

Social Attitudes and Macroeconomic Performance: An Epidemiological Approach¹

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Abstract

In this paper we develop a new empirical approach to uncover the causal link from social attitudes to economic development. We first show that social attitudes of second-generation Americans are significantly influenced by the country of origin of their forebears. In the spirit of the epidemiology literature, we interpret this phenomenon as the consequence of a causal effect of *inherited* social attitudes. This leads us to use the social attitudes of second-generation Americans as an instrument for the social attitudes in the home country of their parents to identify the causal effect of inherited social attitudes on economic development. This strategy allows us to isolate the specific contribution of social attitudes relatively to other traditional candidates, such as invariant institutions or geography, by controlling for country fixed effects. We find that inherited social attitudes had a strong specific causal impact on per capita output and other measures of macroeconomic performance on a sample of 30 countries over the period 1949-2003.

KEYWORDS: Social attitudes, trust, economic development.

JEL CODES: O10, F10, P10, N13.

1 Introduction

What are the fundamental causes of large differences in income per capita across countries? Although there is still little consensus on the answers to this question, a growing literature considers social attitudes such as trustworthiness as one of the main determinant of current economic development. As stressed by Arrow (1972, p. 357) “Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” A prerequisite for the successful development of market economies would be to depart from closed groups interactions and to enlarge exchanges to anonymous others. To that regard, trustworthiness appears as the keystone for successful economic development. This intellectual tradition dates back to Tocqueville (1835), Weber (1902), and to a case study by Banfield (1958) showing that amoral familism, that is lack of trust towards anyone not belonging to local groups, was associated with economic backwardness in Italian villages.¹ This view has been recently restated by economists by using cross-country correlation between indicators of social attitudes based on individual social surveys and income per capita (see La Porta et al., 1997, Knack and Keefer, 1997, Tabellini, 2005), or by using micro studies on developing countries (Platteau, 2000).²

These contributions have tried to uncover a causal link from social attitudes toward economic development.³ However we still lack reliable estimates which could isolate the causal effect of social attitudes on economic development independently of other candidates already documented in the growth literature such as time-invariant institutions (Hall and Jones, 1999, Acemoglu et al., 2001, Rodrick, 1999) or geography (Sachs, 2003). For instance, La Porta et al. (1997) consider that hierarchical religions may discourage the formation of trust. Assuming that the hierarchical structure of religions influences trust but not economic performance directly, cross-country correlations between the percentage of the population belonging to hierarchical religions, trust and economic performance may be interpreted as a causal relation going from trust to economic performance using instrumental variable techniques. Obviously, this interpretation is right only if economic performance is not directly influenced by the percentage of the population belonging to hierarchical religions and if economic performance, trust and religions are not determined by common factors. An important limit of this approach is that it can always been

¹See also Coleman (1988), Fukuyama (1995), Gambetta (1988), Greif (1993), Nisbett (1996), Putnam (1993, 2000).

²This empirical approach is complemented by theoretical papers which analyze the intergenerational transmission of social attitudes. See Bisin and Verdier (2001), Hauk and Saez-Marti (2002), François and Zabojnik (2005), Benabou and Tirole (2006) and Tabellini (2007).

³See Fernandez (2006) and Guiso et al. (2006) for recent surveys.

suspected that there are non observable variables, embedded in the history of each country, that cause economic performance and trust.⁴ This limit clearly shows up even in the most achieved contributions which rely on such an approach. For instance, in Tabellini's (2005) paper it is shown that variations in the literacy rate and the political institutions in place over the past several centuries are correlated with variations in trust at the end of the XXth century. Using instrumental variable techniques, the correlation between the historical variables observed at the end of the XIXth century and economic performance at the end of the XXth century can be interpreted as a causal impact of trust on economic development. But this interpretation relies on two questionable assumptions. First, the literacy rate and the political institutions in place over the past several centuries have no direct impact on economic performance at the end of the XXth century. Second, all these variables are not determined by common factors. Although Tabellini provides a very careful analysis of differences in performance of European regions including country fixed effects, the impossibility to include region fixed effects implies that cross-region correlations between trust and performance may come from unobserved region specific factors which determine trust and performance. This limit is inherent to the empirical strategy: since trust is assumed to be determined by historical variables which pre-existed several centuries ago, it is not possible to account for variations in trust and then to exploit the information obtained from the potential correlations between trust and economic performance across time. Accordingly this approach makes it impossible to include region fixed effects and cannot control for unobserved region specific factors. And at the end of the day, it is thus still impossible to state that social attitudes do matter *per se* or if they pick up the more fundamental influence of specific national features such as the quality of institutions and the legal origins (Djankov et al. (2002), Hall and Jones (1999)), the extent of fractionalization (Rodrick, 1999, Alesina et al., 2001) or geography (Sachs, 2003).

A convincing empirical strategy would thus require to exploit the information contained in changes in trust across countries *and* over time. It would make it possible to insure that correlations between trust and economic performance are not determined by unobservable country specific factors⁵ by including country fixed effects. It would also enable to analyze relations between changes in trust and changes in economic performance across time, rather than relying on cross-country variations in indirect proxies for trust such as religious denominations or past institutions. The temporal dimension of the problem is important since trust has been found to change a lot over the last decades. Its sharp decline in some countries has motivated, in large

⁴See Durlauf and Fafchamps (2005) for a survey on the empirical literature on trust and social capital.

⁵Contrary to Tabellini (2005) our analysis is at the country level rather than at the region level.

part, reflections of sociologists on social attitudes.⁶ Surprisingly, this motivation has so far been absent from empirical studies devoted to the relation between trust and economic performance.

In this paper, we provide a new method which accounts for exogenous changes in trust across countries *and* over time. Our empirical strategy is based on the identification of the inherited part of social attitudes which are not instantaneously overdetermined by the economic and institutional features of the country in which people are living. For that purpose, we focus on the level of trust of second-generation Americans and evaluate the specific role of their country of origins in shaping their level of trust by controlling for other socioeconomic characteristics.⁷ We first show that social attitudes of second-generation Americans are mainly and significantly influenced by the country of origin of their forebears. In the spirit of the epidemiology literature,⁸ we interpret this phenomenon as the consequence of a causal effect of inherited social attitudes. Moreover we estimate potential changes in the inherited trust of second-generation Americans by estimating the level of trust of two separate cohorts of Americans: those who belonged to the working age population between 1949-52 and those who belonged to the working age population in 2000-2003. It turns out that trust has changed over time: the influence of the country of origin on the trust of people who were born in the United-States depends on the period of arrival of their forebears. These social attitudes of Americans are estimated on the General Social Survey which provides yearly information on the level of trust since the 1970s. Moreover this database also provides detailed information on the home country of Americans and their wave of immigration.

