

Family Characteristics and Economic Development

David le Bris¹

KEDGE Business School

January 2015

Comments Welcome

Abstract

This paper links economic development and family characteristics via the propensity to invest and then increase human productivity. Three family characteristics are identified to support investments. Inequality among siblings favors investments in physical capital whereas high female status and strong parental authority favor investments in human capital. We construct a family score according to the presence of these three characteristics following E. Todd's 1984 classification of traditional family types observed around the world. This family score is significantly associated with higher economic outcomes and is robust to other factors already identified by previous research as having a role such as geography, ethnic fractionalization, genetic diversity, religion, quality of institutions and legal origin.

Key words: Economic development, Family model, Cultural Economics.

JEL codes: N 10, N 30, N 50, O 10, O 50, Z 10.

Introduction

The explanation of the large differences in economic development among human communities remains a fundamental economic question. Douglass North (1991) stressed the importance of institutions, while Williamson (2000) highlighted the forerunner role of informal institutions. This paper explores the role in economic development of the first and most basic institution providing arrangement among humans: the family. The family

¹ david.lebris@gmail.com

institution arranges relations between husband and wife, parents and children and between the children themselves.

However, the nature of the links between family members varies dramatically across human communities. In contradiction with a common belief, traditional families were not always an association of several generations and siblings. Traditional families in Germany for instance do include several generations in the same household. But, in the 1960s, Peter Laslett provided evidence that the traditional English family since at least the 13th century is a simple nuclear family (including only parents and minor children) (Laslett et al., 1972). German and English traditional family arrangements are different.

Anthropologists study family arrangements across the world by identifying characteristics that when combined lead to a specific type of family. Following Le Play (1884), Todd (1984, 2011) offered a classification for almost all countries relying on thousands of anthropological studies. His 1984 book (the 1987 English version is entitled *The Causes of Progress: Culture, Authority, and Change*) also assumes two causal relations from family characteristics to economic development. According to this author, the increase in the literacy rate which is the first step of the economic takeoff, comes about earlier in countries characterized by high female status and strong parental authority over children.

We use this framework to build three theoretical relationships between family characteristics and propensity to invest. A family type characterized by high female status leads to higher investments in human capital since women are the main actor in the raising of children. Similar higher investments in human capital are obtained in the family type characterized by strong parental authority over children; strong parental authority allows a deeper and longer transmission of human capital. These two causal links were previously assumed by Todd (1984). We add a third relation, using another family characteristic: the equality or inequality of siblings. A family type characterized by potential inequality among siblings leads to higher investments in physical capital for two reasons. First, potential inequality enables maintaining a critical asset size transferred to only one child whereas strict equality leads to a division in shares of wealth that are too small to invest. This critical size helps investments in physical capital. The second reason is that investment decisions are not biased by the need to transfer equal shares of wealth. Parents can eventually concentrate their wealth in non-divisible assets and support one child to invest in one project without considering the need to transfer equal shares. The investment allocation is thus more efficient.

These different propensities to invest in both human and physical capital according to family characteristics lead to different levels of productivity, which is the fundamental explanation of the differences in economic development.

We use Todd's classifications (1984, 2011) to test these theoretical relationships. Todd (1984) proposed four family types that have been employed in studies by - amongst others -

Duranton et al. (2009), Alesina and Giuliano (2014), Bertocchi and Bozzano (2014). To add further characteristics to define family types, Todd (2011) used fifteen family types in Eurasia. In this present paper, we focus on the basic elements, namely, family characteristics rather than family types, which we instead use to extract the more basic family characteristics.

From Todd's classifications (1984, 2011), we extract the three family characteristics assumed relevant in explaining economic development: relatively high female status (versus low status), strong parental authority over children (versus freedom of children) and potential inequality among siblings (versus strict equality among siblings). Family types all over the world deal with these three issues thus enabling identifying which characteristic is present or not in one given country.

We construct series to assess whether one, two or three of these characteristics are present in a given country. We build a first dummy series with value one when the family structure of a given country is characterized by the presence of strong parental authority over children called AUTHORITY. A second dummy series is constructed for high female status called WOMEN. A third series is constructed for the existence of inequality among siblings called INEQUALITY. We additionally combine these three series to build a fourth, namely, family score (called FAMILY) whose values range from 0 to 3 according to the presence of 0, 1, 2 or 3 characteristics in a country's family type.

All these series are highly correlated with the current GDP per capita with the expected positive sign. We apply several control measures. First we control for several factors previously identified in literature as associated with economic development. In OLS regressions, we add geographic variables: the percentage of the population living in areas at risk of contracting malaria, the percentage of the population living in tropical areas, the mean distance to the nearest waterway, the time since Neolithic transition, the percentage of arable land, the absolute latitude, an index of land suitability for agriculture, a dummy for members of OPEC and a continent fixed effect. The FAMILY score remains highly significant to explain current GDP per capita.

Thereafter, we turn to variables measuring the nature of people. We maintain the geographic variables that were significant in the previous regressions and add an index of ethnic fractionalization, the measure of genetic diversity and the percentage of the population of European descent. The FAMILY score is always highly significant using these control variables independently or together. We also run a robustness test excluding from the dataset those countries where several family types are observed whereas previously we used the dominant type when several family types are present in a given country.

Second, we address the issue of the difference between family type and religion. Religion provides rules on how a family should be arranged and one could thus ask if family type is different from religious affiliation. Religion and family type are indeed closely related but

without a systematic causal relationship. We provide a narrative on the three existing relations between religion and family structure: independence, religion influences the family type and the existing family type influences the development of religion. We again run our regressions including the geographic and human variables identified as significant in our previous specifications but for each country add the share of the population belonging to the main religions. The FAMILY score remains highly significant in explaining economic development.

A further investigation undertaken is the potential indirect channel of the effect of family characteristics on economic development. Indeed, we identified a direct theoretical effect of family characteristics on the level of productivity through the propensity to invest in both human and physical capital. However, an indirect (non-exclusive) channel could also work if the formal institutions (political and economic) mirror the family types. To test this potential indirect channel, we add to our regression including geographical and human control variables, an index that measures the quality of institutions. The FAMILY score decreases but remains highly significant and thus a direct effect of family characteristics cannot be rejected. We use a similar process to test a potential indirect channel through the legal regime since in countries where the legal regime has not been imposed by foreigners one could suppose the legal regime mirrors the family types. This indirect effect of the family characteristics is also rejected since when adding dummies for legal origins in our specification the FAMILY score remains highly significant.

Reverse causality could potentially raise a doubt that economic development leads to specific family types and not the opposite direction which is assumed in this paper. To reject this hypothesis, we rely on Todd's (2011) work on the history of family types in Eurasia. For most countries, the currently observed family type has been the same for centuries. The direction of the causality is thus without doubt from family characteristics to economic development. Surprisingly, the best family types today (such as those enjoyed in Europe or East Asia) appear to be the most primitive and not the most appropriate for earlier periods of time. These primitive family types enjoyed a reversal of fortune.

The rest of the paper is organized as follow. The related literature is presented in (1) followed by the theoretical links between the three family characteristics and the propensity to invest (2). Our data are explained in (3) thereafter providing the empirical test of these theoretical links in (4). In section (5), we investigate the relation between family characteristics and religion. Section (6) tests the potential indirect channel of formal institutions. The potential reverse causality is rejected in (7) prior to offering our conclusions.

1. Related Literature

Interest in the link between family and economics is longstanding. Alfred Marshall and Adam Smith used family structure to help explain disparities in economic development (Scott Smith, 1993: 7). Banfield (1958) used the term "amoral family" to describe the social and cultural environment that shaped individual decisions in a small village in the south of Italy. Grossbard (1978) called for a "marriage between economics and anthropology". Recent literature analyzed the link between marriage and economic outcomes (Jacoby, 1995; Tertilt, 2005).

Todd (1983, 1984) and Le Bras and Todd (1981) identified different consequences of family type on economic and social outcomes. For example, Todd (1983) argued that certain family types are more or less favorable to different forms of government since formal institutions mirror family institution. Especially, all those countries in which communism took power without foreign intervention (Russia, China, Vietnam, Yugoslavia, Cuba) a similar family type exists (called Communitarian) where brothers are equal, under strong authority of their parents. The family explanation appears more consistent than an explanation of the importance of the proletarian class. This form of family is also observed in local areas of Western Europe precisely where Communist parties obtained the best electoral results.

Following the seminal works of Todd, several authors linked traditional family types to currently observed socio-economic outcomes often using Todd's classification. Mamadouh (1999) used Todd's classification of families to explain the difference in political cultures in Europe. Dilli et al. (2013) showed that long-lasting institutions, especially family types, are important explanations of persistent variations in gender equality in addition to economic development. Bertocchi and Bozzano (2014) identified the family structure as a key factor of the gender education gap in Italy in the late 19th century. Tur-Prats (2014) identified in the traditional multiple-generation family the cause of lower domestic violence in Spain today but with her own classification of family types. Duranton et al. (2009) used Todd's family types to explain regional differences in economic outcomes across Europe such as household size, educational attainment, social capital, labor force participation, wealth and inequality. Algan and Cahuc (2005) showed that family culture is responsible for cross-country heterogeneity in employment rates in Europe.

