Online Appendix for Growing Collectivism: Irrigation, Group Conformity and Technological Divergence

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This Online Appendix accompanies the paper *Growing Collectivism: Irrigation, Group Conformity and Technological Divergence.* Section 1 reports additional figures. Section 2 contains additional tables, including descriptive statistics and further estimation results. Section 3 describes the data and the construction of the main variables.

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1 Variable Description

2 Variable Definitions and Sources

2.1 Historical Societies in the Standard Cross Cultural Sample

Figure 2 uses information for historical societies from the Standard Cross Cultural Sample. All outcome measures are scaled to vary between 0 and 1.

Irrigation is based on variable variable V232 that evaluates the intensity of agriculture in six classes, where class 6 identifies societies that traditionally used irrigation.

Collectivism is the difference between parental inculcation of obedience minus self-reliance, averaged over children of all ages and sexes. Each of the two variables is coded on a scale from 0 to 9, where 0 indicates "no inculcation, or opposite trait" and 9 "extremely strong inculcation".

Mobility is taken from variable V786 that codes mobility of adults in three categories, where 1 indicates low mobility (adults generally attached to particular communities throughout their lives) and 3 high mobility (movement between communities is quite common for adults).

Enforcement is based on variable V776 and measures on a scale from 1 to 3 the presence of formal sanctions and enforcement of community decisions.

Elections is based on V77, and takes on the value 1 if local headmen are chosen via elections or informal consensus, and 0 otherwise.

Centralization is based on variable V237 and measures the number of jurisdictional hierarchies beyond the local community, ranging from zero to four levels.

Technology is the average of *Writing*, *Specialization*, *Transport*, and *Money*. *Writing* (V149), *Specialization* (V153), *Transport* (V154), and *Money* (V155), measure the presence and sophistication of technologies on a scale from 1 to 5.

Urbanization is based on variable V152 and measures the degree of urbanization defined as the mean size of local communities in five different categories, ranging from less than 100 people to more than 1000 people.

2.2 Historical Variables from the Ethnographic Atlas

Ancestral Irrigation is based on variable V28 that assesses the intensity of agriculture in six classes: 1 No agriculture - 2 Casual agriculture, incidental to other subsistence modes - 3 Extensive or shifting agriculture, long fallow, and new fields cleared annually - 4 Horti-culture, vegetal gardens or groves of fruit trees - 5 Intensive agriculture, using fertilization, crop rotation, or other techniques to shorten or eliminate fallow period - 6 Intensive irrigated agriculture. Irrigation is a dummy variable equal to 1 if v28 falls into category 6.

Of the 1,265 ethnic groups reported in the database, 126 fall into category 6, and 102 do not have any information on the type of traditional subsistence.

An important group for which information v28 is missing are the "Portuguese" that are widespread in Portugal and Brazil. I impute a value of 5 (intensive agriculture), which is consistent with historical and ethnographic accounts that describe the prominence of intensive agriculture, in particular in the densely populated North where the Ethnographic Atlas locates the Portuguese group (Brumfiel and Earle, 1987; Balmuth *et al.*, 1997; Cunha and Cunha, 2010; Stanislawski, 2014). Importantly, this imputation does not alter the average measure of ancestral irrigation for areas where the Portuguese are located, therefore the empirical results are identical with or without imputation.

Settlement Type is based on variable V30 and is coded in eight categories: 1 Nomadic or fully migratory - 2 Seminomadic -3 Semisendentary - 4 Compact but impermanent settlements - 5 Neighborhoods of dispersed family homesteads - 6 Separated hamlets, forming a single community - 7 Compact and relatively permanent settlements - 8 Complex settlements.

Political Complexity is based on variable V33 and is coded in five categories. 1 No levels (no political authority beyond community) - 2 One levels (e.g., petty chiefdoms) - 3 Two levels (e.g., larger chiefdoms) - 4 Three levels (e.g., states) - 5 Four levels (e.g., large states).

Mean Size of Local Community is based on variable V31 which is coded in eight categories: 1 Fewer than 50 people - 2 between 50-99 people - 3 between 100-199 people - 4 between 200-399 people - 5 between 400-1000 people - 6 1,000 without any town of more than 5,000 - 7 Towns of 5,000-50,000 (one or more) - 8 Cities of more than 50,000 (one or more).

Traditional Democracy is based on variable V72 and takes on the value 1 if local headmen are chosen via elections or informal consensus, and 0 otherwise.

Agricultural Dependence is based on variable V5 and measures dependence on agriculture in 9 classes, ranging from 0 to 100 %.

Share No Agriculture is based on variable V28 and measures the share ancestors that have not used agriculture.

Intensity of Agriculture is based on variable V28 and measures whether agriculture was intensive or not.

Traditional Plow Use is based on variable V39 and measures the share of ancestors that practiced plow agriculture.

Gathering is based on variable V1 and measures the dependence of ancestors on gathering in 9 classes, ranging from 0 to 100 %.

Hunting is based on variable V2 and measures the dependence of ancestors on hunting in 9 classes, ranging from 0 to 100 %.

Fishing is based on variable V3 and measures the dependence of ancestors on fishing in 9 classes, ranging from 0 to 100 %.

Animal Husbandry is based on variable V4 and measures the dependence of ancestors on animal husbandry in 9 classes, ranging from 0 to 100 %.

Clan Communities is based on variable V15 and measures the presence of clans.

States is based on variable V33 and measures the presence of states, i.e. a political organization with three or four levels.

Landed Elite is based on variable V66 and measures whether class differentiation is classified as Elite stratification.

2.3 Geographic Variables

If not stated differently, all geographic controls are evaluated within within a 200 kilometer radius of an ethnic group's location.

Irrigation Suitability is computed using the assessment of irrigation suitability for cereals into five irrigation impact classes by the FAO-GAEZ (Fischer *et al.*, 2002). The data is provided in grid format with 5-minutes longitude/latitude cells (about 9 x 9 km). The shape-file ("Plate 47") that contains the spatial information on irrigation classes is downloadable from http://webarchive.iiasa.ac.at/Research/LUC/GAEZ/.

To compute crop suitability under rain-fed and irrigated conditions, the FAO considers a wide range of local environmental characteristics, including climatic conditions (e.g., rain-fall levels, evapotranspiration), soil and terrain characteristics (e.g., soil textures, terrain slopes, elevation, forest areas), growth periods, and crop-specific environmental requirements for a total of 154 crop-types. The calculation of suitability under irrigation assumes that sufficient water for irrigation is available, and that irrigation infrastructure is in place.

Suitability for rainfed and irrigation agriculture is then used in 6 step algorithm to assess the impact of irrigation in each grid-cell (Fischer *et al.*, 2002).

Step 1: Determine the crop (or multiple crop combination) which maximizes expected cereal output under rain-fed conditions.

Step 2: Determine the crop (or multiple crop combination) which maximizes expected cereal output under irrigation conditions.

Step 3: Determine the fraction of land in each 5-minute latitude/longitude grid-cell that is assessed as very suitable or suitable under irrigation. Test whether the irrigable share exceeds a specified minimum threshold SHmin.

Step 4: Combine rain-fed and irrigated production so as to maximize total output in each grid-cell.

Step 5: Determine the ratio of potential cereal output under rain-fed and irrigation conditions to cereal potential under rain-fed conditions only.

Step 6: Aggregate results into 6 irrigation impact classes according to the following scheme:

- 1) Areas where rain-fed cereals can be cultivated but irrigation is impossible or irrigable share is below a specified threshold SHmin.
- 2) The irrigable share in a grid-cell exceeds the minimum threshold SHmin; irrigation increases potential cereal output of the respective grid-cell by less than 20 percent above rain-fed levels.
- 3) As for 2, but contribution of irrigation to grid-cell production is 20 to 50 percent.
- 4) As for 2, but contribution of irrigation to grid-cell production is 50 to 100 percent.

- 5) As for 2, but contribution of irrigation to grid-cell production is > 100 percent.
- 6) No rain-fed production possible and no or little suitability under irrigation.

I define land as suitable for irrigation in grid cell i if agricultural production increases by at least 50%, following the FAO assertion that "the potential contribution from irrigation is particular important in impact classes 4 and 5." (Fischer *et al.*, 2002):

$$s_i = \begin{cases} 1, & \text{if Impact} = \frac{\text{Potential Yields}_{Irrigation}}{\text{Potential Yields}_{Rain-Fed}} * 100 \ge 50\\ 0, & \text{otherwise} \end{cases}$$

Irrigation Suitability is the number of all cells that fall into irrigation impact classes 4 and 5, divided by the total number of cells suitable for agriculture. Formally, suitability in area r is defined as

Irrigation Suitability_r =
$$\frac{\sum_{i} s_{i,r}}{\text{Total Arable Land}_r}$$

Agricultural Suitability comes from Ramankutty *et al.* (2002) and evaluates the fraction of land that is suitable for agriculture, taking into account both climatic and soil constraints. The data is provided in grid format with cells of size 0.5 x 0.5 degrees (about 55 x 55 km).

Topical Climate (Arid Climate/Continental Climate/Temperate Climate) measures the fraction of land that is classified as tropical (arid/continental/temperate), based on the Koeppen-Geiger climate classifications. A digital map of the Koeppen-Geiger classifications for the world has been constructed by Kottek *et al.* (2006). See also http://koeppen-geiger.vu-wien.ac.at/present.htm.

Distance to River and *No. of Large Rivers* are computed using the ESRI layer package "World Major Rivers". *Distance to River* measures the shortest distance in kilometers from the approximate location of each ethnic group to a major river.

Distance to Coast measures the shortest distance in kilometers from the approx. location of each ethnic group to the coastline using the the Global Self-Consistent, Hierarchical, High-resolution Geography Database (GSHHG).

Altitude is the average of median elevation of cells of a 5 arc-minutes grid, taken from the FAO-GAEZ database.

Mean Precipitation measures average rainfall over the period 1901 to 2000, while *Precipitation Variability* is the standard deviation over the same period. *Mean Temperature* measures average temperature over the period 1901 to 2000. Climate data come from the TS 3.10.1 data set constructed by the Climatic Research Unit (CRU) of the University of East Anglia (Mitchell *et al.*, 2004).

Maria Ecology is constructed using the malaria ecology map provided by Kiszewski *et al.* (2004). Malaria ecology takes into account both the local climate and the presence of vector mosquitoes.

Soil Constraints and *Terrain Constraints* measure the severity of constraints to agriculture, ranging from no constraints, to very severe constraints. The variables constructed measure the percentage of ancestral land that falls into the "no constraints", "very few constraints" or "few constraints" categories. The underlying shapefiles are taken from FAO-GAEZ database and can be downloaded from http://webarchive.iiasa.ac.at/Research/LUC/GAEZ/

Ruggedness measures terrain ruggedness and is based on grid-cell-level data produced by Nunn and Puga (2012).

Rice Suitability is computed from raster data provided by the FAO-GAEZ database. Each raster file contains a suitability index for the specific crop on the scale from 1 to 8, where 1 indicates that the crop is not suitable, and 8 very high suitability. As the suitability index for irrigated rice is available only for intermediate (and higher) input levels for current cultivated land, I evaluate rainfed rice for the same input level and definition of lands to ensure comparability.

Caloric Suitability assesses potential crop yield across the globe, as measured in calories per hectare per year. The grid-cell data comes from Galor and Özak (2016).

Length of Small/Big Rivers comes from a the Rivers and Lake centerlines shapefile provided by Natural Earth Data. (https://www.naturalearthdata.com/downloads/10m-physicalvectors/10m-rivers-lake-centerlines/). As a rough proxy to classify rivers as small or large, I use information on the scale ranks in the map. Small rivers are defined as those for which the scale rank is larger than 4, while large rivers are those for which the scale rank is smaller or equal to 4.

Share of Area that is Cropland comes from the Global Agricultural Lands dataset, created by Ramankutty *et al.* (2010). The share of area that is cropland is evaluated for cities within a radius of 50km. The data is available here: (https://sedac.ciesin.columbia.edu)

2.4 Country Level Variables

Collectivism ranges from 0 to 100, where 100 characterizes the most collectivist, and 0 the most individualist countries. Countries that score high on the index value harmony and conformity, while countries with low scores value personal autonomy. The data is based on the work by Hofstede (2001), who initially surveyed employees of IBM, and it was later extended. The most recent version can be accessed via http://geert-hofstede.com/.

Individualism (Schwartz) measures the degree of individualism based on surveys of teachers and students conducted by Schwartz (1994, 2004). It is the first principal component of three individual variables: *Embededdness, Affective Autonomy*, and *Intellectual Autonomy*. *Embededdness* measures the degree of identification with groups. *Affective Autonomy* and *Intellectual Autonomy* measure the degree of control that individuals have over their choices, either in the pursuit of pleasure or ideas.

In-Group Favoritism is a composite indicator that measures the degree of compatriotism, nepotism, and familism in contemporary societies based on survey responses of citizens and managers by Van de Vliert (2011)

Restraint This is the inverse of the Indulgence vs. Restraint variable of Hofstede *et al.* (2010), ranging between 0 (indulgence) and 100 (restraint). Societies that score high on restraint regulate individual actions by strict social norms and prohibitions. The data is based on the work by Hofstede (2001). The most recent version can be accessed via http://geert-hofstede.com/.

Social Tightness measures the degree of norm heterogeneity and tolerance towards deviation in social norms. Strong social tightness indicates low tolerance for norm deviation, and rigidness towards norm compliance. The index has been created by Uz (2015) based on survey responses to the European and World Values Survey.

Linguistic Individualism measures subject prominence of languages, based on Meyer-Schwarzenberger (2015). Meyer-Schwarzenberger (2015) uses ten grammar variables to measure how much emphasis languages put on individual agency. To create the cross-country data, he links languages from the *Ethnologue* to the majority language of each country. The index is strongly correlated with cultural measures of collectivism, such as the Hofstede Collectivism score and Embededdness. See Meyer-Schwarzenberger (2017) for more information.

State Antiquity evaluates the existence of a supra-tribal state within present-day countries on a score from 0 to 50. Taken from Bockstette *et al.* (2002).

Ethnic Fractionalization measures the extent of ethnic fragmentation in a country based on data from the 1990's. Taken from Alesina *et al.* (2003).

Time since Neolithic Revolution measures the time passed since the transition to agriculture in 1000 years. Taken from Putterman (2008).

Latitude is the latitude of a country's capital, taken from Mayer and Zignago (2011).

Population densities in the year 1 AD, 1000 AD, and 1500 AD are taken from Ashraf and Galor (2013), who divide population taken from McEvedy and Jones (1978) by total land area.

Religious adherence is measured in 2010 and taken from The Association of Religion Data Archives.

Polity IV is an average of the polity2 variable that assesses the type of political regimes in countries (ranging from -10 (full autocracies) to +10 (full democracies)) averaged over different time periods. See also http://www.systemicpeace.org/polity/polity4.htm.

Protest Potential is computed from survey responses of the World Values Survey/European Values Survey Waves 2-6, following Nevitte (2014). Individual protest potential is the average of three dummy variables that identify whether the respondent has already/or would consider to a) sign a petition, b) participate in a boycott, c) participate in a demonstration. The country measure of *Protest Potential* is the average over all residuals obtained from individual level regressions of protest potential on individual characteristics (age, gender, marital status, education and survey wave fixed effects).

Income per capita is measured in 2000 and based on data from the World Bank Development Indicators.

Perc. Natives and *Perc. Europeans* is taken from Ashraf and Galor (2013), who use data from the World Migration Matrix, 1500-2000 of Putterman and Weil (2010).

Civil Conflict (1946-2004) measures the total number of civil conflict onsets taken from Strand (2006).

Conflict Intensity measures the extent of social, ethnic and religious conflicts in the years from 2005 to 2010 and is taken from the Bertelsmann Stiftung.

Land Inequality is taken from Bentzen et al. (2016) building on Frankema (2010).

Pathogen Prevalence measures the historical prevalence of 9 different pathogens. Taken from Murray and Schaller (2010).

Migratory Distance measures the great circle distance from Addis Ababa (Ethiopia). Taken from Ashraf and Galor (2013).

Predicted Genetic Diversity measures the expected diversity as predicted by the migratory distance from East Africa, and is taken from Ashraf and Galor (2013).

Genetic distance to the U.S. (weighted) is taken from Spolaore and Wacziarg (2009).

Secondary and tertiary enrollment rates, years of schooling are averages for the years 1990 to 2010, and taken from Barro and Lee (2013).

PISA Score 2006-2009 is the average math & science test scores of the years 2006 and 2009, obtained from the National Center for Education Statistics.