Next we use the social attitudes of second-generation Americans as an instrument for the social attitudes in the home country of their parents to identify the causal effect of inherited

⁶Inglehart and Welzel (2005), Putnam (2000).

⁷See the excellent surveys of Fernandez and Fogli (2005) and Guiso et al. (2006) on the role of culture on economic behavior. The potential influence of the country of origin of the ancestors on US born people has been analyzed by Reimers (1985), Blau (1992), Rice and Feldman (1997), Carroll et al. (1999), Antecol (2000), Guinnane et al. (2002), Giuliano (2004), Fernandez and Fogli (2005) and Algan and Cahuc (2005). Blau (1992) and Guinnane et al. (2002) examine whether the fertility of immigrants differs from that of the native born in the US. Reimers (1985) and Antecol (2000) study the effect of the country of origin on the labor force participation of immigrants. Rice and Feldman (1997) analyze trust and civic attitudes. Using the same approach, Giuliano (2004) focuses on family leaving arrangements and Fernandez and Fogli (2005) analyze female labor participation and fertility. Carroll et al. (1999) use this approach for the analysis of saving behavior, finding no significant link between the country of origins and saving rates. Algan and Cahuc (2005) look at family values. Most of these studies find a significant influence of the country of origin on attitudes, behavior and economic outcomes.

The persistence of inherited behavior is also documented for other countries. For instance, Guiso et al. (2004) show that households are more likely to use checks, invest less in cash and more in stock, have higher access to institutional credit, and make less use of informal credit in high-social-capital areas of Italy. They also show that the behavior of movers is still affected by the level of social capital of the province where they were born.

Alesina and Fuchs-Schuendeln (2005) and Dohmen et al. (2006) evaluate the influence of attitudes inherited from parents on current attitudes with different methodologies. They find a strong influence of parents on the attitudes of children.

⁸We borrow this terminology from Raquel Fernandez (2006).

social attitudes on economic development. Attitudes of people currently living in the home countries are estimated on the World Value Survey database which provides informations on the level of trust since the 1980s. And we distinguish the same two type of cohorts who were working in the 1950's and the 2000's. We find a strong positive relation between inherited trust of second-generation Americans and that of people living in the home countries. Moreover, it appears that changes in the level of trust inherited from the country of origin of people born in the United States are in line with changes in the level of trust in the corresponding home countries.

These findings suggest that the trust inherited from the country of origin of people born in the US is potentially a good instrument for the trust of people who live in the home countries. Consequently, this instrument can be used to uncover the causal impact of social attitudes on economic development. Obviously, the trust of people born in the United States can be determined by country specific factors that also influence economic performance and trust in their country of origin. For instance, it might be the case that Americans whose ancestors were coming from highly developed countries inherited a high level of trust, and that the past high level of development also has a positive influence on future trust and economic performance in the country of origin. The strength of our empirical strategy is precisely to allow us to control for such factors by the inclusion of country fixed effects and the level of development of the home country at the time when parents' immigration took place.

This strategy allows us to show that there is a significant causal impact of trust on income per capita for 30 countries over the period 1949-2003. The set of countries cover all the regions over the world with European countries, North American countries, Asian countries and the African and Latin American continents. We find that developing countries such as African countries taken as a whole would have been able to double their output per capita between the 1950's and the 2000's if they had had the same level of inherited trust than that of the Swedish people. The impact is also economically sizeable since a country like Germany would have an income per capita 15 percent higher in the 2000's if the level of inherited trust of German people had been identical to that of the Swedish people. Eventually, we show that the main channels through which inherited trust affect income per capita is total factor productivity and incentives to accumulate physical and human capital.

The paper is organized as follows. The estimation strategy is presented in section 2. Data are described in section 3. The results are presented in section 4. Robustness checks are presented in Section 5

2 Estimation strategy

What is the causal effect of social attitudes on macroeconomic performance? We answer this question by looking at the issues raised by the estimation of the following linear equation

$$Y_{ct} = \alpha_0 + \alpha_1 S_{ct} + \alpha_2 X_{ct} + \alpha_3 F_c + \alpha_4 T_t + \varepsilon_{ct} \quad (1)$$

where Y_{ct} stands for indicators of macroeconomic performance (including, in alternative specifications, income per capita and its different components: capital stock per capita, employment rate, human capital and total factor productivity) in country c at period t . The variable S_{ct} measures country average of social attitudes; X_{ct} denotes a vector of average characteristics of the population and past economic development of the economy; F_c stands for country dummies capturing all other time invariant specific features such as the legal origins or past institutions with long-lasting effects; T_t stands for period dummies common to all countries and ε_{ct} is an error term. The inclusion of country fixed effects ensures that the correlation between economic performance and attitudes is not driven by unobservable common country specific factors.

Nevertheless, the problem with equation (1) is that contemporaneous social attitudes are likely to be correlated with the unobserved error term ε_{ct} . For instance, technological changes may induce changes in economic performance and in social attitudes, by changing work habits for instance.

To tackle this issue, we need to explain how social attitudes are determined. Recent studies by Bisin and Verdier (2001), Bisin, Topa and Verdier (2004), Benabou and Tirole (2006) and Tabellini (2007) stress the role of two main forces. A part of social attitudes is shaped by the contemporaneous environment and another part is shaped by inherited attitudes from earlier generations. This suggests to posit the following model

$$S_{ct} = \gamma_0 + \gamma_1 S_{ct-1} + \gamma_2 X_{ct} + \gamma_3 F_c^s + \gamma_4 T_t^s + \nu_{ct} \quad (2)$$

where F_c^s and T_t^s stand for country and time dummies respectively. In equation (2), it is assumed that current social attitudes are determined by all factors likely to influence economic performance and by the social attitudes of previous generations. This assumption has key implications on the definition of the different periods t on which our econometric analysis should focus on. In particular, we have to look at periods which are separated by sufficiently large gaps in order to account for changes in average social attitudes across generations that do not overlap. Namely, as it will be explained in further details below, we consider two periods: 1949-1952 and 2000-2003. In equation (2), it is also assumed that current social attitudes can be influenced by all factors that influence current economic performance (namely variables X_{ct} , F_c^s and T_t^s) and by an error term ν_{ct} .

The restriction that past social attitudes are excluded from the economic performance equation (1) allows us to identify, together with the assumption that $\varepsilon_{ct} \perp S_{ct-1}$, the parameters of the system of equations (1) and (2). This restriction makes sense to the extent that the variables which account for current characteristics of the economy are included in the right-hand side of the economic performance equation (1) and that the forty eight years gap between the two dates t is large. However, as stressed by Tabellini (2005), the problem of this specification is that we do not have any information on S_{ct-1} , since standardized cross-country databases on social attitudes of the parents of the respondents are not available.