A large part of literature using family as an explanatory variable focuses on the difference between nuclear versus large kinship families, leading to different forms of cooperation. Greif (2006) identified in the European family organization the origin of large non-familial organizations he called "corporations". Greif and Tabellini (2012) studied two different ways of sustaining cooperation in China and Europe, the clan and the city. Greif and Iyigun (2013) also refer to family organization, especially the differences between Chinese and English families. Another field of research is the impact of family ties. Focusing on Europe, Esping-Andersen (1999) argued that where family ties are stronger, social risks are more internalized in the family by pooling resources across generations. Alesina and Giuliano

(2010) showed that strong family ties imply greater reliance on the family providing goods and services and less on the market and the government. Alesina et al. (2010) showed that strong family ties are associated with less mobile individuals choosing a more regulated labor market while weak family ties are associated with more flexible labor markets which require the geographic mobility of workers to be efficient. In the same vein, Alesina and Giuliano (2011) established an inverse relationship between family ties and political participation since family and political institutions provide similar kind of goods. Galasso and Profeta (2010) showed that family type influenced the design of the pension system in one country. According to Alesina and Giuliano (2014), countries have lower levels of per capita GDP when the family is an important institution.

2. A theory of the family origin of economic development

The level of human productivity is a key explanation of living standards (Fourastié, 1979). Productivity depends on investments in both human and physical capital. Solow (1956) demonstrated and formalized the role of investments in physical capital in economic growth while unified growth theory emphasizes the importance of human capital formation (e.g., Galor, 2011). To explain the amount invested in both kinds of capital remains an issue. Family characteristics may offer an answer to this still open question.

Todd's classification of traditional family types depends on the combination of several characteristics leading to up to 15 different types of family in his last book. For example, Nuclear, Stem and Communitarian families are each declined in three versions according to the new household relations with the families of the husband and the wife (patrilocal, matrilocal or bilocal). Prior studies using Todd's classification focus on four family types. In the present paper, we concentrate our analysis on three of these characteristics (and not on family types) since they could theoretically explain economic performance.

We assume three theoretical relationships between family characteristics and investments. Relatively high female status enables higher investments in human capital. Strong parental authority over children also aids investments in human capital. Potential inequality among siblings promotes investments in physical capital.

Strong parental authority increases investments in human capital

The first characteristic is parental authority. Family types differ in how parents and children interact. In several types, parents or at least the father, exert strong and extensive authority over children. Children continue being subjected to their parents' authority long after reaching adulthood and even after marrying. In some cases, the new "household" lives in the

parent's house under their authority up to inheriting it. When they have their own children, three generations can cohabit (parents, children and grandchildren).²

To measure the authority of families, Todd analyzed data on the cohabitation of several (especially three) generations in a single household.

Parental authority has a positive effect on investments in human capital. This authority enables parents to invest in the human capital of their children for a longer period compared to families where children become independent early. Moreover, when three generations live together, grandparents are also able to educate and transmit human capital complementarily to parents. Conversely, in family types that are not characterized by strong parental authority, children become independent early with looser ties with their parents, accumulating a lower stock of human capital transferred by their parents.

High female status increases investments in human capital

A second family characteristic affecting development is the status of women. Women enjoy a more or less equal role in the family compared to men depending on the family type. In some family types, the father is the only chief with the children and their mother under his authority (patriarchy). In other family types, women enjoy a more equal (or sometimes even higher) role.

To assess the status of women, Todd used two basic characteristics: equality in inheritance and equality in the choice of location where a new household settles. Inheritance rules and practices can transfer wealth through males (patrilineal), females (matrilineal) or both (bilateral). In the two last forms, women enjoy higher status than in patrilineal families. Todd used a second indicator of female status by observing the location where a new household settles. When female status is low, the new household settles close to the husband's family (i.e., the woman moves to where her husband's family is located and is called patrilocal) or even *with* her husband's family if the model is also characterized by authority in countries such as Russia and China. When female status is high, the new household indifferently settles close to the wife's or the husband's parents (bilocal) or in some cases close to the wife's family (matrilocal).

High female status has a positive effect on investments in human capital since the mother plays a key role in her children's education and thus in the formation of the next generation's human capital. The quality of the children's education depends on the level achieved by their mother. Moreover, in family types where the wife enjoys relatively high

² The relationship between parents and children can be thought of as either 'liberal' or 'authoritarian' leading Todd (1983) to use this characteristic to explain political behaviors in different countries (favoring authoritarian or liberal regimes).

status, she can choose to marry later according to her personal interests. Older age at marriage implies the wife has accumulated a higher level of human capital before becoming a mother thereby aiding investment in the next generation's human capital. This investment is concentrated in a smaller number of children due to the reduced period of marital fertility.³ In family types with low female status, young girls often marry older men thereby reinforcing the superiority of the husband over his wife. The historical reduction of fertility is known to play a key role in economic development but the causes remained unclear (Guinnane, 2011). The female status of traditional family types could be an important factor.

Inequality among brothers increases investments in physical capital

Despite not using the term human capital, Todd (1984) assumed a positive impact on the development of the family's authority and high female status. We add a third family characteristic with a theoretically positive impact on development but through the investment in physical capital: the inequality among siblings.

Family types are characterized by equality or inequality among siblings (or at least brothers). In equal families, all brothers and sometimes sisters have similar rights especially in terms of inheritance. In inegalitarian families, parents can favor one particular child (often the eldest) to the detriment of the others for example using the freedom to test or through the practice of primogeniture.

To measure equality, Todd used data on inheritance laws and practices.

The possibility of inequality among siblings has a positive effect on investments in physical capital for two reasons. The first is reaching a critical size of wealth to support investments. Inequality enables achieving the critical size whereas strictly equal inheritance would lead to a higher number of smaller properties. This critical size helps investing in new physical goods. The second reason relies on the quality of the asset allocation that inequality allows. Due to potential inequality, investment choices are not biased by the need for future equal inheritance allowing parents and children to seize opportunities at any point in time. Parents can choose to concentrate their wealth in a specific asset that may be difficult to share whereas in the case of strict equality the incentive is to invest in easily fractionable assets or

³ To identify the origin of high female status in traditional family types provides an answer to the question of the direction of the observed correlation between women rights and GDP (see Doepke et al., 2012 and Duflo, 2012). The correlation between current women's rights and high female status in traditional family types would need to be tested.

in similar multiple assets. Parents can also easily choose to finance the project of one child without having to consider the need to maintain equality.⁴

The family structure in a giving population is transferred from parents to children. For a recent discussion on the intergenerational transmission of values from parents to children through institutions and beliefs, see Bisin and Verdier (2000) and Guiso, et al. (2006). Cultural values such as family type are very stable over time as shown in different ways by Alesina and Giuliano (2010), Reher (1998) and Todd (2011). Thus, we assume that traditional family characteristics still exist (“transmitted from generation to generation and they have persisted through history to the present day”, Alesina and Giuliano, 2014) and influence current human behavior.

3. Data

Anthropologic data

We use Todd’s (1984 and 2011) classifications to characterize countries. Todd examined a very large number (about 70 pages of references are cited in his 2011 book) of anthropologic, statistical, historical, archeological and legal studies on different families around the world. He crosses his observations to demonstrate his claims on family types. His main sources were anthropologic data on rural areas before the emergence of modernity. He focused on rural areas since family characteristics manifest more easily in the absence of urban constraints. He studied the period before modernity because in the developed world, especially since the birth of the welfare state, the nature of family relations is more difficult to observe.

Todd’s data were partially used by Alesina and Giuliano (2014), Duranton et al. (2009), Dilli et al. (2013), Bertocchi and Bozzano (2014) and Galasso and Profeta (2010). This last study demonstrates the consistency of Todd’s classification of family structure with that used by Alesina and Giuliano (2010) deriving from three questions of the World Value Survey.

We extract the three family characteristics that our study focuses on using Todd’s classification of family types. We construct three dummy series with a value 1 when the family structure of a given country is characterized by AUTHORITY, high female status (WOMEN) and potential INEQUALITY among siblings. These variables are used alone and then combined in series called FAMILY score as the sum of the three prior series. The FAMILY

⁴ In terms of cultural values, the inequality of siblings facilitates the acceptance of wealthy fellow countrymen whereas in countries with an egalitarian family tradition, policies in favor of harmonizing living standards receive more attention.

score is then allocated from 0 and 3. We concentrate our analysis on this last FAMILY series as this combines the three theoretical relations.

Todd does not provide any data for some countries and we thus exclude these cases (mainly Oceania islands). For countries where several family types are observed (India, Italy, Ecuador, etc.) we consider the characteristics of the dominant type for the entire country.

Other data

All other data are from Ashraf and Galor (2013). We use this dataset as it comes from the most recent article in the field and includes extensive control variables. Details of this dataset can be found in Ashraf and Galor (2013) although we provide some information on the more important data. We use income per capita as the explained variable deriving from the *Penn World Table* (Heston et al., 2006). To control for other factors we use: data on institutional and cultural factors includes the social infrastructure index of Hall and Jones (1999), the share of population of European descent based on the *World Migration Matrix, 1500-2000* of Putterman and Weil (2010), legal origin dummies and the share of population affiliated with major world religions from the La Porta et al. (1999) dataset, and the ethnic fractionalization index of Alesina et al. (2003). The geographic controls include the share of population at risk from contracting malaria of Gallup and Sachs (2001) and the share of population living in Koppen-Geiger tropical zones and distance from the nearest coast or sea-navigable river, both from the Gallup et al. (1999) dataset.