Irrigated Area in 2000 measures the area equipped for irrigation in percentage of the total arable land in the year 2000. Based on sub-national irrigation statistics and taken from Siebert *et al.* (2007).

Public Expenditure and *Old Age Expenditure* measure total and old age expenditure as percentage of GDP averaged over the period 2000 to 2010. Based on data from the OECD Social Expenditure Database.

Share Migrants Same Country is computed as the number of migrants originating from country o divided by the total population of host country h in 2000. It therefore measures the size of the group of migrants from a common country of origin in the destination country. The migration data comes from the UN Global Migration Database.

Personal Autonomy and Individual Rights measures the extent of state control over individual choices and the degree of personal freedom on a scale from 0 (worst) and 16 (best). The measure is averaged over the years 2005 to 2010 and taken from the Freedom House.

of Recessions & GDP Growth are constructed using data on GDP per capita (constant 2010 US dollar) from the World Development Indicators. *#* of Recessions measure the number of years in a period in which the growth of GDP per capita is negative.

Political Stability and Absence of Violence measures the perceptions of the likelihood of political instability and/or politically motivated violence in the years 2000 to 2010, taken from World Bank Worldwide Governance Indicators.

Regulatory Quality measures the extent of regulations in the years 2000 to 2010, taken from World Bank Worldwide Governance Indicators.

Voice and Accountability measures the extent to which citizens of a country are able to participate in the political process in the years 2000 to 2010, taken from World Bank Worldwide Governance Indicators.

Freedom to Trade assesses regulation of trade in the years 2000 to 2010, and is taken from the Fraser Institute.

Positive Attitudes Immigration measures the attitudes of European citizens towards immigration on a scale from 1 to 10, where 10 indicates the most positive attitudes towards immigration. Survey-responses are taken from the European Social Survey, and averaged over the years 2002 to 2012.

Cultural Diversity measures diversity taking into account the languages spoken by different groups in a country in 2003, based on Fearon (2003).

Scientific Articles per 1,000 inhabitants are the average annual number of scientific articles over total population during the period 2000-2010, based on data from the World Bank's World Development Indicators.

Agriculture (% of GDP), Industry (% of GDP), Services (% of GDP) measure the contribution of each of the three sectors to total GDP in 2000. Based on data from the World Development Indicators.

Technological Progress in 1000 BC, 0 AD, 1500 AD, 2000 AD measures technological sophistication of countries at different points in time, constructed by Comin *et al.* (2010). The main analysis uses the ancestry-adjusted measures of technology that Comin *et al.* (2010) compute using the World Migration Matrix (1500-2000) of Putterman and Weil (2010).

Routine, Independent, Manual assess characteristics of jobs and are based on survey responses of the World Values Survey/European Values Survey Waves 2-6. *Routine* measures the degree to which job tasks are mostly routine versus creative (inverse of question X054), *Independent* measures the degree of independence of tasks (question X055), and *Manual* measures whether tasks are mostly manual versus cognitive (inverse of question X053). The country measures of task content are the averages of the residuals obtained from individual level regressions of all three dependent variables on individual characteristics (age, gender, marital status, education and survey wave fixed effects).

Region FE include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia, following the World Bank regional classification.

2.5 Individual Data in the Sub-National Analysis

Individual data used to assess cultural attitudes of citizens in sub-national regions is taken from the World Values and European Values Survey. The integrated World Values and European Values Survey is the most comprehensive existing survey that evaluates beliefs and values in six waves and almost 100 countries. It contains information about respondents' beliefs, as well as background information on age, gender, education, marital status and the region where the interview was conducted (question X048). The first survey wave is from 1981 and the data has been extended to a total of six waves until 2014 for the WVS, and four waves until 2008 for the EVS. Surveys were conducted in 1981-1984 (wave 1), 1990-1994 (wave 2), 1995-1998 (wave 3), 1999-2004 (wave 4), 2005-2009 (wave 5), and 2010-2014 (wave 6). WVS/EVS regions are matched when possible to the first administrative division of each country, as shown in Figure A6. See http://www.worldvaluessurvey.org for more information.

I construct the following dependent variables:

Conformity and *Collectivism Scale* are based on the question: *"Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?"* I construct four indicator variables that each take on the value 1 if parents mention either obedience, good manners, independence, or imagination respectively.

Conformity counts the mentioning of obedience and good manners as important child qualities. The variables ranges from 0 to 2.

Collectivism Scale subtracts the mentioning of independence and imagination from the conformity measure. It ranges from -2 to 2.

Collective Ownership is based on the question "*Do you prefer private or state ownership of business?*" It is measures on a scale from 1 - indicating a strong preference for private ownership - to 10 - indicating strong preference for collective ownership of firms.

Degree of Control over Life is based on the question: "Some people feel they have completely free choice and control over their lives, and other people feel that what they do has no real effect on what happens to them. Please use the scale to indicate how much freedom of choice and control you feel you have over the way your life turns out?" The degree of control is measured on a scale from 1 to 10, where a score of 1 indicates none at all and 10 a great deal.

Obedience is based on the question: *"Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?"* It takes on the value 1 if the respondent mentioned obedience, and 0 otherwise.

Strong leader is based on the question: "I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country? Having a strong leader?" It takes on the value 4 if the respondent mentioned very good, 3 for fairly good, 2 for fairly bad, 1 for very bad. *Trust* is based on the question *"Generally speaking, would you say that most people can be trusted, or that you can?t be too careful in dealing with people?"*. It takes on the value 1 if the respondent agrees that "most people can be trusted", and 0 otherwise.

2.6 European Migrants

Individual data on cultural attitudes of European migrants is taken from the European Social Survey. The European Social Survey is a large European survey that was conducted in six waves from 2002 to 2012 in up to 30 countries. Besides questions about attitudes and individual characteristics of respondents, it also contains information on the birthplace of the respondent and the country of origin of the respondent's father and mother. See http://www.europeansocialsurvey.org/ for more information.

The outcome variable *Collectivism* is the principal component of five variables listed in the following. Each variable is measured on a scale from 1 to 6, where 6 indicates "Very much like me" and 1 "Not like me at all":

Respect: "It is important to her/him to get respect from others. She/he wants people to do what she/he says."

Rule following: "She/he believes that people should do what they're told. She/he thinks people should follow rules at all times, even when no-one is watching."

Proper behavior: "It is important to her/him always to behave properly. She/he wants to avoid doing anything people would say is wrong."

Loyalty: "It is important to her/him to be loyal to her/his friends. She/he wants to devote herself/himself to people close to her/him."

Modesty: "It is important to her/him to be humble and modest. She/he tries not to draw attention to herself/himself."

2.7 City-Level Scientific Output

To construct city-level scientific output, I use information on the type of cities, their location and population from the "Populated Places" dataset of Natural Earth (http://www.naturalearthdata.com/downloads/10m-cultural-vectors/10m-populated-places/). The database contains all capitals of countries, and almost all capitals of sub-national regions, in addition to other major cities and towns. The population estimate of cities included in the dataset is computed for the metropolitan area, is available for a single point in time, and derived either from the LandScan database or the United Nations population estimations. Cities are included in the sample if they are capitals of countries or first-level administrative regions, or if estimated city population exceeds 500,000. This selection assures maximization of geographic coverage within countries, and a the same time takes into account the importance of cities.

City-level information on scientific output is obtained from the "ISI Web of Science". For each city in the sample, I extracted the number of records per year from 2000 to 2010, using the address search function of the Web of Knowledge. The resulting output measures the number of scientific contributions per city that are authored by at least one scholar from that same city. It includes all document types, ranging from articles, to book reviews and music scores. The most important document types are articles, meeting abstracts, proceedings papers, as well as book chapters and reviews.

Publications are averaged over the time-period from 2000 to 2010, and scaled by the citylevel population estimate. If collapsed to the country level, my measure of scientific articles per capita strongly correlates with the scientific publication data from the Worldbank Development Indicators, with a correlation coefficient of 0.86.

Furthermore, I measure city-level night-time luminosity in 2005 using satellite data on stable lights at night from Version 4 DMSP-OLS Nighttime Lights Time Series produced by the NOAA's National Geophysical Data Center. Average luminosity is calculated within a radius of 50km around each city.

2.8 Innovativeness of US Migrants

Innovativeness of migrants is assessed using the National College Graduate Survey. The National College Graduate Survey interviews a random sample of individuals from the census that have at least a college degree, live in the United States at the time of the survey, and are not older than 76. It includes several demographic background variables, such as age, gender, marriage status, education, salary, age at arrival in the US, as well as the country of birth of respondents. More information can be found http://www.nsf.gov/statistics/srvygrads.

I construct the following dependent variables for a sample of immigrant respondents:

Patent Granted is an indicator variable equaling 1 if the respondent has been granted a patent since October 1998 (wave 2003).

Any Publication is an indicator variable equal to 1 if the respondent has (co)authored a book, article, or conference paper since October 1998 (wave 2003).

No, of Publications counts the number of (co)authored a books, articles, or conference papers since October 1998 (wave 2003).

Conference Attendance is an indicator variable equal to 1 if the respondent has attended a professional society of association meeting during the past year (wave 2003).

Importance in Job asks about the importance of independence, societal contribution, security, payment, advancement opportunities, benefits, and location of the job. Responses on a scale from 1 to 4, where 1 indicates "not important at all", and 4 "very important" (waves 1993, 2003, 2010, 2013).

2.9 Job-Tasks of US Migrants

I obtain information on the occupations of migrants from the Current Population Survey (CPS) for the years 1994 to 2016. The CPS contains a wide range of socio-economic indicators, such as age, marital status, income, education, and the occupation of the respondent.

It also provides information on the birthplace of the respondent and his/her parents. This allows me to identify first and second-generation migrants. I define the country of origin of a migrant by the the common birth places of his/her parents. More information on the CPS can be found here: https://www.census.gov/programs-surveys/cps.html.

I then link respondents' occupations to information about the characteristics and task content of occupations. First, I match the Census codes of occupations to the task data of Autor and Dorn (2013) that assesses abstract, routine and manual tasks of occupations based on data from the Dictionary of Occupational Titles 1977. Following the authors, for each occupation I compute the Routine Task Index as RTI = ln(Routine) - ln(Manual) - ln(Abstract).

Second, I match the Census codes of occupations from the CPS to the codes of the Standard Occupational Classification (SOC) System, and then to the Occupational Information Network (O*NET) database. The O*NET database of the U.S. Department of Labor, contains information on the task content of almost 1,000 jobs and has been used extensively by labor economists in recent years. For each job, the O*NET gives a rating of the importance of skills and tasks on scale from 1 to 5, that are based on surveys of workers. I measure whether jobs are *Conventional* based on O*Net's Interest category. Conventional jobs are described as those that "frequently involve following set procedures and routines. These occupations can include working with data and details more than with ideas. Usually there is a clear line of authority to follow."

3 Construction of Ancestry-Adjusted Variables

This section describes the construction of ancestral characteristics of contemporary societies. First, I link historic groups of the Ethnographic Atlas to the spatial distribution of ethnic groups today as reported in several maps. Figure A1 provides a visualization of the four different maps used and the areas that they cover. In particular, most African ethnic groups are merged to the *Map of Ethnic Boundaries* constructed by Murdock; groups outside Africa to the *Ethnologue: Languages of the World* database, which maps the spatial distribution of 7,612 languages in the world as in 2003; if no match can be found in the *Ethnologue*, I use the less detailed *Geo Referencing Ethnic Groups* (GREG) map of Weidmann et al. (2010), which includes boundaries of ethnic groups building on the Soviet Atlas Narodov Mira. Finally, for a handful of groups no match can be found in any of these, therefore I match groups to modern administrative boundaries.



Figure A1: Maps of Ethnic Groups

NOTE: This figure shows the spatial extent of contemporary ethnic groups matched to the Ethnographic Atlas. It also illustrates the underlying databases used to match historical ethnic groups to contemporary populations.

After having matched historical ethnic groups to the contemporaneous distribution of ethnicities, I can then construct population-weighted averages of different ancestral characteristics for current populations that reside in any administrative division on which outcome variables are measured (e.g., country or sub-national district). I first overlay the spatial distribution of ethnic groups today by the spatial distribution of population, using grid-level population data from the *Gridded Population of the World* (GPW), to measure the importance of each ethnic group in terms of their population in a given country or sub-national district. An important implicit assumption of this procedure is that individuals that reside within the boundaries of an ethnic group, as drawn by the maps of ethnicities today, belong to this ethnicity. Then I compute a weighted average for each variable in the Ethnographic Atlas or any geographic measure that takes into account the population distribution of descendants of ethnic gorps within an administrative boundary. For example, the main variable of interest, *Ancestral Irrigation*, is computed as the sum of all products of the population share of each ethnic group residing in the administrative division *l* (e.g., country or sub-national district), with an indicator variable that takes on the value 1 if the ethnic group traditionally used irrigation, and 0 otherwise:

Ancestral Irrigation_l =
$$\frac{\sum\limits_{e} (I_e \times Population_{e,l})}{\sum\limits_{e} Population_{e,l}}$$

 $I_e = 1$, if ethnic group *e* used irrigation; 0 otherwise.

The following example illustrates this procedure further: Figure A2 contains the matched ethnic groups of Mexico. The map shows that the largest ethnic groups today are descendants of the Spanish, the Mayans of Yucatan and the Aztecs. According to the *Ethnographic Atlas*, only the Mayans have used irrigation in agriculture. About 6% of the population of contemporary Mexico lives in the area that was historically populated by the Mayans, therefore ancestral irrigation takes on the value 0.06 (6%).



Figure A2: Matched Ethnic Groups in Mexico

NOTE: This figure shows the spatial extent of contemporary Mexican ethnic groups that were matched to a group reported in the Ethnographic Atlas.

Across countries ancestral irrigation is distributed with mean of 23% and standard deviation of 38%. As shown in Figure A3, the mass of the distribution is located at the extreme values of 0 and 1, and the median country has not used irrigation.



Figure A3: Distribution Function of Ancestral Irrigation

NOTE: This figure shows the distribution function of Ancestral Irrigation across countries.

4 Additional Figures



Figure A4: Partial Regression Plots across Countries

(a) OLS

(b) First-Stage







Figure A5: Irrigation Impact Classes













NOTE: This figure shows binned scatterplots of the relationship between individual survey responses and ancestral irrigation across sub-national districts, conditional on individual controls, baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as region fixed effects.



Figure A9: Irrigation and Collectivism: Individual-Level Estimates conditional on Country Fixed Effects

NOTE: This figure shows binned scatterplots of the relationship between individual survey responses and ancestral irrigation across sub-national districts, conditional on individual controls, baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as country fixed effects.



Figure A10: Irrigation and Collectivism across Migrants (ESS)

NOTE: This figure shows the binned scatterplot of the relationship between individual survey responses and ancestral irrigation across European migrants, conditional on individual controls, baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as country fixed effects.



Figure A11: Irrigation and Innovation across Countries

NOTE: This figure shows the cross-country relationship between ancestral irrigation and the number of scientific articles par 1,000 people, conditional on baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as region fixed effects.



Figure A12: Scientific Productivity in 1,893 Cities

NOTE: This figure shows the yearly average number of scientific articles per 1,000 people during the period 2000 - 2010 in a sample of 1,893 cities.

Figure A13: Long-Run Flexible Estimates between Technology and Irrigation



(a) Irrigation Suitability (Ancestral)



NOTE: This figure shows point estimates and 95 % confidence intervals from flexible panel estimates of (ancestry adjusted) technological progress on ancestral irrigation obtained in a) reduced-form regressions; b) OLS regressions; and c) 2SLS regressions. All regressions include controls interacted with time periods, country and time fixed effects. See Table 11 for the corresponding regression table. 28



Figure A14: Cross-Validation of the Ancestral Irrigation Variable

NOTE: This figure cross-validates the measure of ancestral irrigation constructed by the author (x-axis) against the Ancestral Irrigation measure included in the "Ancestral Characteristics of Modern Populations" database (y-axis) constructed by Giuliano and Nunn (2017) across countries.

Figure A15: Rice Suitability

(a) Rain-fed Rice (FAO-GAEZ)



(b) Irrigated Rice (FAO-GAEZ)



NOTE: This figure shows the suitability of rice for a) rain-fed and b) irrigated agriculture.