To cope with the lack of information on the social attitudes of parents, we propose the following alternative strategy. We replace the variable S_{ct-1} by the social attitudes that second-generation Americans inherited from country c . If social attitudes inherited from country c in the US are correlated with contemporaneous social attitudes in the corresponding home country c , it is because people whose forebears originate from the same country share common past social attitudes. Therefore, we assume that the correlation between average social attitudes of people whose forebears were born in country c and average social attitudes of people currently living in country c reflects the causal impact of such common past social attitudes.

In what follows we estimate the causal impact of trust on economic performance by using inherited trust of second-generation Americans in period t as an instrument for trust in the corresponding home country c over the same period t . In order to show that this strategy is relevant, we first document the impact of the country of origin on trust of second-generation Americans. Then, we show that inherited trust of second-generation Americans is a statistically and economically relevant instrument for explaining both the level and the variations in trust in the home countries. Eventually, we estimate the causal impact of trust on economic development. And we decompose the channels through which trust is likely to influence macroeconomic performance by distinguishing its role on physical capital, human capital, labor force and total factor productivity.

3 Data description

In this section, we discuss the data used to measure social attitudes and to identify inherited social attitudes from the country of origin of people born in the United States. We also look at historical data on economic development for time periods and countries that match the data on social attitudes. Our analysis covers the period 1949-2003. The sample consists of 30 countries: Algeria, Argentina, Austria, Belgium, Canada, China, Colombia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Mexico, Morocco, Netherlands,

Nigeria, Norway, Philippines, Poland, Portugal, Puerto Rico, Spain, Senegal, Sweden, United Kingdom and Zimbabwe.

3.1 Social attitudes and inherited social attitudes

Social attitudes of individuals born in the United States are provided by the *General Social Survey* database (GSS). This database covers the period 1972-2004 and provides information on the birth place and the country of origins of the respondent’s forebears since 1977. The GSS variable for the country of origins reads as follows: “*From what countries or part of the world did your ancestors come from?*” Origins cover almost all European countries: Austria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. The GSS database also reports Latin American countries: Mexico, Puerto Rico, and a broad category labelled “Latin American countries with Spanish origins”. Information on Asian origins are available for: China, India and Philippines. Eventually, the GSS also reports two broad categories for Arabic origins or African origins.

To measure cultural transmission of social attitudes across generations, we use information on the waves of immigration. Respondents are asked if they are born in the United States and how many of their parents and grand-parents were born in the country. The question on parents birthplace is scaled 0 if both parents are born in the US, 1 if only the mother is born in the US, and 2 if only the respondent’s father is born in the country. The answer on grand-parents birthplace is scaled from 0 to 4 indicating the number of grandparents born in the US. This information allows us to disentangle four potential waves of immigrations: fourth-generation Americans (all grand-parents born in the US), third-generation Americans (all grand-parents immigrated to the US and all parents were born in the US), second-generation Americans (all parents immigrated to the United States) and first-generation Americans. This database offers the possibility to track back the cultural transmission of social attitudes by disentangling the different waves of immigration.

Social attitudes in the home countries are measured by the *World Value Survey* (WVS) database. The WVS covers three main waves (1981, 1990, 1999-2001) and for the same set of countries defined as potential country of origins in the GSS database. In particular, we reconstruct the categories African and Latin American origins by clustering corresponding countries in the WVS database. For African countries, we use information on the West Coast with Senegal since the slave trade mainly took place in this part of the continent. We also include the two additional available African countries, Nigeria and Zimbabwe, for more recent wave of immigrations. The two available Arabic countries are Algeria and Morocco. And regarding

Latin American countries with Spanish origins, we select the available corresponding countries including Argentina and Colombia.

Eventually, social attitudes are measured by the level of interpersonal trust. We use the following question provided by the WVS and GSS databases: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The answers are given on a scale from 1 to 3, which corresponds to “Most people can be trusted”, “Can’t be too careful”, “Depends”. We construct a *trust* indicator equals to one if the respondent answers that people can be trusted and 0 if she answers that one should be careful (after deleting the answers “do not know”). The choice of this question about mutual trust is motivated by two reasons. First, the cross country correlation between trust, as measured by this question, and economic performance has been widely documented. This allows us to reassess the economic role of trust when a causal relation is identified. Second, this is the only question on social attitudes for which we have a sufficiently large number of observations in the GSS database to implement our empirical strategy.

In Appendix - Table 11, we report the summary statistics for second-generation Americans. The sample provides at least 50 observations per country of origins. The most representative groups came from Italy (471 observations), Germany (331 observations), United Kingdom (268 observations) or Latin America (360 observations from Mexico, 211 observations from Puerto Rico and 196 observations from other Spanish Latin American origins). The level of trust is on average 39.87 percent with a standard deviation of 48.8 percent. Trust varies dramatically by country of origins: from only 18.2 percent and 19.9 percent among people with Puerto-Rican origins or African origins, to 56.4 percent and 78.8 percent among second-generation Americans with Swedish or Danish origins. The respondents in our sample of second-generation Americans are on average 51.3 years old, 43 percent are men, with on average 12.3 years of education and 52 percent are employed, 45 percent are inactive and 3 percent are unemployed. Note that second-generation Americans with European origins are much older than their counterparts coming from developing countries. In Appendix - Table 12, we report the summary statistics for the corresponding home countries which are taken from the WVS database for the waves 1980, 1990, 1999-2001. The sample of countries of residency is made up of at least 1000 observations for each country and the demographic characteristics are quite similar to that of second-generation Americans. The average level of trust in the home countries is 31.8 percent, which is approximately 7 percent point lower than that of second-generation Americans. Yet the cross-country variation is similar to that found among second-generation Americans coming from different countries of origins, the standard deviation reaching 46.5 percent.

3.2 GDP, Physical Capital, Human Capital, Employment and TFP

Economic performance is measured by income per capita expressed in 1990 US dollars. Data borrowed from Maddison cover the period 1820-2003. We consider two periods: 1949-1952 and 2000-2003. These periods are chosen so that people who belonged to the working age population in each period are born at dates that do not overlap. Since the WVS provides information only on people who are more than eighteen years old, we consider that the working age population is made up of people aged from eighteen to sixty five years old. Accordingly, people who were working between 2000-2003 were born between 1935 and 1985, and people who were working in 1949-1952 were born during the period 1884-1934.

We also assess the main channels through which social attitudes are likely to affect economic development: including physical capital, human capital, employment and total factor productivity. Human capital is measured by the average number of years of education provided by Morisson and Murin (2005). Data on the physical capital stock are constructed as follows. We draw on the Easterly and Levine database (2001) which provides capital stock figures from 1951 to 1990.⁹ The database is completed by using data on the investment share over GDP, provided by the Penn World Tables, to calculate total investment. Then, we calculate TFP as a standard Solow residual by assuming an identical share of capital and labor across countries. All variables are defined in 1990 US dollars. Data are averaged over the periods 1949-1952 and 2000-2003. The average macroeconomic performances of the countries of our sample are reported in Appendix - Table 13.