4. Testing the family explanation of current economic development

4.1 Description of family characteristics across the world: data and illustrations

Parental authority

Parental authority is characteristic of Germanic, Russian, Chinese, Japanese and Korean families for example (see a map in Figure 1) and is frequent where new households need to inherit their parent's farm to be able to subsist. Russian and Chinese family types differ from the Japanese and German despite common parental authority over children. Indeed, Japanese and German families combine parental authority with inequality among siblings (a combination called the Stem type), whereas Russian and Chinese families require perfect equality (a combination called the Communitarian type). However, in both cases, the human capital of the parents can be transferred for a longer period.

In the Communitarian type (Russian, Chinese but also traditional Gipsy families), all sons are allowed to marry and bring their spouses into the parental household.⁵ This leads to larger families splitting up when the sustainable size is exceeded. In the Stem type, only one son is allowed to marry and bring his wife into the parental household. In this family type, the ideal is to have only two but well educated children, one to transfer the household and the second to marry an heir.

Todd (1984) highlighted that in around 1850, the marriage age of women in Scandinavia, Germany and Switzerland, which are of the Stem type, is above 27 years. This means fewer but more educated children thanks to more educated mothers. This process is close to and sometimes confused with what is called the European Marriage Pattern (Foreman-Peck, 2011). Some generations later, the inhabitants of these countries enjoy the world's highest standards of living whereas in 1850 they were poor especially compared to France and the UK; in 1868, famine led to a reduction of the Scandinavian population. Outside Europe, only two areas show the same family structure: Japan and Korea.⁶ Todd observed the same later marriage age of women in Japan at around the same date as in the European cases and later in the 20th century in Korea. The results are similar some generations later except in North Korea due to unfavorable formal institutions.

In family types that are not characterized by authority, such as Anglo-Saxon countries, children enjoy more freedom. Children leave early to settle in new households and are more independent of their parents and vice-versa. In medieval English families, for example, children were easily able to obtain their own homes due to the dominance of farm workers employed by large farms owned by few landowners. This led to an early labor market that did not exist in areas where agriculture activities relied on small family farms without employees. These weak ties between parents and children in the traditional English family led to problems of poverty concerning mainly the elderly (isolated from their children) and explains the precocity of the English Poor Laws with respect to comparable countries (Smith, 1984).

In most Muslim countries, the family is not authoritarian despite being clanic. This is due to the specific practice of endogamy. In "Arab marriages" the preference is for marriage between first cousins and if possible the children of two brothers. From the day a girl is born, she is intended in marriage to her older cousin. In many customs, the male cousin enjoys a type of right over his female cousin (Chelhod, 1965). The Koran allows this arrangement as nothing prevents marriage between first cousins. Today, the rate of marriage between first cousins, close to zero in a large part of the world (Bittles, 1994), is around 15% in Turkey and 50% in Afghanistan but also in the cities of Karachi (Pakistan) and Khartoum (Sudan). Even in

⁵ As mentioned in the introduction, Todd (1983) explains the success of Communism in areas dominated by this family type combining parental authority and the equality of brothers living in large family groups.

⁶ The traditional Jewish family also respects this same structure.

wealthy Riyadh, capital of Saudi Arabia, the rate is 42.3% (Todd, 2011: 517). As a consequence, and including marriages with more distant cousins, almost all individuals remain attached to a larger family group. This practice leads to large kinship groups with strong ties called clan or tribe. Again, the Koran supports this large family group since the rules of inheritances are not only from one generation to the next but states the spread of wealth in many shares distributed to all the members of the family group. Greif (1993, 2006) and Greif and Iyigun (2013) highlighted the consequences of clanic organization as opposed to the individualism of European family structures.⁷

However, the clanic organization of the “Arab family” does not require any authority. There is no need for a family chief to decide who is allowed to marry who (the most important decision in human relations) since the choice of couples is the result of traditional practice. Conversely, in the Stem or Communitarian types, when a child brings a spouse into the parental household, the parents are allowed to grant consent to the new “foreign” member of the family. In the “Arab marriage”, the choice of the spouse in this custom transforms fathers and uncles into passive executors of rules. The Arab family is characterized by neither parental AUTHORITY nor only that of the father.



Figure 1. Countries where the family type shows strong parental authority over children

⁷ This effect of the family model on the way humans cooperate (clan versus corporations in a broad sense) is complementary to our approach. However, this paper focuses only on the effects of family structures on productivity. Exogamy could be an additional characteristic to take account of the propensity to freely cooperate whereas endogamy leads clanic organizations.

*High female status*⁸

In Justinian Roman law, girls enjoyed similar inheritance rights to boys. In Christian countries, the consent of wives is required by the Church since ancient times.⁹ Women actively participated in society and, for example, in large areas of Europe an active labor market existed for women before the industrial revolution and despite low economic development (De Moor and Van Zanden, 2010). Most Christian and Latin countries are thus characterized by high female status (WOMEN). Conversely, in countries characterized by the “Arab marriage” tradition, the status of WOMEN is low because they can be excluded from any contact with society outside of the clan (whereas exogamic marriage requires random matching), they can be married very young if they already have a male cousin and the new family does not require financial independence to settle since the clan provides resources. However, Arab marriage offers some comfort to women because they marry in a known environment, namely, the uncle’s family.

The relation between religion and family types is not as simple (see section 5 below). Russian families ascribe low status to women because only sons are allowed to bring their wives into the parental household (and not the other way round). Although Muslim, South-East Asian women enjoy high status since the family type is dissimilar to the standard Arab type. In sub-Saharan Africa, polygyny is very prevalent with few differences between religious affiliations. In these countries, polygyny is not limited to a minority of wealthy men as in some Arab countries. In black Africa, the percentage of women living in polygamous unions varies from 30 to 55% (Todd, 2011: 42). Comparing these African countries to a similar group of monogamous countries, Tertilt (2005) shows that women in polygynous countries on average marry 5.1 years earlier and have 2.2 more children than women in monogamous countries. The average age difference between husband and wife is 6.4 years compared to only 2.8 years in monogamous countries. Thus, the status of women in African countries is undoubtedly low. The traditional family types in China and the main part of India also ascribe low status to women leading to the current observation of the famous “missing women” (Sen, 1990) which is unresolved by the economic growth of these countries (Klasen and Wink, 2003).

⁸ Of course, the status of women remains low compared to men in almost all countries despite extensive changes compared to prior decades. However, the point is that the status of women was more or less lower in the traditional family type.

⁹ The rapt of women was forbidden by the council of Chalcedon in 451 (Canon 27, “The sacred synod decrees that those who carry off girls under pretext of cohabitation, or who are accomplices or co-operate with those who carry them off, are to lose their personal rank if they are clerics, and are to be anathematised if they are monks or layfolk”).

