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The Churches' Bans on Consanguineous Marriages, Kin-networks and Democracy*

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Abstract – *This paper highlights the role of kin-networks for the functioning of modern societies: countries with strong extended families as characterized by a high level of cousin marriages exhibit a weak rule of law and are more likely autocratic. To assess causality, I exploit a quasi-natural experiment. In the early medieval ages the Church started to prohibit kin-marriages. Using the variation in the duration and extent of the Eastern and Western Churches' bans on consanguineous marriages as instrumental variables, reveals highly significant point estimates of the percentage of cousin marriage on an index of democracy. An additional novel instrument, cousin-terms, strengthens this point: the estimates are very similar and do not rest on the European experience alone. Exploiting within country variation of cousin marriages in Italy, as well as within variation of a 'societal marriage pressure' indicator for a larger set of countries support these results. These findings point to a causal effect of marriage patterns on the proper functioning of formal institutions and democracy. The study further suggests that the Churches' marriage rules - by destroying extended kin-groups - led Europe on its special path of institutional and democratic development.*

Keywords: Democracy, Family, Kin-groups, Church, Cousin-Marriage, Institutions
JEL classification Number: O10, N20, N30, Z10

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1. Introduction

The role of the family as one of the most fundamental institution for human society is unquestionable. The family is traditionally seen as individually beneficial providing emotional and material security. However, strong kinship ties can have a perverse negative effect for society as a whole. It can foster an in-group mentality preventing large scale cooperation beyond the confines of the kin-group. As a key consequence, a narrow focus on the interest of the extended family may undermine the essence of democracy – playing by the rules set by the whole society. Family structures vary considerably between countries. In many countries the extended kin-groups, strengthened by kin-marriages, plays an important role. In parts of the world first and second cousin marriages account for 20 to 50 percent of all marriages (Bittles and Black 2010). The social closure implied by kin-marriage creates much tighter family networks compared to less fractionalized societies where the nuclear family dominates. This research advances the hypothesis and empirically demonstrates that the strength of extended kin-groups (as proxied by cousin marriage) is most likely at the core of the large developmental differences in institutional quality and democracy across countries: excessive reliance and loyalty, nepotism, violent conflict and other contingencies of strong extended kin-groups impede the proper functioning of formal institutions. Furthermore, this study suggests that a specific historic event – the Church ban on consanguineous marriage (marriage of the same blood) – constituted a critical juncture leading Europe to a special path in its economic and institutional development.

The idea that extended kin-networks play a decisive role in institutional and economic outcomes is old. The early Christian theologian St. Augustine (354 - 430) propagated a ban on consanguineous marriages by pointing out that marrying outside the kin-group enlarges the range of social relations and "should thereby bind social life more effectively by involving a greater number of people in them" (Augustine, 1998, p. 665). For Weber (1958), the disappearance of extended kin-groups in Europe is one of the central preconditions for the development of public law and the political state (see also Goody, 1990 on Weber's view). Todd (1987) argues that family systems can explain the acceptance and diffusion of societal changes like Protestantism or political ideologies like communism, while Alesina and Giuliano (2014) point out that the extreme reliance on the family hinders the development of institutions and public organizations. Greif (2005) and Greif and Tabellini (2015) argue that western corporations form the basis of European institutional foundations of markets and polities. They trace their origins to the decline of kinship groups, which is attribute to the Church's marriage laws and practices.

This paper builds on the idea that extended kin-groups are detrimental for institutional development. Best to my knowledge it is the first paper that provides causal evidence on the effect of kin-marriages on democracy. It highlights the importance of societies kin-network structures, which are rooted in a countries long term history, for the proper functioning of

formal institutions. For example, other than Huntington (1991) suggested I demonstrate that it is most likely not Islam but the high prevalence of a specific form of cousin marriage in North Africa and the Middle East that is a detriment to democracy. Europe on the other hand has very different marriage patterns – cousin marriage is almost absent and the nuclear family dominates. In line with Acemoglu et al. (2008, 2005)'s idea of critical junctures (that is, that historical factors have shaped the divergent political and economic paths of various societies), I argue that the Church's ban on consanguineous marriages constituted such a juncture leading Europe on its special developmental path.

Estimation strategy and results - This research establishes the importance of extended kin-groups for democracy in several steps. Ordinary least square regressions controlling for a wide range of covariates, which previous research has identified as important determinants for the proper functioning of institutions, demonstrate a robust negative relation between cousin marriage rates and institutional development. Reverse causation and omitted variables may bias these results. To assess causality, I follow several approaches. Firstly, I make use of a quasi-natural experiment – the duration of the Churches' bans on consanguineous marriages. Secondly, I use a linguistic rule – cousin-terms – in instrumental variables (IV) estimation. Thirdly, I exploit within country variation in marriage patterns and attitudes towards marriage. While each approach in itself is unable to alleviate all endogeneity concerns, taken together they paint a very consistent picture: consanguineous marriages most likely have a detrimental causal impact on democracy.

Starting in the early medieval ages the Western Church imposed several marriage regulations that weakened extended kinship groups: most prominently the banning of consanguineous marriages. This ban was very comprehensive – the Catholic Church at times prohibited marriages up to seventh degree of relatedness (that is, marriage between two people sharing one of their 64 great-great-great-great-grandparents). The Eastern Church also banned cousin marriage but never to the same extent. Crucially for causal identification, the ban was imposed exogenously top-down onto the inhabitants and the (often random) outcome of wars shifted the reign of rulers (and with it the "state religion"). Methodologically this approach – using a quasi-natural experiment – is similar to Acemoglu et al. (2011), who use the implementation of radical reforms following the occupation of some parts of Germany by Napoleon as a source of exogenous variation to study its effect on economic prosperity.

Reduced-form country fixed-effects regressions (exploiting the panel structure of historic data) reveals that the Churches' rule has had an early impact on institutional and economic conditions. A longer duration of the ban is positively associated with state formation and population density (as a proxy for development) up to the year 1500. Controlling for country fixed-effects rules out that this result is driven by some time-invariant omitted European factors and together with the exogenous nature of Christianization establishes the importance of the Churches' medieval rule for institutional development. Consistent with the hypothesis of a

detrimental impact of strong kinship groups on institutional development, this relation is stronger for the Western Church with its more encompassing ban.

IV-estimates reveal a pronounced effect of cousin marriage (instrumented by the Churches' bans) on present-day institutional quality and democracy. This IV approach addresses estimation bias due to contemporary omitted factors and the pressing concern of reverse causality, that is, that dysfunctional, weak institutions and autocratic rule increase cousin marriages as a way to insure and protect members of the kin-group. However, it is not able to rule out the possibility of estimation bias due to an alternative Church factor that impacts institutional outcomes through a different channel than the strength of extended kin-networks. This concern is mitigated by exploiting the different extend of the ban in the Eastern and Western Church (which are both in the Roman legal tradition and share essentially the same religion) as a source of variation independent from the introduction of Christianity. However, to directly address this concern, I demonstrate that the point estimates are quantitatively very similar when using an alternative identification strategy, which does not rest on the European experience alone. I employ a second instrument: cousin-terms.

In Anthropological research it has long been established that kin-terms reflect family structures (Morgan 1870). This second IV captures whether the terms for cousins are differentiated (one example are different terms for cousin on the mother's side and the father's side). Differentiated cousin-terms are strongly positively associated with the prevalence of cousin marriage. Using a linguistic rule as an IV follows Licht et al. (2007) and Tabellini (2008). Language only evolves slowly. As such, cousin-terms are not influenced by recent events but reflect distant (and only very decisive) factors that shaped marriage patterns. Thus, both IV approaches – the Churches' bans and cousin-terms – address the pressing concern of reverse causality and estimation bias due to contemporary omitted factors. Moreover, both approaches complement each other and thereby alleviate endogeneity concerns due to omitted factors that are rooted in the longer history of countries. The strength of the Churches' bans as an IV is its exogenous introduction onto the inhabitants – the historical evidence and also the results of the reduced-form country-fixed-effects approach render it unlikely that deep omitted variables (e.g. biogeographic conditions) bias the estimates. However, this approach is not able to exclude the possibility that some other feature of the early medieval Churches' rule biases the estimates. This is the strength of cousin-terms as IVs – a long-standing Anthropological literature has established its close link with marriage patterns. Yet, even when controlling for a long list of covariates this approach does not rule out the possibility that some other (omitted) deep variable may bias the estimates. Importantly, however, if both distinct estimation strategies lead to quantitatively very similar point estimates it is a strong indication that estimation bias due to omitted variables of either sort are unlikely.

IV-regressions of the percent cousin marriages (instrumented by cousin-terms) on democracy reveal highly significant estimates that are remarkably similar both when comparing them to

the alternative IV approach (duration of Churches' bans), or controlling for a wide range of covariates. This is also the case when – as a robustness check - countries in which a sizable fraction of ancestors experienced the Church's kin-marriage ban are excluded. This demonstrates that the relationship between family systems and democracy is robust to the identification strategy used and is not only driven by European countries or countries with a large population of European descent.

Lastly, I turn to within-country analysis to alleviate endogeneity concerns due to unobserved effects at the country level. Italy is a prominent example for large within country differences in institutional quality. Cousin marriage has largely been overlooked as an explanation. Regional data on cousin marriage rates in Italy reveal a highly significantly positive association with criminal activity by the mafia (as a proxy for institutional failure). Both are higher in the South, where the duration of the Western Church's kin-marriage ban was shorter. However, this is not simple a North/South effect. Even within the South and North the percentage of cousin marriage is predictive of mafia activity while North/South fixed-effects are insignificant.

Turning to attitudinal measures based on survey responses of the World Value Survey (WVS) and the European Values Study (EVS) allows to exploit within country variation in a larger set of countries and to control for individual factors like education, income and religious affiliation. The results robustly show that individuals holding a conception of marriage that emphasizes societal pressures (e.g. the view that the same religious affiliation or socio-economic status are important for a marriage as opposed to love and affection) are more likely to prefer undemocratic rule. In line with previous literature it also shows that higher education and income decrease the preference for undemocratic rule. IV estimations exploiting within country variation in the duration of the Western Church's ban in Italy, Portugal and Spain address concerns of reverse causality. The estimation results again point to the importance of societal marriage pressures in explaining attitudes to undemocratic rule.

Literature - There is yet not much empirical research investigating the effect of marriage patterns on cross-country differences in democracy. Buonanno and Vanin (2015) investigate the effect of social closure on crime and tax compliance within Italy. Their measure of closure is based on the diversity of surnames, which reflects the history of migration and inbreeding. They find that while communities with a history of social closure have lower crime rates, they also have higher tax evasion rates. This is consistent with the idea that social closure leads to more control in local interactions, but reduces cooperation on a larger scale. In cross-country regressions Woodley and Bell (2012) show that cousin marriage is associated with democracy. They do not, however, provide causal estimates or empirically link it to historical factors.[4]

[4] Similarly, while not focusing on democracy Akbari, et al. (2016) find a negative association of cousin marriage and corruption that also holds within a country. Further, in an experimental corruption game they show that corruption is higher between siblings.

Closely related are Alesina and Giuliano (2014, 2011, 2010), who focus on family ties, as measured by attitudes towards the nuclear family. They demonstrate how this affects a wide array of economic outcomes and attitudes. In particular Alesina and Giuliano (2014) find that countries with stronger family ties exhibit lower institutional quality and GDP per capita.

This study contributes to the emerging field studying historical, geographical and cultural origins of economic and institutional development (for an overview see Spolaore and Wacziarg, 2013). Licht et al. (2007), Tabellini (2008) and Gorodnichenko and Roland, (2015, forthcoming) emphasize the role of deeply rooted cultural values (which to different degrees all stress loyalty to a cohesive group) for the functioning of institutions and democracy (see also the theoretical work on cultural transmission by Bisin and Verdier, 2001 and Guiso et al., 2006 for an overview on culture). Giuliano and Nunn (2013) show that a tradition of local-level democracy is associated with more democratic national institutions. Galor and Klemp (2015) show that higher human diversity within a country (as measured by genetic heterogeneity) contributed to the emergence of autocratic pre-colonial institutions.[5]

This paper highlights the importance of kin-network structures that deeply rooted in a society's long term history impact institutional outcomes today. It emphasizes one specific historical factor: the Churches' marriage regulations. It thus offers an explanation why Europe embarked on a special path of economic and institutional development, which has been document by Easterly and Levine (2012) and is implicitly acknowledged in many research articles, which include variables capturing "neo-Europes" (relatedly see also Putterman and Weil, 2010). The focus on cousin marriage makes it clear that it is not simply an (unobserved) European trait – while cousin marriage is closely linked to the European experience of the Churches' marriage regulations it also explains variation in institutional quality within Europe, within countries and also across countries when Europe and 'neo-Europes' are excluded.

The paper is structured as follows. Firstly, I give a brief overview on the relation between kin-marriage and its effect on institutional quality (section 2). Section 3 reports OLS regressions controlling for a wide range of covariates. In section 4 I describe the historical context of the Church's ban on consanguineous marriages and present the estimations results exploiting the quasi-natural experiment of the Church's kin-marriage ban. Section 5 presents the estimations with kin-terms as IV. Section 6 reports estimation results of cousin marriage on measures of institutional quality like nepotism, corruption and the constraint on the executive. Section 7 reports within-country results. Section 8 concludes.

[5] Other studies in this field have focused on different deeply rooted factors and outcomes: Ashraf and Galor (2013) attribute differences in economic development to human genetic diversity. Talhelm et al. (2014) and Michalopoulos et al. (2016) show how differences in agriculture and occupation have led to psychological and wealth differences respectively. Nunn (2008) and Nunn and Wantchekon (2011) demonstrate the long term consequences of the slave trade on trust and economic development in Africa, while Alesina et al. (2013) establishes deep roots of gender roles.

2. Consanguinity and democracy

This research advances the hypothesis that the strength of kin-networks as proxied by cousin-marriages is an important factor to understand the cross-societal differences in institutional development and democracy (see also Collier, 2016, emphasizing network structure to understand the cultural foundations of economic failure).[6][7]

Kin-network structures and the associated marriage patterns are linked to values. The importance of kin-marriages probably increased as a result of the Neolithic transformation where people started to invest in land and animal breeding. Kin-marriages allowed to keep property within the family. However, since love is such a strong emotion (most likely evolutionary shaped in bands of hunter gathers where property is not as important) norms favoring the in-group may have become more relevant to support kin-marriages. Moreover, people in closely-knit family networks (where due to cousin marriage new members only rarely join) interact less frequently with outsiders, learn less about others' behavior and therefore may trust others less. This argument – that intense group ties prevent trust from developing beyond the confines of the family – is made by Yamagishi et al. (1998), Fukuyama (1995), and Alesina and Giuliano (2013) among others. A lack of interaction and trust beyond the confines of the in-group hinders large scale cooperation. However, for a functioning democracy this is necessary; individuals need to actively take part in it across the boundaries of their kin-group through voting, making politicians accountable for their actions, and/or volunteering in committees. Often this has a public goods characteristic – the public benefit exceeds the individual one. And indeed Barr et al. (2014) present evidence that cooperation in experimental games with anonymous others is predictive of political participation in school accountability institutions and national elections.

Importantly, kin-marriages go beyond values. Kin-marriages have a direct effect on economic incentives. Supporting one's extended family benefits the prospective spouses of one's own children and therefore indirectly one's future grandchildren. The biological implication of kin-marriage is an increased coefficient of genetic relatedness among members of the kin-group (while at the same time due to assortative mating genetic relatedness between kin-groups decreases).[8] The well-established and empirically supported biological theory of kin-selection or inclusive fitness (Hamilton, 1964) predicts that altruistic actions are more frequently directed

[6] Kin-networks are characterized by additional factors like residence, decent and marriage arrangements like monogamy vs. polygamy. I use kin-marriage as a proxy since its biological and sociological component capture important aspect of kin-networks. I also use 'kin-group' and 'extended family' synonymously to refer to kin-networks beyond the nuclear family.

[7] The importance of network structures and information flows for human cooperation (among non-kin) has been experimentally demonstrated by Rand et al. (2014, 2011) among others. Analytically, the focus on networks (and the constraints they create) has the appealing feature for future research that it allows to investigate behaviour in an optimization framework rather than evoking cultural factors in a more unspecific way.

[8] In the absence of in-breeding the genetic relatedness between siblings is 1/2. The relatedness coefficient increases to (1/2 + 1/16) in offspring of (1st degree) cousins. After a long prior history of in-breeding the relatedness coefficient not only between siblings but also in the local (kinship) group increases further. At the boundary of the local group there is a sharp drop in genetic relatedness (see Hamilton, 1975).

towards genetically related individuals. As a consequence of increased genetic relatedness due to kin-marriages, heuristics favoring kin (ultimately shaped by kin-selection) are more often invoked within the kin-group.[9] Both factors increase nepotism, corruption, and other behavior that benefits the kinship-group with a detrimental effect on the functioning of formal institutions. Yet, functioning formal institutions are essential for democracy. They help to ensure fair elections, protection of civil liberties and also prosecution of rule violation by leaders (or their family members). They therefore provide important checks and balances on the person in power (see section 6 for the effect of cousin-marriage on nepotism, corruption and control of the executive).