5 Additional Tables

5.1 Descriptive Statistics

Cultural Outcomes	Mean	S.D.	Ν
Collectivism (Hofstede)	61.00	22.29	97
Individualism (Schwartz)	0.00	1.63	72
In-Group Favoritism	0.12	0.86	115
Restraint	54.56	22.38	90
Social Tightness	66.45	27.01	61
Linguistic Individualism	0.48	0.30	116
Protest Potential	-0.00	0.16	93
Irrigation	Mean	S.D.	Ν
Ancestral Irrigation	0.23	0.38	163
Irrigation Suitability	0.23	0.29	161
Irrigation Suitability (Local)	0.23	0.31	161
Geographic Variables	Mean	S.D.	Ν
Agricultural Suitability	0.44	0.23	160
Tropical Climate	0.26	0.39	163
Distance to River (km)	821.27	1477.12	163
Distance to Coast (km)	318.66	402.61	163
Altitude	523.05	472.73	163
Mean Precipitation	78.84	51.43	163
Irrigated Rice Suitability	3.45	1.29	161
Rainfed Rice Suitability	2.03	1.04	161
Δ Suitability (Irrigation-Rainfed)	1.96	0.97	161
Ruggedness	1.02	0.86	163
Soil Constraints	0.25	0.15	163
Terrain Constraints	0.24	0.24	163
Caloric Suitability pre 1500	68.59	29.77	163
Caloric Suitability post 1500	81.10	33.75	163
Arid Climate	19.67	33.98	163
Continental Climate	8.00	20.38	163
Temperate Climate	45.48	41.49	163
Mean Temperature	17.30	6.97	163
Std Precipitation	64.49	40.88	163
Further Ethnographic Measures	Mean	S.D.	N
Settlement Type	6.15	1.69	163
Political Complexity	3.30	1.10	163
Mean Size Local Community	5.33	2.94	152
Traditional Democracy	0.28	0.40	154
Agricultural Dependence	5.93	1.46	163
Share No Agriculture	0.01	0.09	163
Intensity of Agriculture	0.71	0.40	163

Table B1: Summary Statistics: Country Variables

Table B1 (continued)			
Traditional Plow Use	0.62	0.45	163
Gathering	0.15	0.35	163
Hunting	0.33	0.47	163
Fishing	0.73	0.77	163
Animal Husbandry	2.86	1.47	163
Clan Community	0.10	0.23	161
Survey Year (avg.)	1878.01	259.73	163
Landed Elite	0.05	0.19	163
Further Country Measures	Mean	S.D.	Ν
Neolithic Revolution	4.89	2.41	155
State Antiquity	0.52	0.22	141
Malaria Suitability	3.19	6.13	163
Ethnic Fractionalization	0.46	0.25	159
Migratory Distance	8.63	7.10	162
Latitude	20.37	24.79	163
Buddhism	0.05	0.17	162
Christianity	0.51	0.37	162
Hindu	0.02	0.10	162
Islam	0.27	0.37	162
Judaism	0.01	0.06	162
Polity IV (1980 - 2014)	2.12	6.06	153
(ln) Income per capita	8.45	1.36	159
(log) Population Density 1 AD	-0.07	1.52	137
(log) Population Density 1000 AD	0.48	1.42	155
(log) Population Density 1500 AD	0.90	1.48	160
Perc. Natives	0.75	0.31	155
Perc. Europeans	0.33	0.42	155
Land Inequality	0.61	0.15	105
Pathogen Prevalence	-0.00	0.65	97
Predicted genetic diversity	0.71	0.05	162
Genetic distance to the U.S. (weighted)	9.56	5.23	159
Tertiary Enrollment, age >25	11.59	9.70	138
Tertiary Completed age >25	7 38	5 98	138
Years Schooling age >25	7.03	3.04	138
Secondary Enrollment age >15	39.80	19 22	138
Vears Tertiary Schooling age >25	0.38	0.31	138
Agriculture (% of GDP)	16.22	13.88	150
Industry (% of GDP)	31.64	18.00	150
Services (% of GDP)	53 11	13.89	150
Technology	Mean	<u> </u>	N
Scientific articles (2000 - 2010) per 1000 pr		0.43	162
Technology 1000 PD	0.24	0.43	102 102
Technology 0 AD	0.02	0.20	100
Technology 1500 AD	0.00	0.17	120 119
Current Technology	0.00	0.20	113 199
Ich Characteristics (MAR/EVS)		0.20 S D	123 N
Boutine		0.65	
	-0.02	0.00	11

Table B1 (continue	ed)		
Independent	0.01	0.79	71
Manual	0.04	0.59	71

Conformity 1.04 0.66 70.978 Collectivism Scale 0.45 1.04 69,171 Degree of Control over Life 6.84 2.36 191,399 Collective Ownership of Firms 5.37 2.84 175,349 Obedience 0.36 0.48 192,141 Trust 0.27 0.44 191,400 Strong Leader 2.23 1.03 177,154 Catholic 0.22 0.42 201,447 Muthist 0.03 0.17 201,447 Muslim 0.16 0.37 201,447 Muslim 0.16 0.37 201,447 None 0.16 0.37 201,447 More 0.16 0.37 201,447 Maried 0.46 0.57 201,447 Mare 0.16 0.37 201,447 Mareid 0.57 0.50 201,447 Mareid 0.50 201,447 Mareid 0.50 201,447 Incomp	Individual-Level	Mean	S.D.	Ν
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Age 41.32 16.42 201,447 Married 0.57 0.50 201,447 Male 0.48 0.50 201,447 Inadequately completed elementary education 0.08 0.27 201,447 Inadequately completed elementary education 0.08 0.27 201,447 Incomplete secondary school: technical/vocational 0.08 0.27 201,447 Incomplete secondary: university-preparatory 0.10 0.30 201,447 Incomplete secondary: university-preparatory type 0.18 0.39 201,447 Some university without degree/Higher education 0.07 0.26 201,447 University with degree/Higher education 0.07 0.26 201,447 Irrigation Suitability 0.19 0.26 201,447 Incorplet e fiver (km) 641.58 830.57 201,447	Religious person	1.36	0.57	187,150
Oarried 0.57 0.50 201,447 Male 0.48 0.50 201,447 Inadequately completed elementary education 0.08 0.27 201,447 Completed (compulsory) elementary education 0.15 0.36 201,447 Incomplete secondary school: technical/vocational 0.08 0.27 201,447 Complete secondary school: technical/vocational 0.18 0.38 201,447 Incomplete secondary: university-preparatory 0.10 0.30 201,447 Complete secondary: university-preparatory 0.18 0.39 201,447 Some university without degree/Higher education 0.07 0.26 201,447 University with degree/Higher education 0.16 0.36 201,447 Irrigation Suitability 0.19 0.26 201,447 Irrigation Suitability 0.51 0.23 201,447 Irrigation Suitability 0.51 0.23 201,447 Irrigation Suitability 0.51 0.23 201,447 Distance to River (km) 641.58 830.57 <t< td=""><td>Age</td><td>41.32</td><td>16.42</td><td>201,447</td></t<>	Age	41.32	16.42	201,447
Male 0.48 0.50 $201,447$ Inadequately completed elementary education 0.08 0.27 $201,447$ Completed (compulsory) elementary education 0.15 0.36 $201,447$ Incomplete secondary school: technical/vocational 0.18 0.38 $201,447$ Complete secondary: university-preparatory 0.10 0.30 $201,447$ Complete secondary: university-preparatory 0.18 0.39 $201,447$ Complete secondary: university-preparatory 0.18 0.39 $201,447$ Some university without degree/Higher education 0.07 0.26 $201,447$ University with degree/Higher education 0.16 0.36 $201,447$ District-LevelMeanS.D.NAncestral Irrigation 0.27 0.42 $201,447$ Irrigation Suitability 0.19 0.26 $201,447$ Tropical Climate 0.12 0.30 $201,447$ Distance to River (km) 641.58 830.57 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ No. Large River 0.50 0.53 $201,447$ River length (1000 km) 0.90 0.52 $193,391$ Small river length (1000 km) 0.68 0.42 $193,391$	Married	0.57	0.50	201,447
Inadequately completed elementary education0.080.27201,447Completed (compulsory) elementary education0.150.36201,447Incomplete secondary school: technical/vocational0.180.38201,447Complete secondary: university-preparatory0.100.30201,447Complete secondary: university-preparatory type0.180.39201,447Some university without degree/Higher education0.070.26201,447University with degree/Higher education0.160.36201,447District-LevelMeanS.D.NAncestral Irrigation0.270.42201,447Irrigation Suitability0.190.26201,447Distance to River (km)0.510.23201,447Distance to Coast (km)275.06367.09201,447Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Male	0.48	0.50	201,447
Completed (compulsory) elementary education 0.15 0.36 201,447 Incomplete secondary school: technical/vocational 0.08 0.27 201,447 Complete secondary school: technical/vocational 0.18 0.38 201,447 Incomplete secondary: university-preparatory 0.10 0.30 201,447 Complete secondary: university-preparatory type 0.18 0.39 201,447 Some university without degree/Higher education 0.07 0.26 201,447 University with degree/Higher education 0.16 0.36 201,447 District-Level Mean S.D. N Ancestral Irrigation 0.27 0.42 201,447 Irrigation Suitability 0.19 0.26 201,447 Agricultural Suitability 0.19 0.26 201,447 Distance to River (km) 0.51 0.23 201,447 Distance to Coast (km) 275.06 367.09 201,447 Mean Precipitation 69.73 42.36 201,447 Mean Precipitation 69.50 0.53	Inadequately completed elementary education	0.08	0.27	201,447
Incomplete secondary school: technical/vocational Complete secondary school: technical/vocational Incomplete secondary: university-preparatory 0.08 0.27 $201,447$ Incomplete secondary: university-preparatory 0.10 0.30 $201,447$ Complete secondary: university-preparatory type 0.18 0.39 $201,447$ Some university without degree/Higher education 0.07 0.26 $201,447$ University with degree/Higher education 0.16 0.36 $201,447$ District-LevelMeanS.D.NAncestral Irrigation 0.27 0.42 $201,447$ Irrigation Suitability 0.19 0.26 $201,447$ Agricultural Suitability 0.19 0.26 $201,447$ Distance to River (km) 641.58 830.57 $201,447$ Distance to Coast (km) 275.06 367.09 $201,447$ Altitude 0.44 0.41 $201,447$ No. Large River 0.50 0.53 $201,447$ No. Large River 0.50 0.53 $201,447$ Niver length (1000 km) 0.90 0.52 $193,391$ Small river length (1000 km) 0.68 0.42 $193,991$	Completed (compulsory) elementary education	0.15	0.36	201,447
Complete secondary school: technical/vocational Incomplete secondary: university-preparatory0.180.38201,447Complete secondary: university-preparatory Some university without degree/Higher education0.180.39201,447Ouriversity with degree/Higher education0.160.36201,447University with degree/Higher education0.160.36201,447District-LevelMeanS.D.NAncestral Irrigation0.270.42201,447Irrigation Suitability0.190.26201,447Agricultural Suitability0.190.26201,447Distance to River (km)641.58830.57201,447Distance to Coast (km)275.06367.09201,447Altitude0.440.41201,447No. Large River0.500.53201,447No. Large River0.500.53201,447Nitude0.120.27201,447Noi Large River0.500.53201,447Noi Large River0.500.53201,447Nitude0.120.27201,447Noi Large River0.500.53201,447Noi Large River0.500.53201,447Nitude0.120.27201,447Noi Large River0.500.52193,391Small river length (1000 km)0.680.42193,391Small river length (1000 km)0.680.42193,391	Incomplete secondary school: technical/vocational	0.08	0.27	201.447
Incomplete secondary: university-preparatory 0.10 0.30 $201,447$ Complete secondary: university-preparatory type 0.18 0.39 $201,447$ Some university without degree/Higher education 0.07 0.26 $201,447$ University with degree/Higher education 0.16 0.36 $201,447$ District-LevelMeanS.D.NAncestral Irrigation 0.27 0.42 $201,447$ Irrigation Suitability 0.19 0.26 $201,447$ Agricultural Suitability 0.19 0.26 $201,447$ Distance to River (km) 0.51 0.23 $201,447$ Distance to Coast (km) 275.06 367.09 $201,447$ Altitude 0.44 0.41 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ No. Large River 0.50 0.53 $201,447$ No. Large River 0.50 0.53 $201,447$ River length (1000 km) 0.68 0.42 $193,391$ Small river length (1000 km) 0.68 0.42 $193,391$	Complete secondary school: technical/vocational	0.18	0.38	201.447
Complete secondary: university-preparatory type Some university without degree/Higher education 0.18 0.39 $201,447$ Some university without degree/Higher education 0.07 0.26 $201,447$ University with degree/Higher education 0.16 0.36 $201,447$ District-LevelMeanS.D.NAncestral Irrigation 0.27 0.42 $201,447$ Irrigation Suitability 0.19 0.26 $201,447$ Agricultural Suitability 0.19 0.26 $201,447$ Tropical Climate 0.12 0.30 $201,447$ Distance to River (km) 641.58 830.57 $201,447$ Distance to Coast (km) 275.06 367.09 $201,447$ Altitude 0.44 0.41 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ No. Large River 0.50 0.53 $201,447$ Niver length (1000 km) 0.90 0.52 $193,391$ Small river length (1000 km) 0.68 0.42 $193,991$	Incomplete secondary: university-preparatory	0.10	0.30	201,447
Some university without degree/Higher education 0.07 0.26 $201,447$ University with degree/Higher education 0.16 0.36 $201,447$ District-LevelMeanS.D.NAncestral Irrigation 0.27 0.42 $201,447$ Irrigation Suitability 0.19 0.26 $201,447$ Agricultural Suitability 0.19 0.26 $201,447$ Tropical Climate 0.12 0.30 $201,447$ Distance to River (km) 641.58 830.57 $201,447$ Distance to Coast (km) 275.06 367.09 $201,447$ Altitude 0.44 0.41 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ No. Large River 0.50 0.53 $201,447$ Arid Climate 0.12 0.27 $201,447$ River length (1000 km) 0.90 0.52 $193,391$ Small river length (1000 km) 0.68 0.42 $193,991$	Complete secondary: university-preparatory type	0.18	0.39	201,447
University with degree/Higher education 0.16 0.36 $201,447$ District-LevelMeanS.D.NAncestral Irrigation 0.27 0.42 $201,447$ Irrigation Suitability 0.19 0.26 $201,447$ Agricultural Suitability 0.51 0.23 $201,447$ Tropical Climate 0.12 0.30 $201,447$ Distance to River (km) 641.58 830.57 $201,447$ Distance to Coast (km) 275.06 367.09 $201,447$ Altitude 0.44 0.41 $201,447$ Mean Precipitation 69.73 42.36 $201,447$ No. Large River 0.50 0.53 $201,447$ Arid Climate 0.12 0.27 $201,447$ River length (1000 km) 0.90 0.52 $193,391$ Small river length (1000 km) 0.68 0.42 $193,991$	Some university without degree/Higher education	0.07	0.26	201.447
District-Level Mean S.D. N Ancestral Irrigation 0.27 0.42 201,447 Irrigation Suitability 0.19 0.26 201,447 Agricultural Suitability 0.51 0.23 201,447 Tropical Climate 0.12 0.30 201,447 Distance to River (km) 641.58 830.57 201,447 Distance to Coast (km) 275.06 367.09 201,447 Altitude 0.44 0.41 201,447 Nean Precipitation 69.73 42.36 201,447 No. Large River 0.50 0.53 201,447 No. Large River 0.50 0.53 201,447 Nean Precipitation 69.73 42.36 201,447 No. Large River 0.50 0.53 201,447 River length (1000 km) 0.90 0.52 193,391 Small river length (1000 km) 0.68 0.42 193,391	University with degree/Higher education	0.16	0.36	201,447
Ancestral Irrigation 0.27 0.42 201,447 Irrigation Suitability 0.19 0.26 201,447 Agricultural Suitability 0.51 0.23 201,447 Tropical Climate 0.12 0.30 201,447 Distance to River (km) 641.58 830.57 201,447 Distance to Coast (km) 275.06 367.09 201,447 Altitude 0.44 0.41 201,447 Mean Precipitation 69.73 42.36 201,447 No. Large River 0.50 0.53 201,447 River length (1000 km) 0.90 0.52 193,391 Small river length (1000 km) 0.68 0.42 193,391	District-Level	Mean	S.D.	N
Irrigation Suitability 0.19 0.26 201,447 Agricultural Suitability 0.51 0.23 201,447 Tropical Climate 0.12 0.30 201,447 Distance to River (km) 641.58 830.57 201,447 Distance to Coast (km) 275.06 367.09 201,447 Altitude 0.44 0.41 201,447 Mean Precipitation 69.73 42.36 201,447 No. Large River 0.50 0.53 201,447 Arid Climate 0.12 0.27 201,447 River length (1000 km) 0.90 0.52 193,391 Small river length (1000 km) 0.68 0.42 193,391	Ancestral Irrigation	0.27	0.42	201,447
Agricultural Suitability0.510.23201,447Tropical Climate0.120.30201,447Distance to River (km)641.58830.57201,447Distance to Coast (km)275.06367.09201,447Altitude0.440.41201,447Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Irrigation Suitability	0.19	0.26	201,447
Tropical Climate0.120.30201,447Distance to River (km)641.58830.57201,447Distance to Coast (km)275.06367.09201,447Altitude0.440.41201,447Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Agricultural Suitability	0.51	0.23	201,447
Distance to River (km)641.58830.57201,447Distance to Coast (km)275.06367.09201,447Altitude0.440.41201,447Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Tropical Climate	0.12	0.30	201,447
Distance to Coast (km)275.06367.09201,447Altitude0.440.41201,447Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Distance to River (km)	641.58	830.57	201,447
Altitude0.440.41201,447Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Distance to Coast (km)	275.06	367.09	201,447
Mean Precipitation69.7342.36201,447No. Large River0.500.53201,447Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	Altitude	0.44	0.41	201,447
No. Large River 0.50 0.53 201,447 Arid Climate 0.12 0.27 201,447 River length (1000 km) 0.90 0.52 193,391 Small river length (1000 km) 0.68 0.42 193,391	Mean Precipitation	69.73	42.36	201,447
Arid Climate0.120.27201,447River length (1000 km)0.900.52193,391Small river length (1000 km)0.680.42193,391	No. Large River	0.50	0.53	201,447
River length (1000 km) 0.90 0.52 193,391 Small river length (1000 km) 0.68 0.42 193,391	Arid Climate	0.12	0.27	201,447
Small river length (1000 km) 0.68 0.42 193,391 Diamondary in the (1000 km) 0.08 0.01 100,001	River length (1000 km)	0.90	0.52	193,391
	Small river length (1000 km)	0.68	0.42	193,391
Big river length (1000 km) $0.22 \ 0.31 \ 193,391$	Big river length (1000 km)	0.22	0.31	193,391
Ruggedness 1.00 0.82 201,447	Ruggedness	1.00	0.82	201,447
Settlement Type 6.42 1.54 201,447	Settlement Type	6.42	1.54	201,447
Political Complexity 3.76 1.02 201,447	Political Complexity	3.76	1.02	201,447
Mean Size Local Community 6.62 2.43 201.447	Mean Size Local Community	6.62	2.43	201,447
States 0.73 0.41 201,447	States	0.73	0.41	201,447
Landed Elite 0.06 0.22 200,460	Landed Elite	0.06	0.22	200,460