4 Results

4.1 Inherited social attitudes in the US

In order to measure how second-generation Americans varied in their social attitudes depending on their country-of-ancestry, we ran an individual level probit regression on the answers to the trust question: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The dependent variable is equal to one if the respondent thought that most people can be trusted and zero otherwise. In addition to country-of-ancestry dummies, we also control for age (age squared), sex, education, income, employment status and religious affiliation. We also use information on the level of education of the respondent’s parents. This information might be crucial since potential correlation between social attitudes and ethnic heritage might transit through parents characteristics such as human

⁹The capital stock is computed from investment flows with the depreciation rate provided by Easterly and Levine (1999). The initial capital stock in 1951 is also borrowed from Easterly and Levine.

capital rather than culture per se. All estimations include year dummies to control for specific temporal shocks. All standard errors are corrected for clustering at the country level. Americans with Swedish ancestors are taken as the reference group.

The analysis is focused on two cohorts: Americans who were born in the US between 1884 and 1934 and between 1935 and 1985. As indicated above, the analysis of these groups allows us to focus on people who belonged to the working age population (between 18 and 65 years old) in 1949-1952 and 2000-2003 respectively. In particular, by selecting second-generation Americans among these two cohorts, that is Americans whose parents were born in the home countries and then immigrated to the US, we are able to capture inherited social attitudes from the previous generation of the working age population in 1949-1952 and 2000-2003.

Table 1 reports the marginal effects of the country-of-ancestry dummies for Americans who were born in the United States between 1935 and 1985. Marginal effects are computed with the remaining variables evaluated at their means. In this first step, we select all Americans belonging to this cohort, whatever the wave of immigration of their forebears. Since most individual characteristics are likely to be endogenous as regards the level of trust, Table 1-Col.1 first reports the results when only demographic variables (age and gender) are taken into account. Column 1 shows that the fact to have forebears coming from a different country of origin than Sweden has always a statistically significant effect at the 1 percent level on social attitudes. The gap is the most sizeable for Americans with African origins, Latin American origins and Indian origins, the probability to trust others being reduced by 33 percent, 29 percent and 25 percent by comparison with Americans with Swedish forebears. Respondents with Mediterranean origins and Eastern European origins come next. For instance, the fact to have Italian origins reduces by 12 percent the level of trust comparatively to people with Swedish origins. Respondents with Continental European origins also tend to be less trusting than Americans with Swedish forebears, but the gap is less sizeable. German or Austrian origins would reduce by 7.2 percent and 6.6 percent respectively social attitudes. The fact to have forebears from UK also leads to a lower level of trust but the gap with Sweden reaches only 1.8 percent. Eventually, people whose forebears came from other Nordic countries tend to have comparable or slightly higher level of trust.

Table 1-Col.2 reports the marginal estimates of inherited attitudes when the full set of other individual controls are taken into account. Strikingly, the coefficients associated with the country of origins are still highly significant and remain fairly unchanged. Table 2 reports the corresponding marginal effects associated with individual controls. As expected, the level of trust increases with the level of education, the level of education of parents (but only transmitted by the mother), the level of income, the age, and the fact to be employed rather than unemployed.

But except education, no other individual controls are statistically significant. In particular, no significant statistical relation with individual trust shows up. This finding raises concern about the possibility to capture and instrument social attitudes by religious affiliation in aggregate panel data.

Table 3 reports the marginal effects of country-of-origins dummies for second-generation Americans only. We distinguish the two cohorts of Americans who were born between 1885-1934 and 1935-1985. Only controls for demographic variables are included at this first stage. To make the comparison between cohorts meaningful, we drop the country of origins for which we have less than 15 observations. For both cohorts, the country-of-ancestry dummies are highly significant and economically sizeable. Coefficients vary from -37 percent (Philippian origins) to 39.8 percent (Danish origins) for second-generation American born between 1884 and 1934 and they vary from -26 percent (African origins) to 2.1 (Dutch origins) for second-generation Americans born between 1935 and 1985. It is instructive to notice that inherited trust for respondents whose parents came from France, Germany or United Kingdom was higher to that of people with Swedish origins as long as the older cohort (born between 1884 and 1934) is concerned. By contrast, inherited trust seems to have deteriorated compared to people with Swedish origins regarding the younger cohort of people born between 1935 and 1985.

4.2 Inherited trust of Americans and trust in the home countries

This section examines the correlations between inherited social attitudes of second-generation Americans and social attitudes in the home country of their parents. This analysis is a key step in our empirical approach since a significant correlation between the two variables is required to use the social attitudes of second-generation Americans as an instrument for social attitudes in the home country of their parents.

We start by looking at the cross-section correlation between inherited trust in the United States and in the home countries. Figure 1 illustrates the basic correlation between the marginal effect of the country of residency and the marginal effect of the country of origin on the level of trust. The correlation is displayed for the cohort born between 1935 and 1985 (the same correlation pattern holds for the other cohort). The marginal effect of the country of residency on social attitudes is derived from probit estimates on the WVS database in the wave 2000. We control for the same demographic individual characteristics as those used in the estimation of the marginal effect of the country-of-ancestry in the GSS database. As it happens, there is a positive relation between inherited trust of second-generation Americans and that of the same cohort living in the home country, the R-squared reaching $R^2=0.51$. Figure 1 suggests that parents who migrated to the United States have transplanted their level of trust to their

Table 1: Marginal effect associated with the country of origin of Americans: Probit estimates