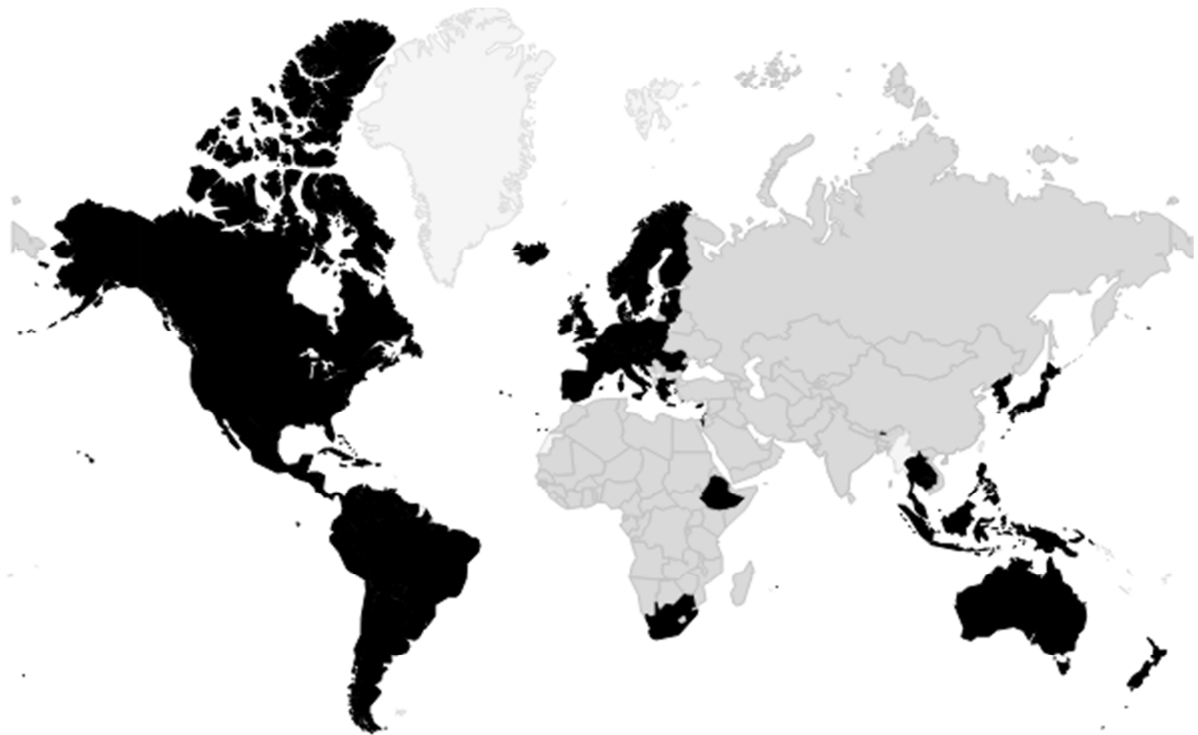


Figure 2. Countries where family type shows relatively high female status

Inequality among siblings

Potential inequality among sibling is prevalent in Northern Europe, in both German and English families. However, in the German case (as in Scandinavian, Austrian, Japanese, Korean or Swiss cases), this inequality is associated with parental authority (leading to the Stem family) whereas in England (as in Denmark and the Netherland) children enjoy more freedom (leading to the Absolute Nuclear type). Most inheritances are actually equalitarian although wealth can also be transferred in a non-equalitarian way. The “freedom to test” is evidence of this potential inequality. The English family concept was exported by emigrants to the US, Australia, New Zealand and less so South Africa. In most South-East Asian countries there are no rules forbidding unequal transfer and therefore these countries are also characterized by inheritance inequality.

In the rest of the world, strict equality at least among brothers is required. Brothers in the Muslim world are all strictly equal according to the Koran. Russian and China are also equalitarian in terms of inheritance and in terms of the possibility of each son bringing a wife into the parental home. Latin Europe is also equalitarian since at least the Roman law. Latin America, following the Iberian colonizers, adopted the rule of equality. This has been reinforced by the adoption of the French civil law where this equality is clearly affirmed. The potential mixed effect with legal origin is tested below.

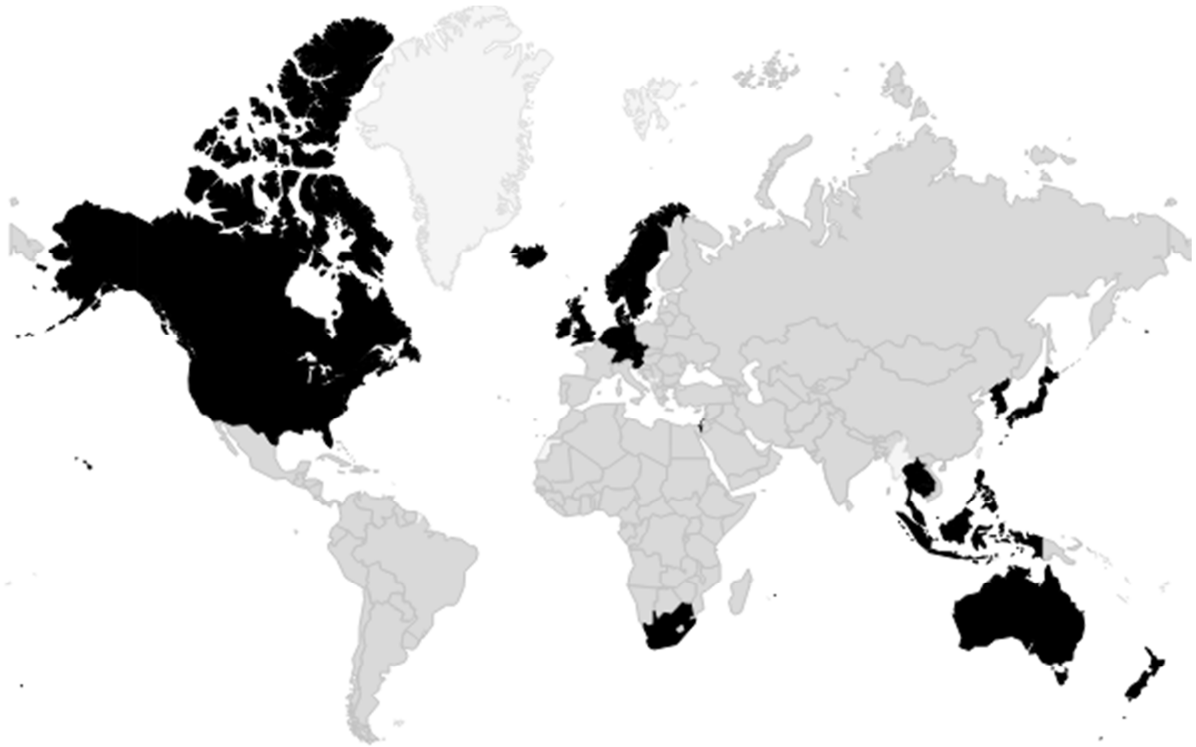


Figure 3. Countries where family type shows potential inequality among siblings

Family Score

Adding the three series of dummy variables, for each country we construct a FAMILY score ranging from 0 to 3. A few countries obtained a score of 3 including the Germanic and Scandinavian countries, Ireland, Israel and in Asia, Japan and the two Koreas. All these countries are among the richest in the world except North Korea where high propensity to development has not been expressed due to the socialist regime.

As a result of the presence of two positive family characteristics, a few countries achieved a FAMILY score of 2. These include England, and thus Anglo-Saxon countries (characterized by WOMEN and INEQUALITY) and a few other European countries such as Finland and the Baltic States. Most East-Asian countries scored 2 (WOMEN and INEQUALITY). A large group of countries had only one positive characteristic, high female status for Latin Europe and Latin America, parental authority for Eastern Europe, Russia, China and India. Another large group of countries had a zero rating, particularly most Muslim and sub-Saharan countries.

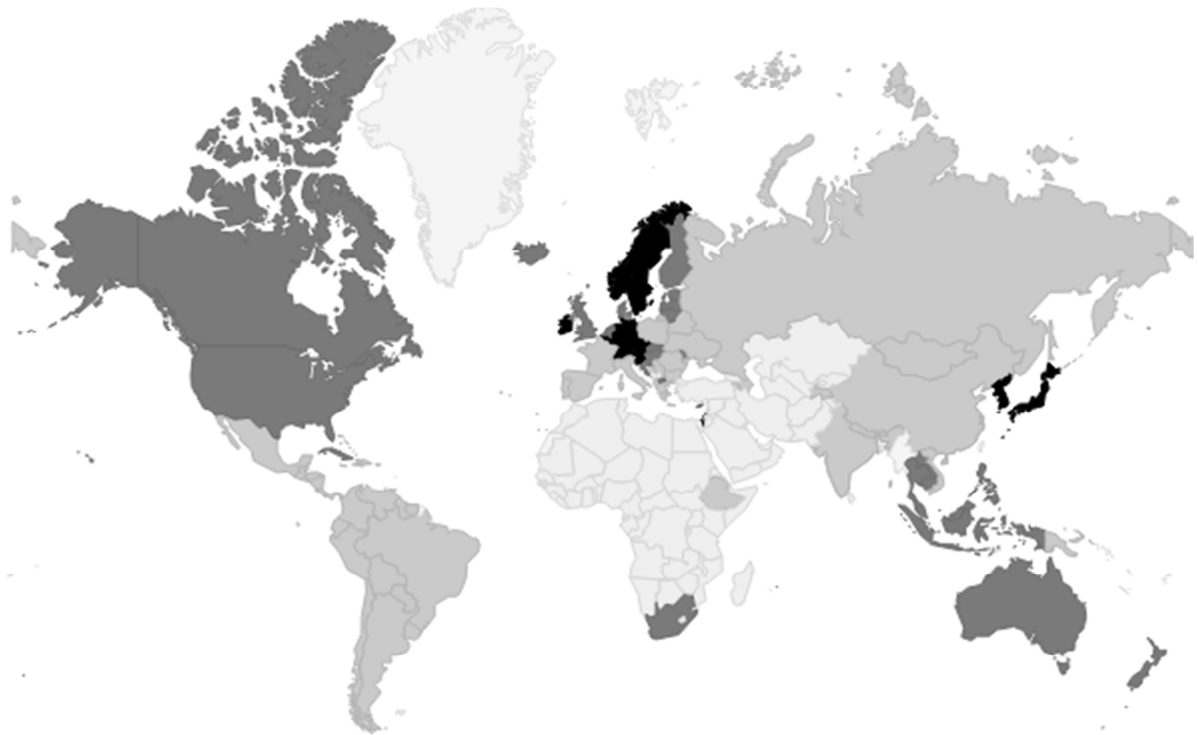


Figure 4. Family score according to propensity to invest
 (from 0 in pale grey to 3 in black)

4.2 Is family structure statistically associated with economic development?

Explaining economic development by family characteristics and other factors

To test the effect of family characteristics on current economic development controlling for other fundamentals factors, we ran this type of regressions:

$$\ln(y_i) = \alpha + \beta_1 F_i + \beta_2 X_i + \varepsilon_i$$

where y_i is the income per capita of country i in the year 2000, F_i is a series measuring a family characteristic or the FAMILY score of the country i (AUTHORITY, WOMEN, INEQUALITY and for most of the specification FAMILY score), X_i is a vector of control factors and, finally, ε_i is a country-specific disturbance term.