Table B2: Summary Statistics: Individual-Level (WVS/EVS) across Districts

Individual-Level	Mean	S.D.	Ν
Collectivism	0.01	1.42	17,950
Age	46.86	17.78	17,950
Male	0.45	0.50	17,950
Big City 0/1	0.48	0.50	17,950
Married	0.57	0.49	17,950
Less than lower secondary education	0.12	0.33	17,950
Lower secondary education completed	0.17	0.37	17,950
Upper secondary education completed	0.34	0.47	17,950
Post-secondary non-tertiary education completed	0.05	0.21	17,950
Fertiary education completed	0.32	0.47	17,950
Other education	0.00	0.07	17,950
Home Country-Level	Mean	S.D.	Ν
Ancestral Irrigation	0.31	0.40	17,950
rrigation Suitability	0.20	0.23	17,950
Agricultural Suitability	0.56	0.24	17,950
Tropical Climate	0.06	0.21	17,950
Distance to River (km)	517.61	610.64	17,950
Distance to Coast (km)	297.66	298.01	17,950
Altitude	405.31	312.59	17,950
Mean Precipitation	57.26	28.93	17,950
Settlement Type	6.10	1.92	17,950
Political Complexity	3.70	1.32	17,950
Mean Size Local Community	6.53	2.41	17,950
Polity IV (2000-2010)	5.38	5.59	17,281
Ethnic Fractionalization	0.33	0.20	17,875
ln) Income per capita	8.99	0.96	17,771
Destination Country-Level	Mean	S.D.	Ν
Polity IV (2000 - 2010)	9.56	0.98	17,932
Personal Autonomy and Individual Rights	13.94	1.96	17,950
ln) Income per capita	10.04	0.57	17,950
# of Recessions (1980-2010)	0.20	0.08	17,950
Public Expenditure (2000-2010)	20.60	4.31	16,225
Old Age Expenditure (2000-2010)	6.43	2.19	16,225
Ethnic Fractionalization	0.29	0.18	17,950
Size Community Same Country of Origin	2.49	3.94	14,791
# of Recessions (1990-2010)	0.20	0.08	17,950
# of Recessions (1950-2010)	0.19	0.08	17,950
Growth GDP p.c. (1980-2010)	2.04	1.22	17,950
Growth GDP p.c. (1950-2010)	2.48	1.19	17,950
Political Stability and Absence of Violence	0.46	0.91	17,950
Regulatory Quality	1.24	0.53	17,950
Voice and Accountability	1.11	0.49	17,950
Conflict Intensity	2.41	0.76	3,795
Secondary Enrollment, age >15	51.67	8.92	17,950
PISA Score 2006-2009	196 79	24.64	16,984
	430.73		.,
Expenditure per student, Secondary	23.47	4.19	15.929
Expenditure per student, Secondary Freedom to Trade	23.47 8.26	4.19 0.58	15,929 17,950
Expenditure per student, Secondary Freedom to Trade Positive Attitudes Immigration	23.47 8.26 4.82	4.19 0.58 0.61	15,929 17,950 17,950
Expenditure per student, Secondary Freedom to Trade Positive Attitudes Immigration Migration Share (2000-2010)	23.47 8.26 4.82 13.38	4.19 0.58 0.61 6.56	15,929 17,950 17,950 14,791
Expenditure per student, Secondary Freedom to Trade Positive Attitudes Immigration Migration Share (2000-2010) Cultural Diversity	23.47 8.26 4.82 13.38 0.25	4.19 0.58 0.61 6.56 0.13	15,929 17,950 17,950 14,791 17,475

Table B3: Summary Statistics: European Migrants (ESS)

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	Mean	S.D.	Ν
Scientific Articles (2000 - 2010), per 1000 ppl	0.86	2.48	1893
Ancestral Irrigation	0.29	0.45	1893
Agricultural Suitability	0.53	0.24	1893
Tropical Climate	0.19	0.38	1893
Distance to River (km)	670.77	792.62	1893
Distance to Coast (km)	263.23	388.82	1893
Altitude	426.47	524.60	1893
Mean Precipitation	76.84	44.14	1893
Settlement Type	6.79	1.19	1893
Political Complexity	4.03	0.90	1893
Mean Size Local Community	7.22	1.70	1893
Country Capital	0.08	0.27	1893
Region Capital	0.73	0.44	1893
Share of Area that is Cropland	0.29	0.21	1880
(Log) Night Lights 2005 (per capita)	-12.63	1.38	1885
(log) Population 2005	13.83	1.41	1893

Table B4: Summary Statistics: City-Level Innovation
Individual-Level	Mean	S.D.	Ν
Patent Granted	0.04	0.21	16,127
Any Publication	0.29	0.45	16,127
No. of Publications	3.66	11.97	16,127
Conference Attendance	0.53	0.50	16,127
Importance in Job: Independence	3.57	0.60	52,029
Age	45.32	11.99	52,029
Male	0.39	0.49	52,029
Married	0.78	0.41	52,029
Age at Arrival	23.79	10.74	52,029
Ln Salary	11.60	1.78	52,029
Ln Salary Sq.	137.64	45.81	52,029
Bachelor	0.41	0.49	52,029
US High-School	0.23	0.42	52,029
US BA	0.13	0.34	52,029
US Grad School	0.22	0.42	52,029
All Edu Foreign	0.42	0.49	52,029
Home Country-Level	Mean	S.D.	Ν
Ancestral Irrigation	0.37	0.36	52,029
Irrigation Suitability	0.19	0.19	52,029
Agricultural Suitability	0.58	0.20	52,029
Tropical Climate	0.26	0.36	52,029
Distance to River (km)	731.71	683.70	52,029
Distance to Coast (km)	215.38	213.35	52,029
Altitude	321.70	241.16	52,029
Mean Precipitation	93.79	44.58	52,029
Settlement Type	6.16	1.44	52,029
Political Complexity	3.67	0.98	52,029
Mean Size Local Community	6.58	1.86	52,029

Table B5: Summary Statistics: Innovativeness of US Migrants (NCGS)

Individual-Level	Mean	S.D.	Ν
Routine Task-Intensity	0.99	1.75	193,857
Conventional	4.39	1.37	185,527
Age	39.22	22.52	374,030
Age sq.	2045.34	1936.92	374,030
Female	0.52	0.50	374,030
Married	0.51	0.50	374,030
(log) Family Income	10.54	1.05	374,030
(log) Family Income Sq.	112.27	20.80	374,030
None or Preschool	0.01	0.12	303,842
Grades 1-4	0.04	0.19	303,842
Grades 5 and 6	0.07	0.26	303,842
Grades 7 and 8	0.06	0.23	303,842
Grade 9	0.05	0.21	303,842
Grade 10	0.03	0.17	303,842
Grade 11	0.03	0.16	303,842
Grade 12, no diploma	0.02	0.15	303,842
High School	0.27	0.45	303,842
Some College	0.11	0.31	303,842
Associate's degree, occupational/vocational	0.03	0.16	303,842
Associate's degree, academic program	0.03	0.17	303,842
Bachelor's degree	0.16	0.36	303,842
Professional school degree	0.06	0.24	303,842
Master's degree	0.02	0.13	303,842
Doctorate degree	0.02	0.13	303,842
Home Country-Level	Mean	S.D.	Ν
Ancestral Irrigation	0.22	0.32	374,030
Agricultural Suitability	0.62	0.18	374,030
Tropical Climate	0.20	0.32	374,030
Distance to River (km)	1093.50	661.40	374,030
Distance to Coast (km)	131.70	168.07	374,030
Altitude	376.92	223.71	374,030
Mean Precipitation	79.15	40.70	374,030
Settlement Type	6.49	1.40	374,030
Political Complexity	3.68	0.87	374,030
Mean Size Local Community	7.07	1.73	374,030

Table B6: Summary Statistics: Occupations and Tasks of US Migrants (CPS)

5.2 Irrigation Suitability and Adoption of Irrigation across Ethnic Groups

		Irrigat	ion Agric	ulture Pra	cticed	
	(1)	(2)	(3)	(4)	(5)	(6)
Irrigation Suitability	0.20*** (0.04)	0.19*** (0.05)	0.30*** (0.05)	0.35*** (0.06)	0.33*** (0.05)	0.24*** (0.04)
Suitability for Rainfed Agriculture				0.07 (0.06)		
Latitude					0.00*** (0.00)	
Longitude					0.00*** (0.00)	
Geographic Controls		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Ethnographic Controls	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark
Region FE						\checkmark
Observations	1062	1026	991	991	991	991
R-squared	0.04	0.05	0.15	0.15	0.19	0.25
Mean Dep. Variable	0.11	0.12	0.11	0.11	0.11	0.11

Table B7: First-Stage across Ethnic Groups

NOTE: OLS regressions. The unit of observation is an ethnic group included in the Ethnographic Atlas. Geographic controls are evaluated within a 200 km circle drawn around the reported location of ethnic groups. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

5.3 Irrigation and Collectivism: Further Results across Countries

					Collec	tivism				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ancestral Irrigation	16.07*** (4.08)	17.25*** (5.35)	17.18*** (5.65)	18.23*** (5.89)	17.83*** (5.21)	19.39*** (6.35)	20.52*** (5.70)	19.16*** (5.66)	18.86*** (6.70)	23.74*** (6.77)
Agricultural Suitability		23.82** (11.47)	8.07 (13.38)	21.51 (13.65)	8.83 (14.79)	24.52** (11.67)	27.35** (12.30)	27.67** (11.30)	17.42* (9.35)	10.83 (12.10)
Tropical Climate		27.19*** (10.21)	24.38** (10.25)	29.46*** (10.76)	30.52*** (9.24)	26.56** (10.18)	15.53 (11.27)	21.73** (10.64)	17.92** (8.48)	1.44 (10.03)
Distance to River (km)		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01*** (0.00)	-0.00* (0.00)
Distance to Coast (km)		-0.02 (0.01)	-0.02* (0.01)	-0.01 (0.01)	-0.02 (0.01)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.01)	-0.00 (0.01)	-0.02 (0.01)
Altitude		0.01* (0.01)	0.01** (0.01)	0.02*** (0.01)	0.01** (0.01)	0.01* (0.01)	0.01** (0.01)	0.01* (0.01)	0.00 (0.01)	0.01* (0.01)
Mean Precipitation		-0.19*** (0.07)	-0.22*** (0.07)	-0.17** (0.07)	-0.13 (0.08)	-0.20*** (0.07)	-0.16** (0.07)	-0.17** (0.07)	-0.14* (0.08)	-0.12 (0.08)
Settlement Type		2.99 (1.96)	2.35 (1.89)	2.22 (2.34)	0.71 (2.66)	2.71 (2.04)	1.81 (2.05)	1.28 (2.02)	3.07 (2.37)	3.16 (2.18)
Political Complexity		-0.47 (3.06)	-0.18 (3.16)	-0.47 (3.80)	-1.67 (3.04)	-0.43 (2.97)	1.20 (3.51)	-0.61 (3.18)	-0.67 (2.95)	-3.06 (3.79)
Mean Size Local Community		-4.03** (1.72)	-4.95*** (1.53)	-2.50 (2.09)	-1.12 (2.65)	-3.91** (1.80)	-3.87** (1.63)	-2.87 (1.82)	-4.64** (2.02)	-3.54* (1.95)
Agricultural Dependence			6.29** (2.82)							3.01 (2.74)
State Antiquity				-10.79 (12.84)						-7.02 (11.22)
Traditional Democracy					-11.78* (6.48)					0.69 (5.12)
Neolithic Revolution						-0.70 (1.17)				3.38** (1.32)
Malaria Suitability							1.22** (0.52)			1.67*** (0.54)
Ethnic Fractionalization								23.13* (11.90)		20.54** (9.94)
Controls Bagion FE		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	√	√
Region FE Observations	97	93	93	86	90	93	93	93	√ 93	√ 83
R-squared	0.07	0.36	0.41	0.40	0.37	0.37	0.39	0.40	0.63	0.73
Mean Dep. Variable	61.00	60.66	60.66	60.50	61.50	60.66	60.66	60.66	60.66	61.41
δ for $\beta = 0$		7.854	8.228	3.927	14.894	4.972	14.982	12.694	2.453	2.365

Table B8: Cross-Country Estimation: all Controls Reported

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as malaria suitability, are adjusted for ancestry. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table B9: Irrigation and Collectivism: Robustness of the Country-Level Estimates

					Colle	ctivism				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A - Reduced Form										
Irrigation Suitability	45.05***	42.52***	48.81***	36.21**	31.97*	36.66***	37.06***	51.33***	39.31***	49.65***
	(13.84)	(13.27)	(13.80)	(15.47)	(16.08)	(13.21)	(13.55)	(16.43)	(13.67)	(15.04)
Panel B - OLS										
Ancestral Irrigation	15.46***	15.68***	16.68***	13.41*	13.16**	15.14**	11.13**	21.08**	15.57**	19.11**
	(5.43)	(5.56)	(5.35)	(7.83)	(6.43)	(6.43)	(4.92)	(8.52)	(6.62)	(8.02)
Migratory Distance Squared	\checkmark									
Latitude		\checkmark								
(log) Population Density 1500			\checkmark							
Religion				\checkmark						
Polity IV (1980-2014)					\checkmark					
(ln) Income per capita						\checkmark				
Perc. Natives & Europeans							\checkmark			
Civil Conflicts (1946-2004)								\checkmark		
Pathogens									\checkmark	
No Soviet Countries										\checkmark
Controls	\checkmark									
Region FE	\checkmark									
Observations	92	93	91	93	93	92	92	90	93	88
R-squared	0.66	0.65	0.66	0.66	0.66	0.71	0.69	0.63	0.66	0.63
Mean Dep. Variable	60.41	60.66	60.55	60.66	60.66	60.50	60.41	60.41	60.66	61.31