Trust in other=1				
Americans born between 1935-85				
Country of origins	(1) : No controls		(2): Controls	
	Coeff	Std Error	Coeff	Std Error
Africa	-.337***	(.000)	-.302***	(.002)
Arab	-.113***	(.001)	-.042***	(.005)
Austria	-.066***	(.001)	-.031***	(.006)
Belgium	-.046***	(.002)	.045***	(.002)
Canada	-.109***	(.000)	-.086***	(.001)
China	-.173***	(.008)	-.169	(.012)
Czech Republic	-.109***	(.000)	-.103***	(.006)
Denmark	-.036***	(.000)	-.041***	(.000)
Finland	.057***	(.001)	.065***	(.001)
France	-.077***	(.000)	-.050***	(.001)
Germany	-.072***	(.000)	-.060***	(.000)
Greece	-.091***	(.001)	-.092***	(.002)
Hungary	-.085***	(.000)	-.097***	(.001)
India	-.252***	(.001)	-.251***	(.002)
Ireland	-.068***	(.000)	-.050***	(.001)
Italy	-.129***	(.000)	-.118***	(.003)
Japan	-.064***	(.002)	-.077***	(.002)
Latin America other	-.295***	(.001)	-.280***	(.001)
Mexico	-.174***	(.001)	-.116***	(.002)
Netherlands	-.109***	(.000)	-.083***	(.002)
Norway	.053***	(.000)	.064***	(.000)
Philippines	-.129***	(.002)	-.136***	(.003)
Poland	-.078***	(.000)	-.081***	(.000)
Portugal	-.093***	(.000)	-.096***	(.002)
Puerto Rico	-.349***	(.000)	-.327***	(.001)
Spain	-.071***	(.000)	-.054***	(.001)
Sweden			Reference	
Switzerland	-.021***	(.001)	.033***	(.001)
United Kingdom	-.026***	(.000)	-.037***	(.001)
Individual controls	Age, Age ² , Sex		Full specification	
Pseudo-R ²	.051		.085	
Observations	9651		9507	
Marginal effects with robust standard error.				
General Social Survey: ***:1%, **: 5%, *: 10%				

Table 2: Marginal effect associated with individual characteristics

Trust in other=1 Cohorts 1935-85		
Controls	Coeff	Std Error
Age	.009***	(.003)
Age2	-.000	(.000)
Men	.020*	(.010)
Education	.042***	(.002)
Education mother	.013***	(.011)
Education father	-.000	(.001)
Income category	.033	(.029)
Unemployed	Reference	
Employed	.057	(.037)
Inactive	.043	(.031)
Protestant	Reference	
Catholic	.001	(.019)
Muslim	.042	(.275)
Jew	-.015	(.048)
Buddhist	.026	(.075)
No religion	-.004	(.010)
Marginal effects with robust standard error.		
GSS : ***:1%, **: 5%, *: 10		

children in a fairly similar way as parents who stayed instead in the home country did. More rigorous analysis below confirms this phenomenon.

Table 4-Col.1 & 2 reports GLS regressions of the cross-section correlation between the level of trust of second-generation Americans and that of people currently living in the home countries. We run these estimations on the two cohorts of people born between 1884-1934 and 1935-1985 taken together. The dependent variable is the level of trust measured by the marginal effects of country of residency. The explanatory variable is the marginal effect on trust of country of origins. The coefficients are those displayed in Table 3. Table 4 - Col. 1 first shows the correlation without any controls. Table 4 - Col. 2 includes the initial average gap in the level of GDP per capita in the home country relatively to Sweden at the time the forebears immigrated. Controlling for initial GDP is key in as much as this variable could co-determine both inherited attitudes transmitted by the previous generation to their offsprings in the United States and the current gap in GDP in the corresponding home countries relatively to Sweden. Thus including this variable should dampen our concern that inherited attitudes could affect the current gdp gap by other channel than trust. In the first specification, the coefficient of correlation is fairly high, reaching .859, and significant at the 1 percent level. The magnitude of the correlation is lowered by more than half when the lagged value of the gap in GDP per capita relatively to

Table 3: Marginal effect associated with the country of origin for the cohorts 1884-1934 and 1935-1985.

Country of origins	Trust in other=1			
	Second-generation Americans		Second-generation Americans	
	Born between 1884-1934		Born between 1935-1985	
	(1)		(2)	
	Coeff	Std Error	Coeff	Std Error
Africa	-.258***	(.015)	-.260***	(.006)
Arab			-.061***	(.013)
Austria	.068***	(.011)	-.205***	(.006)
Canada	-.015	(.019)	-.134***	(.003)
China	-.063***	(.028)	-.125***	(.008)
Check Republic	.034	(.010)	-.237***	(.010)
Denmark	.398***	(.007)	-.031**	(.018)
Finland	.022***	(.011)		
France	.169***	(.015)	-.090***	(.006)
Germany	.002	(.012)	-.179***	(.006)
Greece	-.285***	(.015)	-.052***	(.005)
Hungary	.050***	(.011)	-.184***	(.006)
India	-.056***	(.024)	-.138***	(.008)
Ireland	.063***	(.003)	-.026***	(.005)
Italy	-.118***	(.012)	-.129***	(.003)
Latin America other	-.345***	(.012)	-.246***	(.008)
Mexico	-.313***	(.019)	-.237***	(.009)
Netherlands	.020***	(.003)	.021*	(.011)
Norway	.161***	(.001)	-.040***	(.009)
Poland	.007	(.012)	-.110***	(.001)
Philippines	-.373***	(.005)	-.193***	(.005)
Portugal	.092***	(.027)	-.214***	(.002)
Puerto Rico	-.191***	(.027)	-.279***	(.008)
Spain	-.307***	(.017)	-.097***	(.008)
Sweden			Reference	
United Kingdom	-.010	(.010)	-.087***	(.004)
Pseudo-R ²		.051		.061
Observations		845		956

Marginal effects with robust standard error. General Social Survey: ***:1%, **: 5%, *: 10%

Sweden is included. But the coefficient is still statistically significant at the one percent level.

We then assess to what extent the within evolution of trust among the two cohorts of Americans who were belonging to the working age group in 1949-1952 and 2000-2003 is correlated with the evolution of trust among the same two cohorts who were living in the corresponding home countries. If parents do transfer in a similar way their social attitudes to their off-spring, regardless of whether they still live in the home country or have immigrated to the United States, a significant positive correlation in social attitudes variations across the two cohorts should show up in the home country and in the United States.

Table 4 - Col. 3 and Col. 4 document this within correlation by controlling for country fixed effects. It is worth stressing that country fixed effects also enable us to capture all time invariant country features which could influence inherited trust for second generation Americans and people currently living in the home countries of their parents. The dependent variable of the regression is still the level of trust of people living in the home country of the parents captured by marginal effects of the country of residency relatively to Sweden. The explanatory variable is the level of trust of second-generation Americans measured by the marginal effect of countries of ancestry relatively to Swedish origins. Table 4 - Col. 3 reports the within correlation without controlling for the gap in lagged GDP per capita while Table 4 - Col. 4 includes it. In both cases, the within correlation is positive and highly significant at the one percent level, suggesting that inherited trust of second-generation Americans is a relevant instrument for explaining the level of trust in the home countries.

It is worth noticing that the coefficient associated with inherited trust is dramatically reduced by the inclusion of lagged GDP. This result suggests that past economic performance has a significant influence on current trust on the top of time-invariant national features. This point illustrates that high levels of past education or of past income favor the development of cooperative attitudes. Moreover, we also find that country fixed effects, which capture many features such as legal origins, religions or geography, have a statistically significant and economically sizeable impact on current trust. This last point highlights the value-added of our approach which uses a time-varying instrument for trust and thus allows to account for other fundamental determinants of social attitudes captured by fixed effects.