Table 1 shows the results of the simple OLS regressions of log income per capita in 2000 on the four family series without any control. Each of these series appears positively and significantly associated with current economic development on a full sample of 177 countries with data. The three theoretical links are combined in the FAMILY series score

which should thus have higher explanatory power. The correlation between this series and the GDP per capita is presented in Figure 5.

Table 1. Family characteristics and economic development

	log income per capita in 2000			
	(1)	(2)	(3)	(4)
WOMEN	1,264*** (0,0000)			
VERTICALITY		0,697*** (0,0009)		
INEQUALITY			1,281*** (0,0000)	
Family score				0,732*** (0,0000)
Observations	177	177	177	177
R ²	0,28	0,06	0,32	0,32

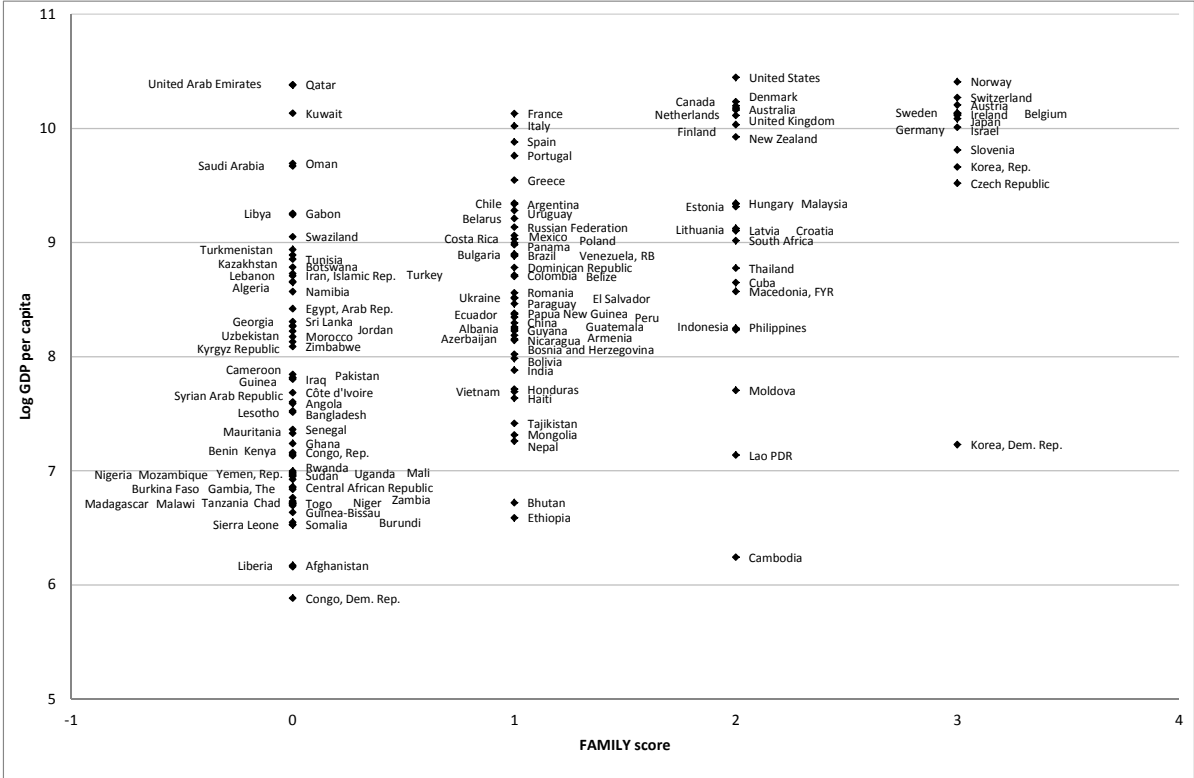


Figure 5. Family score and economic development

Is the family explanation robust to geography?

Beyond family characteristics, countries have different geographic conditions. Several geographic factors have been identified in literature as able to explain an important part of the current development (Spolaore and Wacziarg, 2013). We thus control for these geographic factors (Table 2). The first controls are for the agricultural productivity of land. As Ashraf and Galor (2013), we use three factors, (i) the percentage of arable land, (ii) absolute latitude and (iii), an index gauging the overall suitability of land for agriculture. The two last factors appear significant but only when a fixed effect is used to control for continents. Another geographic control factor is the mean distance to waterway since this highly affects the cost of exchange. This factor is significantly associated with lower economic development. Another geographic factor is the risk of malaria since the burden of this disease has been proven crucial (Gallup and Sachs, 2001). The higher the percent of population at risk of contracting malaria, the significantly poorer the country. By comparison, the percent of population living in a tropical zone and thus with associated diseases is not correlated with economic development. The last geographic control is a dummy variable for the Organization of the Petroleum Exporting Countries (OPEC), which is significantly associated with higher development.

According to Diamond (1997), the main factor explaining the divergence in economic development is having had a favorable agricultural environment centuries ago. The time since Neolithic transition (ancestry adjusted) can be accepted as exogenous and mainly geographic since agriculture was invented in a few countries (Middle-East, China, Central America) and then spread. For most countries, the arrival date of agriculture is mainly linked to distance from the place of invention. Our test rejects this factor as statistically linked to current economic development.

Crucially, our FAMILY variable score remains highly significant using this combination of geographic factors. The sign is as expected, i.e., the higher the FAMILY score, the more the country is economically developed. This combination of fundamental geographic factors and the effect of family structures explains a large part of differences in the current GDP per capita with a R^2 of 0.65.

A last control is a dummy for each continent. Our FAMILY score is partially correlated to continents. Since most African countries obtained a zero score, the FAMILY score could be a proxy for continents. We thus control in column (2) for a dummy for each continent. This also enables controlling for the Eurasian effect since according to Diamond (1997), Asian and European continents benefit from specific advantages. The FAMILY score remains significant at the 1 % level but the coefficient decreases.

Table 2. Family characteristics and economic development controlling for geography

	log income per capita in 2000	
	(1)	(2)
Family score	0,413*** (0,0000)	0,314*** (0,0007)
% of pop at risk of contracting malaria	-1,475*** (0,0000)	-1,366*** (0,0000)
% of pop. Living in tropical zones	-0,052 (0,8332)	0,095 (0,7199)
Mean distance to nearest waterway	-0,390** (0,0065)	-0,284** (0,0426)
log Neolithic transition (ancestry adjusted)	0,000 (0,5861)	0,000 (0,7586)
log percentage of arable land	-0,096 (0,2006)	-0,111 (0,1629)
log absolute latitude	0,076 (0,5118)	0,063 (0,5825)
log land suitability for agriculture	-0,134** (0,0731)	-0,153*** (0,0397)
OPEC member	0,429* (0,0645)	0,499** (0,0267)
Continent fixed effect	No	Yes
Observations	145	145
R ²	0,65	0,67

Adding controls for the nature of people

Recent literature identified three factors related to the nature of people explaining the differences we observe in economic development. The first is ethnic fractionalization controlled with the ethnic diversity index proposed by Alesina et al. (2003). The second control is the genetic diversity index developed by Ashraf and Galor (2013). The last control is the share of population of European descent. This factor could be problematic as Europeans may have brought their family structure with them and it correlates with our measure of FAMILY score. However, we use this factor as a control since Europeans may have also brought institutions other than family structure with them, more or less formal, which then spread in the country.

To control for these factors, we combine these with the geographic factors previously identified as significant. According to the results presented in Table 2, among the fundamental geographic factors, we retain the percentage of population living at risk of contracting malaria, the mean distance to the nearest waterway, the agricultural suitability of land and a dummy for OPEC members.

The results of these controls for the nature of people are presented in Table 3. Ethnic fractionalization (Column 2) and share of European descent (Column 3) are confirmed as significant with the expected sign but genetic diversity (Column 4) would seem to be devoid of correlation. More importantly, the FAMILY score always remains highly significant with the expected sign even when including these three factors together (Column 5).

Table 3. Family characteristics and economic development controlling for geography and the nature of people

	log income per capita in 2000				
	(1)	(2)	(3)	(4)	(5)
Family score	0,424*** (0,0000)	0,400*** (0,0000)	0,269*** (0,0008)	0,420*** (0,0000)	0,235*** (0,0050)
% of pop at risk of contracting malaria	-1,508*** (0,0000)	-1,344*** (0,0000)	-1,181*** (0,0000)	-1,522*** (0,0000)	-1,010*** (0,0000)
log land suitability for Agriculture	-0,200*** (0,0001)	-0,197*** (0,0001)	-0,221*** (0,0000)	-0,179*** (0,0006)	-0,213*** (0,0000)
Mean distance to nearest waterway	-0,369*** (0,0083)	-0,319** (0,0226)	-0,329** (0,0116)	-0,385*** (0,0055)	-0,283** (0,0309)
OPEC member	0,389* (0,0803)	0,490** (0,0301)	0,526** (0,0124)	0,430** (0,0513)	0,637*** (0,0029)
Ethnic Fractionalization		-0,587** (0,0399)			-0,567** (0,0344)
% of pop. of European Descent			0,887*** (0,0000)		0,869*** (0,0000)
Genetic Diversity				135,490 (0,1281)	101,821 (0,2224)
Genetic diversity Squared				-92,863 (0,1402)	-71,481 (0,2257)
Continent fixed effect	No	No	No	No	No
Observations	145	145	145	145	145
R ²	0,65	0,66	0,70	0,66	0,70

4.3 Robustness check for countries with various family regimes

Our measures could be biased by the choice to attribute the dominant family type to a given country. Indeed, 27 countries show different family structures within their territories. Thus, we control for this simplification by re-running our measures but on a sub-samples after

excluding countries showing different family types.¹⁰ We focus on the most interesting specification, which includes all the control variables previously identified as significant except the European descent percentage since this may be correlated with the FAMILY score. The following table shows the regression using only the control factors (Column 1) and then adding the FAMILY score (Column 2). The FAMILY score is still highly significant on this sub-sample test and allows increasing the R² of the regression. We can thus conclude that the simplification of attributing the dominant family type to a country is not problematic.