NOTE: OLS estimations. The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			Colle	ctivism	
	(1)	(2)	(3)	(4)	(5)
	Old World	wo Asia	wo Africa	FE for Middle East	Continent FE
Panel A - Reduced Fo	orm				
Irrigation Suitability	42.22***	47.71***	55.69**	52.22***	35.05**
	(15.17)	(15.30)	(25.08)	(15.43)	(14.63)
Panel B - OLS					
Ancestral Irrigation	15.42***	21.26**	25.59***	19.97***	14.38**
	(5.74)	(9.00)	(7.08)	(7.23)	(6.37)
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	72	70	76	93	93
R-squared	0.56	0.69	0.67	0.63	0.53
Mean Dep. Variable	59.15	57.79	58.00	60.66	60.66

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			Colle	ctivism		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Reduced Form						
Irrigation Suitability	56.87*** (19.42)	59.12** (23.04)	42.99** (17.61)	36.11** (15.10)	63.55*** (20.34)	42.83*** (15.48)
Panel B - OLS						
Ancestral Irrigation	19.35*** (6.64)	18.52** (7.21)	13.84* (7.25)	18.45*** (5.93)	18.61*** (6.00)	15.50** (6.25)
Caloric Suitability pre 1500	-0.19 (0.14)					
Caloric Suitability post 1500		-0.04 (0.12)				
Arid Climate			0.75 (0.62)			
Continental Climate			0.59 (0.61)			
Temperate Climate			0.43 (0.60)			
Mean Temperature				1.93*** (0.62)		
Std Precipitation					0.41* (0.23)	
Std Precipitation Square					-0.00 (0.00)	
Ruggedness						16.22*** (4.36)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	93	93	93	93	93	93
R-squared	0.63	0.63	0.67	0.67	0.66	0.68
Mean Dep. Variable	60.66	60.66	60.66	60.66	60.66	60.66

Table B11: Cross-Country Estimation: Additional Geographic Controls

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			(Collectivisr	n		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A - Reduced Form	1						
Irrigation Suitability	50.19***	50.18***	50.00***	49.15***	49.27***	49.40***	48.57***
	(15.07)	(14.65)	(14.78)	(13.55)	(14.64)	(14.42)	(13.94)
Panel B - OLS							
Ancestral Irrigation	19.61*** (6.68)	22.79*** (6.65)	21.31*** (6.74)	16.99*** (6.34)	18.81*** (6.62)	18.94*** (6.70)	17.75** (7.01)
Share No Agriculture	11.91 (10.36)						
Intensity of Agriculture		-14.00 (8.97)					
Traditional Plow Use			-14.53 (10.84)				
Gathering				10.43 (8.34)			
Hunting				-8.67** (3.87)			
Fishing				-5.39 (4.30)			
Animal Husbandry					-0.25 (2.61)		
Clan Community						1.90 (11.39)	
Survey Year (avg.)							0.00 (0.00)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	✓
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	93	93	93	93	93	93	93
R-squared	0.63	0.64	0.63	0.65	0.63	0.63	0.63
Mean Dep. Variable	60.66	60.66	60.66	60.66	60.66	60.66	60.66

Table B12: Cross-Country Estimation: Additional Ethnographic Controls

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table B13: Correlation Matrix of Hofstede's Cultural Indicators

Variables	Collectivism	Power Distance Index	Masculinity	Uncertainty Avoidance	Long-Term Orientation	Restraint
Collectivism	1.00					
Index	0.66	1.00				
Masculinity	-0.06	0.10	1.00			
Uncertainty Avoidance	0.21	0.20	0.01	1.00		
Long-Term Orientation	-0.24	-0.11	0.03	0.12	1.00	
Restraint	0.13	0.28	0.00	0.19	0.40	1.00

	Collec	tivism	Rest	raint	Power I	Distance	Mascı	ulinity	Uncertaiı	nty Avoidance	Long-Teri	m Orientation
	(1)	(2)	(3)	(4)	(5)	(9)	(2)	(8)	(6)	(10)	(11)	(12)
	OLS	IV	OLS	IV	OLS	N	OLS	N	OLS	IV	OLS	IV
Ancestral Irrigation	17.25*** (5.35)	35.70*** (8.77)	28.40*** (4.85)	26.56*** (7.48)	17.63*** (4.46)	32.26*** (8.56)	1.65 (5.49)	14.61* (8.37)	7.48 (6.05)	11.35 (10.13)	3.86 (5.63)	-4.23 (7.11)
Controls	>	>	>	>	>	>	>	>	>	>	>	>
Observations	93	93	89	89	93	93	93	93	93	93	94	94
R-squared	0.36	0.30	0.37	0.37	0.41	0.36	0.06	0.02	0.32	0.32	0.52	0.51
Mean Dep. Variable	60.66	60.66	54.80	54.80	63.70	63.70	48.30	48.30	65.42	65.42	43.69	43.69
First Stage F-Stat		33.18		87.51		31.59		31.59		31.59		96.62

NOTE: The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.05, *** p < 0.05, *** p < 0.05, ***

	Collectivism (Hofstede)	Individualism (Schwartz)	Linguistic Individualism	In-Group Favoritism	Restraint	Social Tightness
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Reduced Form	m					
Irrigation Suitability	27.43**	-3.83***	-0.94***	1.39***	42.84**	109.75***
	(11.47)	(0.71)	(0.20)	(0.38)	(16.35)	(16.06)
Power Distance Index	0.47***	-0.02***	-0.00	0.02***	0.12	0.11
	(0.12)	(0.01)	(0.00)	(0.00)	(0.16)	(0.15)
Panel B - OLS						
Ancestral Irrigation	8.77	-1.22***	-0.51***	0.67***	26.90***	49.38***
	(6.00)	(0.45)	(0.06)	(0.18)	(7.44)	(7.06)
Power Distance Index	0.52***	-0.02***	-0.00	0.02***	0.09	0.05
	(0.11)	(0.01)	(0.00)	(0.00)	(0.16)	(0.16)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	92	62	73	82	75	52
R-squared	0.51	0.73	0.63	0.66	0.48	0.62
Mean Dep. Variable	60.39	0.28	0.55	-0.07	52.84	65.04

Table B15: Ancestral Irrigation and Collectivism, Controlling for Power Distance

NOTE: The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			Collectivism	n	
	(1)	(2)	(3)	(4)	(5)
Panel A - Reduced Form					
Irrigation Suitability	44.89***	45.05***	44.89***	45.05***	50.14***
	(13.94)	(13.84)	(13.94)	(13.84)	(15.37)
Panel B - OLS					
Ancestral Irrigation	15.35***	15.46***	15.35***	15.46***	17.37**
	(5.37)	(5.43)	(5.37)	(5.43)	(6.92)
Migratory Distance	-3.20***	-2.70			
	(1.10)	(2.52)			
Migratory Distance Sq.		-0.01			
		(0.06)			
Predicted genetic diversity			424.39***	755.97	
			(145.46)	(1392.49)	
Predicted genetic diversity square				-257.58	
				(1088.33)	
Genetic distance to the U.S. (weighted)					-0.33
					(0.65)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	92.00	92.00	92.00	92.00	91.00
R-squared	0.66	0.66	0.66	0.66	0.61

Table B16: Ancestral Irrigation and Collectivism, Controlling for Genetic Diversity

NOTE: The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			Collectivism	ı	
	(1)	(2)	(3)	(4)	(5)
Irrigated Rice Suitability	6.79***		7.10***		
	(1.70)		(2.25)		
Rainfed Rice Suitability		8.41**	-1.02		
		(3.71)	(4.62)		
Δ Suitability (Irrigation-Rainfed)				10.83***	5.75*
				(2.78)	(2.91)
Region FE					\checkmark
Observations	93	93	93	93	93
R-squared	0.41	0.34	0.41	0.39	0.61
Mean Dep. Variable	60.66	60.66	60.66	60.66	60.66

Table B17: Irrigated vs Rainfed Rice and Collectivism across Countries

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the Hofstede *et al.* (2010) Index of Collectivism. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Collec	ctivism	
	(1)	(2)	(3)	(4)
Panel A - Reduced Form				
Irrigation Suitability	49.20***	49.20***	53.58***	31.97*
	(14.40)	(14.51)	(13.08)	(16.08)
Landed Elite		1.15 (8.97)		
Land Inequality			-48.01***	
			(17.93)	
Polity IV (1980 - 2014)				-1.09**
				(0.50)
Proportion of total effect mediated	•	0	-0.113	0.350
Panel B - OLS				
Ancestral Irrigation	18.86***	21.24***	19.76**	13.16**
	(6.70)	(7.59)	(7.88)	(6.43)
Landed Elite		-13.13		
		(11.38)		
Land Inequality			-36.96**	
			(17.54)	
Polity IV (1980 - 2014)				-1.28***
				(0.41)
Controls	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark
Observations	93	93	80	93
R-squared	0.63	0.63	0.72	0.66
Mean Dep. Variable	60.66	60.66	59.79	60.66
Proportion of total effect mediated		-0.126	0.023	0.302

Table B18: Irrigation, Land Inequality, and Elite Stratification

NOTE: OLS regressions. The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Lar	nd Inequ	ality
	(1)	(2)	(3)
Ancestral Irrigation	0.01		
Irrigation Suitability	()	0.07 (0.09)	
Irrigation Suitability (Local)			0.24*** (0.08)
Controls	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark
Observations	103	103	101
R-squared	0.57	0.58	0.51
Mean Dep. Variable	0.60	0.60	0.60

Table B19: Ancestral versus Local Irrigation Suitability and Land Inequality

NOTE: OLS regressions. The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			Polity IV	(1980-2014	4)		Pro	test Poten	tial
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ancestral Irrigation	-3.83** (1.58)						-0.20*** (0.05)		
Irrigation Suitability		-10.26*** (2.46)		-9.69*** (3.37)	-9.74*** (3.36)	-15.17*** (2.54)		-0.40*** (0.14)	-0.26* (0.14)
Irrigation Suitability (Local)			-4.99** (2.41)	-0.98 (3.10)					
Irrigation Suitability Class 5 (Local)					-0.84 (2.97)				
Land Inequality						5.09* (2.62)			
Polity IV (1980 - 2014)									0.01*** (0.00)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	144	144	144	144	144	101	91	91	90
R-squared	0.61	0.63	0.60	0.63	0.63	0.78	0.45	0.43	0.50
Mean Dep. Variable	2.55	2.55	2.55	2.55	2.55	3.79	-0.00	-0.00	-0.01

Table B20: The Culturally Embodied Effect of Irrigation on Institutions

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the Polity IV index in columns (1) to (6) and Protest Potential in columns (7) to (9). Protest potential measures citizens willingness to engage in lawful boycott, demonstrations or to sign a petition, and is constructed from survey responses of the WVS/EVS, following Nevitte (2014). Protest potential is constructed as country average of the residuals obtained from individual level regressions that control for age, gender, marital status, education and survey wave fixed effects. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

				Ance	stral Irrig	ation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Irrigation Suitability	1.09*** (0.15)	1.14*** (0.15)	0.98*** (0.17)	1.09*** (0.15)	0.90*** (0.15)	1.04*** (0.14)	1.04*** (0.14)	0.74*** (0.18)	0.78*** (0.17)
Agricultural Dependence		0.09*** (0.02)							0.09*** (0.02)
State Antiquity			0.39*** (0.13)						0.20 (0.15)
Traditional Democracy				0.06 (0.07)					0.05 (0.07)
Neolithic Revolution					0.04*** (0.01)				-0.02 (0.02)
Malaria Suitability						-0.01** (0.01)			-0.01* (0.01)
Ethnic Fractionalization							-0.19 (0.12)		0.16 (0.11)
Controls	\checkmark								
Region FE								\checkmark	\checkmark
Observations	151	151	136	148	147	151	148	151	131
R-squared	0.42	0.48	0.46	0.42	0.48	0.44	0.42	0.61	0.65
Mean Dep. Variable	0.21	0.21	0.20	0.21	0.21	0.21	0.21	0.21	0.19

Table B21: First-Stage Results

NOTE: OLS regressions. The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). The dependent variable is Ancestral Irrigation, which measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Collect	ivism	
IV, Irrigation Suitability	Impact Classes 4 and 5 (Baseline)	Impact Class 5	Average Class
	(1)	(2)	(3)
Ancestral Irrigation	35.70***	36.32***	26.05***
	(4.07)	(4.06)	(3.43)
Controls	\checkmark	\checkmark	\checkmark
Observations	93	93	93
R-squared	0.30	0.29	0.35
Mean Dep. Variable	60.66	60.66	60.66
First Stage F-Stat	33.18	29.92	34.17

Table B22: Alternative Definitions of the Instrument

NOTE: 2SLS regressions. The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). The dependent variable is Ancestral Irrigation, which measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

			Collec	tivism		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Reduced Form						
Irrigation Suitability	34.34*** (9.78)	43.16*** (11.77)	38.20*** (10.46)	31.73*** (9.60)	38.01*** (11.42)	37.68*** (11.57)
Panel B - 2SLS						
Ancestral Irrigation	26.45*** (7.92)	33.48*** (11.75)	27.83*** (8.79)	25.24*** (8.65)	36.16*** (7.31)	36.72*** (7.47)
Soil Constraints	-52.63*** (15.45)					
Terrain Constraints	-25.34** (9.84)					
Arid Climate		4.38 (13.25)				
Std Precipitation			0.57*** (0.17)			
Std Precipitation Square			-0.00 (0.00)			
Ruggedness				17.96*** (4.72)		
Migratory Distance					2.50 (1.73)	2.50 (1.74)
Migratory Distance Sq.					-0.03 (0.06)	-0.03 (0.06)
Clan Community						6.93 (12.11)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	93	93	93	93	92	92
R-squared	0.48	0.31	0.42	0.44	0.47	0.47
Mean Dep. Variable	60.66	60.66	60.66	60.66	60.41	60.41
First Stage <i>F</i> -Stat	34.12	20.60	28.50	26.22	34.59	33.19

Table B23: Robustness of IV Results to Additional Controls

NOTE: OLS regressions. The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). The dependent variable is Ancestral Irrigation, which measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

Variables	Collectivism (Hofstede)	Individualism (Schwartz)	In-Group Favoritism	Restraint	Social Tightness	Linguistic Individualism
Collectivism (Hofstede)	1.00					
Individualism (Schwartz)	-0.63	1.00				
In-Group Favoritism	0.68	-0.64	1.00			
Restraint	0.13	-0.20	0.40	1.00		
Social Tightness	0.54	-0.72	0.63	0.38	1.00	
Linguistic Individualism	-0.54	0.69	-0.55	-0.42	-0.80	1.00

Table B24: Correlation Matrix of Country Collectivism Measures

Variables	Collectivism (Hofstede)	Conformity	Collectivism Scale	Collective Ownership	Control over Life	Obedience	Good Manners	Independence	Imagination
Collectivism (Hofstede)	1.00								
Conformity	0.46	1.00							
Collectivism Scale	0.41	0.87	1.00						
Collective Ownership	0.60	0.39	0.35	1.00					
Control over Life	-0.01	0.16	0.09	-0.04	1.00				
Obedience	0.48	0.84	0.81	0.36	0.06	1.00			
Good Manners	0.36	0.77	0.59	0.09	0.22	0.34	1.00		
Independence	-0.17	-0.47	-0.76	-0.23	0.10	-0.50	-0.19	1.00	
Imagination	-0.16	-0.12	-0.30	-0.28	0.11	-0.10	0.06	0.16	1.00

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Variables	Individualism (Schwartz)	In-Group Favoritism	Restraint	Social Tightne > ss	Linguistic Individualism	Conformity	Collectivism Scale	Collective Ownership	Control over Life
Individualism (Schwartz)	1.00	•		b	0			4	
In-Group Favoritism	-0.64	1.00							
Restraint	-0.20	0.40	1.00						
Social Tightness	-0.72	0.63	0.38	1.00					
Linguistic Individualism	0.69	-0.55	-0.42	-0.80	1.00				
Conformity	-0.54	0.24	-0.24	0.35	-0.26	1.00			
Collectivism Scale	-0.54	0.33	-0.17	0.28	-0.13	0.87	1.00		
Collective Ownership	-0.58	0.46	0.22	0.38	-0.51	0.39	0.35	1.00	
Control over Life	0.17	-0.23	-0.78	-0.24	0.19	0.16	0.09	-0.04	1.00