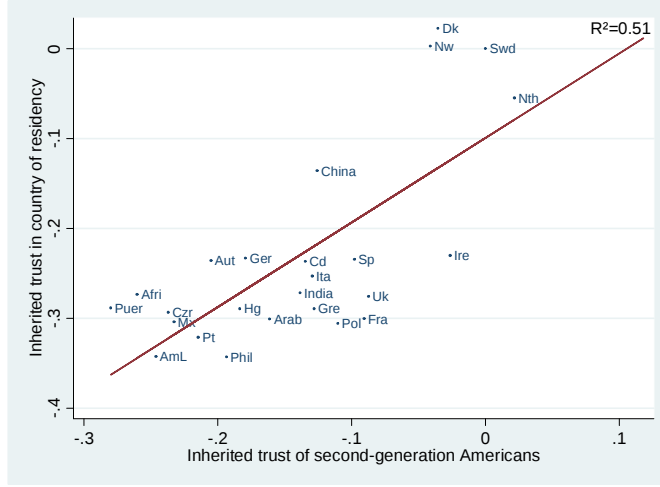


Figure 1: Trust of second-generation Americans by country of origins relative to trust of nationals in country of residency. *Note:* Marginal effect from probit estimates on WVS and GSS databases.

Table 4: Estimated effect of inherited attitudes on current national social attitudes. GLS Estimations.

Dependent variable	Trust of nationals in country of residency			
	(1)	(2)	(3)	(4)
Trust of second-generation Americans by country-of-ancestry	.859*** (.000)	.310** (.157)	.381*** (.000)	.207*** (0.002)
Lagged gap of GDP per capita	No	Yes***	No	Yes***
Country dummies	No	No	Yes***	Yes***
Observations	47	45	47	45

4.3 The causal impact of inherited trust on macroeconomic performance

4.3.1 GDP per capita

This section documents the causal impact of social attitudes on economic development by estimating the system of equations (1) and (2) written as follows:

$$\hat{Y}_{ct} = \alpha_1 \hat{S}_{ct} + \alpha_2 \hat{X}_{ct} + \alpha_3 \hat{F}_c + \hat{\varepsilon}_{ct}, \quad (3)$$

$$\hat{S}_{ct} = \delta_1 \hat{S}_{ct}^{US} + \delta_2 \hat{X}_{ct} + \delta_3 \hat{F}_c^s + \hat{\nu}_{ct}, \quad (4)$$

where $\hat{Y}_{ct} = Y_{ct} - Y_{\tilde{c}t}$ (similarly, $\hat{Z}_{ct} = Z_c - Z_{\tilde{c}t}$, for $Z = S, X, F, F^s, \varepsilon, \nu$) is equal to the difference between GDP per capita in country c and GDP per capita in the country of reference $\tilde{c}$, which is still Sweden. GDP per capita is measured in 1990 dollars for the period $t=1949-1952$ and $t=2000-2003$. Social attitudes $\hat{S}_{ct}$ are those of the cohorts born between 1884-1934 and 1935-1985 who belonged to the working-age population in 1949-1952 and 2000-2003 respectively.

Since social attitudes in the home countries are likely to be biased by reverse causality, we instrument social attitudes in the home-countries by inherited attitudes $\hat{S}_{ct}^{US}$ of second-generation Americans belonging to the same two cohorts in equation (4). In lines with our previous estimation strategy, social attitudes in home countries $\hat{S}_{ct}$ are measured by the marginal effects of the country of residency on trust relatively to Sweden. Similarly, social attitudes of second-generation Americans, $\hat{S}_{ct}^{US}$, are measured by the marginal effect of their country of origins on trust relatively to second-generation Americans whose parents immigrated from Sweden. The coefficients correspond to that displayed in Figure 1. We include in the vector $\hat{X}_{ct}$ the lagged gap in GDP per capita relatively to Sweden (namely the GDP gap in 1900-1903 for the period 1949-1952 and the GDP gap in 1949-1952 for the period 2000-2003). Moreover we also control for country fixed effects $\hat{F}_c$ and $\hat{F}_c^s$ in equations (3) and (4). These fixed effects are used to control for omitted time invariant variables (institutional framework, legal origins, initial level of illiteracy...) which could co-determine both inherited trust of second-generation Americans and current GDP per capita in the home countries.

Three stage Least Square (3SLS) estimates of the system of equations (1) and (2) are reported in Table 5. Panel A reports the second stage estimation of the coefficient α_1 , panel B gives the corresponding first stage regression for the coefficient δ_1 , and panel C reports basic GLS regressions of current GDP and social attitudes in the home countries. Table 5-Col. 1 reports the correlation between trust and the gap in GDP per capita relatively to Sweden without any additional controls for both the first stage and the second stage regressions. Column 2 includes the lagged value of the gap in GDP per capita in both regressions. Column 3 includes country dummies and assesses the within effect of changes in trust on variation in the gap of GDP per

capita relatively to Sweden. In all specifications, the instrument for trust in the home countries is significant at the 1 percent level and the implied IV estimated effect of trust on GDP per capita is also significant at the 1 percent level.

Table 5: IV Regressions of GDP per capita

	(1)	(2)	(3)
<i>Panel A: Dependent variable: GDP per capita (3SLS)</i>			
Trust in home countries	25843 ^{***} (3086)	38579 ^{***} (7114)	30238 ^{***} (9261)
Lagged gap in GDP per capita		Yes ^{***}	Yes ^{***}
Country dummies	No	No	Yes ^{***}
Adj-R ²	.563	0.856	0.888
<i>Panel B: Dependent variable: Trust in home countries (3SLS)</i>			
Trust of second-generation Americans by country-of-ancestry	.865 ^{***} (.145)	.3864 ^{***} (.076)	.208 ^{***} (.067)
Lagged gap in GDP per capita		Yes ^{***}	Yes ^{***}
Country dummies	No	No	Yes ^{***}
Adj-R ²	.421	0.956	0.973
<i>Panel C: Dependent variable: GDP per capita (GLS)</i>			
Trust in home countries	22328 ^{***} (2785)	5757 [*] (3113)	23561 ^{***} (8168)
Lagged gap in GDP per capita		Yes ^{***}	Yes [*]
Country dummies	No	No	Yes ^{***}
Observations	45	43	43

These results show that IV estimated effects of trust on GDP are sizeable. To illustrate the quantitative impact of the causal effect of social attitudes on GDP, Figure 2 displays the change in GDP per capita in period 2000-2003 that countries would have experienced if the level of inherited trust in a given country had been the same as that prevailing in Sweden during that period.¹⁰ This Figure shows that GDP per capita in 2000 would have been increased by more than 100 percent in Africa and India if the level of inherited trust among the working age population had been the same as in Sweden by that time, controlling for initial level of GDP per capita in 1950 and for time invariant country fixed effects. Africa and poor countries such as India and China are obviously extreme cases. It is well documented that these developing countries are plagued by an important lack of interpersonal trust. As Banfield (1958), Fafchamps (1996) or Platteau (2000) argued, traditional societies are characterized by pervasive intra-group trust

¹⁰The change in GDP per capita is equal to $-\alpha_1\delta_1\hat{S}_{ct}^{US}$ where the estimated value of the coefficients α_1 and δ_1 are taken from Table 5-Col 3, Panels A and B.