Table 4. Robustness checks for countries with single family type

	log income per capita in 2000	
	(1)	(2)
Family score		0,374*** (0,0000)
% of pop at risk of contracting malaria	-1,557*** (0,0000)	-1,286*** (0,0000)
log land suitability for agriculture	-0,135** (0,0185)	-0,190*** (0,0005)
Mean distance to nearest waterway	-0,538*** (0,0005)	-0,350** (0,0174)
OPEC member	0,465* (0,0833)	0,604** (0,0159)
Ethnic fractionalization	-0,819** (0,0170)	-0,497 (0,1217)
Continent fixed effect	No	No
Observations	118	118
R ²	0,60	0,66

5. Is the family characteristic different from religious affiliation?

Family structures and religion are closely related¹¹ and thus family structure may just be a proxy of religion. The relation between the two phenomena appears more complex with three types of relations. In some regions, religion influences family structure and in some the opposite is true (i.e., family structures have influenced religion) while in others, religion and the family type observed are entirely independent.

¹⁰ The countries that were excluded because of the presence of several family types are Sudan, Madagascar, South-Africa, India, Canada, United-States, Israel, Greece, Spain, Portugal, Italy, United-Kingdom, France, Netherlands, Brazil, Mexico, Belize, El Salvador, Honduras, Costa-Rica, Guatemala, Nicaragua, Venezuela, Peru, Bolivia, Ecuador and Paraguay.

¹¹ Todd also excludes any correlation between family type and language. Indo-European languages cover many forms of family type, for example, the language in Iran is Indo-European but the family type is Arab.

The influence of religion on family structure is well-known, particularly in Islam where the Koran provides a complete set of rules to organize the family. The family type of many countries is largely influenced by the rules of Islam. According to Todd (2011: 30), the populations of Egypt and Maghreb were converted to their current family type at the same time as they were converted to Islam and then to the Arabic language. The Church is another important source of rules affecting family structure. For example, the relatively high status of women in Christian countries can be linked to the influence of the Church. The rapt of women was forbidden by the council of Chalcedon in 451 (see footnote 9). Polygamy and especially the Roman practice of *concubine* were forbidden by the Council of Toledo in 400 leading to the publication of banns as a means of publicly recognizing the official wife. Gradually, the civil laws in Europe were adjusted to the canons of the Church and after the 10th century, marriage would be governed by canonic law and considered a sacrament. Thus, the wife's full and free consent to marriage is a strict obligation although the consent of parents is not (Chénon, 1929: I.86). According to Greif (2006), the European family system based on individuals and not on clans derived from the Church. Indeed, Christian attachment to the principle of exogamy was very explicit as indicated by numerous councils and the canon law; here continuity with Roman practices is absolute. In the City of God, St. Augustine assumed that extending the incest taboo was a constituent part of progress (St. Augustine, 413: XV.16). Several Councils banned marriage between cousins of different degrees or even any degree when parenthood is common (Council of Rome of 721, canons 5-9).

There are also many cases of independence between religion and family structure. Despite being Muslim, Albanians are exogamous with few marriages between cousins (Todd, 2011: 467). By contrast, the Christians of Beyrouth (Lebanon) frequently marry cousins (around 10% of marriages).¹² Despite being Christian, the status of WOMEN in Georgia and Armenia is very low even today as demonstrated by the gender ratio observed in 2000 which is respectively 118 and 120 boys for 100 girls due to selective abortions (Todd, 2011: 487). The most demonstrative case of independence between religion and family structure is South-East Asia. Most inhabitants of Burma, Thailand, Laos, Cambodia, Malaysia, Philippines and Java enjoy the same family type whether Muslim, Christian or Buddhist.

However, pre-existing family structures have also influenced the religions we observe today. Specific forms of religion became dominant in areas where specific forms of family types already existed. For example in Europe, Protestantism is observed in areas of the Stem Type (combination of AUTHORITY and INEQUALITY) according to Todd (1984: 256). This relationship is confirmed in France as Protestantism succeeded mainly in the south of France where the family type is similar to the German whereas the rest of France, with other family types, remains highly Catholic (Le Bras and Todd, 1981: 374). According to Todd (1984),

¹² However, the rate for Muslims is 21.5%.

Islam became the dominant religion where the “Arab family” was already present as the family rules of the Koran are compatible with this specific family type. On the status of WOMEN for example, according to Islamic law in the Sunni version, girls inherit a lower share than boys but in a large part of the Arab world, this rule is not respected and girls are totally excluded from inheritance repartition.¹³

As a consequence, there is not a simple causal relation between family structure and religion but three possible relations. Family type as a consequence of religion is one of three cases of relations. In this case, the family structure is not the fundamental factor reducing the general explanatory power of family characteristics. To assess whether the others two relations are significant (independence and causal link from family structure to religion) we control for the share of the three main religions in the population of each country. In the following regressions, we add the share of population that is Protestant, Catholic and Muslim for each country. Column (1) of Table 5 shows that Catholicism and Protestantism are positively and significantly associated with economic development but Islam is not. Despite the presence of religion, the FAMILY score in Colum (2) remains highly significant and increases the R².

Table 5. Family characteristics and economic development controlling for geography, the nature of people and religion

	log income per capita in 2000	
	(1)	(2)
Family score		0,305*** (0,0003)
% of pop at risk of contracting malaria	-1,670*** (0,0000)	-1,416*** (0,0000)
log land suitability for agriculture	-0,221*** (0,0003)	-0,218*** (0,0002)
Mean distance to nearest waterway	-0,392*** (0,0040)	-0,282** (0,0331)
OPEC member	0,430* (0,0547)	0,494** (0,0217)
Ethnic fractionalization	-0,683** (0,0149)	-0,554** (0,0398)
% of pop. of Protestant	1,172*** (0,0010)	1,043*** (0,0022)
% of pop. of Catholic	0,414** (0,0417)	0,508*** (0,0097)
% of pop. of Muslim	-0,375 (0,1294)	-0,026 (0,9182)
Continent fixed effect	No	No
Observations	145	145
R ²	0,67	0,70

¹³ The Shiite law is even more favorable (Todd, 2011: 487), see also, Weldon and Htun (2012)

6. Is the effect of family structure direct or via more formal institutions?

As explained in section 3, family characteristics have theoretical effects on economic development due to the different propensity to invest in physical and human capital. However, family structure could influence society to build specific formal institutions. Perhaps the formal institutions of a given country mirror the family characteristics. Galasso and Profeta (2010) provide strong evidence of this kind of phenomenon.

We obtain an indication on the importance of the institutional channel compared to the direct effect of family characteristics by considering how β_1 changes when adding a factor measuring the quality of institutions. If family structure is related to current economic development through the formal institution channel, the coefficient β_1 of the FAMILY score will decrease when controlling for formal institutions.

Table 6 provides a test of the formal institution channel. In column (1) we run a regression comparable to the previous. In column (2) we add a measure of the quality of institutions as captured by the social infrastructure index of Hall and Jones (1999). Due to a lower number of countries covered by this index, the sample decreases to 108 countries. The coefficient of the FAMILY score decreases implying that part of the explanatory power works through the quality of institutions. However, the coefficient of the FAMILY score remains highly significant.

A last set of controls considers legal origin since this institutional characteristic has been identified as able to explain differences in economic development (La Porta et al., 2008). For many countries, especially in Europe or those freely choosing a legal regime (such as Latin America for French civil law or several countries for the Socialist regime), the legal regime could also be the result of the fundamental factor of family characteristics. Of course, for countries that have inherited their institutions from colonizers (Acemoglu et al., 2001) the current legal origin has no link with family structures.

In column (3), we run the same regression as in column (1) but with the full sample of countries and in column (4) add a dummy for British, French and Socialist legal origin.¹⁴ British and French legal origin do not have a significant effect but Socialist origin is significantly associated with lower economic development. More importantly, our FAMILY score remains highly significant with only a modest decrease of this coefficient meaning that the legal origin variable is a very limited channel, if any, of the impact of family characteristics.

¹⁴ We do not use German and Scandinavian legal origin as the number of cases is too small.