In the absence of some other strong supra-level institutions (like a nation-state with functioning rule of law), the extended family provides protection and insurance while demanding loyalty. That is, the network structure implied by the family system creates constraints for the people therein. These pressures may be quite strong given the easier monitoring in closely-knit networks and the potentially extreme cost of ostracism in a society without well-functioning institutions providing protection. Thus, an individual has to take into account the demands of the extended family, which may manifest itself by having to hire relatives (leading to nepotism), accepting bribes, voting according to group-identity (and not preferences), or other activity which benefits the family at the expense of the larger society. As such, societies may find themselves stuck in an equilibrium where it is individually beneficial to support the extended family while at the same time it hinders more efficient large-scale institutions to develop, which not only provide insurance and protection but also ensure the proper implementation of formal (democratic) institutions. Further, the lack of a feasible outside option and the ease of monitoring members makes strong extended kin-networks often very hierarchical. This may create a psychology favorable to obedience and in support of authoritarian leadership. Indeed, when studying amoral familism Banfield (1958) mentions that the role of the parental education is to teach obedience. I address this link in within country estimates based on individual survey responses in section 7.

A society fractionalized along the lines of kin-groups may also be more conflict prone — an argument akin to the literature on ethnical fractionalization (see Alesina et al., 2003; Alesina and Ferrara, 2005; Alesina and Zhuravskaya, 2008; Easterly and Levine, 1997). Thus, even ethnically rather homogenous countries like in North Africa may experience more conflict due to strong kin-groups which hinders the smooth functioning of states. Further, as Hillman et al. (2015) and Rabushka and Shepsle (1972) point out, a strong group identity (e.g. based on the kin-group) is inconsistent with democracy. Voting according to group identity is pointless (as opposed to voting on policies, or personal preferences) since the results depend on the strength of the group and therefore lead to a repetition of the same electoral outcome. Similarly, there

[9] Similarly, following Ashraf and Galor (2013)'s argument that genetic heterogeneity increases conflict it implies a decrease of conflict within the extended family and an increases in conflict between extended families.

is no point in being an opposition that (loyal to the constitution) awaits a turn in government when, because of group identity voting, such a turn will never come.[10]

For all of these reasons, strong extended kin-groups (reinforced by kin-marriages) prevents large-scale cooperation and coordination which is essential for democracy. Thus, like Bowles (2011) argues this suggest that more market integrated, liberal societies do not lead to a decline in trust but are characterized cooperation of unrelated others. Evidence from cross-societal behavioral studies find evidence consistent with this argument. People from societies that are Western, Educated, Industrialized, Rich, and Democratic (WEIRD) in many instances are behaviorally distinct from most populations around the world (Henrich, Heine, and Norenzayan 2010). Herrmann et al. (2008) conducted a public goods game with and without punishment among anonymous student participants. Consistent with the idea that interactions in collectivistic societies are confined to the in-group, they observed more anti-social punishment (the punishment of those that cooperated more than the punisher) in collectivistic societies. Similarly, Gächter and Schulz (2016) find that student samples from collectivistic societies score lower on a behavioral measure of intrinsic honesty. Relatedly, Henrich et al. (2001) finds evidence that market integration – presumably a consequence of the declining importance of extended families and a proxy for the frequency of interaction with unrelated others – leads to more cooperation.

Taken together, as Weber argues, the dissolution of strong extended kinship ties is likely an essential precondition for the proper functioning of formal institutions in modern large-scale societies. Prohibition of kin-marriage has a direct effect on economic incentives and behavior that is shaped by kin-selection: biological relatedness within the kin-group decreases (while it increases with outsiders) and incentives to indirectly benefit one's own offspring by benefitting extended nieces and nephews also do not exist anymore. Further, the increased interaction with individuals outside the kin-group (people were forced to distantly relocate to marry) may change values towards a more general morality. At the same time losing the protection of (and loyalty demands by) the kin-group may create a demand for a rule of law governing non-lineage-related interactions.[11] This change may have contributed to a transition from a code of honor to a code of law (Pinker 2012).

3. Kin-Marriage and democracy: OLS Estimate

Figure 1 reveals a strong negative association between the fraction of cousin marriages and democracy. Spearman's rho is -0.73 and highly significant. The linear fit reveals that a 10 percentage point increase in cousin marriages is associated with an about 3 points lower democracy score. Cousin marriage (comprises 1st and 2nd degree cousins) is based on data of a

[10] Ben-Bassat and Dahan (2012) find support for voting along the lines of extended families: in the Israeli Arab population candidates receives significantly more votes from their associated extended family.

[11] E.g. the Salian Franks legal code (around 500) rendered relatives mutually liable for debts, legal penalties, and legal compensation. This was no longer the case in the 10th century (see Greif and Tabellini, 2015).

meta study conducted by Bittles, 2001 (see appendix C for details and figure B.2 for a map of the world distribution). Democracy is the widely used measure based on the Polity IV data (see appendix C for details and figure B.1 for a map of the world distribution).

The OLS regression in table 1 corroborates this finding when a long list of covariates is included which previous research has identified as important determinants for democracy. Modernization theory (see Lipset, 1959) has emphasized the role of education and economic growth in promoting political development. Glaeser et al. (2007) make the point that schooling teaches people to interact with others and increases the benefits of civic participation. As such, they emphasize a similar mechanism (interaction with others fosters civic engagement and thus supports democracy). Column (2) controls for education (the UN education index for the year 2005), and in column (3) GDP per capita is added as another proxy for "modernization". Adding these two control variables may be over controlling as they may be themselves outcomes of the strength of extended kin-groups (e.g. strong extended families may put more weight on tradition and less so on - particularly female - education and/or strong family boundaries hinder exploiting comparative advantages leading to lower GDP).

Countries' legal origins are included in column (4). La Porta et al. (2008) and La Porta et al. (1999) stress its importance for countries' formal institutions. A further control in column (4) is ethnolinguistic fractionalization. La Porta et al. (1999) and Alesina et al. (2003) demonstrate a negative effect of ethnic fractionalization on the quality of government. The mechanisms underlying this relation are likely to be similar to the ones outlined for family systems: both ethnic fractionalization and fractionalization along extended families (even within an ethnicity) may decrease cooperation and trust and foster tension and conflict.

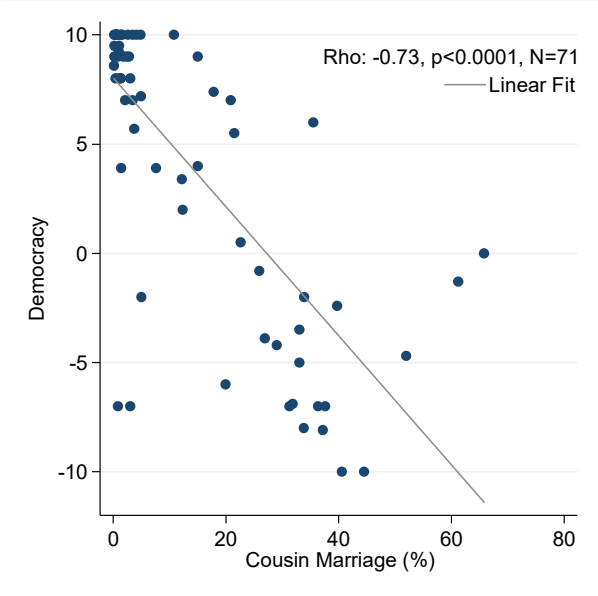

Figure 1: %-Cousin marriages (first and second degree) and democracy

Column (5) includes controls for historically-distant events and geography, namely the timing of the Neolithic transformation, absolute latitude, genetic diversity and terrain ruggedness. Diamond (1997) emphasizes that initial geographical and biogeographical conditions gave rise to the adoption of agricultural practices (the timing of the Neolithic transformation could thus be seen as a proxy for biogeographical starting conditions). In line with this reasoning, Putterman, (2008) coded the timing of the Neolithic Transformation and finds that the effects of the Neolithic revolution are still impacting incomes across the world today. Galor and Klemp (2015) show that a higher degree of genetic diversity leads to autocratic governments. Cavalli-Sforza et al. (2004) point out that in Italy consanguineous marriages are more likely in the mountains. A further control is therefore terrain ruggedness (using the measure of Nunn and Puga, 2012) as geographical barriers may make it harder to find a non-related marriage partner in proximity. In column (7) all covariates are used simultaneously. This may be problematic due to multicollinearity (GDP, cousin-marriage and education are highly correlated). This possibility is somehow mitigated as in Middle Eastern countries, while there are high cousin marriage rates, a non-negligible fraction of their GDP stems from natural resources. Nevertheless, some caution applies when interpreting these estimates.

The regression results in table 1 reveal a highly-significant and quantitatively-large association between the percentages of cousin marriages and democracy: a 10 percentage point higher

	(1) Democracy OLS	(2) Democracy OLS	(3) Democracy OLS	(4) Democracy OLS	(5) Democracy OLS	(6) Democracy OLS
%-Cousin Marriage	-0.29***	-0.28***	-0.29***	-0.30***	-0.26***	-0.24***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.08)
Education 2005		1.83				7.32
		(4.05)				(8.02)
GDP per capita 2000			0.01			-0.04
			(0.06)			(0.08)
UK legal origin				3.12		4.21*
				(2.33)		(2.20)
French legal origin				2.86		3.25
				(2.11)		(2.13)
Ethnolinguistic fractionalization				-3.02		-1.89
				(2.59)		(2.66)
Neolithic transformation (ancestor adjusted)					-0.57	-0.72
					(0.44)	(0.51)
Absolute latitude					0.84	0.94
					(0.64)	(0.74)
Predicted genetic heterogeneity (ancestor adjusted)					-5.73	-8.03
					(24.10)	(27.02)
Terrain ruggedness					1.65**	1.76**
					(0.79)	(0.77)
Constant	7.73***	6.41**	7.54***	6.60***	10.61	6.14
	(0.72)	(3.06)	(1.29)	(1.81)	(14.85)	(18.75)
N	69	69	69	69	69	69
R^2	0.516	0.517	0.517	0.544	0.572	0.613
F-stat	38.63	18.41	19.13	9.886	23.34	13.73

Table 1: Cousin marriage rates and democracy. Dependent variable is an index of democracy based on the Polity IV data set (varying from -10 to 10). Explanatory variable is the percentage of cousin marriage (based on Bittles, 2001). Covariates include the UN index of education in 2005, GDP per capita in 2000, ancestor adjusted predicted genetic heterogeneity (taken from Ashraf and Galor, 2013), UK and French legal origin (according to La Porta et al. 2008), ancestor adjusted timing of the Neolithic transformation (Putterman 2008), absolute latitude (taken from Acemoglu et al., 2001), and terrain ruggedness (taken from Nunn and Puga, 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

cousin marriage rate is associated with an approximately 3 points lower sore on the democracy index. The point estimates are remarkably stable when controlling for a wide range of covariates. While the coefficients of most of the covariates are insignificant, they have the expected sign (e.g. 'Education' has a positive sign, while "Ethnolinguistic Fractionalization', and "Predicted genetic heterogeneity' have negative signs). Terrain ruggedness exhibits a significant positive coefficient in column (6) and weakly so in column (5). The R^2 does not increase much when the other covariates are added.

Table A.1 in the appendix reports the same regressions including continent fixed-effects. This does not change the results qualitatively, although it decreases the size of the coefficient (%-Cousin marriage is a significant predictor of democracy in all specifications, although weakly in column 5 and 6), table A.2 in the appendix shows that the results are also robust to the inclusion of further covariates, like economic inequality (measured by the Gini-coefficient), the fraction of people at risk of contracting malaria, the land suitable for agriculture, arable land and temperature.

The available data restricts the analysis to 69 countries. To address potential concerns regarding the geographical coverage and representativeness I rely on a second albeit coarser explanatory variable, which increases the sample size to 132 countries (see figure B.3 in the appendix for the world distribution). This dummy variable 'cousin marriage preferred' captures whether cousin marriage is predominantly preferred in a given country. It is based on Rijpma and Carmichael (2013) and work by Jutta Bolt. The regression results in table A3 in the appendix likewise reveal that 'cousin marriage preferred' is a highly significant and robust predictor for democracy controlling for many covariates. Consistent with the literature in this enlarged sample ethnolinguistic fractionalization and genetic heterogeneity exhibits significantly negative coefficients.

Religion - Can some inherent property of the Christian belief explain the findings? Disentangling the effect of Christianity from marriage patterns is complicated by the fact that in most countries with a sizable proportion of Christians cousin-marriage is avoided due to the history of the Churches' bans on consanguinity. The within country analysis based on survey responses (section 7) controls for religious affiliation at the individual level. Nevertheless, even in cross-section data there is variation due to Atheists and African countries with a sizable Christian population but no medieval history of kin-marriage bans. Table 2 reports OLS regressions controlling for the the different Christian denominations (the baseline is Catholic).[12]

[12] Weber (1958) emphasized a Protestant ethic for the development of formal institutions, democracy and economic prosperity. However, the Reformation often successfully took hold in areas that experienced a long duration of the ban on consanguinity. As such, institutional and economic development in these areas may not (only) reflect a particular Protestant work ethic but also a longer history of marrying outside the family, which fostered the development of well-functioning institutions (Todd, 1987, p. 59-60, also makes the point that family systems were decisive for mass literacy and diffusion of Protestantism).

Column (2) to (4) contains controls for further major religions. Huntington (1991) has suggested that Islam is detrimental to democracy and indeed Fish (2002) finds that the proportion of Muslims is negatively correlated with democracy. However, other than Islam it may be the underlying marriage patterns that are detrimental to democracy. North African and Middle Eastern countries exhibit a high percentage of cousin marriages. Further, other than in most ethnicities parallel-cousin marriage (father's brother's daughter) is most prevalent (Korotayev 2000). Often there even exists the right to marry the *bint 'amm* (father's brother's daughter). In these patrilineal societies this type of marriage leads to lineage endogamy – the prospective spouse is from one's own decent group. This is in contrast to cross-cousin marriage (father's sister's daughter) where the prospective partner is from a different lineage. As a consequence, parallel cousin marriage leads to even stronger fractionalization of societies along the boundaries of extended kin-groups. Parallel cousin marriage is not based in the writings of the Quran. Mitterauer (2015) among others has suggested that the (rough and conflict lading) environment of camel herding (possibly together with Islamic inheritance rules) gave rise to parallel cousin marriage as a way to keep the property within the lineage; the geographic extension of parallel cousin marriage coincides with the range of camels' habitat.[13] Outside the camel's habitat – e.g. in the predominantly Islamic countries in South-East Asian, or in Turkic countries like Turkey, Uzbekistan and Kyrgyzstan parallel cousin marriage is not preferred. Regressions that ignore this underlying family structure may find a negative effect of Islam on democracy because they suffer from an omitted variable bias.

From table 2, column (1) it is apparent that the association between the percentage of cousin marriage and democracy is robust to controlling for the fraction of Christians. Due to the high historical link between the fractions of Christians and cousin-marriages, it is not surprising that the coefficients for cousin marriages decreases (compared to table 1). Still, a 10 percentage point increase in cousin marriage is associated with a 1.7 units lower democracy score. In line with Weber (1958)'s argument about Protestant ethics, the proportion of Protestants exhibits a significant larger effect on democracy than the other Christian denominations. However, this could also be driven by a longer exposure to the Church's marriage regulations in these areas.

In line with Huntington (1991), column (2) reveals a weakly significant (but large) negative coefficient for the share of Muslims, when the regression does not control for marriage patterns. Controlling for the percentage of cousin marriage (column 3) decreases the coefficient for the fraction of Muslims. Adding an additional control for parallel cousin marriage, leads to a further substantive decline (column 4). The percentage of cousin marriage exhibits a weakly significant coefficient (column 3) and a highly significant one when controlling for parallel cousin marriage (column 4). Parallel cousin marriage likewise exhibits a significant and quantitatively large coefficient. This is evidence that not the Islamic religion, but rather the

[13] See also Michalopoulos, Naghavi, and Prarolo (2012) on the origins and spread of Islam.

	(1) Democracy OLS	(2) Democracy OLS	(3) Democracy OLS	(4) Democracy OLS
%-Cousin Marriage	-0.166**		-0.118*	-0.114***
	(0.072)		(0.066)	(0.039)
Parallel				-5.733**
				(2.591)
Fraction Christian	6.463**	3.767	2.292	1.493
	(2.676)	(5.452)	(5.518)	(8.060)
Fraction Protestant	3.887**	4.774*	4.748*	4.345*
	(1.668)	(2.617)	(2.745)	(2.597)
Fraction Orthodox	-0.088	2.887	9.107	15.760
	(23.506)	(15.682)	(20.773)	(12.619)
Fraction Other Christian	2.515	3.098	2.225	2.102
	(2.381)	(3.493)	(3.572)	(3.592)
Fraction Muslims		-10.455*	-7.957	-3.982
		(5.891)	(5.812)	(9.409)
Fraction Hindu		-10.413	-13.204	-13.675
		(10.134)	(10.451)	(13.006)
Fraction Buddhist		4.796	4.157	2.252
		(5.706)	(5.658)	(8.014)
Fraction No religion		2.422	2.202	0.737
		(7.174)	(6.635)	(9.637)
Constant	2.567	5.374	7.157	7.830
	(2.613)	(5.352)	(5.472)	(8.090)
N	68	68	68	68
R^2	28.22	17.87	17.51	31.67

Table 2: OLS regression of '%-Cousin Marriage' on democracy controlling for Religion. Data on religion is taken from Barro and McCleary (2003) Robust standard errors are in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

prevalence of (parallel) cousin marriage negatively impacts the proper functioning of institutions and democracy.

4. The Church's ban on consanguineous marriages and institutional development

The OLS results reveal a robust association between cousin marriages and democracy controlling for a wide range of covariates. However, unobserved omitted variables and reverse causation may bias the estimates. In this section I make use of the exogenous nature of the Church's ban on consanguineous marriages to assess causality.

