigo	RV
Enna	EN	Salerno	SA
Ferrara	FE	Sassari	SS
Firenze	FI	Savona	SV
Foggia	FG	Siena	SI
Forli	FC	Siracusa	SR
Frosinone	FR	Sondrio	SO
Genova	GE	Taranto	TA
Grosseto	GR	Olbia-Tempio	TM
Imperia	IM	Teramo	TE
Isernia	IS	Terni	TN
La Spezia	LS	Torino	TO
Latina	LT	Trapani	TP
Lecce	LE	Treviso	TE
Lecco	LC	Udine	UD
Livorno	LI	Varese	VA
Lodi	LO	Venezia	VE
Lucca	LU	Verbania	VB
Macerata	MC	Vercelli	VC
Mantova	MN	Verona	VE
Massa	MS	Vibo Valentia	VV
Matera	MT	Vicenza	VI
Messina	ME	Viterbo	VT

The length of first degree civil trials (average of the years 2006 and 2007) are computed as in the text (Section 3) using data from the Direzione Generale di Statistica e analisi Organizzativa (DG-Stat) of the Ministry of Justice.

The number of appointed judges in each province has been kindly provided by the Consiglio Superiore della Magistratura.

The value added per capita (average of the years 2006 and 2007) and the population size are taken from Istituto Nazionale di Statistica (ISTAT), *Aggregati dei conti territoriali per branca di attività economica (Version, Nov-2013)*. Current value added has been converted using regional deflator at chained values (base year 2005) taken from Istituto Nazionale di Statistica *Aggregati dei conti territoriali per branca di attività economica (Version, Nov-2013)*. .

The years of schooling in 2006 and 2007 are obtained from the Census data of 2011 retropolating data using the surveys of population by educational attainment (ISTAT).

Current measures of civic capital come from Cartocci (2007).

The source of geographical variables is ISTAT

Urbanization rates in 1871 is the ratio of population living in towns equal to or larger than ten thousands inhabitants over the total provincial population, using data from the *Dizionario dei Comuni del Regno d'Italia*, Roma, Eredi Botta, 1874.

Data of the *Società di Mutuo Soccorso* are taken from Ministero dell'Agricoltura Industria e Commercio, *Statistica delle Società di Mutuo Soccorso*, Roma, Regia Tipografia, 1875.

Illiteracy rate of 1871 are from the Ministero dell'Agricoltura Industria e Commercio, *Censimento 31 Dicembre 1871*, vol. 2, Roma, Tipografia Cenniniana, 1875.

All the historical variables are computed at current boundaries.

Table 7: Summary statistics of variables used in the text

Variable	Obs	Mean	Std. Dev.	Min	Max
value added per capita	102	3.017204	0.2571809	2.51461	3.597321
length of trials	102	466.349	177.2018	182.7978	926.5903
urbanization rate 1871	102	0.2660967	0.206439	0	0.779857
Y. Of schooling	102	9.625683	0.4097206	8.682881	11.0561
Current civic capital	102	-0.107353	3.071177	-6.43	5.47
abs. Latitude	102	42.59343	2.619094	36.56	46.11
av. Temperature	102	13.68235	2.710282	3.6	18.3
Inherited culture	102	-1.09E-09	0.7822114	-0.9600835	2.4183

Value added per capita, length of trials and years of schooling are average values of 2006 and 2007