Table 6. Family characteristics and economic development controlling for geography, the nature of people and formal institutions

	log income per capita in 2000			
	(1)	(2)	(3)	(4)
Family score	0,567*** (0,0000)	0,303*** (0,0003)	0,400*** (0,0000)	0,393*** (0,0000)
% of pop at risk of contracting malaria	-1,146*** (0,0000)	-0,960*** (0,0000)	-1,344*** (0,0000)	-1,483*** (0,0000)
log land suitability for agriculture	-0,150*** (0,0027)	-0,089** (0,0469)	-0,197*** (0,0001)	-0,159*** (0,0018)
Mean distance to nearest waterway	-0,354** (0,0821)	-0,293 (0,1025)	-0,319** (0,0226)	-0,182 (0,2026)
OPEC member	0,281 (0,1617)	0,371** (0,0369)	0,490** (0,0301)	0,463** (0,0354)
Ethnic fractionalization	-0,555** (0,0496)	-0,465* (0,0616)	-0,587** (0,0399)	-0,570** (0,0448)
Social Infrastructure		1,749*** (0,0000)		
British Legal Origin				-0,226 (0,4463)
French Legal Origin				-0,300 (0,3116)
Socialist Legal Origin				-0,748*** (0,0091)
Continent fixed effect	No	No	No	No
Observations	108	108	145	145
R ²	0,78	0,83	0,66	0,68

7. The direction of causality: the reversal of fortune of the primitive family

One could ask if the correlation we have demonstrated between family characteristics and economic development is due to reverse causality i.e., economic development causes specific family characteristics. This potential reverse causality is easily rejected by the history of family types where anthropologists considered a variety of evidences in the study of the long-term history of family structures. This analysis is possible using old documents such as old codes (including the first, the Hammurabi code that deals with many aspects of family life) and contracts in the archives especially sales contracts showing whether sales after death included all siblings or one specific heir to assess INEQUALITY among siblings and whether the wife signed alongside her husband for the status of WOMEN.

In the absence of documents, more original evidence is required. For example, prehistoric human remains enable assessing the status of WOMEN. Indeed, the genetic kinship of male and female human remains shows the relation between husband and wife (matri, patri or

billocality). In a patrilocal family structure, the wife joins the husband's family meaning low status of WOMEN whereas when status is high the husband can join the wife's family. Statues or sculptures of women can also be used to measure female status according to their number, the importance of the decorations compared to those of men and the activities represented. Same observations were obtained from tombs. INEQUALITY among brothers can also be supported by family representation where one of the brothers is put forward.

Reverse causality (i.e., from economic development to family type) can be rejected by the timeline. The family types we observe and use in this study existed in most countries centuries prior to economic takeoff. The family types precede economic development and thus the causality is from family types to economic development. This does not mean that family structures are fixed but that they move very slowly compared to other more formal institutions (level 1 institutions according to Williamson, 2000).

Moreover, Todd (2011) demonstrated a reversal of fortunes in the family types. The history of family structures shows that the characteristics most adapted today for economic growth are actually the most primitive forms of family organizations. Specifically, the English family type is similar to that of hunter-gatherers (Todd, 2011: 19). Many hunter-gatherers are associations of nuclear families in a horde, which is anthropologically similar to the association of nuclear families observed in villages or cities today in Europe. More generally, Europe due to its peripheral location in Eurasia is a conservatory of primitive forms of family organizations.

Countries characterized by primitive forms of family types enjoyed a complete reversal of fortune. The losers of yesterday are the winners of today. The date of first writing (the beginning of history) is a good measure of past success. The oldest Japanese text (the Kojiki) only dates back to 712 and the non-Romanized European even later: the 8th century for the eastern part of Germany (following the Charlemagne conquest), the 10th-11th century for Russia, around one century later for Scandinavian areas and only in the 13th-14th century for the Baltic countries. These countries clearly lagged behind China, India and Mesopotamia (around -3300) and Egypt (-3000). However, these countries with primitive family structures are now incomparably wealthier than the winner of yesterday.

According to Todd (2011), prior to the modern economic takeoff there was a linear history of family structures from primitive forms to more complex organizations. The primitive family form consists of small groups of nuclear families of hunter-gatherers. Successive innovations took place to provide stronger ties leading to more complex family forms. A first step in the complexity led to the Stem family (parental authority and inequality among siblings since only one married son remains in the parental home), then to the Communitarian family (parental authority and equality among siblings since all sons can marry and bring their spouses into the parental household). The complexity of family types moved from the

nuclear form (one couple) to the Stem form (two couples) and to the Communitarian form (three couples or more). The “Arab marriage” constitutes the third and ultimate innovation in the complexity of family organizations (Todd, 2011: 518).

Complex family forms were adapted to historical economic contexts especially in times of war. This complexity clearly attached each household to only one filiation, that of the father, leading to a strong cohesion of several large groups. This clear affiliation removes the possibility to claim multiple affiliations which is possible when the new household could be close to both the husband’s and the wife’s families. Groups enjoying clear affiliations obtained an advantage in case of conflicts. The “Arab marriage” where the children of two brothers marry provides an even stronger affiliation since the husband’s and the wife’s families are actually the same one. This system leads to very extended family groups enjoying a strong cohesion.

The military efficiency of these family forms has recently been demonstrated when modern occidental armies fought the clans in Afghanistan, Iraq or Somalia. A complex family form can also be a successful way of doing business as demonstrated for example by the medieval Italian bank or Rothschild in the 19th century with several brothers established in different places with strong links. However, this is unfavorable to modernity as it compromises the building of non-familial hierarchies (states or administrations such as corporations). The clan structure is in conflict with vertical hierarchies rendering their construction difficult. Even when a hierarchy seems to exist, in reality it is often controlled by a clan as in many Arab states. Modern hierarchies require individuals free of other ties.

Thus, there is no universally better family type. Depending on the context, the characteristics of one family type can be an advantage or an inconvenience. Another interesting example is the English family characterized by inequality among siblings but not parental authority. This type was better to launch the industrial revolution since young English people were free (no attachment to the parental household) to go work for new industries seeking labor. Young English people could easily move from their familial land since the separation of children and parents was the norm. Conversely, moving from the familial land was considered an unnatural rupture of a family characterized by authority. This enabled a faster rural exodus to industrial cities in England than in Germany.¹⁵ For the same reason, the English family was also efficient in colonization where colonizers were intended to seize opportunities of moving and taking risks (where inequality among siblings is favorable). However, in a later stage of economic development, the economy required more qualified people and technological changes increased the demand for human capital as affirmed for example by Doepke and Tertilt (2009). In this new context, the German model was better because parental authority over children staying at home for longer allowed a

¹⁵ On the relation between modernity and the British family, see Macfarlane (1978).

higher investment in human capital. At this stage of development, the German family structure became more adapted to the new needs. This could explain the rise of Germany compared to England during the second industrial revolution.

Conclusions

This paper makes two key contributions. First, we introduce three theoretical links from family characteristics to economic development through the propensity to invest in both human and physical capital. Parental AUTHORITY leads to higher investments in human capital since children remain under the authority of their parents for longer. The high status of WOMEN also allows investing more in human capital thanks to the crucial role played by mothers in their children's education. INEQUALITY among sibling enables investing more in physical capital since a critical size of wealth is maintained and the seizure of opportunities is not discouraged. These theoretical links are mainly a formalization of the work of E. Todd.

The second contribution of this paper is in testing the explanatory power of these theoretical relations in terms of the differences we observe in current outcomes in different countries across the world. The presence of these favorable characteristics is associated with higher GDP per capita. This association is robust to the control of factors previously identified in literature that are able to explain economic development, namely, geography, ethnic fractionalization, genetic diversity, main religion and legal origin. These family characteristics would seem to have a mainly direct effect rather than through building better institutions as the family factor is also robust to the inclusion of a quality of institution index. It would be interesting to test these family characteristics in countries characterized by different types of family structures such as Spain, France and especially India.

In terms of policy recommendations, our findings indicate that economic development is a consequence of the deep informal institution which is the family type. These informal institutions are very slow moving and even political decisions to change them may not be considered rightful. Perhaps changes in family type converging to that observed in the US are already underway? According to Reher (1998), "changes of this past century have tended to make cultures and mentalities more uniform". Todd and Courbage (2007) found evidence of these kinds of changes. There is some evidence of the transference of preferences through television. Chong et al. (2008) found that exposure to soap operas in Brazil led to a decrease in fertility. Oster and Jensen (2009) showed that attitudes to the status of women changed with the arrival of cable television in rural India. Perhaps Hollywood movies and soap operas have played a key role for decades in changing family characteristics and thus sustaining economic development?