4.1 Historical background

Starting in the early medieval ages, the Church imposed several marriage practices that weakened the extended family. For example, the Church insisted that the groom and the bride consented freely; only then would the Church acknowledge a marriage. It also discouraged polygamy, divorce, adoption and remarriage. Most importantly the Church prohibited consanguineous marriages (marriage of the same blood). This ban also encompassed affinal relatedness, people related to one's sexual partners, and baptismal sponsors. The ban on consanguinity gained momentum starting in the 8th century. Pope Zacharias stated in 743 that Christians are not allowed to marry if they were in any way related to each other. The incest legislation and enforcement tightened and probably in the middle of the 9th century the ban on consanguinity extended to the 7th degree (that is, marriage was forbidden between two people sharing one of their 64 great-great-great-great-grandparents or more practically to anyone

where some relationship was known) in all of the Western Church's sphere.[14] In 1215 pope Innocent restricted consanguinity to the 4th degree as an impediment. In 1917 it was decreased further to the 3rd degree (banning first and second cousins from marrying), and in 1983 to the 1st degree. The Orthodox Church imposed the ban later and never to the same extent, always allowing third cousins to marry.[15]

The virtual absence and even stigmatization of cousin marriage today in countries that experienced this ban is evidence that eventually the Church (and secular rulers) succeeded in enforcing this rule. A good indication of how seriously the ban was taken is that the nobility in the 10th and 11th century were not marrying (distant) relatives even though it became increasingly hard to find a noble marriage partner (Bouchard 1981). Studying this time period, the historian de Jong (1998) concludes that avoidance of kin-marriage had become one of the defining criteria of Christianity. Around the time of the reduction of the ban from the 6th to the 3rd degree in 1215, enforcement become less strict. This becomes apparent by a subsequent increase in cousin marriage by the nobility and granting of dispensations (see Donahue, 2008, on the latter).

Transgressions of the ban had serious consequences. Consanguineous marriages were annulled (as a consequence offspring thus was illicit and stripped of rights like inheritance), and willful transgressors were faced with severe punishment like excommunication.[16] Often Church rules were given legal sanctions by secular rules. For example, in Anglo-Saxon England punishment for consanguineous marriage was slavery (Goody 1983), while in the Visigoth kingdom punishment was perpetual penance and entry into a monastery (Archibald 2001). Furthermore, in writings the danger of 'pollution of the blood" was emphasized. This can be considered to be strategically aimed at influencing attitudes as it seems to have been clear to the clergy that the idea of 'pollution' could not be traced from the bible (Rolker 2012). This likely contributed to a shift in norms against cousin marriage (leading to increased denunciations of transgressions). According to the historian Mitterauer (2010) "We find it difficult to comprehend today just how preoccupied the era was with the fear of incest …".

[14] It is not clear when this increase occurred. Pope Gregory III wrote in 732 that marriage was forbidden to the 7th degree. However, there was disagreement in the Western Church as to follow the Germanic or the Roman mode of counting. The Roman system counted up to the common ancestor and then down to the prospective partner. Thus, a prohibition of the 7th degree meant that one was allowed to marry one's third cousin (that is, someone sharing a great-grandparent with). The Germanic (used by the Franks) system only counted up to the common ancestor. A prohibition to the 7th degree thus meant that one was not allowed to marry any decedents of one's 64 great-great-great-great grandparents. Bouchard (1981) and de Jong (1989) locate the (decisive) switch from the Roman to the Germanic counting in the first half of the 9th century.

[15] At the council of Trullo in 692 the Greek Church condemned cousin marriage (probably up to second cousin). The Isaurian emperors, Leo (685-741) and Constantinus (718–775), forbade marriage in the 6th degree and not long afterwards it was extended to the 7th degree (Roman counting). Thus, third degree cousins were always allowed to marry. This restriction is in place up to today in the Greek Orthodox Church (Addis 1961).

[16] Excommunication was not only due its stigmatization and the belief to spend eternity in hell a severe penalty. Christians were not allowed to support, employ or enter into contracts with an excommunicated person. Existing contracts were considered void. E.g. debts to an excommunicated person could be ignored, property could even be seized and attacks on and murder of an excommunicated person carried far less weight.

As a consequence of these policies and their enforcement, extended families lost control over the marriages of their members which destroyed the lineage structure in society (de Jong, 1998; Mitterauer, 2010; Greif, 2005).[17] The extensive ban up to the 7th degree in the Western Church makes it unlikely that a marriage partner could be found in proximity, which forced individuals to relocate to marry. The ban only up to third cousins in the Eastern Church might still have allowed people to stay within the same village or move to a place close by (the number of prohibited marriage partners increases exponentially in the prohibited degrees). According to Mitterauer (2010), the enforcement was also generally stronger in the Western Church compared to the Eastern Church.[18] Thus, patrilineal kinship structures were less affected in the sphere of the Orthodox compared to the Western Church (Mitterauer 2010).

Historians have discussed several reasons why the Church implemented this extensive ban on consanguinity. The Bible does not put restrictions on cousin marriage; incest is dealt with in Leviticus 18 and 20 but cousin marriage is not forbidden. Goody (1983) emphasize that the Church had financial motives for enforcing this ban. Weakening the extended family increased the likelihood that an individual's bequest would fall to the Church. Similarly, the Church and political leaders most likely had a good understanding that weak extended families would aid them in manifesting and consolidating their power over clans, lineages and pagan traditions (see Ausenda 1999, p. 148). This may have also been the reason why Christian kings endorsed the ban and incorporated it into secular law or pagan rulers adopted Christianity. An understanding of the social implications, already in the early medieval times, is highlighted by the writings of St. Augustine (354-430). He emphasized the increase in social cohesion that is brought about by not marrying kin:

> "Who would doubt, however, that the state of things at the present time is more virtuous, now that marriage between cousins is prohibited? And this is not only because of the multiplication of kinship bonds just discussed: it is not merely because, if one person cannot stand in a dual relationship when this can be divided between two persons, the number of family ties is thereby increased." (Augustine, 1998, p. 665-667).

In line with historians like Michael Mitterauer I argue that democratic ideas and the formalizations of constitutions are in continuation of societal changes that take its root in the early medieval Church regulations that weakened extended kin-groups. Councils, often called 'parlamentum', where decisions were implemented by majority votes are already known from the medieval times. The loosening kin-networks lead to other social arrangements like vassalage. Vassalage entailed duties like mandatory military service but also rights, e.g. giving advice to the overlord at councils like the Holy Roman's Empire's Hoftag. This arrangement

[17] See also Korotayev (2003). Based on the Ethnographic Atlas, he finds a negative relationship between lineages and Christianity at the ethnicity level.

[18] For example, marriage within the forbidden degrees was in line with (Eastern Church's) Patriarch Alexius Studites' (1025-43) ruling that consanguineous marriages may be valid if there was genuine ignorance of the relationship. It thus became practice to claim ignorance. In 1166 the Synode of Constantinople decided that ignorance was not a sufficient excuse and the marriages had to be dissolved (Angold, 1995).

is in contrast to other societies with strong extended kin-groups. A natural question then arises how the Arabic expansion in the 7th and 8th century and the Ottoman empire (starting in the 14th century) could be sustained over several centuries in societies with strong extended kin-groups. One likely answer is that these empires relied heavily on male slaves that were conscripted (in thousands) as children (from Christian parents) and subsequently trained as elite warriors and administration personal (mamelukes "*slaves on horse*" in the case of the Arabic expansion and Janissaries in the Ottoman empire). Thus, the ruling elite could rely on people that were cut off their family ties (and also had no political participation – except through military revolt).[19]

4.2 Data on duration of church ban and identification

Identification - Importantly for this identification strategy, the duration and extent of the Church's marriage rules were exogenous to the inhabitants. In many instances Christianization in the medieval ages was imposed top down. For example, the conversion to Christianity of the Saxons in Northern Germany was enforced following their defeat in 782 to Charles the Great – people who refused to convert were executed. Similarly, historical sources suggest that the decisive shift to Christianity occurred in England in 655 when the (pagan) King Penda was slain in battle.[20] Crusades were launched against the Baltic States, Finland and pagan Prussia (between 1193 and 1316) to convert the inhabitants to Christianity. In Poland and what is now the Czech Republic, Christianization was accompanied by uprisings. Evidence for top-down Christianization are also found in historical sources describing the mass baptism of Kiev in the Dnieper River in 988, as ordered by Vladimir.[21] Also the decision in favor of either the Western or the Eastern Church was hardly foreseeable. For example, Tsar Boris in Bulgaria was leaning to the Western Church. However, after a successful attack the Byzantine Empire demanded conversion to Eastern Christianity. Clearly, ordinary inhabitants also had no direct way to influence or stop the introduction of the Church's marriage legislation. Letters between the Pope and his bishops demonstrate initial opposition to the ban by newly-Christianized English (see e.g. de Jong, 1989). This is evidence against an already existing negative attitude (independent of the Church) against cousin marriage.

Another source of variation comes from the conquest of areas previously under the Churches' spheres by rulers with other religions. Examples are the conquest of the Hispanic Peninsula by the Islamic Umayyad from the Christian Visigoths in 711, the Arab conquest of Sicily around the year 900, or the campaigns of the Ottoman Empire beginning in the 14th century which

[19] An exception is the Mameluke rule in Egypt, where they elected the Sultan. Janissaries in the Ottoman empire were (initially) not allowed to marry, engage in trade and unlike normal slaves they were paid a regular salary.
[20] See also the law codes of Ine King of Wessex (688-726). For failing to baptize a child within 30 days of birth, people had to pay 30 Shillings as a penalty.
[21] According to anecdotes Vladimir was looking for a religion and considered Islam, as well as the Western Church. However, he did not like the idea of alcohol prohibition in Islam and found no beauty in the gloomy churches of the Germans, so he decided for the Orthodox Church. While it is not clear how much truth there is in this it nevertheless demonstrates that having the decision rest on one person probably introduced a considerable degree of randomness.

resulted in large parts of the Balkans falling under its rule. Certainly the Mongol invasion of the Kievan Rus' between 1223 and 1480 in what is now Russia, Belarus and Ukraine also led to a disruption in the Eastern Church's enforcement of its marriage laws. Even though the Christian religion was not forbidden, it is clear that the Church could not enforce the ban on consanguineous marriages in the same way. A non-negligible fraction converted to Islam. The outcomes of wars in the medieval ages were heavily influenced by random factors – often hinging on the decision of a single person or weather conditions. For example, bad weather conditions caused the Ottoman forces to leave their heavy canons in Hungary when besieging Vienna in 1529 (they ultimately retreated unsuccessfully). Similarly, some historians attribute the (then pagan) Hungarians' loss against Otto in 955 to rain (which caused the Hungarians to remove their bows to protect them from water). Taken together, it is reasonable to assume that the Church's marriage legislation in a given area and its duration were exogenous to the inhabitants. They could not influence the introduction of this law, and (different) religions were imposed on them in a top-down manner as a consequence (of the often random outcomes) of wars.

The empirical strategy in this section is to firstly estimate reduced-form country fixed-effects of the duration of the Eastern and Western Churches' ban on institutional and economic outcomes in the 15th hundred (exploiting the panel structure of historical data). This fixed-effects approach empirically rules out that the results are a reflection of some unobserved (European) time invariant factor that simultaneously impacts both the duration of the ban and institutional development. The reduced-form regression thus allows to establish the importance of the Church rule. Using this historical data also allows to test whether – in line with the hypothesis – the Eastern and Western Churches' ban impacted development already in the 15th hundred (following the most extensive and stringent enforcement of the ban) and that the impact of the Western Church's rule with its more encompassing ban was stronger.

Secondly, I use the duration of the Churches' ban to instrument '%-Cousin marriages'. This IV allows to address reverse causation and estimation bias due to omitted contemporary factors. However, it does not exclude the possibility of estimation bias due to other Church related factors that impacted institutional development through a different channel than the dissolution of extended kin-groups. One such a factor may be religious beliefs and moral teachings that have a positive impact on the proper functioning of institutions. To address this possibility, the regressions control for the proportion of Christians within a country. Additionally, in the within country analysis based on survey responses religious affiliation is controlled for at the individual level. The possibility of some other institutional innovation by the Church driving the results is mitigated by the variation in the extent of the ban of the Eastern and Western Church, which both share essentially the same religion and are both in the Roman tradition. An unobserved alternative (institutional) Church factor would therefore needed to be stronger in the West. Further, many historians (e.g. Mitterauer, 2010; Goody, 1983; de Jong, 1998) have consistently pointed out the decisiveness of the ban implying major societal changes. It

destroyed the extended kin-network structure, forced people to relocate to marry and thereby to form new alliances and ties. An alternative (institutional) innovation would therefore needed to have a similarly strong impact on society. Nevertheless, this IV approach does not allow to empirically rule out that an omitted alternative Church factor biases the estimates. To address this concern I employ kin-terms as a second IV in section 5. As a robustness check this also allows to exclude all countries with a sizable fraction of individuals with European ancestors from the analysis. Further, section 6 focuses on within country evidence, where within a country inhabitants were living under the same formal institutions for many years.

Data - I constructed a variable 'duration of the Church's ban' that captures the duration for which a present-day country experienced the Church's ban up to the year 1500. I created two separate indicators: one for the Western Church and one for the Eastern Church since the Western Church's ban was more encompassing. As starting year, I use 506 AD for the Western Church (when the council of Agde forbade cousin marriage) and 692 AD for the Eastern Church (when the council of Trullo in 692 forbade cousin marriage).[22] The starting years is only relevant for countries that were already Christian. The starting year for other countries is based on widely accepted dates of Christianization.

The discovery of the New World witnessed large migration flows. A large proportion of the inhabitants of the Americas and other ex-colonies are descendants from Europe, and they brought their family systems with them. To account for this migration, I constructed an ancestor-adjusted index using the migration matrix from Putterman and Weil (2010). The adjusted measure captures the average duration a person's ancestor lived under the Church's cousin marriage ban (up to the year 1500) in a given country today (see figure B.2 and B.3 in the appendix for the world distribution).

[22] Using the duration of up to the year 1500 allows to straightforwardly construct an ancestor-adjusted measure for the Church's cousin marriage ban based on Putterman and Weil (2010)'s migration matrix. Apart from this practical implication, the cut-off is justified for several reasons. Importantly, the peak in the enforcement and the extent of the ban was before the year 1500. After 1500 no non-Christian ruler (favouring cousin marriage) took power in Western Europe. Nevertheless, the Reformation occurred in 1517, formally lifting the ban on cousin marriage in Protestant areas. By this time all the areas affected by the Reformation already had a long history with the cousin marriage ban (about 300 years in Finland, 500 in Sweden, 650 in the Czech Republic, and around 730 in Germany). After such a long duration and propagation of the ban, it is likely that cousin marriage was stigmatized and avoided even in the absence of a ban. Moreover, in Sweden (and with it the area of today's Finland) the Lutheran Church prohibited first cousin marriage until 1829. The trend in Protestant Germany and Switzerland was likewise a return to the Catholic canonical standards (Harrington 1995). Some imprecisions arise due to the Christianization of indigenous people in the Americas and Philippines after the 1500s (other than that there are no other areas with considerable Christianization by the Catholic Church before the 19th century). In these countries, the Catholic Church exempted the newly Christianised people from the full extent of the ban and, apart from the Philippines, the native population makes up only small fraction of today's population. Constructing a separate measure for the Orthodox Church not only captures that the ban was not as encompassing in the East but also that the Church's influence was not as powerful due to the Mongol invasion and Ottoman rule starting in the 1500s. While Christians were not persecuted, they experienced repercussions, e.g. Jizya, a tax on non-Muslims which made a switch of religion worthwhile. Thus, while the approach does not allow to disentangle these two factors, all these factors lead to a less severe ban and enforcement thereof by the Eastern Church. Nevertheless, this measure is an approximation of the duration of the average ancestor's duration under the ban.

4.3 Reduced-form estimates: The Church's ban and (medieval) development

The reduced-form relationship between the duration of the Churches' bans and institutional development is particularly interesting in the historical context (where data on marriage patterns is not available). The widest extend and strongest enforcement of the ban occurred before the 15th century. If indeed the Church ban transformed societies' network structures, then this should have effected institutional outcomes already in the 15th century. These reduced-form regressions based on historical data allow to test whether the timing of the Churches' bans is consistent with early institutional change and whether the Western Church with its more encompassing ban had a stronger impact. Exploiting the panel structure of the historic data allows to rule out estimation biases due to any country specific time-invariant omitted variables like geography, already-existing differences in cultural values and genetic factors.

I use two indicators for historic institutional development. One is the state antiquity index (see Bockstette et al., 2002; and Borcan et al., 2014). It reveals the presence of a supra-tribal polity, that is, the degree to which each of the present-day countries was the site of nation states, kingdoms, or empires. The index ranges from 0 to 50. Data is compiled for each half century from the years 1 to 1950 AD. I use the data from 450 to 1500. The second measure is population density. The rationale for this indicator is that in the precolonial Malthusian era economic gains led to a larger but not richer population. Even though it is not directly related to institutional change, as a robustness check it likewise captures societal changes that occurred in this time period. Data on worldwide population density in 1000 CE and 1500 CE is based on McEvedy and Jones (1978), as used by Ashraf and Galor (2013). I also report reduced-form estimation with the contemporary measure for democracy as the dependent variable (based on the widely used Polity IV index for democracy).