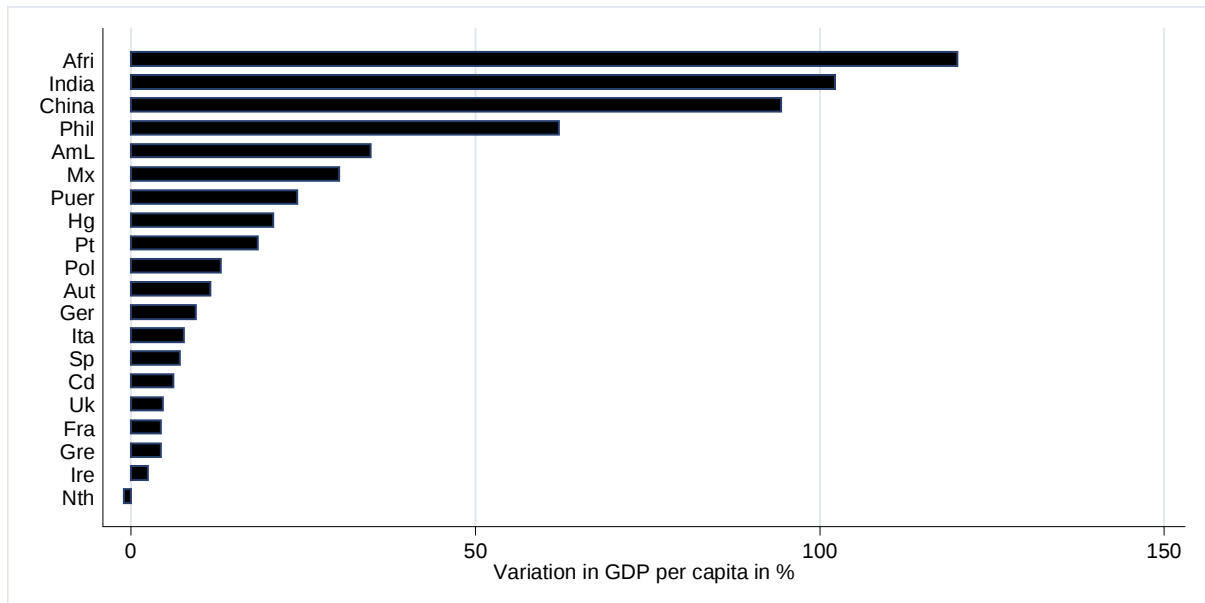


Figure 2: Predicted variations in GDP per capita in period 2000-2003 if the level of inherited trust of people in working age were the same as in Sweden, controlling for country fixed effects.

and do not extent this trust to anonymous interactions. The functioning of markets is drastically limited when trust is circumscribed to small groups. But Figure 2 shows that inherited trust has also a non negligible impact on GDP per capita in developed countries. European countries such as France or the United-Kingdom would increase their GPD by 5 percent if the level of inherited trust was the same as in Sweden.

Figure 3 illustrates the impact of inherited trust on GDP per capita from another perspective. This Figure displays the reduction in the GDP per capita gap relatively to Sweden that would occur if the level of inherited trust was the same as in Sweden during the period 2000-2003 (for countries whose GDP per capita is lower than Sweden). It turns out that differences in inherited trust explain a very large share of differences in GDP per capita among developed countries. For instance France would reduce by more than two third its gap in GDP per capita relatively to Sweden if the French had the same level of inherited trust than the Swedes. By contrast, differences in inherited trust explain a smaller part of the differences in GDP per capita as long as developing countries are concerned. This result is fairly consistent since institutions in developed countries are much closer to Swedish institutions than are those of developing countries. In other words, countries whose GDP per capita is much lower than that of Sweden are not only hampered by their low level of inherited trust. They are also influenced by other structural elements which explain the largest share of their GDP differential with Sweden. Such

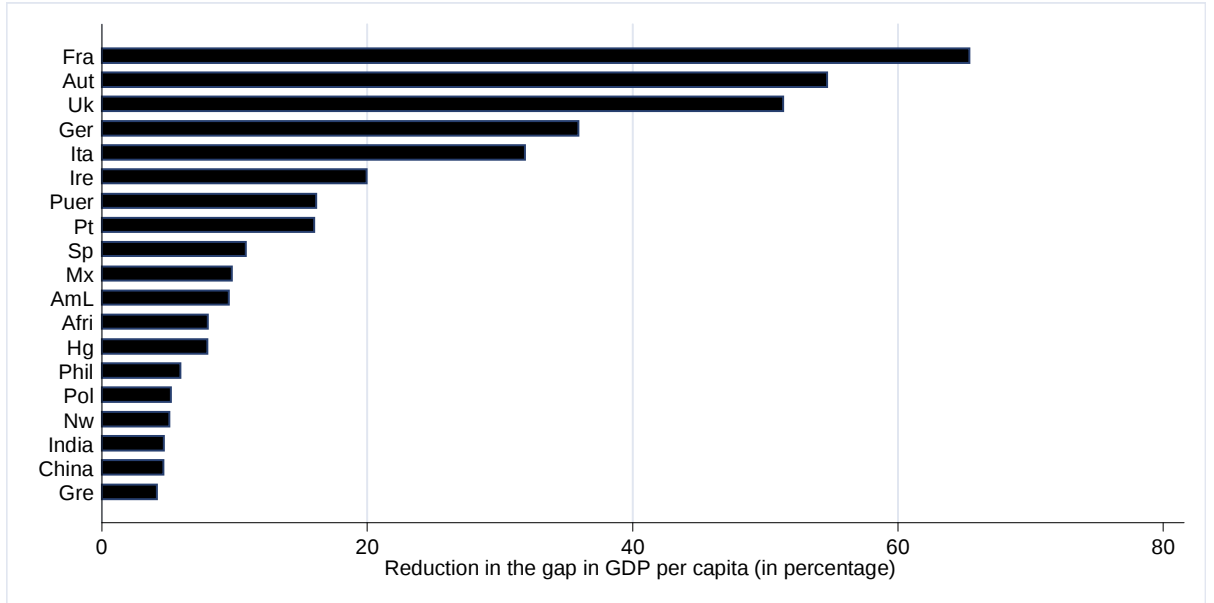


Figure 3: Reduction (in percentage) in the gap in GDP per capita with respect to Sweden if the level of inherited trust of people in working age were the same as in Sweden in the period 2000-2003.

other elements may be linked to specific national features such as institutions or geography.