References

- Acemoglu, D., Johnson, S. and Robinson, J.A. (2001), The Colonial Origins of comparative Development: An Empirical Investigation. *American Economic Review*, 91(5): 1369-1401.
- Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S. and Wacziarg, R. (2003), Fractionalization. *Journal of Economic Growth*, 8(2): 155-94.
- Alesina, A. and Giuliano, P. (2010), The Power of the Family, *Journal of Economic Growth*, 15: 93-125.
- Alesina, A., Algan, Y., Cahuc, P. and Giuliano, P. (2010), Family Values and the Regulation of Labor, *NBER working Paper*, n. 15747.
- Alesina, A. and Giuliano, P. (2011), Family Ties and Political Participation, *Journal of the European Economic Association*, 9(5): 817-839.
- Alesina, A. and Paola, G. (2014), Family Ties in: *Handbook of Economic Growth*, vol. 2, chap. 4, pages 177-215, Elsevier.
- Algan, Y. and Cahuc, P. (2005), The Roots of Low European Employment: Family Culture? in NBER International Seminar on Macroeconomics, Pissarides, C. and Frankel, J. (eds), Cambridge, MIT Press.
- Ashraf, Q. and Galor, O. (2013), The 'Out of Africa' Hypothesis, Human Genetic Diversity, and Comparative Economic Development, *American Economic Review*, 103(1): 1-46.
- Banfield, E. C. (1958), *The Moral Basis of a Backward Society*, Free Press, Glencoe.
- Bertocchi, G. and Bozzano, M. (2014), Family Structure and the Education Gender Gap: Evidence from Italian Provinces, IZA Discussion Paper No. 8347.
- Bittles, A (1994), The Role and Significance of Consanguinity as a Demographic Variable. *Population and Development Review*, 20(3): 561-84.
- Bisin, A., and Verdier, T. (2000), Beyond the melting pot: Cultural transmission, marriage, and the evolution of ethnic and religious traits. *Quarterly Journal of Economics*, 115(3): 955-988.
- Chelod J. (1965), La mariage avec la cousine parallèle dans le système arabe, *L'Homme*, 5(3/4): 113-173.
- Chénon, E. (1929), *Histoire Générale du Droit Français*, Paris, Sirey.
- Chong, A., S. Duryea, and La Ferrara, E. (2008), Soap Operas and Fertility: Evidence from Brazil. CEPR Discussion Papers, vol. 6785.
- De Moor, T. and Van Zanden, J. L. (2010), Girl Power: The European Marriage Pattern and Labour Markets in the North Sea Region in the Late Medieval and Early Modern Period, *Economic History Review*, 63: 1-33.
- Diamond, J. (1997) *Guns, Germs, and Steel: The Fates of Human Societies*, New-York: Norton.
- Dilli, S., Rijpma, A. and Carmichael, S. (2013), Development Versus Legacy: The Relative Role of Development and Historical Legacies in Achieving Gender Equality. CESifo Working Paper No. 4411.
- Duflo, E. (2012), Women Empowerment and Economic Development, *Journal of Economic Literature*, 50: 1051-1079.
- Durantón, G., Sandal, R. and Rodriguez-Pose, A. (2009), Family Types and the Persistence of Regional Disparities in Europe, *Economic Geography*, 85: 23-47.
- Doepke, M. and Tertilt, M. (2009), Women's Liberation: What's in It for Men?, *Quarterly Journal of Economics*, 124(4): 1541-1591.

- Doepke, M., Tertilt, M. and Voena, A. (2012), The Economics and Politics of Women's Rights, *Annual Review of Economics*, 4(1): 339-372.
- Esping-Andersen, G. (1999), *Social Foundation of Post-Industrial Economies*, Oxford: Oxford University Press.
- Foreman-Peck, J. (2011), The Western European marriage pattern and economic development, *Explorations in Economic History*, 48(2): 292-309.
- Fourastié, J. (1979), *Les Trente Glorieuses, ou la révolution invisible de 1946 à 1975*, Paris: Fayard.
- Galasso V. and Profeta P. (2010), When the State Mirrors the Family: The Design of Pension Systems, CESifo Working Paper 3191.
- Galor, O. (2011), *Unified Growth Theory*, Princeton: Princeton University Press.
- Gallup, J. L. and Sachs, J.D. (2001), The Economic Burden of Malaria, *American Journal of Tropical Medicine and Hygiene*, 64 (1–2): 85–96.
- Gallup, J. L., Sachs, J. D. and Mellinger, A. D. (1999), Geography and Economic Development, *International Regional Science Review*, 22 (2): 179–232.
- Greif, A. (1993), Contract Enforceability and Economic Institutions in Early Trade: the Maghribi Trader's Coalition, *American Economic Review*, 83(3): 525-48.
- Greif, A. (2006), Family Structure, Institutions and Growth: the Origins and Implication of Western Corporations, *American Economic Review*, 96.2: 308-312.
- Greif, A. and Tabellini, G. (2012), The Clan and the City: Sustaining Cooperation in China and Europe, Working Papers 445, IGER.
- Greif, A. and Iyigun M. (2013), Social Organization, Violence and Modern Growth, *American Economic Review*, 103(3): 534-38.
- Grossbard, A. (1978), Towards a Marriage between Economics and Anthropology and a General Theory of Marriage, *American Economic Review*, 68(2): 33–37.
- Guinnane, T. (2011), The Historical Fertility Transition: A Guide for Economists, *Journal of Economic Literature*, 49(3): 589-614.
- Guiso, L., Sapienza, P. and Zingales, L. (2006), Does Culture Affect Economic Outcomes?, *Journal of Economic Perspectives*, 20(2): 23{48.
- Hall, R. E., and Jones, C. (1999), Why Do Some Countries Produce So Much More Output Per Worker Than Others?, *Quarterly Journal of Economics*, 114 (1): 83–116.
- Heston, A., Summers, R. and Aten, B. (2006), *Penn World Table Version 6.2*, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.
- Jacoby, H. G. (1995), The Economics of Polygyny in Sub-Saharan Africa: Female Productivity and the Demand for Wives in Côte d'Ivoire. *Journal of Political Economy*, 103(5): 938–71.
- Klasen, S. and Wink, C. (2003), Missing Women': Revisiting the Debate, *Feminist Economics*, 9: 263–299.
- Laslett P., Wall, R. and others (1972), *Household and Family in Past Time*, Cambridge University Press.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. W. (1999), The Quality of Government, *Journal of Law, Economics, and Organization*, 15 (1): 222–79.
- La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2008), The Economic Consequences of Legal Origins, *Journal of Economic Literature*, 46(2): 285-332.
- Le Bras H. and Todd, E. (1981), *L'invention de la France*, Paris: Hachette.

- Le Play, F. (1884), *L'organisation de la famille selon le vrai modèle signalé par l'histoire de toutes les races et de tous les temps*. Tours: A. Mame.
- Mamadouh, V. (1999), A political-cultural map of Europe. Family structures and the origins of differences between national political cultures in the European Union, *GeoJournal*, 47: 477-486.
- Macfarlane, A. (1978), *The Origins of English Individualism*, Oxford: Basil Blackwell.
- North, D. (1991), Institutions, *Journal of Economic Perspectives*, 5(1): 97–112
- Oster, E. and Jensen, R. (2009), The Power of TV: Cable Television and Women's Status in India, *Quarterly Journal of Economics*, 124 (3): 1057–1094.
- Putterman, L. and Weil, D. N. (2010), Post-1500 Population Flows and the Long-Run Determinants of Economic Growth and Inequality, *Quarterly Journal of Economics*, 125 (4): 1627–82.
- Reher, D. S. (1998), Family ties in Western Europe: Persistent Contrasts, *Population and Development Review*, 24(2): 203-234.
- St. Augustine (413), *De Civitate Dei contra paganos*, Hippo.
- Scott Smith, D. (1993), The curious history of theorizing about the history of the western nuclear family, *Social Science History*, 17(3): 325-353.
- Sen, A. (1990), More than 100 Million Women are Missing, *The New York Review of Books*.
- Smith, R.M. ed. (1984), *Land, Kinship, and Life-Cycle*, Cambridge: Cambridge University Press.
- Solow, R. M. (1956), A Contribution to the Theory of Economic Growth, *Quarterly Journal of Economics*, 70.1: 65–94
- Spolaore, E. and Wacziarg, R. (2013), How Deep Are the Roots of Economic Development?, *Journal of Economic Literature*, 51(2): 325-369.
- Tertilt, M. (2005), Polygyny, Fertility, and Savings, *Journal of Political Economy*, 113(6): 1341-1371.
- Todd, E. (1983), *La Troisième Planète*, Paris: Seuil. English version : Todd, E. (1985), *Explanation of Ideology: Family Structure & Social System*, London; Blackwell.
- Todd, E. (1984), *L'enfance du monde*, Paris: Seuil. English version : Todd, E. (1987), *The causes of progress: culture, authority, and change*, London: Blackwell.
- Todd, E. (2011), *L'origine des systèmes familiaux Tome 1 L'Eurasie*, Paris: Gallimard.
- Todd, E. and Courbage, Y. (2007), *Le Rendez-vous des civilisations*. Paris: Seuil. English version: Todd, E. and Courbage, Y. (2011), *A Convergence of Civilizations. The Transformation of Muslim Societies around the World*, New-York: Columbia University Press.
- Tur-Prats, A. (2014), Family Types and Intimate-Partner Violence: A Historical Perspective, working paper.
- Weldon, L. and Htun, M. (2012), Sex Equality in Family Law: Historical Legacies, Feminist Activism, and Religious Power in 70 Countries. <https://openknowledge.worldbank.org/handle/10986/9204>.
- Williamson O. (2000), The New Institutional Economics: Taking Stock, Looking Ahead, *Journal of Economic Literature*, 38: 595-613.