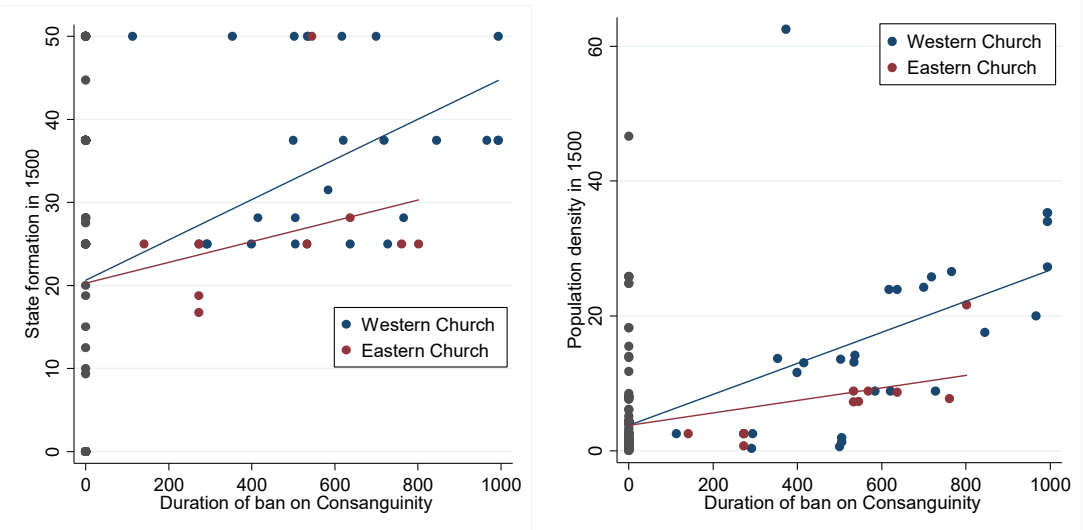

Figure 2: Relation of the duration of the ban on consanguineous marriages up to the Year 1500 and state formation (left hand side) and population density (right hand side) in 1500. The lines are linear fits for the Western (blue) and Eastern Church (red).

The left panel of Figure 2 displays the relation between the duration of the Churches' bans and state formation in the year 1500. The longer the duration of the Churches' marriage bans, the higher the state antiquity index, that is, the probability of the presence of a supra tribal polity. In line with the hypothesis this relation is stronger for the duration of the Western Church's more encompassing ban. The right panel of Figure 2 displays a very similar relation between the Churches' bans and population density in the year 1500.

Table 3 reports the regression results of the duration of Churches' ban on institutional and economic outcomes. Explanatory variables are the log duration of the ban under both the Eastern and the Western Churches (up to the year 1500). The duration of the ban matters since it takes time for a kin-network structure to change and to impact institutional development. However, initially the impact of the ban should be more pronounced. I therefore use the log duration of the bans. Column (1) and (2) reports country fixed-effects regression with the State Antiquity Index as dependent variable, while in column (3) and (4) the dependent variable is population density. Column (2) and (4) contain period fixed-effects to control for an overall trend. Column (5 to 8) report cross-country regression with today's democracy as the dependent variable. Column (7) includes several covariates that capture the influence of geographical and historical factors prior to the Churches' bans. Diamond (1997) and Putterman (2008) emphasize initial bio-geographic conditions that gave rise to the timing Neolithic transformation, which still impacts institutional outcomes today. The timing of the Neolithic transformation is therefore included. Another covariate is genetic heterogeneity. Galor and Klemp (2015) show that a higher genetic heterogeneity contributes to the emergence of autocratic institutions. Further control variables are terrain ruggedness, absolute latitude, arable land and temperature.[23] Column (6) controls for contemporary factors (education, GDP per capita) as well as ethnolinguistic fractionalization, and legal origins. Column (8) includes all covariates simultaneously.

The regression results in column (1) reveal that there is a highly significant relationship between the log duration of both Churches' bans and the State Antiquity Index. As hypothesized this relationship is more pronounced for the countries under the influence of the Western Church where the ban encompassed more degrees of kinship. The difference between the two coefficients is highly significant ($F(1,148) = 7.05$, $p=0.0088$). Controlling for period fixed-effects reveals a highly significant effect for the log duration of the Western Church's ban, while it is only weakly significant so for the Eastern Church (this may reflect that the overall trend is to some extend driven by the increase of countries under the Western Church's sphere). Log population density as dependent variable reveals a similar pattern (column 3 and 4). The log duration of both Churches' bans have a highly significant impact on population density (the impact is lower for the duration of the Eastern Church, but not significantly

[23] See Burke et al. (2015) and Van Lange et al. (2016) on the relation between temperature (or climate more generally) and conflict.

though). Controlling for period fixed-effects again reveals that population growth in the Western Church's sphere was above trend. The coefficient for the Eastern Church is positive, but not significant. Column (5) to (8) report the reduced-form cross-country regressions with the contemporary measure of democracy as dependent variable. Again the coefficients for the log duration of the Western Church's ban are highly significant, while the coefficients for the Eastern Church are only significant in some specifications. This may also reflect that the Eastern Church's power was weaker after 1500 due to the Ottoman rule and the conversion to Islam of a non-negligible proportion of the population. F-tests reveal that the coefficients for the Western Church's ban with its more encompassing ban are significantly larger in column (5) to (7). These findings are robust to the inclusion of many covariates. In line with the

	(1) State Antiquity Up to 1500 FE	(2) State Antiquity Up to 1500 FE	(3) Log Pop. Density 1000 and 1500 FE	(4) Log Pop. density 1000 and 1500 FE	(5) Democ-racy	(6) Democ-racy	(7) Democ-racy	(8) Democ-racy
Log. Dur. W. Church Ban	2.36***	1.77***	0.14***	0.07***	0.93***	0.95***	0.82***	0.68***
(aa. in column 5 to 8)	(0.48)	(0.50)	(0.02)	(0.01)	(0.10)	(0.17)	(0.13)	(0.16)
Log. Dur. E. Church Ban	0.95***	0.40*	0.11***	0.04	0.34**	0.30	0.32	0.37*
(aa. in column 5 to 8)	(0.22)	(0.24)	(0.04)	(0.03)	(0.16)	(0.20)	(0.20)	(0.20)
Education 2005						4.37		4.55
						(4.51)		(4.32)
GDP per capita 2000						-0.14*		-0.02
						(0.08)		(0.07)
UK legal origin						2.22		3.47**
						(1.44)		(1.47)
French legal origin						0.92		2.98**
						(1.33)		(1.45)
Ethnolinguistic fractionalization						-3.09		-1.38
						(2.32)		(2.31)
Neolithic transformation (ancestor adjusted)							-0.00*	-0.00**
							(0.00)	(0.00)
Absolute latitude							-0.08	-0.08
							(0.06)	(0.07)
Predicted gen. heterogeneity (ancestor adjusted)							-40.88***	-42.89***
							(14.24)	(15.03)
Terrain ruggedness							0.44	0.42
							(0.45)	(0.42)
Arable land							0.09***	0.11***
							(0.03)	(0.03)
Temperature							-0.20	-0.25*
							(0.14)	(0.14)
Constant	23.53***	16.77***	1.11***	0.68***	2.82***	1.84	38.97***	38.15***
	(0.85)	(1.49)	(0.08)	(0.07)	(0.53)	(3.06)	(10.97)	(11.78)
Country fixed-effects	Yes	Yes	Yes	Yes	No	No	No	No
Period fixed-effects	No	Yes	No	Yes	No	No	No	No
N	2979	2979	308	308	144	144	144	144
Countries	149	149	154	154				
R^2	0.118	0.183	0.239	0.687	0.347	0.379	0.453	0.485

Table 3: Country fixed-effects regression of the log duration of the Churches' ban on State formation and population density (up to 1500, column 1 to 4) as well as OLS regressions of the ancestor adjusted log duration on democracy (average years between 2001 and 2010, column 5 to 8). Column (2) and (4) include period fixed-effects. Additional covariates are Education from the UN education index in the year 2005, the GDP per capita in 2000, dummy variables indicating whether a country has UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity, temperature and arable land as used by Ashraf and Galor (2013), ancestor adjusted years since the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga 2012), and the fraction of Christians in a country (Barro and McCleary 2003). Robust standard errors (clustered on countries in column 1 to 4) are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

literature English legal origins reveal a positive association with democracy (column 4), while predicted genetic heterogeneity exhibit a significantly negative one.

These reduced-form regressions establish a link between the Church's rule and economic and institutional outcomes. Given that Christianization was introduced exogenously top-down onto inhabitants (and often introduced after battles which at that time carry a large random component) and country fixed-effects are controlled for, it is likely that the duration of the Church's rule impacted economic and institutional outcomes already in the medieval ages and still is today. The sheer extent of the ban – changing kin terms are just one manifestation – makes the Churches' cousin marriage ban the likely explanation. It is also supported by the literature emphasizing the role of generalized morality, weak family ties, and individualism for the functioning of formal institutions. Further, it is also consistent with the stronger effect of the Western Church's rule on institutional outcomes. There the ban was more comprehensive (yet both Churches are in the Roman tradition). The following sections reveal further evidence for the hypothesis that consanguineous marriages have a detrimental impact on the quality of institutions and democracy.

4.4 IV-estimates: Cousin marriage instrumented by the Church's ban

To investigate the role of marriage patterns on democracy table 4 reports two stage least square regressions with democracy as the dependent variable and the percentage of cousin marriage as the explanatory variable. The percentage of cousin marriage is instrumented by the ancestor adjusted log duration of the Eastern and Western Churches' bans on consanguineous marriages. Included covariates are: Education (column 2), GDP per capita (column 3), ethnolinguistic fractionalization and legal origins (column 4), and the fraction of Christians (column 6). Column (5) contains controls for the (ancestor adjusted) timing of the Neolithic transformation, (ancestor adjusted) genetic heterogeneity, terrain ruggedness, and latitude – variables describing geographical or even "deeper" historical events than the Church's cousin marriage ban.

The regression results in table 1 column (1) reveal a highly significant and large coefficient for the percentage of cousin marriage. A 10 percentage points higher cousin marriage rate decreases the Polity IV democracy score by about 4 units. Controlling for several covariates leads to very similar estimates. With the exception of column (6) when controlling for the fraction of Christians. The coefficient decreases and is only weakly significant. This regression suffers from weak instruments (the F-stat of the excluded instruments is below 10). This is not too surprising given the close link between the Church medieval rule and today's fraction of Christians in a country. This is not the case, however, when using the alternative instrument 'cousin-terms' (see table 5). There the regression does not suffer from weak instruments.

	(1) Democracy IV: Church's ban	(2) Democracy IV: Church's ban	(3) Democracy IV: Church's ban	(4) Democracy IV: Church's ban	(5) Democracy IV: Church's ban	(6) Democracy IV: Church's ban
%-Cousin Marriage	**-0.389*****	**-0.467*****	**-0.400*****	**-0.408*****	**-0.420*****	**-0.221***
	(0.049)	**(0.085)**	**(0.046)**	**(0.055)**	**(0.090)**	**(0.133)**
Education		-9.665				
		(8.500)				
GDP per capita			-0.033			
			(0.058)			
UK legal origin				4.175*		
				(2.405)		
French legal origin				3.798*		
				(2.211)		
Ethnolinguistic Fractionalization				-0.401		
				(2.923)		
Neolithic Transf. (ancestor adjusted)					-0.381	
					(0.462)	
Absolute Latitude					-0.037	
					(0.073)	
Pred. gen. heterogeneity (ancestor adjusted)					55.981	
					(53.305)	
Terrain ruggedness					1.818**	
					(0.776)	
Fraction Christians						6.147
						(4.197)
Cons	9.054***	16.312**	9.608***	6.288***	-29.363	3.723
	(0.552)	(6.525)	(1.239)	(1.828)	(34.337)	(4.011)
N	69	69	69	69	69	69
Wald-test chi2	64.10	56.36	74.30	67.48	132.2	117.3
F-stat 1st stage excl. instr.	34.27	15.54	36.22	35.06	23.81	5.315

Table 4: Dependent variable is democracy (ranges between -10 and 10) from the polity IV data set. Explanatory variable is '% of cousin marriage'. '%-Cousin Marriage' is instrumented by the ancestor adjusted log duration of the Western and Eastern Churches' bans on consanguineous marriages up to 1500 (bold). Additional covariates are Education from the UN education index in the year 2005, the GDP per capita in 2000, dummy variables indicating whether a country has UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity (Ashraf and Galor, 2013), the years since the Neolithic transformation (Putterman 2008), absolute latitude as used by Acemoglu et al. (2001), terrain ruggedness (Nunn and Puga 2012), and the fraction of Christians in a country (Barro and McCleary 2003). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

5. IV estimates: Kinship terminology, marriage patterns and institutional development

Identification - To strengthen the argument that kin-marriages impact institutional outcomes, I make use of an additional IV: cousin-terms. The association between kin-terminology and marriage patterns has long been recognized and is well-established in Anthropology (see. e.g. Morgan, 1870). In many societies differentiated cousin-terms are prescriptive of the people one can/should or is forbidden to marry. For example, in the Iroquois kinship terminology parallel cousins (e.g. father's brother's daughter) are likewise called brother and sister – an indication of an incest taboo against parallel cousin marriage. Cross-cousins (e.g. father's sister's daughter) are termed differently and often times are preferred marriage partners. The Ethnographic Atlas containing data both on cousin terminology and whether cousin marriage is preferred for more than 845 ethnicities reveals a strong association between cousin-terms

and marriage patterns.[24] While cousin marriage is preferred in about 40% percent of the ethnicities which differentiate cousin-terms, this is the case for only 7% percent of those that do not differentiate cousin-terms.

Underlying this identification strategy is the idea that language only evolves slowly, and thus kin-terms do not reflect recent societal changes. Following Tabellini (2008) and Licht et al. (2007) I therefore use language as an IV to rule out reverse causation and estimation bias due to contemporary, possibly-omitted factors. An obvious advantage of this IV is its close and strong association with marriage patterns that is well-established in the anthropological literature. At the same time cousin-terms are not fixed; they reflect long lasting decisive changes in family systems that are ultimately shaped by geography, agricultural techniques, formal and informal institutions (e.g. inheritance and marriage rules) and their interactions. Due to migration, random outcomes of wars, technological innovations and institutional change the factors that originally gave rise to kin-terms may not exist anymore - Tabellini (2008) refers to the randomness of history.

For example, the interaction between the harsh geographic living conditions in North Africa and the Middle East, the importance of keeping camel herds together (as splitting may jeopardize the whole stock) and Islamic inheritance rule (daughters also inherit) have probably led to a prevalence of parallel cousin marriage in this region. As such, human agricultural innovation (camel herding), and the Arab expansion with its export of human made inheritance rules carry a degree of randomness (which are not tied to geography alone). Further, one conditions (camel herding) is no longer relevant for most people. Similarly, the Church marriage rules are human made rules that most likely impacted marriage patterns independent of geography and agricultural technics as suggested by historical evidence. Intriguingly, there is a clear indication that the Churches bans had an impact on kin-terms. According to Mitterauer (2010), initially all the Indo-European languages in Europe distinguished between paternal and maternal relatives. According to him the decisive factor in the transformation of kinship terminology for Germanic and Slavic languages was the Churches' bans on kin-marriages. This transformation follows an astonishing chronological pattern reflecting the start of the ban in a given area. The first Germanic language to undergo this change was English (beginning with the Norman conquest), followed by German, then Swedish (where some differentiation still exists). In the Slavic language the process took place first in Czech and Polish and relatively late in Russian. The Slavic languages in the Balkans have retained the differentiating terminology for paternal and maternal uncle and aunt, while this is no longer the case for cousin.

[24] The Ethnographic Atlas classifies cousin-terms into 6 categories, which are common in Anthropological literature (Descriptive/Sudanese, Iroquois, Omaha, Crow, Hawaiian, Eskimo). The Eskimo and Hawaiian kin terminologies do not distinguish cousins, while the others do. In contrast to Hawaiian kin-terminology, where all cousins are called brother or sister, Eskimo kin-terminology (e.g. English, German, or Spanish) puts more emphasis on the nuclear family by distinguishing siblings from cousins.

The Churches' marriage bans and the Arabic expansion illustrate that there is a considerably degree of randomness in the (distant) conditions that gave rise to kin-terms. Nevertheless, the IV approach with kin-terms does not rule out that some omitted deep geographic or agricultural factor impacts both kin-terms and institutional development. To mitigate this probability, the regression analysis controls for a wide range of geographic factors, which previous research has identified as important determinants for institutional development. Using kin-terminology as an IV also has the feature that the source of variation does not only stem from Europe. Thus, as a robustness check, the IV analysis is restricted to countries where the inhabitant's ancestors were not exposed to the Churches' bans on consanguineous marriages. This makes it unlikely that an omitted uniquely-European factor coincidently drives the estimation results.

Taken together, both IV strategies, the duration of the Churches' bans on consanguinity and kin-terms allow to rule out revers causality and estimation bias due to contemporary omitted variable. They therefore highlight the importance of deep factors shaping democratic outcomes. Compared to cousin-terms the strength of the duration of the Churches' bans as IVs is its exogenous introduction onto the inhabitants – the historical evidence and the results of the reduced-form country-fixed-effects approach in the previous section 4.1 makes it unlikely that deep omitted variables bias the estimates. The disadvantage is that some other feature of the Christianization may potentially introduce an estimation bias. This is the strength of kin-terms as the IV – a long Anthropological literature has established that kin-terms are closely linked to marriage patterns. Thus, both estimation strategies complement each other. Importantly, if both distinct estimation strategies lead to quantitatively very similar point estimates it is a good indication that the estimation results are not biased by omitted variables of either sort.

Data - Based on the aggregated Ethnographic Atlas data, the variable 'cousin-terms' captures the proportion of people in a country that distinguish cousin-terms. As Europe is underrepresented in the Ethnographic Atlas, I amended missing values for European countries (and also some other countries mostly South American countries - see figure B.6 in the appendix for the world distribution). This variable exhibits a high correlation with the percentage of cousin marriages (Spearman's Rho: 0.73, $p<0.0001$, N=72).