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Respect							1.00
Loyalty						1.00	0.40
Follow Rules					1.00	0.16	0.33
Modesty				1.00	0.21	0.48	0.37
Proper Behavior			1.00	0.35	0.43	0.39	0.41
Collectivism		1.00	0.79	0.67	0.62	0.68	0.70
Collectivism (Hofstede)	1.00	0.35	0.28	0.35	0.36	-0.09	0.14
Variables	Collectivism (Hofstede)	Collectivism	Proper Behavior	Modesty	Follow Rules	Loyalty	Respect

Table B27: Correlation Matrix of Hofstede's Collectivism and ESS Measures (Origin Country)

	Trust	Trust Strangers	Trust Family	Trust Neighbors	Trust (Family-Strangers)	Trust (Neighbors-Strangers)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Reduced For	rm					
Irrigation Suitability	-0.08**	-0.23***	0.17***	0.24***	0.40***	0.50***
	(0.03)	(0.07)	(0.04)	(0.08)	(0.08)	(0.08)
Panel B - OLS						
Ancestral Irrigation	-0.02	-0.12***	0.04*	0.05	0.16***	0.17***
	(0.02)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)
Panel C - 2SLS						
Ancestral Irrigation	-0.07**	-0.21***	0.16***	0.23***	0.38***	0.47***
	(0.03)	(0.07)	(0.04)	(0.07)	(0.08)	(0.08)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	191,400	102,253	107,243	103,751	101,991	101,528
Number of Districts	940	700	708	707	700	700
R-squared	0.02	0.02	0.01	0.03	0.01	0.01
Mean Dep. Variable	0.27	0.96	2.80	1.87	1.84	0.91
First Stage F-stat	107.37	79.75	88.63	84.62	79.66	80.09

Table B28: Ancestral Irrigation and the Radius of Trust

NOTE: The unit of observation is the individual. Controls include individual characteristics (age, age square, gender, marriage status, and education), survey wave indicators, as well as baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a district's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Regressions are weighted by survey weights. Heteroscedastic-robust standard errors in parentheses, clustered at the sub-national district. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Confo	ormity	Collec (Conform	tivism Scale= nity-Autonomy)	Colle Owne	ective ership	Degree o over	f Control Life
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A - Reduced Form								
Irrigation Suitability	0.71***	0.28***	0.53***	0.40**	1.92***	1.32***	-1.11***	-0.78**
	(0.11)	(0.09)	(0.18)	(0.16)	(0.26)	(0.42)	(0.18)	(0.30)
Landed Elite	-0.02	0.01	0.50***	0.09	-0.24	-0.58*	0.68***	0.15
	(0.08)	(0.05)	(0.13)	(0.07)	(0.20)	(0.34)	(0.09)	(0.16)
Proportion of total effect mediated	0.011	0.125	0.50	0.196	-0.032	-0.159	-0.175	-0.058
Panel B - OLS								
Ancestral Irrigation	0.13***	0.08***	0.07	0.05	0.74***	0.44***	-0.64***	-0.27**
	(0.04)	(0.03)	(0.05)	(0.05)	(0.11)	(0.14)	(0.07)	(0.12)
Landed Elite	0.03	0.04	0.61***	0.16**	-0.33	-0.49	0.80***	0.09
	(0.07)	(0.05)	(0.12)	(0.06)	(0.24)	(0.36)	(0.12)	(0.18)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark		\checkmark		\checkmark		\checkmark	
Country FE		\checkmark		\checkmark		\checkmark		\checkmark
Observations	70,978	70,978	69,171	69,171	174,365	174,365	190,412	190,412
Number of Districts	487	487	472	472	896	896	931	931
R-squared	0.11	0.17	0.11	0.15	0.05	0.09	0.07	0.11
Mean Dep. Variable	1.04	1.04	0.45	0.45	5.40	5.40	6.83	6.83
Proportion of total effect mediated	0.090	0.093	0.579	0.335	-0.075	-0.076	-0.211	-0.020

Table B29: Ancestral Irrigation and Elite Stratification

NOTE: The unit of observation is the individual. Controls include individual characteristics (age, age square, gender, marriage status, and education), survey wave indicators, as well as baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a district's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Regressions are weighted by survey weights. Heteroscedastic-robust standard errors in parentheses, clustered at the sub-national district. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Confo	ormity	Collect (Conform	ivism Scale= ity-Autonomy)	Colle Owne	ective ership	Degree of over	f Control Life
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A - Reduced Fo	rm							
Irrigation Suitability	0.713***	0.290***	0.879***	0.452***	1.799***	1.089***	-0.938***	-0.665**
	(7.01)	(3.74)	(4.75)	(3.07)	(7.38)	(2.82)	(-4.90)	(-2.32)
Panel B - OLS								
Ancestral Irrigation	0.15***	0.09***	0.18**	0.07*	0.62***	0.40***	-0.45***	-0.26**
	(0.04)	(0.03)	(0.07)	(0.04)	(0.09)	(0.14)	(0.08)	(0.12)
Religion	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark		\checkmark		\checkmark		\checkmark	
Country FE		\checkmark		\checkmark		\checkmark		\checkmark
Observations	70,978	70,978	69,171	69,171	175,349	175,349	191,399	191,399
Number of Districts	487	487	472	472	899	899	934	934
R-squared	0.12	0.17	0.11	0.16	0.06	0.09	0.07	0.11
Mean Dep. Variable	1.04	1.04	0.45	0.45	5.40	5.40	6.82	6.82

Table B30: Controlling for Religion

NOTE: The unit of observation is the individual. All regressions control for self-reported religious denomination (catholic, orthodox, buddhist, muslim, protestant, hindu, none, other). Controls include individual characteristics (age, age square, gender, marriage status, and education), survey wave indicators, as well as baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a district's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Regressions are weighted by survey weights. Heteroscedastic-robust standard errors in parentheses, clustered at the sub-national district. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Confo	ormity	Collecti (Conform	vism Scale= ity-Autonomy)	Colle Owne	ective ership	Degree of over	f Control Life
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A - Reduced Fo	orm							
Irrigation Suitability	0.672***	0.262***	0.903***	0.428***	1.956***	1.029***	-0.948***	-0.690**
	(5.53)	(3.06)	(4.60)	(2.71)	(7.52)	(2.67)	(-4.90)	(-2.39)
Panel B - OLS								
Ancestral Irrigation	0.11**	0.07**	0.17**	0.03	0.76***	0.39***	-0.57***	-0.27**
	(0.05)	(0.03)	(0.08)	(0.04)	(0.10)	(0.13)	(0.08)	(0.13)
Religiosity	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark		\checkmark		\checkmark		\checkmark	
Country FE		\checkmark		\checkmark		\checkmark		\checkmark
Observations	63,428	63,428	61,669	61,669	164,840	164,840	181,764	181,764
Number of Districts	467	467	452	452	895	895	933	933
R-squared	0.12	0.17	0.11	0.16	0.05	0.09	0.07	0.11
Mean Dep. Variable	1.05	1.05	0.47	0.47	5.40	5.40	6.84	6.84

Table B31: Controlling for Religiosity

NOTE: The unit of observation is the individual. All regressions control for self-reported religiosity. Controls include individual characteristics (age, age square, gender, marriage status, and education), survey wave indicators, as well as baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a district's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Regressions are weighted by survey weights. Heteroscedasticrobust standard errors in parentheses, clustered at the sub-national district. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Obed	ience	Strong	Leader
	(1)	(2)	(3)	(4)
Panel A: Reduced Form				
Irrigation Suitability	0.12*** (0.04)	0.10** (0.05)	-0.12 (0.14)	-0.15 (0.14)
× States	0.04** (0.02)		0.31*** (0.05)	
× Mean Size Local Community		0.00** (0.00)		0.04*** (0.01)
States	-0.06*** (0.02)		-0.19*** (0.07)	
Mean Size Local Community	0.01 (0.01)	0.00 (0.01)	-0.00 (0.02)	-0.02 (0.02)
Panel B: OLS				
Ancestral Irrigation	0.01 (0.03)	0.03 (0.05)	0.16 (0.10)	0.03 (0.21)
× States	0.05 (0.04)		0.12 (0.11)	
× Mean Size Local Community		0.00 (0.01)		0.03 (0.03)
States	-0.05* (0.03)		-0.11 (0.09)	
Mean Size Local Community	0.00 (0.01)	0.00 (0.01)	-0.00 (0.02)	-0.01 (0.02)
Controls	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark
Observations	192,141	192,141	177,154	177,154
Number of Districts	918	918	931	931
R-squared	0.09	0.09	0.07	0.07
Mean Dep. Variable	0.36	0.36	2.23	2.23

Table B32: Heterogeneous Effects on Acceptance of Authority

NOTE: The unit of observation is the individual. Controls include individual characteristics (age, age square, gender, marriage status, and education), survey wave indicators, as well as baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a district's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Regressions are weighted by survey weights. Heteroscedastic-robust standard errors in parentheses, clustered at the subnational district. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Obed	lience	Strong	Leader	Tri	ust
	(1)	(2)	(3)	(4)	(5)	(6)
Irrigation Suitability	-0.07 (0.06)	-0.08	0.20	0.40** (0.20)	-0.04	-0.09** (0.05)
× River Length (1000 km)	0.22*** (0.05)	(0.01)	-0.11 (0.13)	(0.20)	-0.06 (0.05)	(0.00)
× Small river Length (1000 km)		-0.06 (0.05)		-0.36** (0.17)		-0.06 (0.07)
× Big river Length (1000 km)		0.64*** (0.07)		0.45** (0.21)		-0.12** (0.06)
River length (1000 km)	-0.08*** (0.02)		0.03 (0.06)		0.02 (0.02)	
Small river length (1000 km)		0.01 (0.02)		0.29*** (0.07)		-0.03 (0.02)
Big river length (1000 km)		-0.33*** (0.03)		-0.56*** (0.12)		0.12*** (0.03)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	184,698	184,698	169,938	169,938	183,869	183,869
Number of Districts	872	872	885	885	894	894
R-squared	0.09	0.10	0.06	0.08	0.06	0.06
Mean Dep. Variable	0.36	0.36	2.22	2.22	0.27	0.27

Table B33: Heterogeneous Effects by River Size

NOTE: The unit of observation is the individual. Controls include individual characteristics (age, age square, gender, marriage status, and education), survey wave indicators, as well as baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a district's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Regressions are weighted by survey weights. Heteroscedastic-robust standard errors in parentheses, clustered at the sub-national district. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table B34: Geographic Matching Estimator

	Conform	nity	Collectivism (Conformity-Au	Scale= itonomy)	Collecti Ownersl	ve 1ip	Degree of C over Li	ontrol fe
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SATT	0.12***	0.12***	0.17***	0.10**	0.48***	0.14	-0.29***	-0.53***
	(0.03)	(0.04)	(0.04)	(0.05)	(0.12)	(0.20)	(0.08)	(0.14)
Matching Variables	Lat/Long, Controls	+ Country FE	Lat/Long, Controls	+ Country FE	Lat/Long, Controls	+ Country FE	Lat/Long, Controls	+ Country FE
Observations	487	487	472	472	899	899	934	934

NOTE: The unit of observation is the region. SATT indicates the treatment effect for the treated from a nearest neighbor matching for the 2 nearest matches. The treatment variable takes on the value 1 if the regional share of ancestral irrigation is larger than 0, and 0 otherwise. All dependent variables are country averages of the residuals obtained from individual level regressions that control for age, gender, marital status, education and survey wave fixed effects and based on survey responses from the World Values Survey/European Values Survey. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Heteroscedastic-robust standard errors in parentheses. * p < 0.00, *** p < 0.05, *** p < 0.01.

5.5 Irrigation and Collectivism: Further Results across Migrants

			Collec	tivism		
	All Mi	grants	1st Gen	eration	2nd Ge	neration
	(1)	(2)	(3)	(4)	(5)	(6)
Ancestral Irrigation	0.97***	1.21***	0.87***	0.93***	1.13**	1.88***
-	(0.29)	(0.31)	(0.24)	(0.24)	(0.53)	(0.64)
Polity IV (2000-2010)	0.01	0.02*	0.01	0.01	0.02	0.06*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)
Ethnic Fractionalization	0.02	0.02	0.01	0.03	-0.04	-0.33
	(0.17)	(0.20)	(0.15)	(0.17)	(0.41)	(0.61)
(ln) Income per capita	-0.02	-0.06	-0.05	-0.08*	0.03	-0.08
	(0.04)	(0.05)	(0.04)	(0.04)	(0.09)	(0.11)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE	\checkmark		\checkmark		\checkmark	
Sub-National District FE		\checkmark		\checkmark		\checkmark
Observations	17,159	8,103	12,988	6,044	4,165	2,057
R-squared	0.05	0.08	0.05	0.10	0.06	0.15
No. Origin Countries	1193	909	1159	875	388	273
Mean Dep. Variable	0.00	0.04	0.01	0.06	-0.01	-0.01
First Stage F-Stat	22.15	24.00	27.73	30.52	17.98	20.24

Table B35: Estimates of Cultural Transmission in European Migrants Conditional on Home Country Controls

NOTE: 2SLS estimates. The unit of observation is an European immigrant. The dependent variable collectivism is the principal component of respect, loyalty, rule following, proper behavior, and modesty. Controls include individual characteristics (age, gender, marriage status, education, city type), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as survey wave indicator variables. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin is defined by the common birth country of parents. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin × country of residence level. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table B36: Cultural Transmission in Second-Generation European Migrants Father & Mother Country of Origin

			Collectiv	ism		
	Parents S	ame Country	Mother's	Country	Father's	Country
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Reduced Form						
Irrigation Suitability	0.57***	1.04***	0.36***	0.57***	0.36***	0.63***
	(0.20)	(0.26)	(0.11)	(0.15)	(0.11)	(0.15)
Panel B: OLS						
Ancestral Irrigation	0.06	0.30**	-0.03	0.06	0.01	0.06
	(0.10)	(0.13)	(0.06)	(0.09)	(0.06)	(0.08)
Panel C: 2SLS						
Ancestral Irrigation	0.97**	1.45***	0.49***	0.67***	0.53***	0.78***
	(0.39)	(0.40)	(0.18)	(0.20)	(0.19)	(0.22)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE	\checkmark		\checkmark		\checkmark	
Sub-National District FE						
Observations	4,312	2,136	10,314	4,894	10,856	5,223
No. Origin Countries	0.07	0.17	0.09	0.15	0.09	0.13
Mean Dep. Variable	414	291	818	576	887	600
First Stage F-Stat	-0.01	-0.00	-0.11	-0.05	-0.10	-0.04
fstat	15.77	18.46	27.46	27.34	23.90	25.23

NOTE: The unit of observation is a European second-generation immigrant. The dependent variable collectivism is the principal component of respect, loyalty, rule following, proper behavior, and modesty. Controls include individual characteristics (age, gender, marriage status, education, city type), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as survey wave indicator variables. The odd numbered columns control for country of residence fixed effects, the even numbered columns control for sub-national district of residence fixed effects. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin of migrants is defined by the common birth country of parents in columns (1) and (2), the birth country of the father in columns (3) and (4), and the birth country of the mother in columns (5) and (6). Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin × country of residence level. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Collectivism				
	(1)	(2)	(3)	(4)	
Ancestral Irrigation × # of Recessions (1990-2010)	3.07**				
	(1.19)				
Ancestral Irrigation × # of Recessions (1950-2010)		3.00***			
		(1.06)			
Ancestral Irrigation × Growth GDP p.c. (1980-2010)			-0.11		
			(0.07)		
Ancestral Irrigation × Growth GDP p.c. (1950-2010)				-0.14*	
				(0.07)	
Controls	\checkmark	\checkmark	\checkmark	\checkmark	
Country of Origin FE	\checkmark	\checkmark	\checkmark	\checkmark	
Host Country FE	\checkmark	\checkmark	\checkmark	\checkmark	
Observations	4,475	4,475	4,475	4,475	
R-squared	0.13	0.13	0.13	0.13	
No. Origin Countries	421	421	421	421	
Mean Dep. Variable	0.01	0.01	0.01	0.01	

Table B37: Factors Affecting Cultural Persistence: Economic Shocks

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NOTE: The unit of observation is a second-generation European immigrant. The dependent variable collectivism is the principal component of respect, loyalty, rule following, proper behavior, and modesty. Controls include individual characteristics (age, gender, marriage status, education, city type), as well as survey wave indicator variables. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin is defined by the common birth country of parents. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin × country of residence level. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Collectivism			
	(1)	(2)	(3)	(4)
Ancestral Irrigation × Political Stability and Absence of Violence	-0.14*			
	(0.07)			
Ancestral Irrigation × Regulatory Quality		-0.18		
		(0.16)		
Ancestral Irrigation × Voice and Accountability			-0.37**	
			(0.17)	
Ancestral Irrigation × Conflict Intensity				0.41*
				(0.23)
Controls	\checkmark	\checkmark	\checkmark	\checkmark
Country of Origin FE	\checkmark	\checkmark	\checkmark	\checkmark
Host Country FE	\checkmark	\checkmark	\checkmark	\checkmark
Observations	4,312	4,312	4,312	1,074
R-squared	0.12	0.12	0.12	0.13
No. Origin Countries	414	414	414	83
Mean Dep. Variable	-0.01	-0.01	-0.01	-0.19

Table B38: Factors Affecting Cultural Persistence: Institutions

NOTE: The unit of observation is a second-generation European immigrant. The dependent variable collectivism is the principal component of respect, loyalty, rule following, proper behavior, and modesty. Controls include individual characteristics (age, gender, marriage status, education, city type), as well as survey wave indicator variables. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin is defined by the common birth country of parents. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin × country of residence level. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Collectivism			
	(1)	(2)	(3)	(4)	(5)
Ancestral Irrigation × Freedom to Trade	-0.14 (0.15)				
Ancestral Irrigation × Positive Attitudes Immigration		0.34** (0.15)			
Ancestral Irrigation × Migration Share (2000-2010)			0.04* (0.02)		
Ancestral Irrigation × Cultural Diversity				0.78 (0.65)	
Ancestral Irrigation × Size of Plurality Group					-1.32** (0.52)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country of Origin FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Host Country FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	4,312	4,312	3,147	4,231	4,231
R-squared	0.12	0.12	0.14	0.12	0.12
No. Origin Countries	414	414	351	404	404
Mean Dep. Variable	-0.01	-0.01	-0.15	-0.01	-0.01

Table B39: Factors Affecting Cultural Persistence: Openness

NOTE: The unit of observation is a second-generation European immigrant. The dependent variable collectivism is the principal component of respect, loyalty, rule following, proper behavior, and modesty. Controls include individual characteristics (age, gender, marriage status, education, city type), as well as survey wave indicator variables. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin is defined by the common birth country of parents. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin × country of residence level. * p < 0.05, *** p < 0.01.