Results - Table 5 reports two stage least square regression of the percent cousin marriages (instrumented by cousin-terms) on democracy. The control variables are the same as in table 4. The estimated coefficients for '%-Cousin Marriage' are all highly significant. Further, they are quantitatively very similar when instead of cousin-terms the duration of the Churches' bans is used as IVs (compare to table 4). Having the two distinct estimation strategies leading to quantitatively very similar estimates is an indication that the estimates do not suffer from estimation bias.

	(1) Democracy IV: cousin Term	(2) Democracy IV: cousin term	(3) Democracy IV: cousin Term	(4) Democracy IV: cousin Term	(5) Democracy IV: cousin Term	(6) Democracy IV: cousin Term
%-Cousin Marriage	**-0.409*****	**-0.468*****	**-0.416*****	**-0.444*****	**-0.505*****	**-0.339*****
	(0.048)	**(0.074)**	**(0.046)**	**(0.057)**	**(0.118)**	**(0.121)**
Education		-9.290				
		(8.259)				
GDP per capita			-0.033			
			(0.059)			
UK legal origin				4.257*		
				(2.543)		
French legal origin				4.179*		
				(2.221)		
Ethnolinguistic Fractionalization				0.369		
				(3.284)		
Neolithic Transf. (ancestor adjusted)					-0.347	
					(0.601)	
Absolute Latitude					-0.088	
					(0.097)	
Pred. gen. heterogeneity (ancestor adjusted)					90.462	
					(61.906)	
Terrain ruggedness					2.010**	
					(0.838)	
Fraction Christians						2.966
						(4.024)
Cons	9.254***	16.064**	9.766***	6.206***	-52.042	6.823*
	(0.642)	(6.308)	(1.303)	(1.854)	(40.584)	(3.795)
N	67	67	67	67	67	67
Wald-test chi2	73.84	67.48	82.93	89.16	157.2	118.9
F-stat 1st stage excl. instr.	115.5	43.05	112.7	94.73	33.42	14.55

Table 5: Two-stage least square regressions of '%-Cousin Marriage' on Polity IV's democracy index. '%-Cousin Marriage' is instrumented by the fraction of people in a country speaking a language where cousin-terms are differentiated. Additional covariates are Education from the UN education index in the year 2005, the GDP per capita in 2000, UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity (Ashraf and Galor, 2013), ancestor adjusted years since the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga 2012), and the fraction of Christians in a country (Barro and McCleary 2003). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

Table A.4 in the appendix reports regression results when all instruments (the Churches' bans and cousin-terms) are used simultaneously and adding additional controls (Gini-coefficient, fraction of population at risk to contract malaria, arable land, temperature). Tests for overidentification suggest that the IVs were correctly excluded. Addressing concerns of sample selection, table A.5 reports two stage IV regressions using the coarser explanatory (dummy) variable 'cousin marriage preferred', which increases the sample size to 132. Again this paints a very similar picture: the coefficients for 'cousin marriage preferred' are all highly significant.

Excluding countries affected by the Church's ban – The analysis so far focused on the world sample. Using cousin-terms as IV allows to exclude all countries that have a sizeable population with European descent. Excluding these countries is an important robustness check as it allows to demonstrate that the effect of marriage patterns on institutional development does *not only* rest on the European experience, but holds more generally.

Table 6, column (1) reports the regression of democracy on the percentage of cousin marriages using cousin-terms as IV. Column (2) excludes all European countries. In column (3) all countries where the average person's ancestors have a history of experiencing the Church's ban for more than 4 generations (120 years) are excluded. This includes all European countries,

	(1) Democracy IV: cousin-term	(2) Democracy IV: cousin-term	(3) Democracy IV: cousin-term	(4) Democracy IV: cousin-term	(5) Democracy IV: cousin-term	(6) Democracy IV: cousin-term
%-Cousin Marriage	**-0.405*****	**-0.383*****	**-0.444*****	**-0.482*****	**-0.481*****	**-0.484****
	(0.046)	**(0.054)**	**(0.133)**	**(0.150)**	**(0.150)**	**(0.188)**
Asia				2.543	2.537	0.709
				(4.222)	(4.220)	(5.180)
Africa				4.761	4.754	3.255
				(4.748)	(4.746)	(6.193)
Oceania				2.045**	2.045**	
				(1.006)	(1.006)	
Europe				1.866*		
				(1.016)		
_cons	9.238***	8.591***	10.421***	8.260***	8.260***	10.137***
	(0.639)	(1.074)	(3.964)	(1.032)	(1.032)	(0.442)
N	68	52	33	68	52	33
Wald-stat chi2	78.56	50.89	11.15	118.8	116.5	92.84
F-stat (1st – stage)	125.8	94.79	11.15	10.56	10.47	6.291

Table 6: Two stage least squares estimates of the percentage of cousin marriages on democracy in sub-samples. The percentage of cousin marriages is instrumented with cousin-terms. In column (2) and (4) European countries are excluded and in column (3) and (6) countries with a considerable fraction of ancestors with a European background are excluded. Robust standard errors are in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

most countries in the Americas, and countries like South Africa, New Zealand, Australia and Israel. The estimations in the restricted samples reveal highly significant coefficients for the percent of cousin marriage. Strikingly, they are quantitatively very similar in all the sub-samples. Column (4) to (6) report continent fixed-effects regressions. Focusing on the within continent variation (column 4 to 6) reveals larger effects, which again are quantitatively very similar in all sub-samples.

Due to the low sample size the IV estimations may become biased. Appendix A.6 reports the results of the coarser measure 'cousin marriage preferred', which enlarges the sample. It also contains controls for further covariates. Again, the coefficients are highly significant and quantitatively similar compared to the whole sample. This evidence based on non-European countries or countries that do not have a sizable population with ancestors that experienced the Churchs' cousin marriage bans makes a genuinely-European omitted trait (other than through family systems) as an alternative explanation unlikely.

6. Cousin marriage, Nepotism, Corruption and Institutional quality

Democracy needs high quality institutions to function. They are needed to effectively constrain the power of the executive, protect property from appropriation and individual rights from abuse by the government or elites. Also in a very practically sense they are needed to implement the smooth functioning of a fair election process. Institutions that are plagued by corruption and nepotism cannot effectively achieve this. Yet, the strong reliance and focus on the interest of the extended family undermines the quality of institutions through nepotism and corruption. Table 7 reports IV estimation of kin-marriage on nepotism, corruption and constraint on the executive (a widely used measure for the quality of institutions).

Nepotism is taken from Van de Vliert (2011) based on data by the World Economic Forum. A representative sample of top executives were asked to what extent senior management positions in their country are held by relatives. Corruption is based on the Transparency International's corruption index for the year 2005 (as used by Treisman, 2006), while constraint on executive is taken from the polity IV data set and measures the institutional constraints on the arbitrary use of power. The IV-regression results in table 7 reveal a consistent picture: the coefficients for %-cousin marriage are highly significantly positive for nepotism, and corruption and negative for 'Constraint on the Executive'. Maybe surprising, GDP per capita enters with a highly significant negative sign for nepotism and corruption. OLS regressions paint a similar picture (table A.7 in the appendix); so do regressions with the coarser measure 'Cousin marriage preferred', which enlarges the sample size (table A.8 in the appendix). All this evidence suggests a negative impact of cousin marriage on the quality of institutions, which as a consequence undermines the functioning of democracy by not being able to provide checks and balances on the leaders, protect individuals from abuse of power and/or ensuring a fair electoral process.

	(1) Nepotism	(2) Nepotism	(3) Nepotism	(4) Corrup-tion	(5) Corrup-tion	(6) Corrup-tion	(10) Constraint on exec	(11) Constraint on exec	(12) Constrain t on exec
	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms	IV: bans + c. terms
% cousin marriage	**0.03*****	**0.02*****	**0.03****	**0.07*****	**0.02****	**0.07****	**-0.12*****	**-0.12*****	**-0.13*****
	(0.01)	**(0.01)**	**(0.01)**	**(0.02)**	**(0.01)**	**(0.03)**	**(0.01)**	**(0.01)**	**(0.02)**
GDP per capita		-0.06***			-0.17***			0.01	
		(0.01)			(0.02)			(0.02)	
UK legal origin		-0.40*			-0.31			0.97	
		(0.22)			(0.38)			(0.69)	
French legal origin		0.34*			-0.26			0.97	
		(0.20)			(0.29)			(0.64)	
Ethnolinguistic fractionalization		-0.05			1.10*			-0.05	
		(0.42)			(0.58)			(0.91)	
T. of Neolithic transform. (aa)			-0.01			-0.16			-0.05
			(0.08)			(0.16)			(0.13)
Abs. latitude			-0.02			-0.05*			-0.00
			(0.01)			(0.03)			(0.02)
P. gen. heterogen. (aa)			-7.41			-10.18			17.25
			(7.67)			(14.86)			(14.54)
Terrain rugged.			0.27			0.46*			0.58***
			(0.16)			(0.26)			(0.22)
Constant	-0.56***	0.25	5.01	-5.78***	-3.11***	3.46	6.65***	5.80***	-5.91
	(0.17)	(0.20)	(5.28)	(0.37)	(0.35)	(9.94)	(0.19)	(0.61)	(9.54)
N	56	56	56	69	68	69	68	67	68
chi2	13.15	172.7	43.26	18.74	242.3	58.93	99.61	115.5	183.2
fs	22.80	36.54	9.397	45.21	50.16	21.08	46.21	50.90	20.38

Table 7 Two-stage least square regressions of '%-Cousin Marriage' on Nepotism (ranges between -2.02 and 2.3) as used by Van de Vliert (2011) in column 1 to 3, the Corruption Perception Index in 2005 (ranges from -9.7 to -1.7) in column (4) to (6), and the Polity IV Constraint on the Executive (average between 2001 to 2010, ranges from 1 to 7) in column (7) to (9). '%-Cousin Marriage' is instrumented by cousin-terms and the ancestor adjusted log duration of the Churches' cousin marriage ban (in bold). Additional covariates are GDP per capita in 2000, dummy variables indicating whether a country has UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity as used by Ashraf and Galor (2013), the ancestor adjusted years since the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

7. Within-country results

The within-country analysis addresses endogeneity concerns arising from unobserved country fixed-effects and – when using the survey data – allows to control for individual characteristics. Marriage patterns can vary considerably within a country. The left panel of figure 2 reveals the variation in cousin marriage at the provincial level in Italy (using data compiled by Cavalli-Sforza et al., 2004). Italy has long been used as an example highlighting regional differences in institutional quality. For example, Putnam (1993) pointed out that local government is much less efficient in the South than the North, even though the formal institutions at the national level are the same. To explain the differences, he suggested historical reasons. Guiso et al. (2005) suggest that the North-South gap is due to the lack of a free city-state experience in the South. Following Greif (2005)'s argument an important factor for the advancement of free city-states in the North and the backwardness in the South may be attributable to family structures.

Figures 3 (left panel) displays the percentage of cousin marriage in Italian provinces at around 1960. The South of Italy exhibits a large percentage of cousin marriages. Figure 3 (right panel) displays the Mafia Index – an index capturing activity such as 'pizzo' (extortion), attempted and successful mafia murders, kidnapping, arson, bomb or fire attacks, (see Calderoni, 2011). It thus reflects the failure of institutions to curb mafia activity. The strong association is apparent (Spearman rho: 0.79, $p < 0.0001$, N=87). This finding is consistent with the idea that the Church marriage regulations changed social cohesion and as a consequence the functioning of formal institutions; the north of Italy experienced a considerably longer duration of the Western Church's ban. Sicily was under Arab rule until around the beginning of the 11th century, while mainland South Italy and Sardinia were under the influence of the Byzantine Empire and the Orthodox Church. Of course, the north and the south of Italy not only differ in their different past experience of marriage legislation: e. g. the South is more mountainous,

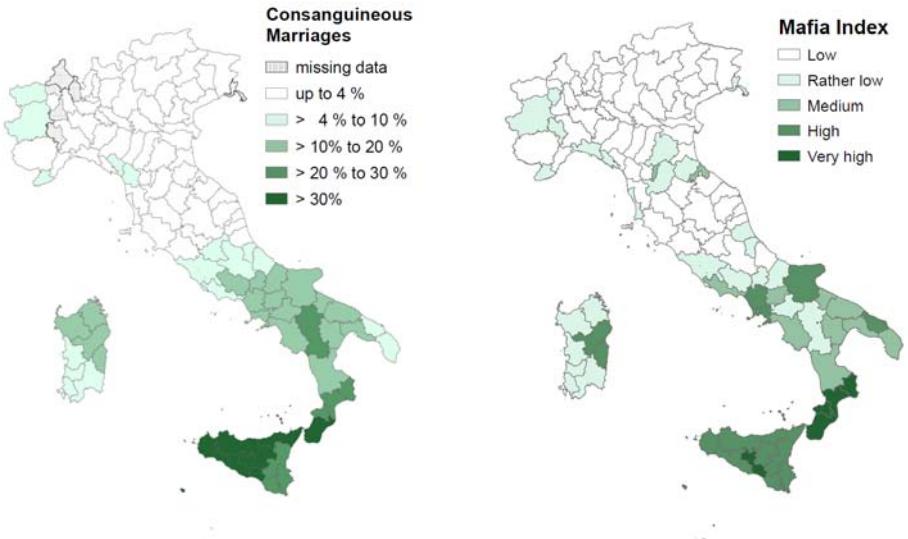

Figure 3: Cousin marriages (between 1960 to 1964, left hand side) and the Mafia Index (between 2000 and 2004, right hand side).

differs also in agriculture and belonged to different political entities also after the beginning of the 11th century. Nevertheless, the highly significant association is robust to controlling for North/South fixed-effects or the different southern political entities in OLS regressions. In fact, the controls for North/South have almost no impact on the coefficient for %-cousin marriage and are not even significant (see table A.10 in the appendix). This demonstrates that even within the North and South of Italy consanguinity is predictive of mafia activity. The data is therefore consistent with the idea that stronger extended families impede the proper functioning of institutions.

To strengthen the point that family structures and the Church marriage regulations impact on institutions and democracy and to increase the number of countries I turn to the World Values Survey and the European Value Study. These surveys have a large number of respondents within a country – allowing to exploit within country variation and also to control for characteristics like religion, gender, education and income at the individual level. I further make use of IV-estimations exploiting within country variation in the duration of the Western Chruch's ban in three countries. Like Italy, Spain and Portugal also experienced variation in the duration of the Western Church's marriage ban. The Hispanic peninsula was ruled by Islamic leaders and was taken back gradually by the Reconquista creating variation in the duration of the Church rule (other than Italy the North and South subsequently did not belong to different political entities). Today's administrative units exhibit variation in the duration of the Church's ban (e.g. at a given point in time the Reconquista in Spain gained only part of the territory that makes up a region in Spain today) and within country migration occurred. As such the regional duration of the ban is an approximation (where I approximated region averages based on area covered).

As explanatory variable I created an indicator of 'societal marriage pressure' (SMP). This indicator captures the degree people believe a successful marriage is determined by societal pressures and not by a couple's love and affection for each other. To construct the indicator, I used peoples rating on how important the same social background, same religious beliefs, children, being apart from in-laws, happy sexual relationship and sharing household chores are for a successful marriage (each rating ranging from 0 'not very important' to 2 'very important'). The first three questions relate to factors that are to a large degree determined by societal or family pressures outside the realm of love and affection, while the last three focuses on the nuclear couple (they thus enter with a negative sign). At the country level SMP exhibits a highly significant correlation with the '%-Cousin Marriage' (Spearman's rho: 0.57, p=0.0014, N=28).

The dependent variable captures an individual's preference for undemocratic rule. It is the principal component based on ratings of two statements: "Having a strong leader who does not have to bother with parliament and elections" and "Having the army rule" on a 4-point scale (with 1 being very bad and 4 being very good). On a country level preference for an

undemocratic rule exhibits a highly significantly negative correlation with Polity IV's democracy index (Spearman rho: -0.58, $p<0.0001$, $N=98$). In the appendix (table A.11 and A12) I present the results using alternative dependent variable: generalized morality based on Tabellini (2008) and obedience. Generalized morality is the principal component of the WVS-trust question and people's valuation of "tolerance and respect for other people" as a value to transmit to children. The other variable 'obedience' captures whether people belief that 'obedience' is an important value to teach children. On the country level generalized morality exhibits a highly significantly positive association with the Polity IV democracy index (Spearman rho: 0.31, $p=0.0015$, $N=101$), while it is negative so for obedience (Spearman rho: -0.38, $p=0.0001$, $N=101$).

Table 7 reports country fixed-effects regression of SMP on the preference for undemocratic rule. Column (1) to (6) are OLS estimates, while column (7) to (9) are two stage least square estimates where SMP is instrumented by the duration of the Western Church's ban. Again this allows to rule out reverse causality and estimation bias due to contemporary omitted variables. Column (1) to (3) contain the whole sample of 46 countries, while the other columns are restricted to the sub-sample (Italy, Spain, Portugal). Covariates are age, age squared, gender, marriage status, the wave of the survey, education (omitted category is primary education or less), relative income (omitted category is low income) and religious denomination.

The OLS regression demonstrate that the SMP is a significant predictor for 'undemocratic rule' controlling for country fixed-effects and individual characteristics. The effect is stronger in the sub-sample of Spain, Italy, and Portugal (column 4 to 6), where there is within variation in the duration of the Western Church's ban on consanguinity. Similarly, the IV-estimates exploiting this variation reveal significant and quantitatively large estimates for the effect of SMP on 'undemocratic rule' (column 7 to 9). The excluded instrument is highly significant (that is the duration of the ban is predictive of SMP within a country). Some caution applies when interpreting the coefficient in column (9) as the instrument is weak (F-stat is below 10). Consistent with the analysis of Glaeser et al. (2007) on the role of education in sustaining democratic institutions table 7 reveals that higher educated people have a lower preference for undemocratic rule. Similarly, so do relatively richer people. Using the alternative dependent variable 'generalized morality' (see table A.11 in the appendix) and obedience (see table A.12 in the appendix) leads to very similar results. SMP has a negative impact on generalized morality and a positive one on obedience. Taken together, country fixed-effects regressions with controls for individual factors like religion, education, and relative income and IV-estimations in a sub-sample of three countries reveal a significant association between societal marriage pressures and generalized morality, obedience and preferences for undemocratic rule. This is evidence that marriage patterns shape attitudes that support or potentially undermine democracy. A preference for democratic rule, and generalized morality is important for a functioning democracy, while obedience can be supportive of autocratic rule.

	(1) Undemocratic Rule OLS	(2) Undemocratic Rule OLS	(3) Undemocratic Rule OLS	(4) Undemocratic Rule OLS	(5) Undemocratic Rule OLS	(6) Undemocratic Rule OLS	(7) Undemocratic Rule IV: W. Church ban	(8) Undemocratic Rule IV: W. Church ban	(9) Undemocratic Rule IV: W. Church ban
Societal Marriage Pressure	0.049***	0.045***	0.040***	0.072***	0.067***	0.062***	**0.439****	**0.402****	**0.497****
(SMP)	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.008)	**(0.175)**	**(0.180)**	**(0.223)**
Age	-0.007***	-0.007***	-0.007***	-0.008*	-0.011**	-0.009	-0.008	-0.009*	-0.004
	(0.002)	(0.002)	(0.002)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Age squared	0.000***	0.000***	0.000**	0.000*	0.000**	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.024*	0.020	0.016	-0.019	-0.021	-0.032	-0.051	-0.049	-0.080*
	(0.013)	(0.012)	(0.013)	(0.025)	(0.025)	(0.029)	(0.034)	(0.033)	(0.046)
Married	-0.042***	-0.040***	-0.003	0.048*	0.034	0.078**	-0.066	-0.059	-0.083
	(0.012)	(0.012)	(0.013)	(0.029)	(0.029)	(0.034)	(0.065)	(0.061)	(0.093)
Secondary Edu.		-0.183***	-0.157***		-0.176***	-0.118***		-0.049	0.051
		(0.020)	(0.023)		(0.029)	(0.036)		(0.077)	(0.098)
Tertiary Edu.		-0.372***	-0.323***		-0.306***	-0.256***		-0.107	-0.002
		(0.030)	(0.031)		(0.048)	(0.057)		(0.123)	(0.154)
Middle Income			-0.100***			-0.132***			-0.055
			(0.017)			(0.039)			(0.066)
High Income			-0.190***			-0.203***			-0.092
			(0.030)			(0.040)			(0.079)
Constant	0.034	0.144	0.235**	0.234	0.391	0.321	0.263	0.294	0.357
	(0.092)	(0.092)	(0.090)	(0.286)	(0.281)	(0.336)	(0.353)	(0.328)	(0.408)
Religion Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	63733	63314	53354	5370	5357	3685	5370	5357	3685
F-stat	20.44	22.90	22.35	14.91	17.92	13.00			
Wald Chi							601.6	708.4	403.1
F-stat 1st stage for excl. instr.							12.66	11.18	8.861

Table 8: Societal marriage pressures and undemocratic rule. Explanatory variable is the indicator of societal marriage pressure (SMP) and the dependent variable 'preference for undemocratic rule'. Covariates are age, age squared, dummy variables for female, married, religious affiliation, education (column 2, 4, and 6), country and the wave. Column (1) to (6) are country fixed-effects OLS regressions, while column (7) to (9) are two stage least square regressions with SMP instrumented by the duration of the Western Church's ban on consanguineous marriages. Instrumented variables are in bold. Column (5) to (9) contain only respondents from Italy, Spain and Portugal. Robust standard errors (clustered on 46 countries in column 1 to 3) are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

8. Discussion and Conclusion

The Eastern and Western Church started banning consanguineous marriages in the early medieval ages. This ban – at times extending up to the 7th degree in the Western Church and including affinal and spiritual kin – imposed a severe restriction on whom to marry. The ban forced people to relocate to marry and increasingly enter into relationships with people beyond the confines of the extended family. Changing kin-terms in the Germanic and Slavic languages are most likely a demonstration of the tremendous changes that the Churches' marriage laws brought about.

This study demonstrates a highly significant association between the duration of the Churches' rule and institutional development up to the 15th century: a longer duration is associated with higher population density, and state formation. Exploiting the panel structure of the historical data in country fixed-effects regressions together with the exogenous nature of the introduction of Christianity and Church rule in medieval Europe makes geographical, genetic, cultural or other already existing (unobserved) differences as alternative explanations unlikely. The results are consistent with the hypothesis that the marriage rules are the decisive factor explaining the impact of the Churches' rule on institutional outcomes: the effects are stronger for the Western Church with its more encompassing ban compared to the Eastern Church. Cross-country reduced-form regressions controlling for a wide spectrum of covariates similarly reveal a highly significant association between the ancestor adjusted duration of the medieval Churches' rule and a contemporary measure of democracy. In line with Acemoglu et al. (2008, 2005) it therefore suggests that deep historic factors impact today's democracy.

Ordinary least square regressions controlling for a wide range of covariates reveal that cousin marriage is a highly significant and robust predictor of democracy. Using the duration of both the Western and Eastern Churches' bans as IVs for cousin marriage rules out estimation bias due to contemporary factors and reverse causation. Again the coefficients are highly significant and robust to the inclusion of a wide range of covariates. The drawback of this IV is that it cannot rule out that some other feature of the Churches' rule (apart from its effect through the dissolution of extended kinship groups) biases the estimates. This possibility is mitigated since there is variation in the extend of the ban between the Eastern and Western Church, which both are in the Roman tradition. An alternative factor would likewise have needed to be stronger in the Western Church.

More importantly though, congruent evidence comes from an additional IV – cousin-terms. Kin-terms have long been recognized in anthropological research as closely reflecting marriage patterns. Kin-terms only change very slowly reflecting distant rather than contemporary events. Thus, again this IV addresses reverse causation and estimation bias due to contemporary (unobserved) factors like famine or social unrest. The estimation results controlling for many geographical and agricultural factors reveal highly significant and remarkably consistent point

estimates for the percent cousin marriage. This IV allows to exclude all European countries in the analysis and, as an even stronger robustness check, all countries that have a sizable proportion of people with ancestors who experienced the Church's ban on kin-marriage. The results paint the same picture: the percentage of cousin marriage has a significantly negative and quantitative very similar impact on institutions. However, even when controlling for a wide range of covariates the possibility that some deep unobserved factor biases the estimates cannot be ruled out. Given, however, that two distinct estimation strategies (the duration of the Churches' ban and cousin-terms) lead to very similar point estimates makes estimation bias due to an omitted variable unlikely.

Further evidence comes from within-country analysis, which allows to address endogeneity concerns due to unobserved country effects. A prominent example of within country variation in institutional quality is Italy where institutions function less well in the south. Cousin marriage rates (around 1960) are considerably higher in the south, where also the duration of the Western Church's cousin marriage ban was shorter. Regression results reveal that cousin marriage rates at the provincial level are highly significantly correlated with mafia activity (as a proxy for institutional failure). This does not simply reflect a North South divide. The relation also holds within the North and the South.

To increase the number of countries in the within analysis and to control for individual characteristics I constructed an indicator of 'Societal Marriage Pressures' (SMP) based on data of the World Value Survey and the European Social Study. This indicator captures the degree individuals think that societal pressures as opposed to love and affection is important for marriage. The country fixed-effects regressions demonstrate that SMP is highly significantly positively associated with a preference for undemocratic rule, obedience and limited morality. IV-country fixed-effects regressions (exploiting within variation of the Western Church's rule in Italy, Spain and Portugal as an IV) reveal likewise significant positive estimates for the effect of SMP on 'undemocratic rule'.

Taken together, the ban on consanguineous marriages – largely imposed exogenously on the population – most likely constitutes a critical juncture that reduced the power of extended kin-groups and gave rise to the development of formal institutions. As such, it may be an important prerequisite for Europe's special path that ultimately led to the development of democracy and economic prosperity. However, the relation between strong extended families and the functioning of institutions holds more generally, that is, also when excluding the European experience. For example, it also offers an explanation why democracy struggles to be established in North African and Middle Eastern countries. Other than Huntington (1991) argued I demonstrate that it is most likely not Islam but the high prevalence of a specific from of cousin marriage leading to strong extended kin-groups, which is a detriment to democracy.

The findings in this article have important policy implications: to curb rule violations, foster democracy, and build strong functioning formal institutions the potentially deleterious effect of dense kin-networks has to be taken into account.

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Appendix A - Robustness Checks

A.1: OLS regression of Cousin Marriage on Democracy including continent fixed-effects

	(1) Democracy OLS	(2) Democracy OLS	(3) Democracy OLS	(4) Democracy OLS	(5) Democracy OLS	(6) Democracy OLS
%-Cousin Marriage	-0.19***	-0.20***	-0.18***	-0.20***	-0.13*	-0.13*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
Education 2005		-4.74				3.76
		(5.30)				(6.33)
GDP per capita 2000			-0.07			-0.13*
			(0.07)			(0.08)
UK legal origin				4.46*		6.04**
				(2.39)		(2.35)
French legal origin				3.33		3.86*
				(2.23)		(1.97)
Ethnolinguistic fractionalization				-1.69		-0.77
				(2.91)		(2.56)
Neolithic transformation (ancestor adjusted)					-0.84	-0.96*
					(0.59)	(0.57)
Absolute latitude					-0.51	0.06
					(0.76)	(0.69)
Predicted genetic heterogeneity (ancestor adjusted)					2.41	0.01
					(46.05)	(39.07)
Terrain ruggedness					2.14***	2.13***
					(0.71)	(0.68)
Continent fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	10.12***	14.40***	11.92***	5.83**	14.66	9.22
	(0.04)	(4.79)	(1.74)	(2.38)	(30.38)	(26.42)
N	69	69	69	69	69	69
R^2	0.594	0.599	0.601	0.632	0.667	0.726

Table A.1: Continent fixed-effects OLS regressions of percent of first and second degree cousin marriages (based on Bittles, 2001) on the Polity IV democracy index. Covariates are the UN index of education in 2005, GDP per capita in 2000, Ethnolinguistic fractionalization, ancestor adjusted predicted genetic heterogeneity (Ashraf and Galor, 2013), UK and French legal origin (La Porta et al. 2008), ancestor adjusted timing of the Neolithic transformation (Putterman 2008), absolute latitude, and terrain ruggedness (Nunn and Puga, 2012). Further, continent dummies are added. Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.2 OLS regression of Cousin Marriage on Democracy including additional covariates

	(1) Democracy OLS	(2) Democracy OLS	(3) Democracy OLS	(4) Democracy OLS	(5) Democracy OLS
%-Cousin Marriage	-0.23***	-0.31***	-0.21***	-0.19***	-0.14**
	(0.05)	(0.04)	(0.05)	(0.05)	(0.06)
Gini-coefficient	-0.03		0.02		
	(0.05)		(0.07)		
Percent at risk of contr.		2.70	3.05		
Malaria		(2.04)	(2.23)		
GDP per capita			0.17		
			(0.11)		
Land suitable for				7.91***	6.23**
agriculture				(2.55)	(3.10)
Temperature				-0.18**	-0.35**
				(0.08)	(0.14)
Arable Land				-0.02	0.04
				(0.04)	(0.05)
Neolithic transformation					-0.54
(ancestor adjusted)					(0.41)
Absolute latitude					-1.62
					(1.00)
Predicted genetic heterogeneity					-12.12
(ancestor adjusted)					(24.43)
Terrain ruggedness					0.76
					(0.79)
Constant	9.26***	7.62***	4.46	7.18***	25.59
	(2.04)	(0.75)	(4.39)	(1.93)	(19.34)
N	57	68	57	66	66
R^2	0.392	0.519	0.456	0.597	0.642

Table A.2 OLS regressions of percent of first and second degree cousin marriages (based on Bittles, 2001) on the Polity IV democracy index. Covariates include the Gini-coefficient in 2004, GDP per capita in 2000, the fraction of people at risk of contracting Malaria, Land suitable for agriculture, Temperature, Arable Land, ancestor adjusted predicted Genetic Heterogeneity (all taken from Ashraf and Galor, 2013), UK and French legal origin (La Porta et al. 2008), the timing of the Neolithic transformation (Putterman 2008), absolute latitude, and terrain ruggedness (Nunn and Puga, 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.3 OLS regression of dummy variable 'cousin marriage preferred' on Democracy

	(1) Democracy OLS	(2) Democracy OLS	(3) Democracy OLS	(4) Democracy OLS	(5) Democracy OLS	(6) Democracy OLS
Cousin Marriage Preferred	-5.47***	-3.90***	-4.88***	-5.40***	-4.77***	-3.89***
	(1.14)	(1.34)	(1.33)	(1.17)	(1.15)	(1.35)
Education 2005		9.71***				12.06**
		(2.43)				(4.75)
GDP per capita 2000			0.13**			-0.04
			(0.05)			(0.07)
UK legal origin				1.61		2.83*
				(1.62)		(1.64)
French legal origin				1.14		3.14**
				(1.31)		(1.40)
Ethnolinguistic fractionalization				-6.25***		-2.41
				(2.04)		(2.75)
Neolithic transformation (ancestor adjusted)					-0.45	-0.75**
					(0.27)	(0.29)
Absolute latitude					1.98***	1.32**
					(0.50)	(0.65)
Predicted genetic heterogeneity (ancestor adjusted)					-34.61**	-24.50
					(16.79)	(16.20)
Terrain ruggedness					0.16	0.34
					(0.43)	(0.37)
Constant	5.17***	-0.98	3.78***	7.12***	26.41**	14.49
	(0.59)	(1.71)	(0.88)	(1.14)	(12.17)	(12.68)
N	132	132	132	132	131	131
R^2	0.156	0.233	0.196	0.214	0.252	0.329
F-stat	22.81	21.68	20.13	8.169	8.489	9.032

Table A.3: Predominant preference for cousin marriage and democracy. Explanatory variable is the dummy variable whether cousin marriage is predominantly preferred in a country (based on Rijpma and Carmichael, 2013). Dependent variable is the Polity IV democracy index. Covariates are the UN index of education in 2005, GDP per capita in 2000, Ethnolinguistic fractionalization, ancestor adjusted predicted genetic heterogeneity (taken from Ashraf and Galor, 2013), UK and French legal origin (La Porta et al. 2008), ancestor adjusted timing of the Neolithic transformation (Putterman 2008), absolute latitude, and terrain ruggedness (Nunn and Puga, 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.4 2SLS regression of Cousin Marriage on Democracy including additional covariates and all instruments (cousin-terms and duration of Churches' bans on consanguinity)

	(1) Democ-racy IV: ban + c.term	(2) Democ-racy IV: ban + c.term	(3) Democ-racy IV: ban + c.term	(4) Democ-racy IV: ban + c.term	(5) Democ-racy IV: ban + c.term	(6) Democ-racy IV: ban + c.term	(7) Democ-racy IV: ban + c.term	(8) Democ-racy IV: ban + c.term	(9) Democ-racy IV: ban + c.term
%-Cousin Marriage	**-0.40*****	**-0.47*****	**-0.41*****	**-0.43*****	**-0.49*****	**-0.56*****	**-0.45*****	**-0.44*****	**-0.30*****
	(0.04)	**(0.07)**	**(0.04)**	**(0.05)**	**(0.10)**	**(0.15)**	**(0.09)**	**(0.12)**	**(0.10)**
Education 2005		-9.39							
		(7.75)							
GDP per capita 2000			-0.03			-0.04			
			(0.06)			(0.15)			
UK legal origin				4.12*		6.21			
				(2.47)		(4.08)			
French legal origin				4.06*		7.39**			
				(2.21)		(3.47)			
Ethnolinguistic fractionalization				0.06		1.90			
				(3.08)		(2.76)			
Percent at risk of contr. Malaria					7.98	10.13*			
					(5.23)	(5.70)			
Gini-coefficient					-0.06	-0.28*			
					(0.05)	(0.16)			
Neolithic transformation (ancestor adjusted)							-0.42	-0.44	
							(0.51)	(0.50)	
Absolute latitude							-0.05	-0.01	
							(0.07)	(0.11)	
Pred. gen. heterogeneity (ancestor adjusted)							68.86	58.33	
							(52.25)	(43.44)	
Terrain ruggedness							1.93**	2.01**	
							(0.77)	(0.90)	
Temperature								0.08	
								(0.33)	
Arable Land								0.02	
								(0.04)	
Fraction Christians									3.95
									(3.49)
Constant	9.18***	16.13***	9.72***	6.24***	11.80***	15.11**	-37.64	-33.13	5.87*
	(0.54)	(5.89)	(1.21)	(1.84)	(2.02)	(6.49)	(33.68)	(33.75)	(3.30)
N	68	68	68	67	56	55	68	67	68
Wald -chi2	89.70	82.20	108.9	88.72	27.87	38.81	161.6	230.1	134.3
1st stage F-stat of excl. I.	46.21	25.48	59.55	38.69	14.82	18.95	20.38	18.24	9.728
Test over id. (p-value)	0.8566	0.6711	0.8676	0.5447	0.8106	0.8612	0.4811	0.4236	0.3328