	Collectivism		
	(1)	(2)	(3)
Ancestral Irrigation × Secondary Enrollment, age >15	-0.00 (0.01)		
Ancestral Irrigation × PISA Score 2006-2009		-0.00 (0.00)	
Ancestral Irrigation × Expenditure per student, Secondary			-0.02 (0.02)
Controls	\checkmark	\checkmark	\checkmark
Country of Origin FE	\checkmark	\checkmark	\checkmark
Host Country FE	\checkmark	\checkmark	\checkmark
Observations	4,312	4,141	3,852
R-squared	0.12	0.12	0.12
No. Origin Countries	414	397	363
Mean Dep. Variable	-0.01	0.01	0.02

Table B40: Factors Affecting Cultural Persistence: Education

NOTE: The unit of observation is a second-generation European immigrant. The dependent variable collectivism is the principal component of respect, loyalty, rule following, proper behavior, and modesty. Controls include individual characteristics (age, gender, marriage status, education, city type), as well as survey wave indicator variables. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin is defined by the common birth country of parents. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin × country of residence level. * p < 0.10, ** p < 0.05, *** p < 0.01.
				Scienti	fic articles	(per 1,000	people)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A - Reduced Form										
Irrigation Suitability	-0.50***	-0.49***	-0.53***	-0.27*	-0.39**	-0.44**	-0.53***	-0.75***	-0.52***	-0.61***
	(0.17)	(0.16)	(0.18)	(0.16)	(0.16)	(0.18)	(0.18)	(0.28)	(0.18)	(0.19)
Panel B - OLS										
Ancestral Irrigation	-0.35***	-0.35***	-0.37***	-0.22**	-0.30***	-0.33***	-0.38***	-0.47***	-0.34***	-0.36***
	(0.10)	(0.09)	(0.10)	(0.09)	(0.08)	(0.12)	(0.11)	(0.13)	(0.10)	(0.14)
Migratory Distance Squared	\checkmark									
Latitude		\checkmark								
(log) Population Density 1500			\checkmark							
Religion				\checkmark						
Perc. Natives & Europeans					\checkmark					
Civil Conflicts (1946-2004)						\checkmark				
Malaria Suitability							\checkmark			
Pathogens								\checkmark		
Ethnic Fractionalization									\checkmark	
No Soviet Countries										\checkmark
Controls	\checkmark									
Region FE	\checkmark									
Observations	150	150	148	149	146	143	150	92	147	135
R-squared	0.63	0.63	0.62	0.67	0.64	0.64	0.62	0.72	0.64	0.67
Mean Dep. Variable	0.25	0.25	0.25	0.25	0.26	0.26	0.25	0.39	0.26	0.26

Table B41: Irrigation and Scientific Productivity: Robustness of the Country-Level Estimates

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the average number of articles produced annually between 2000-2010 per 1,000 inhabitants. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, *** p < 0.05, *** p < 0.01.

	Scientif	ic articles	(per 1,000	people)
	(1)	(2)	(3)	(4)
Panel A - Reduced Form				
Irrigation Suitability	-0.69***	-0.81***	-0.62***	-0.62***
	(0.18)	(0.20)	(0.20)	(0.19)
Panel B - OLS				
Ancestral Irrigation	-0.39***	-0.44***	-0.42***	-0.40***
	(0.10)	(0.11)	(0.10)	(0.10)
Years Schooling, age >25	0.04***			
	(0.01)			
Secondary Enrollment, age >15		-0.00		
		(0.00)		
Years Tertiary Schooling, age >25			0.53***	
			(0.16)	
Tertiary Completed, age >25				0.02***
				(0.01)
Controls	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark
Observations	127	127	127	127
R-squared	0.69	0.67	0.72	0.71
Mean Dep. Variable	0.29	0.29	0.29	0.29

Table B42: Irrigation and Scientific Productivity: Robustness to Education

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the average number of articles produced annually between 2000-2010 per 1,000 inhabitants. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Scientifi	c articles (per 1,000 j	people)
	(1)	(2)	(3)	(4)
Ancestral Irrigation	-0.71***	-0.62***	-0.67***	-0.42**
Noolithic Povolution	(0.22)	(0.23)	(0.19)	(0.19)
Neonthic Revolution		(0.03)		
Traditional Democracy		0.05		
		(0.10)		
State Antiquity		0.45*** (0.17)		
Polity IV (2000 - 2010)			-0.00	
			(0.01)	
(ln) Income per capita			0.11***	
			(0.04)	
Tertiary Enrollment, age >25			0.01***	
			(0.00)	
Agriculture (% of GDP)				-0.09*
				(0.05)
Industry (% of GDP)				-0.09*
				(0.05)
Services (% of GDP)				-0.08
				(0.05)
Controls	\checkmark	\checkmark	\checkmark	\checkmark
Region FE	\checkmark	\checkmark	\checkmark	\checkmark
Observations	150	132	122	142
R-squared	0.59	0.64	0.73	0.66
Mean Dep. Variable	0.25	0.26	0.30	0.25
First Stage F-Stat	16.27	16.34	19.62	18.16

Table B43: Irrigation and Scientific Productivity:2SLS with Country Controls

NOTE: 2SLS regressions. The unit of observation is the country. The dependent variable is the average number of articles produced annually between 2000-2010 per 1,000 inhabitants. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Scientific articles (p	Scientific articles (per 1,000 people)							
IV, Irrigation Suitability	Impact Classes 4 and 5 (Baseline)	Impact Class 5	Average Class						
	(1)	(2)	(3)						
Ancestral Irrigation	-0.71***	-0.77***	-0.64***						
	(0.22)	(0.25)	(0.21)						
Controls	\checkmark	\checkmark	\checkmark						
Region FE	\checkmark	\checkmark	\checkmark						
Observations	150	150	150						
R-squared	0.59	0.57	0.60						
Mean Dep. Variable	0.25	0.25	0.25						
First Stage F-Stat	16.27	13.31	15.36						

Table B44: Irrigation and Scientific Productivity: Alternative Definitions of the Instrument

NOTE: 2SLS regressions. The unit of observation is the country. The dependent variable is the average number of articles produced annually between 2000-2010 per 1,000 inhabitants. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Scientif	ic articles	s (per 1,00) people)	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A - Reduced Form						
Irrigation Suitability (Ancestral)	-0.58***	-0.45*	-0.46**	-0.49***	-0.42**	-0.42**
	(0.19)	(0.24)	(0.19)	(0.17)	(0.18)	(0.18)
Panel B - 2SLS						
Ancestral Irrigation	-0.78***	-0.49**	-0.64**	-0.67***	-0.68***	-0.66***
	(0.24)	(0.23)	(0.25)	(0.23)	(0.21)	(0.20)
Soil Constraints	-0.37**					
	(0.16)					
Terrain Constraints	0.33*					
	(0.19)					
Arid Climate		-0.23				
		(0.16)				
Std Precipitation			0.00			
			(0.00)			
Std Precipitation Square			-0.00			
			(0.00)			
Ruggedness				-0.16**		
				(0.06)		
Migratory Distance					0.01	0.00
					(0.03)	(0.03)
Migratory Distance Sq.					0.00	0.00
					(0.00)	(0.00)
Clan Community						-0.09
	1	/	1	/	1	(0.03)
Controls Begion FF	√ .(√	√	√	√ .(√ √
Observations	v 150	v 150	v 150	v 150	v 150	v 150
R-squared	0.59	0.62	0.60	0.61	0.60	0.60
Mean Dep. Variable	0.25	0.25	0.25	0.25	0.25	0.25
First Stage F-Stat	13.46	13.48	13.00	15.87	15.98	17.90

Table B45: Irrigation and Scientific Productivity:OLS and IV with Additional Geography

NOTE: The unit of observation is the country. The dependent variable is the average number of articles produced annually between 2000-2010 per 1,000 inhabitants. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Scientifi	ic articles (j	Current Technology	
	(1)	(2)	(3)	(4)
Irrigation Suitability (Ancestral)	-0.38**	-0.52***	-0.50**	-0.32***
	(0.19)	(0.17)	(0.20)	(0.08)
Irrigation Suitability (Local)	0.01		-0.04	0.11
	(0.19)		(0.14)	(0.07)
Controls		\checkmark	\checkmark	\checkmark
Region FE		\checkmark	\checkmark	\checkmark
Observations	160	150	150	119
R-squared	0.07	0.61	0.61	0.74
Mean Dep. Variable	0.24	0.25	0.25	0.45

Table B46: The Culturally Embodied Effect of Irrigation on Current Technological Progress

NOTE: OLS regressions. The unit of observation is the country. The dependent variable in columns (1) - (3) is the average number of articles produced annually between 2000-2010 per 1,000 inhabitants, and in column (4) the index of technological progress taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Technological Progress (Ancestry Adjusted)							
	1000	1000 BC		0 AD		1500 AD) AD	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Ancestral Irrigation	0.219*** (0.083)	0.203* (0.116)	0.129*** (0.030)	0.119*** (0.043)	0.128** (0.055)	0.140** (0.064)	-0.110*** (0.036)	-0.117*** (0.044)	
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
Region FE		\checkmark		\checkmark		\checkmark		\checkmark	
Observations	102	102	122	122	110	110	119	119	
R-squared	0.30	0.38	0.35	0.40	0.68	0.79	0.56	0.72	
Mean Dep. Variable	0.53	0.53	0.83	0.83	0.61	0.61	0.45	0.45	

Table B47: Irrigation and Long-Run Technological Reversal across Nations

NOTE: OLS regressions. The unit of observation is the country. The dependent variable is the index of technological progress taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

		(lo		(ln) Inco	me per capita			
	1 A	AD	1000 AD		1500 AD		20	000 AD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ancestral Irrigation	0.724**	0.011	0.676**	0.170	0.470	0.064	-0.171	-0.309
	(0.338)	(0.616)	(0.318)	(0.583)	(0.294)	(0.540)	(0.213)	(0.243)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Region FE		\checkmark		\checkmark		\checkmark		\checkmark
Observations	131.00	131.00	143.00	143.00	148.00	148.00	147.00	147.00
R-squared	0.21	0.57	0.21	0.53	0.22	0.56	0.59	0.72
Mean Dep. Variable	-0.06	-0.06	0.50	0.50	0.94	0.94	8.41	8.41

Table B48: Irrigation and Economic Development across Nations

NOTE: OLS regressions. The unit of observation is the country. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Technology (Ancestry Adjusted)							
	Old V	Old World OLS IV		Without Europe		ts × Post 1500		
	OLS			IV	OLS	IV		
	(1)	(2)	(3)	(4)	(5)	(6)		
Ancestral Irrigation × Post 1500	-0.28*** (0.04)	-0.43*** (0.08)	-0.28*** (0.05)	-0.43*** (0.07)	-0.27*** (0.06)	-0.55*** (0.14)		
Controls × Post 1500	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Continents × Post 1500					\checkmark	\checkmark		
Year FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Country FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Observations	354	353	340	338	453	451		
R-squared	0.60	0.59	0.66	0.65	0.62	0.60		
First Stage <i>F</i> -Stat		71.14		52.70		16.53		

Table B49: Irrigation and Long-Run Technological Reversal: DiD Estimates Alternative Samples and Accounting for Continent Specific Effects

NOTE: The unit of observation is the country-period. The dependent variable is the index of technological progress between 1000BC and 2000 taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with period dummies. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Technology (Ancestry Adjusted)			
	RF	OLS	IV	
	(1)	(2)	(3)	
Irrigation Suitability (Ancestral) \times 0 AD	-0.08 (0.15)			
Irrigation Suitability (Ancestral) \times 1500 AD	-0.23** (0.11)			
Irrigation Suitability (Ancestral) \times 2000 AD	-0.53*** (0.15)			
Ancestral Irrigation × 0 AD		-0.10 (0.08)	-0.08 (0.13)	
Ancestral Irrigation × 1500 AD		-0.10 (0.08)	-0.19* (0.10)	
Ancestral Irrigation × 2000 AD		-0.35*** (0.09)	-0.48*** (0.14)	
Controls × Post 1500				
Controls × Year FE	\checkmark	\checkmark	\checkmark	
Year FE	\checkmark	\checkmark	\checkmark	
Country FE	\checkmark	\checkmark	\checkmark	
Observations	453	453	451	
R-squared	0.72	0.72	0.71	
Mean Dep. Variable	0.61	0.61	0.61	
First Stage F-Stat			13.90	

Table B50: Irrigation and Long-Run Technological Reversal: Flexible Estimates

NOTE: The unit of observation is the country-period. The dependent variable is the index of technological progress between 1000BC and 2000 taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with period dummies. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table B51: Irrigation and Long-Run Technological Reversal DiD (Technology unadjusted for Migration)

	Technology (Unadjusted)				
	OLS	OLS	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)
Irrigation Suitability (Local) × Post 1500	-0.23 (0.17)		0.27 (0.19)		
Irrigation Suitability (Ancestral) \times Post 1500		-0.64*** (0.10)	-0.80*** (0.17)		
Ancestral Irrigation × Post 1500				-0.41*** (0.06)	-0.59*** (0.10)
Controls × Post 1500	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Year FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	449	449	449	449	448
R-squared	0.44	0.49	0.50	0.50	0.49
First Stage F-Stat					63.08

NOTE: OLS regressions. The unit of observation is the country-period. The dependent variable is the unadjusted index of technological progress between 1000BC and 2000 taken from Comin *et al.* (2010). Controls include base-line geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with the Post 1500 dummy. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Techno	logy (Unad	djusted)
	OLS	OLS	IV
	(1)	(2)	(3)
Irrigation Suitability (Ancestral) \times 0 AD	0.02 (0.15)		
Irrigation Suitability (Ancestral) \times 1500 AD	-0.09 (0.12)		
Irrigation Suitability (Ancestral) \times 2000 AD	-0.61*** (0.16)		
Ancestral Irrigation × 0 AD		-0.04 (0.09)	0.01 (0.13)
Ancestral Irrigation × 1500 AD		-0.00 (0.08)	-0.05 (0.11)
Ancestral Irrigation \times 2000 AD		-0.41*** (0.10)	-0.56*** (0.15)
Controls × Year FE	\checkmark	\checkmark	\checkmark
Year FE	\checkmark	\checkmark	\checkmark
Country FE	\checkmark	\checkmark	\checkmark
Observations	449	449	448
R-squared	0.59	0.61	0.59
First Stage F-Stat			13.29