Table A.4: Two stage least square regressions of the percent cousin marriages (first and second degree according to Bittles, 2001) on the Polity IV democracy index. '%-Cousin Marriage' is instrumented by the fraction of people within a country speaking a language that differentiates cousin-terms as well as the log duration of the Eastern and Western Churches' bans on consanguineous marriages. Covariates are the UN index of education in 2005, GDP per capita in 2000, Ethnolinguistic fractionalization, ancestor adjusted predicted genetic heterogeneity, arable land, temperature (taken from Ashraf and Galor, 2013), UK and French legal origin (La Porta et al. 2008), ancestor adjusted timing of the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga, 2012)., and the fraction of Christians in a country (Barro and McCleary 2003). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.5 2SLS regression of dummy variable 'cousin marriage preferred' on Democracy

	(1) Democ-racy IV: ban + c.term	(2) Democ-racy IV: ban + c.term	(3) Democ-racy IV: ban + c.term	(4) Democ-racy IV: ban + c.term	(5) Democ-racy IV: ban + c.term	(6) Democ-racy IV: ban + c.term	(7) Democ-racy IV: ban + c.term	(8) Democ-racy IV: ban + c.term	(9) Democ-racy IV: ban + c.term
Cousin marriage preferred	**-11.98*** (1.65)**	**-11.26*** (2.15)**	**-11.54*** (1.72)**	**-13.37*** (1.92)**	**-12.79*** (2.61)**	**-13.17*** (2.84)**	**-11.26*** (1.97)**	**-11.60*** (2.44)**	**-8.60*** (2.66)**
Education 2005		3.39 (4.14)							
GDP per capita 2000			0.06 (0.05)			0.03 (0.07)			
UK legal origin				4.01** (1.74)		3.58 (2.18)			
French legal origin				4.25*** (1.41)		4.25** (1.81)			
Ethnolinguistic fractionalization				-4.13 (2.80)		-1.41 (3.46)			
Percent at risk of contr. Malaria					0.24 (2.65)	-0.14 (2.63)			
Gini-coefficient					0.01 (0.08)	-0.05 (0.11)			
Neolit. transformation (ancestor adjusted)							-0.20 (0.35)	-0.29 (0.37)	
Absolute latitude							0.06 (0.04)	0.16 (0.10)	
Pred. gen. heterogen. (ancestor adjusted)							8.78 (25.16)	5.60 (25.56)	
Terrain ruggedness							-0.15 (0.61)	0.12 (0.65)	
Temperature								0.21 (0.22)	
Arable Land								0.00 (0.05)	
Fraction Christians									4.98* (2.67)
Constant	7.02*** (0.62)	5.01 (3.17)	6.39*** (1.10)	6.40*** (1.30)	7.45*** (2.87)	7.80* (3.99)	-0.25 (17.77)	-4.00 (19.56)	3.44 (2.15)
N	125	122	124	124	100	99	122	120	125
Wald -chi2	53.03	61.70	61.44	81.20	34.65	50.92	80.11	96.25	108.1
1st stage F-stat of excl. I.	54.26	27.71	70.01	36.45	15.77	12.58	37.43	30.65	20.43
Test over id. (p-value)	0.0986	0.2877	0.1878	0.1546	0.1623	0.5744	0.1381	0.1456	0.2916

Table A.5: Two stage least square regressions of the dummy variable 'Cousin marriage preferred' (based on Rijpma and Carmichael, 2013) on Polity IV's democracy index. 'Cousin marriage preferred' is instrumented by 'cousin-terms' (the fraction of people within a country speaking a language that differentiates cousin-terms) as well as the log duration of the Eastern and Western Churches' bans on consanguineous marriages. Covariates are the UN index of education in 2005, GDP per capita in 2000, Ethnolinguistic fractionalization, ancestor adjusted predicted genetic heterogeneity, arable land, temperature (taken from Ashraf and Galor, 2013), UK and French legal origin (La Porta et al. 2008), ancestor adjusted timing of the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga, 2012)., and the fraction of Christians in a country (Barro and McCleary 2003). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.6 2SLS regression of dummy variable 'cousin marriage preferred' on Democracy excluding Europe and countries where large fraction of ancestors experienced the Church marriage ban.

	(1) Democ-racy IV: c.term	(2) Democ-racy IV: c.term	(3) Democ-racy IV: c.term	(4) Democ-racy IV: c.term	(5) Democ-racy IV: c.term	(6) Democ-racy IV: c.term	(7) Democ-racy IV: c.term	(8) Democ-racy IV: c.term	(9) Democ-racy IV: c.term	(10) Democ-racy IV: c.term
Cousin Marriage preferred	**-8.183***** **(2.190)**	**-6.192**** **(2.467)**	**-9.940***** **(2.215)**	**-6.775***** **(2.353)**	**-6.961***** **(2.606)**	**-4.870*** **(2.570)**	**-4.919**** **(2.506)**	**-8.464***** **(3.041)**	**-1.805 (2.762)**	**-4.843*** **(2.495)**
Asia		-5.362** (2.115)					-5.356*** (1.795)			
Africa		-2.527 (2.103)					-2.669 (1.816)			
Oceania		2.039 (1.765)								
Education			2.872 (4.316)					0.338 (5.320)		
UK legal origin			7.372*** (2.180)					5.469** (2.777)		
French legal origin			7.088*** (1.949)					5.005* (2.795)		
Ethnolinguistic fractionalization			-3.598 (3.321)					-2.817 (3.618)		
Absolut Latitude				-0.016 (0.057)					-0.122** (0.059)	
Pred. gen. heterogen. (ancestor adjusted)				-25.631 (20.097)					-38.110* (23.139)	
Terrain ruggedness				0.067 (0.672)					0.596 (0.589)	
Fraction Christians					4.193 (2.646)					3.321 (2.609)
Constant	4.605*** (1.169)	6.958*** (1.352)	-0.035 (3.856)	22.969 (14.154)	2.471 (2.114)	2.333 (1.542)	6.180*** (1.518)	1.601 (4.194)	30.403* (16.520)	1.269 (2.073)
N	92	92	88	91	92	77	77	73	77	77
Wald -chi2	13.96	63.60	41.02	18.50	48.65	3.592	19.73	9.211	13.74	15.56
1st st. F-stat of excl. I.	88.64	49.03	51.49	62.07	55.07	58.66	45.13	26.79	26.39	62.50

Table A.6: Two stage least square regressions of the dummy variable 'Cousin marriage preferred' (based on Rijpma and Carmichael, 2013) on Polity IV's democracy index. Column (1) to (5) exclude all European countries, while column (6) to (7) excludes all countries where ancestor experience a substantial duration of the Churches' bans. 'Cousin marriage preferred' is instrumented by 'cousin-terms (the fraction of people within a country speaking a language that differentiates cousin-terms). Covariates are continent dummies, the UN index of education in 2005, Ethnolinguistic fractionalization, ancestor adjusted predicted genetic heterogeneity (taken from Ashraf and Galor, 2013), UK and French legal origin (La Porta et al. 2008), absolute latitude, terrain ruggedness (Nunn and Puga, 2012)., and the fraction of Christians in a country (Barro and McCleary 2003). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.7 OLS regressions of Nepotism, Corruption, Institutional Quality on Percent Cousin Marriage

	(1) Nepotism	(2) Nepotism	(3) Nepotism	(4) Corrup-tion	(5) Corrup-tion	(6) Corrup-tion	(7) Constraint on exec	(8) Constraint on exec	(9) Constraint on exec
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
% cousin marriage	0.02***	0.02***	0.03**	0.05***	0.01	0.03*	-0.09***	-0.09***	-0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)
GDP per capita		-0.05***			-0.18***			0.02	
		(0.01)			(0.02)			(0.02)	
UK legal origin		-0.44*			-0.16			0.73	
		(0.23)			(0.39)			(0.67)	
French legal origin		0.34			-0.13			0.67	
		(0.21)			(0.29)			(0.62)	
Ethnoling. fractional.		0.05			1.24**			-0.76	
		(0.43)			(0.60)			(0.87)	
T. of Neolithic			-0.00			-0.09			-0.10
transform. (aa)			(0.08)			(0.16)			(0.12)
Abs. latitude			-0.02*			-0.07***			0.03**
			(0.01)			(0.02)			(0.01)
P. gen. heterogen.			-5.42			4.20			-5.88
(aa)			(7.57)			(10.30)			(8.18)
Terrain ruggedness			0.26			0.54*			0.49**
			(0.17)			(0.27)			(0.21)
Constant	-0.47***	0.20	3.67	-5.35***	-3.04***	-6.13	6.27***	5.79***	9.41*
	(0.16)	(0.21)	(5.18)	(0.35)	(0.37)	(7.00)	(0.22)	(0.66)	(5.46)
N	58	58	58	71	70	71	70	69	70
R^2	0.118	0.653	0.362	0.135	0.788	0.395	0.538	0.554	0.615
F	10.99	30.08	8.012	15.38	48.64	12.22	57.61	10.99	29.73

Table A.7 OLS regressions of '%-Cousin Marriage' on nepotism (ranges between -2.02 and 2.3) as used by Van de Vliert (2011) in column 1 to 3, the Corruption Perception Index in 2005 (ranges from -9.7 to -1.7) in column (4) to (6), and the Polity IV Constraint on the Executive (average between 2001 to 2010, ranges from 1 to 7) in column (7) to (9). Additional covariates are GDP per capita in 2000, dummy variables indicating whether a country has UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity as used by Ashraf and Galor (2013), the ancestor adjusted years since the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.8 OLS regressions of Nepotism, Corruption, Institutional Quality on Dummy Variable 'Cousin Marriage preferred'

	(1) Nepotism	(2) Nepotism	(3) Nepotism	(4) Corrup-tion	(5) Corrup-tion	(6) Corrup-tion	(7) Constraint on exec	(8) Constraint on exec	(9) Constraint on exec
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Cousin Marriage	0.55***	0.34*	0.29	1.14***	0.23	0.57*	-1.44***	-1.27***	-1.02***
preferred	(0.19)	(0.17)	(0.21)	(0.32)	(0.23)	(0.33)	(0.35)	(0.39)	(0.38)
GDP per capita		-0.06***			-0.18***			0.04**	
		(0.01)			(0.02)			(0.02)	
UK legal origin		-0.67***			-0.36			0.36	
		(0.20)			(0.28)			(0.47)	
French legal origin		0.15			-0.03			0.13	
		(0.17)			(0.25)			(0.40)	
Ethnolinguistic Frac.		0.32			0.90*			-1.82**	
		(0.34)			(0.48)			(0.73)	
T. of Neolithic			0.05			-0.05			-0.10
transform. (aa)			(0.05)			(0.09)			(0.09)
Abs. latitude			-0.02***			-0.06***			0.05***
			(0.01)			(0.01)			(0.01)
P. gen. heterog. (aa)			2.94			10.67*			-13.65**
			(4.85)			(6.12)			(5.77)
Terrain ruggedness			0.20**			0.26			0.01
			(0.09)			(0.16)			(0.14)
Constant	-0.19	0.50**	-2.11	-4.48***	-2.74***	-10.31**	5.26***	5.53***	14.23***
	(0.12)	(0.19)	(3.55)	(0.25)	(0.33)	(4.59)	(0.20)	(0.51)	(4.20)
N	100	98	98	137	134	133	143	140	136
R^2	0.051	0.582	0.174	0.055	0.784	0.302	0.107	0.238	0.277
F	8.708	28.62	5.208	12.50	66.84	12.87	17.30	14.06	10.77

Table A.8 OLS regressions of the dummy variable 'Cousin marriage preferred' on nepotism (ranges between -2.02 and 2.3) as used by Van de Vliert (2011) in column 1 to 3, the Corruption Perception Index in 2005 (ranges from -9.7 to -1.7) in column (4) to (6), and the Polity IV Constraint on the Executive (average between 2001 to 2010, ranges from 1 to 7) in column (7) to (9). Additional covariates are GDP per capita in 2000, dummy variables indicating whether a country has UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity as used by Ashraf and Galor (2013), the ancestor adjusted years since the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.9 Two stage least square regressions of Nepotism, Corruption, Institutional Quality on Dummy Variable 'Cousin Marriage preferred'

	(1) Nepotism IV: ban + c.term	(2) Nepotism IV: ban + c.term	(3) Nepotism IV: ban + c.term	(4) Corrup-tion IV: ban + c.term	(5) Corrup-tion IV: ban + c.term	(6) Corrup-tion IV: ban + c.term	(7) Constraint on exec IV: ban + c.term	(8) Constraint on exec IV: ban + c.term	(9) Constraint on exec IV: ban + c.term
Cousin Marriage preferred	**1.17***** **(0.33)**	**0.74***** **(0.25)**	**0.81**** **(0.38)**	**3.21***** **(0.63)**	**1.05***** **(0.37)**	**1.43**** **(0.64)**	**-3.77***** **(0.52)**	**-3.80***** **(0.56)**	**-3.27***** **(0.58)**
GDP per capita		-0.05*** (0.01)			-0.18*** (0.02)			0.02 (0.02)	
UK legal origin		-0.72*** (0.21)			-0.61** (0.30)			0.92* (0.54)	
French legal origin		0.05 (0.19)			-0.32 (0.28)			0.96** (0.41)	
Ethnolinguistic Frac.		0.19 (0.32)			0.84* (0.50)			-1.36 (0.90)	
T. of Neolithic transform. (aa)			0.07 (0.05)			-0.08 (0.10)			-0.02 (0.11)
Abs. latitude			-0.02** (0.01)			-0.05*** (0.02)			0.03** (0.01)
P. gen. heterog. (aa)			-1.33 (4.86)			5.09 (7.26)			0.05 (7.44)
Terrain ruggedness			0.20** (0.09)			0.22 (0.17)			0.01 (0.20)
Constant	-0.37*** (0.13)	0.51*** (0.17)	0.61 (3.54)	-5.34*** (0.30)	-2.89*** (0.33)	-6.70 (5.30)	6.06*** (0.19)	5.86*** (0.52)	5.14 (5.26)
N	92	92	91	122	120	119	125	123	122
R^2	12.23	142.8	30.92	26.21	294.9	56.80	52.10	92.89	89.83
F	19.22	23.15	15.86	44.55	35.18	33.81	54.26	40.76	37.43

Table A.9 Two-stage least square regressions of the dummy variable 'Cousin Marriage Preferred' on nepotism (ranges between -2.02 and 2.3) as used by Van de Vliert (2011) in column 1 to 3, the Corruption Perception Index in 2005 (ranges from -9.7 to -1.7) in column (4) to (6), and the Polity IV Constraint on the Executive (average between 2001 to 2010, ranges from 1 to 7) in column (7) to (9). '%-Cousin Marriage' is instrumented by cousin-terms and the ancestor adjusted log duration of the Churches' cousin marriage bans (in bold). Additional covariates are GDP per capita in 2000, dummy variables indicating whether a country has UK or French legal origins (La Porta et al. 2008), ethnolinguistic fractionalization and ancestor adjusted predicted genetic heterogeneity as used by Ashraf and Galor (2013), the ancestor adjusted years since the Neolithic transformation (Putterman 2008), absolute latitude, terrain ruggedness (Nunn and Puga 2012). Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.10 Cousin marriage and mafia activity in the Italian provinces

	(1) Mafia Index	(2) Mafia Index	(3) Mafia Index	(4) Mafia Index (North)	(5) Mafia Index (South)
PercentCousin Marriages	0.858*** (0.157)	0.758*** (0.231)	0.966*** (0.299)	0.909*** (0.211)	0.743*** (0.257)
South		3.300 (3.233)			
Kingdom of Naples (Mainland South)			2.390 (3.208)		
Kingdom of Sicily (Island of Sicily)			-6.561 (9.025)		
_cons	6.799*** (0.977)	6.592*** (0.808)	5.896*** (1.017)	6.088*** (0.607)	10.204** (4.360)
N	87	87	87	57	30
F	30.00	30.80	21.27	18.52	8.320

Table A.10: Ordinary least square estimation of cousin marriage on Mafia activity. Cousin marriages is based on Cavalli-Sforza et al. (2004) and Mafia activity on Calderoni, (2011). In column (1) a dummy variable for Southern Italy is included, in column (2) dummy variables for the area of the former Kingdom of Naples and the Kingdom of Sicily are included, while column (4) only contains Northern and column (5) only Southern Provinces. Robust standard errors are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.11 Societal Marriage Pressure (SMP) and Generalized Morality

	(1) Generalized Morality OLS	(2) Generalized Morality OLS	(3) Generalized Morality OLS	(4) Generalized Morality OLS	(5) Generalized Morality OLS	(6) Generalized Morality OLS	(7) Generalized Morality IV: W. Church ban	(8) Generalized Morality IV: W. Church ban	(9) Generalized Morality IV: W. Church ban
Societal Marriage Pressure	-0.017***	-0.013***	-0.011**	-0.048***	-0.041***	-0.041***	**-0.560***	**-0.544***	**-0.447****
(SMP)	(0.004)	(0.004)	(0.004)	(0.008)	(0.008)	(0.009)	**(0.196)**	**(0.206)**	**(0.222)**
Age	0.006***	0.005***	0.007***	-0.002	0.000	0.001	-0.004	-0.004	-0.003
	(0.002)	(0.002)	(0.002)	(0.005)	(0.005)	(0.006)	(0.007)	(0.007)	(0.008)
Age squared	-0.000***	-0.000**	-0.000***	-0.000	0.000	-0.000	0.000*	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.036***	0.038***	0.044***	0.025	0.026	0.024	0.070*	0.070*	0.068
	(0.012)	(0.012)	(0.013)	(0.027)	(0.027)	(0.033)	(0.040)	(0.040)	(0.046)
Married	0.020	0.019	-0.006	0.006	0.024	-0.017	0.165**	0.165**	0.134
	(0.013)	(0.012)	(0.012)	(0.031)	(0.031)	(0.037)	(0.075)	(0.072)	(0.095)
Secondary Edu.		0.202***	0.175***		0.241***	0.219***		0.051	0.063
		(0.022)	(0.023)		(0.031)	(0.039)		(0.088)	(0.098)
Tertiary Edu.		0.354***	0.310***		0.394***	0.418***		0.092	0.170
		(0.034)	(0.032)		(0.057)	(0.070)		(0.148)	(0.164)
Middle Income			0.056***			0.082*			0.009
			(0.014)			(0.042)			(0.067)
High Income			0.141***			0.105**			-0.003
			(0.022)			(0.046)			(0.082)
Constant	-0.193***	-0.306***	-0.373***	0.223	0.048	0.147	-0.146	-0.167	-0.089
	(0.058)	(0.055)	(0.061)	(0.239)	(0.244)	(0.284)	(0.364)	(0.341)	(0.383)
Religion Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	57628	57251	48131	5234	5221	3610	5234	5221	3610
F-stat	7.925	17.35	18.30	6.685	12.38	9.339			
Wald Chi							165.1	220.1	189.7
F-stat 1st stage for excl. instr.							13.87	12.31	9.013

Table A.11: Societal marriage pressures and generalized morality. Explanatory variable is the indicator of societal marriage pressure (SMP). Dependent variable generalized morality following Tabellini (2008). Covariates are age, age squared, dummy variables for female, married, religious affiliation, education (column 2, 4, and 6), country and the wave. Column (1) to (6) are country fixed-effects OLS regressions, while column (7) to (9) are two stage least square regressions with SMP instrumented by the duration of the Western Church's ban on consanguineous marriages. Instrumented variables are in bold. Column (5) to (9) contain only respondents from Italy, Spain and Portugal. Robust standard errors (clustered on 46 countries in column 1 to 3) are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

A.12 Societal Marriage Pressure (SMP) and Obedience

	(1) Obedience OLS	(2) Obedience OLS	(3) Obedience OLS	(4) Obedience OLS	(5) Obedience OLS	(6) Obedience OLS	(7) Obedience IV: W. Church ban	(8) Obedience IV: W. Church ban	(9) Obedience IV: W. Church ban
Societal Marriage Pressure	0.017***	0.015***	0.013***	0.021***	0.019***	0.019***	**0.251*** **	**0.257** **	**0.218** **
(SMP)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)	**(0.094)**	**(0.101)**	**(0.106)**
Age	-0.004***	-0.004***	-0.004***	-0.004*	-0.005**	-0.003	-0.004	-0.003	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)
Age squared	0.000***	0.000***	0.000***	0.000*	0.000*	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.014***	-0.015***	-0.017***	-0.016	-0.017	-0.015	-0.036*	-0.036*	-0.037*
	(0.005)	(0.005)	(0.005)	(0.013)	(0.013)	(0.015)	(0.019)	(0.019)	(0.023)
Married	0.002	0.002	0.012**	0.031**	0.025*	0.032*	-0.040	-0.040	-0.041
	(0.005)	(0.004)	(0.005)	(0.015)	(0.015)	(0.018)	(0.035)	(0.035)	(0.046)
Secondary Edu.		-0.077***	-0.073***		-0.062***	-0.045**		0.029	0.032
		(0.010)	(0.011)		(0.015)	(0.019)		(0.044)	(0.047)
Tertiary Edu.		-0.156***	-0.142***		-0.127***	-0.081***		0.014	0.035
		(0.015)	(0.016)		(0.025)	(0.031)		(0.070)	(0.074)
Middle Income			-0.027***			-0.019			0.017
			(0.008)			(0.020)			(0.032)
High Income			-0.058***			-0.108***			-0.057
			(0.011)			(0.021)			(0.039)
Constant	0.376***	0.420***	0.428***	0.317***	0.361***	0.285**	0.472**	0.448**	0.375*
	(0.047)	(0.048)	(0.051)	(0.112)	(0.112)	(0.132)	(0.183)	(0.176)	(0.207)
Religion Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	60113	59716	50104	5355	5342	3679	5355	5342	3679
F-stat	15.99	26.89	38.91	7.045	8.554	8.344			
Wald Chi							55.19	74.57	99.08
F-stat 1st stage for excl. instr.							12.83	11.29	8.819

Table A.12: Societal marriage pressures and obedience. Explanatory variable is the indicator of societal marriage pressure (SMP). Dependent variable is the dummy variable whether parents see obedience as an important value to teach children. Covariates are age, age squared, dummy variables for female, married, religious affiliation, education (column 2, 4, and 6), country and the wave. Column (1) to (6) are country fixed-effects OLS regressions, while column (7) to (9) are two stage least square regressions with SMP instrumented by the duration of the Western Church's ban on consanguineous marriages. Instrumented variables are in bold. Column (5) to (9) contain only respondents from Italy, Spain and Portugal. Robust standard errors (clustered on 46 countries in column 1 to 3) are reported in parenthesis. *p < 0.10, **p < 0.05, ***p < 0.01.

Appendix B – Additional Figures

B.1 Democracy

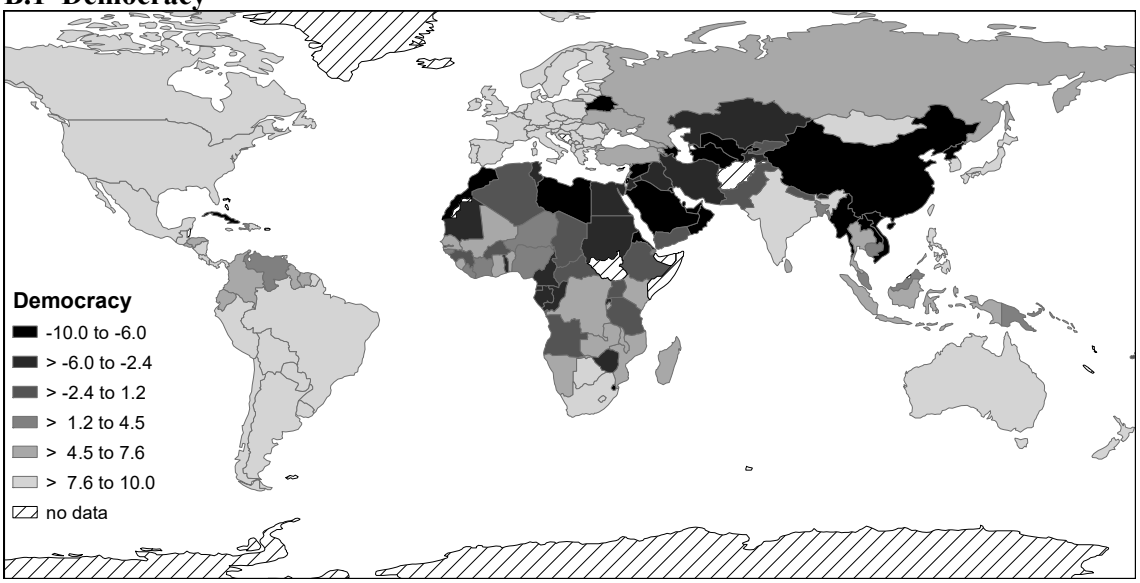

Figure B.1: Index of democracy from the Polity IV (average from 2001 to 2010)

B.2 Percent cousin marriage

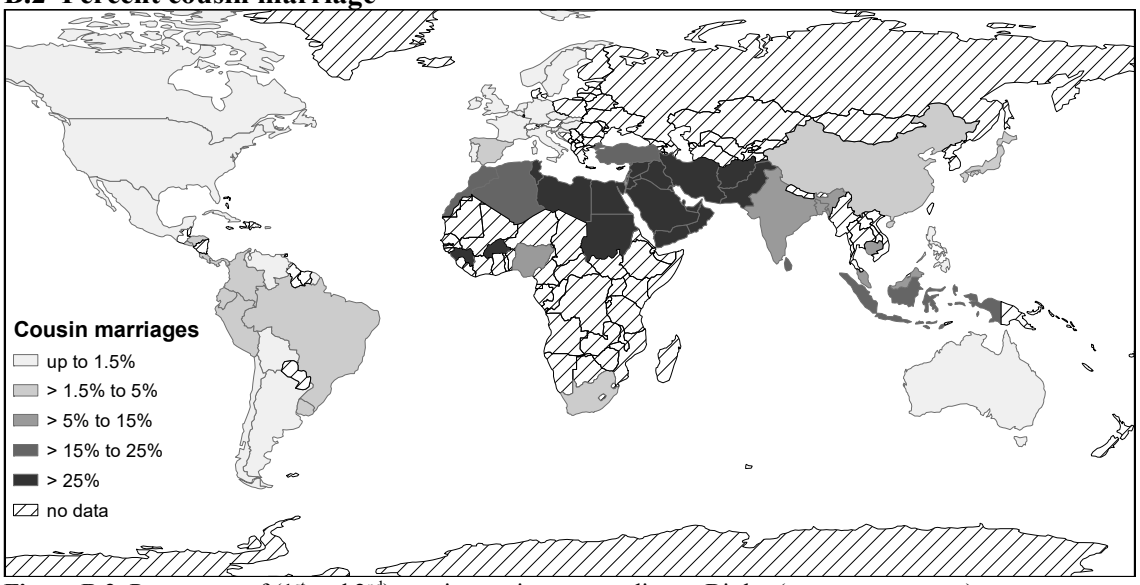

Figure B.2: Percentage of (1st and 2nd) cousin marriages according to Bittles (www.consang.net).

B.3 Cousin marriage preffered

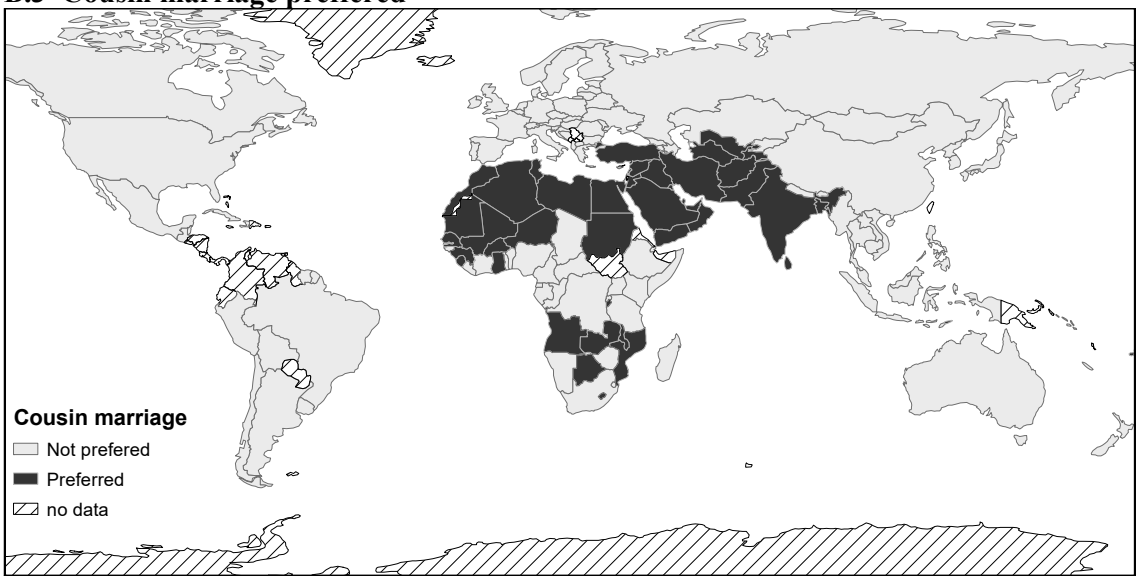

Figure B.3: Dummy variable 'cousin marriage predominantly preferred' (based on Ethnographic Atlas according to Rijpma and Carmichael, 2013)

B.4 Duration of Western Church's ban on consanguinity

Figure B.4: Ancestor adjusted index of the duration of the Western Church's ban on consanguineous marriages (up to the year 1500).

B.5 Duration of Eastern Church's ban on consanguinity

Figure B.5: Ancestor adjusted index of the duration of the Eastern Church's ban on consanguineous marriages (up to the year 1500).

B.6 Cousin term differentiation

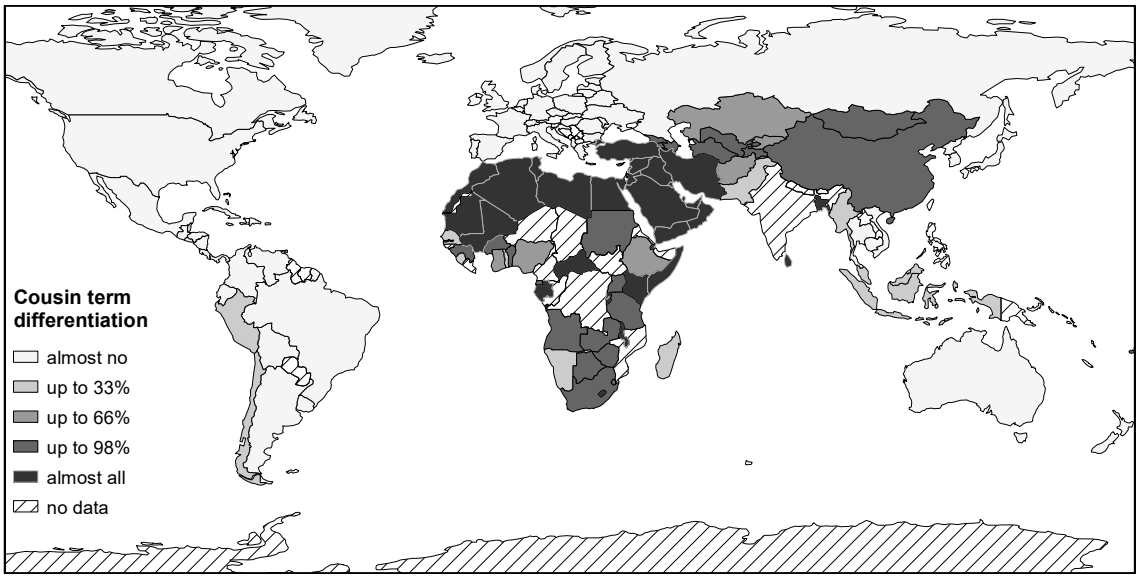

Figure B.6: Cousin-term differentiation. The percentage of people speaking a language that differentiates cousin-terms (own calculations based on the Ethnographic Atlas as aggregated by Jutta Bolt and Rijpma and Carmichael, 2013).

Appendix C – data sources

Polity Composite Democracy Index - The composite index is the democracy score minus the autocracy score of the Polity IV data set. It ranges from –10 to 10. I used the average of ten years from 2001 to 2010. Where years were missing for a country, the average of the non-missing years was taken. The democracy score reflects three elements: (i) the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; (ii) the existence of institutionalized constraints on the exercise of power by the executive; (iii) the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. Other aspects of plural democracy, such as the rule of law, systems of checks and balances, freedom of the press, and so on are means to, or specific manifestations of, these general principles. The autocracy score is constructed similarly. It is derived from the coding of the competitiveness of political participation (ii) openness of executive recruitment (iii) constraints on chief executive (iv) regulation of participation (v) competitiveness of participation.

Percent Cousin Marriage – Based on an extensive literature survey, Bittles (2001) compiled data on cousin marriages around the world (first and second degree). Bittles (at www.consang.net) provides country estimates but cautions to carefully check the underlying source. Where no data was available for the country as a whole from an underlying source, but existed for sub-regions or sub-ethnicities covering a large proportion of the country, I calculated the country levels based on the population shares in these sub-regions (this was the case for Bangladesh, China, India, Iran, Australia and Israel). If data for the whole country was available from more than one source, I used the average of the sources. I added three countries (Germany, Uzbekistan and Malta) based on estimates from different sources. The sampling year and the underlying methodology of the data collection varies: some are based on surveys while others are based on church dispensations. Nevertheless, evidence from countries that have data based on different sources suggest consistency over time and sampling method. Studies comparing Bitles's data to genetic correlates of inbreeding find that both methods paint a consistent picture (Leutenegger et al., 2011, Pemberton and Rosenberg, 2014).

Dummy variable *'Cousin marriage preferred'* – this is an alternative measure for cousin marriages. It is taken from Rijpma and Carmichael (2013) and largely rests on the Ethnographic Atlas. The Ethnographic Atlas is a worldwide ethnicity level data base containing information for 1265 ethnic groups. The data largely reflects information on Ethnicities for the period between 1820 to 1960. It therefore predates my outcome measures by several years. In the Ethnographic Atlas Ethnicities are classified according to whether or not they prefer cousin marriage and what kind of cousin marriage (e.g. cross-cousins vs. parallel cousins) is preferred. The Ethnographic Atlas is missing many large populations in Europe. As a second source and a consistency check Rijpma and Carmichael (2013) used Emanuel Todd's classification to construct this indicator. This indicator has the nice feature that there is an underlying

parsimonious coding and the aggregated indicators covers a larger range of countries. However, the measure is coarser as it does not reveal the extent of realized cousin marriage.

Preference for parallel cousin marriage – this variable captures the fraction of inhabitants in a country that prefer parallel-cousin marriage. It is likewise based on the Ethnographic Atlas (see above).