Table B52: Irrigation and Long-Run Technological Reversal: Flexible Estimates (Technology unadjusted for Migration)

> NOTE: The unit of observation is the country-period. The dependent variable is the unadjusted index of technological progress between 1000BC and 2000 taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with period dummies. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

-		(Anc	estry adju	sted)	
	OLS	OLS	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)
Irrigation Suitability (Local) × Post 1500	-0.34*** (0.10)		0.07 (0.11)		
Irrigation Suitability (Ancestral) \times Post 1500		-0.58*** (0.08)	-0.63*** (0.10)		
Ancestral Irrigation × Post 1500				-0.36*** (0.05)	-0.55*** (0.09)
Controls × Post 1500	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Year FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	433	433	433	433	430
R-squared	0.49	0.53	0.53	0.53	0.52
First Stage F-Stat					50.41

Table B53: Irrigation and Long-Run Technological Reversal DiD (without Military Technology)

NOTE: The unit of observation is the country-period. The dependent variable is the index of technological progress, excluding military technology, between 1000BC and 2000 taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with the post 1500 dummy. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Technolo	ogy (Ancest	ry adjusted)
	OLS	OLS	IV
	(1)	(2)	(3)
Irrigation Suitability (Ancestral) \times 0 AD	-0.04 (0.16)		
Irrigation Suitability (Ancestral) \times 1500 AD	-0.24** (0.12)		
Irrigation Suitability (Ancestral) × 2000 AD	-0.66*** (0.14)		
Ancestral Irrigation × 0 AD		-0.07 (0.09)	-0.05 (0.14)
Ancestral Irrigation × 1500 AD		-0.08 (0.08)	-0.21** (0.11)
Ancestral Irrigation × 2000 AD		-0.41*** (0.09)	-0.61*** (0.13)
Controls × Year FE	\checkmark	\checkmark	\checkmark
Year FE	\checkmark	\checkmark	\checkmark
Country FE	\checkmark	\checkmark	\checkmark
Observations	433	433	430
R-squared	0.65	0.66	0.63
First Stage <i>F</i> -Stat			13.76

Table B54: Irrigation and Long-Run Technological Reversal Flexible Estimates (without Military Technology)

NOTE: The unit of observation is the country-period. The dependent variable is the index of technological progress, excluding military technology, between 1000BC and 2000 taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with the period dummies. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Technolog	gy (Ancest	ry Adjuste	d)
	OLS	OLS	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)
Irrigation Suitability (Local) × Post 1500	-0.18		0.08		
	(0.11)		(0.12)		
Irrigation Suitability (Ancestral) × Post 1500		-0.36***	-0.42***		
		(0.09)	(0.10)		
Ancestral Irrigation × Post 1500				-0.31***	-0.38***
-				(0.05)	(0.08)
Controls × Post 1500	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Year FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	229	229	229	229	216
R-squared	0.59	0.63	0.64	0.69	0.68
First Stage F-Stat					38.45

Table B55: Irrigation and Long-Run Technological Reversal: Short Panel 1500 - 2000

NOTE: The unit of observation is the country-period. The dependent variable is the index of technological progress between 1500 and 2000 taken from Comin *et al.* (2010). Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities) interacted with the post 1500 dummy. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors clustered at the country level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

5.7 Irrigation and Innovation: Further Results across Cities

		Sc	ientific ar	ticles (per 1,00)0 people)	
	OLS	OLS	OLS	Poisson ML	OLS	Poisson ML
	(1)	(2)	(3)	(4)	(5)	(6)
Ancestral Irrigation	-1.00***	-0.21**	-0.20*	-0.85***	-0.22*	-0.96***
	(0.23)	(0.11)	(0.11)	(0.29)	(0.13)	(0.37)
Share of Area that is Cropland	-0.54	-0.12	-0.10	-0.28	-0.15	-0.69**
-	(0.34)	(0.28)	(0.28)	(0.22)	(0.34)	(0.33)
Country Capital			1.54***	1.32***	1.39**	1.35***
			(0.55)	(0.21)	(0.63)	(0.36)
Region Capital			1.19**	0.96***	1.40*	1.29***
0 1			(0.60)	(0.19)	(0.79)	(0.08)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Sample	Full	Full	Full	Full	Restricted	Restricted
Observations	1,880	1,880	1,880	1,880	874	874
Number of Countries	153	153	153	153	49	49
R-squared	0.11	0.32	0.34		0.27	
Mean Dep. Variable	0.86	0.86	0.86	0.86	0.68	0.68

Table B56: Irrigation and City-Level Scientific Productivity: Controlling for Agricultural Land

NOTE: The unit of observation is a city. The dependent variable is the average number of articles per year and 1,000 inhabitants between 2000-2010. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures whether the majority ethnic group of the city used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country level in columns 1 - 4. * p < 0.10, ** p < 0.05, *** p < 0.01.

	(Log) N	light Light	s 2005 (per capita)	(Log) Night Lights 2005	Scientific a	rticles (per 1,000 people)
	OLS	OLS	OLS	OLS	OLS	Poisson ML
	(1)	(2)	(3)	(4)	(5)	
Ancestral Irrigation	-0.13	-0.16	-0.16	-0.10	-0.17*	-0.71**
	(0.27)	(0.11)	(0.10)	(0.11)	(0.10)	(0.29)
Country Capital			0.36***	0.46***	1.39***	1.30***
			(0.11)	(0.08)	(0.46)	(0.18)
Region Capital			0.47***	0.31***	1.06**	0.72***
			(0.08)	(0.06)	(0.50)	(0.12)
(log) Population 2005				0.80***		
				(0.03)		
(Log) Night Lights 2005 (per capita)					0.19	0.41***
					(0.13)	(0.15)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Country FE		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	1,896	1,867	1,867	1,877	1,856	1,885
Number of Countries	158	129	129	131	129	158
R-squared	0.32	0.82	0.83	0.90	0.33	
Mean Dep. Variable	-12.64	-12.64	-12.64	1.18	0.86	0.86

Table B57: Irrigation and City-Level Luminosity at Night

NOTE: The unit of observation is a city. The dependent variable is the average luminosity at night per capita in 2005. Controls include baseline geographic & ethnorgraphic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures whether the majority ethnic group of the city used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country level in columns 1 - 4. * p < 0.01, *** p < 0.01.

5.8 Irrigation and Innovation: Further Results across Migrants

		Important in Job:											
	Independence	Security	Location	Contribution	Payment	Benefits	Advancement						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)						
Ancestral Irrigation	-0.08**	0.05	-0.00	-0.03	0.01	-0.03	0.01						
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.04)						
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark						
Observations	52,029	52,029	52,029	52,029	52,029	35,902	52,029						
R-squared	0.05	0.07	0.05	0.06	0.05	0.05	0.11						
Number of Countries	128	128	128	128	128	122	128						
Mean Dep. Variable	3.57	3.63	3.49	3.44	3.64	3.64	3.47						

Table B58: Important Job Characteristics of US Migrants

NOTE: OLS regressions. The unit of observation is an US immigrant. Controls include individual characteristics (age, gender, marriage status, age at arrival in the US, dummies for bachelor, professional and postgraduate degrees, indicators for the level of education that was completed in the US, log salary and its square, and survey wave fixed effects), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as US macro-region fixed effects. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin. * p < 0.10, ** p < 0.05, *** p < 0.01.

	No. of Publications								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Ancestral Irrigation	-1.23** (0.53)	-0.58 (0.55)	-1.16** (0.52)	-1.02* (0.57)	-1.14** (0.56)	-1.20** (0.52)	-1.74*** (0.53)		
Collectivism (Hofstede)		-0.03*** (0.01)							
(ln) Income per capita			0.77*** (0.25)						
Agriculture (% of GDP)				0.14 (0.37)					
Industry (% of GDP)				0.15 (0.37)					
Services (% of GDP)				0.21 (0.37)					
Tertiary Enrollment, age >25					0.03** (0.01)				
Polity IV (2000 - 2010)						0.04 (0.03)			
Ethnic Fractionalization							-3.28*** (0.89)		
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		
Observations	16,127	15,139	16,068	14,319	15,697	16,055	16,078		
R-squared	0.07	0.08	0.07	0.08	0.07	0.07	0.07		
Number of Countries	121	87	118	114	109	116	119		
Mean Dep. Variable	3.66	3.74	3.66	3.60	3.70	3.67	3.66		

Table B59: Irrigation and Individual-Level Innovativeness of US Migrants: Conditional on Home Country Controls

NOTE: OLS regressions. The unit of observation is an US immigrant. Controls include individual characteristics (age, gender, marriage status, age at arrival in the US, dummies for bachelor, professional and postgraduate degrees, indicators for the level of education that was completed in the US, log salary and its square, and survey wave fixed effects), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as US macro-region fixed effects. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Patent Granted	Any Publication	No. of Publications	Conference Attendance	Important in Job: Independence
	(1)	(2)	(3)	(4)	(5)
Ancestral Irrigation	-0.01	-0.06***	-1.16**	-0.06***	-0.05**
	(0.01)	(0.02)	(0.49)	(0.01)	(0.02)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	16,127	16,127	16,127	32,948	52,029
R-squared	0.05	0.16	0.08	0.13	0.06
Number of Countries	121	121	121	130	128
Mean Dep. Variable	0.04	0.29	3.66	0.57	3.57

Table B60: Irrigation and Individual-Level Innovativeness of US Migrants: Continent FE

NOTE: OLS regressions. The unit of observation is an US immigrant. All regressions include dummies for for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Controls include individual characteristics (age, gender, marriage status, age at arrival in the US, dummies for bachelor, professional and postgraduate degrees, indicators for the level of education that was completed in the US, log salary and its square, and survey wave fixed effects), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as US macro-region fixed effects. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin. * p < 0.10, ** p < 0.05, *** p < 0.01.

		No. of Publications							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Ancestral Irrigation	-1.23** (0.53)	-1.33** (0.54)	-1.01** (0.50)	-0.80* (0.43)	-2.71* (1.39)	-1.06** (0.47)	-1.11** (0.54)	-1.35** (0.53)	
Immigration Reason FE		\checkmark							
Field of Study FE			\checkmark						
Doctoral Degree				\checkmark					
Only PhD Graduates					\checkmark				
Region of Degree FE						\checkmark			
U.S. Citizen							\checkmark		
Race FE								\checkmark	
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
Observations	16,127	16,127	16,127	16,127	3,002	16,127	16,127	16,127	
R-squared	0.07	0.10	0.11	0.18	0.06	0.08	0.07	0.08	
Number of Countries	121	121	121	121	110	121	121	121	
Mean Dep. Variable	3.66	3.66	3.66	3.66	13.52	3.66	3.66	3.66	

Table B61: Irrigation and Individual-Level Innovativeness of US Migrants: Robustness to Further Individual Characteristics

NOTE: OLS regressions. The unit of observation is an US immigrant. Controls include individual characteristics (age, gender, marriage status, age at arrival in the US, dummies for bachelor, professional and postgraduate degrees, indicators for the level of education that was completed in the US, log salary and its square, and survey wave fixed effects), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as US macro-region fixed effects. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Patent Granted	Any Publication	No. of Publications	Conference Attendance	Important in Job: Independence
	(1)	(2)	(3)	(4)	(5)
Ancestral Irrigation	-0.04***	-0.08**	-1.81*	-0.07***	-0.13***
	(0.01)	(0.03)	(0.95)	(0.02)	(0.04)
Ancestral Irrigation × US Education	0.05***	0.04	1.02	-0.01	0.08**
	(0.01)	(0.04)	(0.95)	(0.02)	(0.03)
US Education	-0.03***	-0.02	-1.78***	0.04**	-0.02**
	(0.01)	(0.02)	(0.50)	(0.01)	(0.01)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	16127	16127	16127	32948	52029
R-squared	0.05	0.15	0.07	0.13	0.05
Number of Countries	121	121	121	130	128
Mean Dep. Variable	0.04	0.29	3.66	0.57	3.57

Table B62: Irrigation and Individual-Level Innovativeness of US Migrants: The Role of Education

NOTE: OLS regressions. The unit of observation is an US immigrant. Controls include individual characteristics (age, gender, marriage status, age at arrival in the US, dummies for bachelor, professional and postgraduate degrees, indicators for the level of education that was completed in the US, log salary and its square, and survey wave fixed effects), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as US macro-region fixed effects. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses, clustered at the country of origin. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Routine		Iı	ndepender	nt	Manual		
	OLS	IV	IV	OLS	IV	IV	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ancestral Irrigation	0.69***	0.94***	0.82***	-0.89***	-0.97***	-0.93***	0.31	0.48	0.35
	(0.22)	(0.31)	(0.27)	(0.24)	(0.35)	(0.36)	(0.21)	(0.34)	(0.31)
(ln) Income per capita			-0.24***			0.11			-0.27***
			(0.08)			(0.11)			(0.08)
Controls	\checkmark								
Observations	71	71	70	71	71	70	71	71	70
R-squared	0.29	0.27	0.34	0.28	0.28	0.30	0.12	0.11	0.21
Mean Dep. Variable	-0.02	-0.02	-0.01	0.01	0.01	0.02	0.04	0.04	0.04
First Stage F-Stat		64.82	63.04		64.82	63.04		64.82	63.04

Table B63: Irrigation and Patterns of Job Specialization Across Countries

NOTE: The unit of observation is the country. All dependent variables are country averages of the residuals obtained from individual level regressions that control for age, gender, marital status, education and survey wave fixed effects and based on survey responses from the World Values Survey/European Values Survey. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

		Routin	e	In	depender	nt		Manual		
	OLS	IV	IV	OLS	IV	IV	OLS	OLS	IV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Ancestral Irrigation	0.68**	1.02**	1.05***	-0.87***	-1.29**	-1.25**	0.42*	0.66	0.66	
	(0.29)	(0.48)	(0.41)	(0.30)	(0.52)	(0.50)	(0.24)	(0.56)	(0.46)	
(ln) Income per capita			-0.32***			0.16			-0.34***	
			(0.09)			(0.13)			(0.08)	
Controls	\checkmark									
Region FE	\checkmark									
Observations	71	71	70	71	71	70	71	71	70	
R-squared	0.35	0.33	0.40	0.33	0.31	0.33	0.33	0.31	0.43	
Mean Dep. Variable	-0.02	-0.02	-0.01	0.01	0.01	0.02	0.04	0.04	0.04	
First Stage F-Stat		22.36	22.80		22.36	22.80		22.36	22.80	

Table B64: Irrigation and Patterns of Job Specialization Across Countries: Continent FE

NOTE: The unit of observation is the country. All dependent variables are country averages of the residuals obtained from individual level regressions that control for age, gender, marital status, education and survey wave fixed effects and based on survey responses from the World Values Survey/European Values Survey. Controls include baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities). Region fixed effects include dummies for Europe, Africa, North America, Latin America and Caribbean, East Asia and Pacific, Central and West Asia, and South Asia. Ancestral Irrigation measures the percentage share of a country's population whose ancestors have used irrigation. Heteroscedastic-robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

	Routine Task-Intensity (Autor-Dorn)			Conventional		
	All Migrants	1st Generation	2nd Generation	All Migrants	1st Generation	2nd Generation
	(1)	(2)	(3)	(4)	(5)	(6)
Ancestral Irrigation	0.04	0.04	0.04	0.09*	0.09	0.07
	(0.04)	(0.04)	(0.09)	(0.05)	(0.05)	(0.06)
Collectivism (Hofstede)	0.00***	0.00***	0.00*	-0.00	-0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Controls	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Observations	178,295	147,926	30,159	170,838	142,314	28,332
R-squared	0.07	0.07	0.10	0.11	0.11	0.11
No. Origin Countries	83	83	80	83	83	80
Mean Dep. Variable	0.98	0.95	1.13	4.37	4.32	4.63

Table B65: Irrigation and Job Tasks of US Migrants: Controlling for Collectivism

NOTE: OLS regressions. The unit of observation is a US immigrant. Controls include individual characteristics (age and its square, gender, marriage status, 16 education fixed effects, log family income and its square, and survey wave fixed effects), baseline geographic & ethnographic controls (agricultural suitability, average rainfall, distance to coast and rivers, land in tropical climate, average altitude, political complexity, settlement types and mean size of local communities), as well as US State fixed effects. Ancestral Irrigation measures the percentage share of the population whose ancestors have used irrigation in the immigrant's country of origin. The country of origin of migrants is defined by the common birth country of parents. Heteroscedastic-robust standard errors in parentheses clustered at the country of origin. * p < 0.05, *** p < 0.01.

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