From this viewpoint, our approach adds new insights on the impact of social attitudes on economic development since the previous studies found correlations between trust and economic performance, but without controlling for national time invariant specificities (La Porta et al., 1997, Knack and Keefer, 1997, Tabellini, 2005). To that regard, it is instructive to reassess the link between trust and GDP per capita in our framework but without controlling for country fixed effects. The comparison of Figures 2 and 4 shows¹¹ that the impact of inherited trust on GDP per capita would have been overestimated by a factor of three if the country fixed effects were not controlled for. It appears clearly that the inclusion of country fixed effect is of first importance. Accordingly, it is necessary to use time-varying instruments for trust in order to get relevant estimates and isolate the specific contribution of social attitudes relatively to other specific invariant national features.

Eventually, it is worth discussing how our results are related to the literature providing alternative candidates for explaining the role of specific national features. The emphasis has been mainly put on two candidates: institutions and geography. Institutions, in particular property

¹¹In Figure 4 the change in GDP per capita is equal to $-\alpha_1 \delta_1 \hat{S}_{ct}^{US}$ where the estimated value of the coefficients α_1 and δ_1 are taken from Table 5-Col 2, Panels A and B.

rights and rule of law, have been found to limit rent-seeking or rent extractions behavior and provide the incentives for individuals and firms to invest in productive activities. Hall and Jones (1999) found an overwhelming effect of social infrastructures on the cross-country heterogeneity in output per worker. Social infrastructures were defined as a composite index of government anti-diversion policies and the Sachs and Warner (1995) indicator on the openness of a country to other countries. Hall and Jones did control for potential reverse causality by using instrumental variables such as distance to equator or primary languages. Acemoglu et al. (2001) provided additional evidence on the role of the quality of institutions on the economic development of previous colonies by instrumenting extractive institutions with the mortality rate of settlers. Conversely, Sachs (2003) claimed that geography could have a much more direct effect on income through diseases such as malaria, rather than just an indirect effect through institutions.

All these studies provide a careful econometric treatment of potential reverse causality channel. Yet they are only based on cross-country comparison and cannot control for country fixed effects since they use time invariant proxies for institutions and geography. They thus face a problem of potential co-determination of their explanatory variable with other more fundamental invariant national features. This raises concern on the fundamental causality channel between an identified institutional or geographical factor and growth. Rodrick (1999) stressed this major concern in his study on the consequences of fractionalization and inequality on growth. Using invariant indicators at the national level, Rodrick was able to include dummies only at the regional level rather than at the country level. He concluded with disappointment that these regional dummies remain highly significant after the introduction of proxies for fractionalization, inequality and property rights enforcement. This suggests that these explanatory variables are likely to be no longer statistically significant if country fixed effects were to be included.

Our strategy has a comparative advantage by allowing us to analyze both cross-country and temporal dimensions. It is important to stress that we do take into account all the institutions and geographical factors provided in the previous literature. Since the institutions mentioned above are time invariant, they are captured by our country fixed effects. But our country dummies also capture any institutional factors that are imperfectly measured by the existing indicators or any other potential omitted invariant national features. We are thus able to disentangle the specific causal channel from social attitudes relatively not only to institutions and geography but also to any other potential invariant national factors.

4.3.2 Decomposition of the impact of social attitudes

The previous section has shown that differences in inherited trust have a strong direct impact on differences in GDP per capita. But inherited trust may influence economic performance through

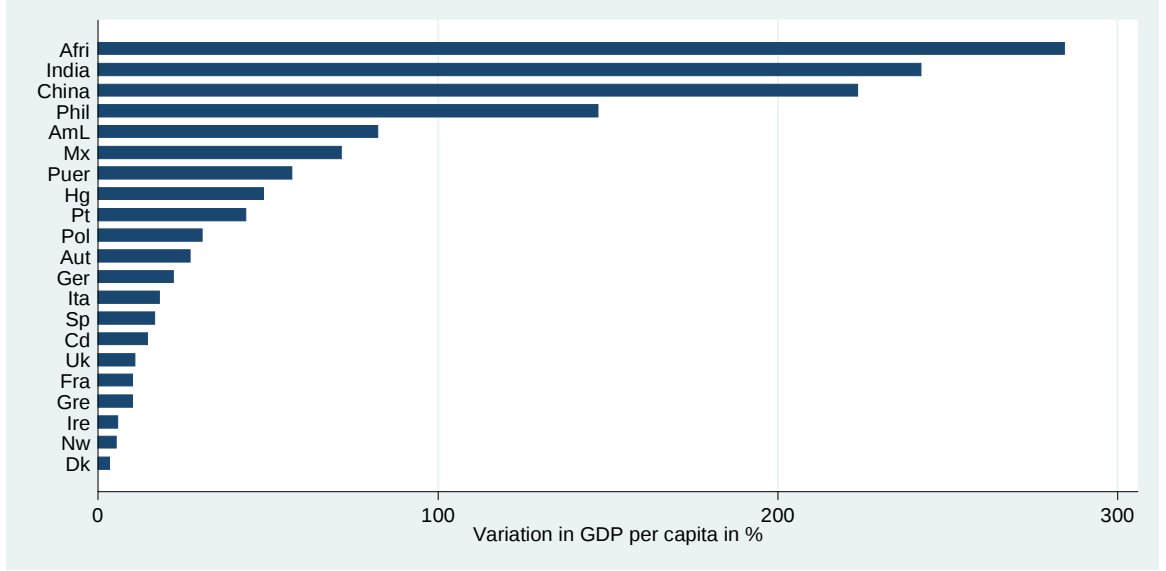


Figure 4: Predicted variations in GDP per capita in period 2000-2003 if the level of inherited trust of people in working age were the same as in Sweden, without controlling for country fixed effects.

different channels such as investment, employment and the overall efficiency of labor and capital. In order to identify these channels, let us assume that output is produced with a Cobb Douglas technology:

$$Y_{ct} = A_{ct} K_{ct}^{\alpha} (h_{ct} L_{ct})^{1-\alpha}$$

where Y_{ct} , A_{ct} , K_{ct} , L_{ct} , and h_{ct} refer to output, total factor productivity, capital, employment and average level of education in the population in country c at time t . This equation yields a simple relation between the cross-country log-differences in output per capita and the cross-country differences in the employment population ratio and in the technological parameter, which reads:

$$\hat{y}_{ct} = \hat{a}_{ct} + \alpha \hat{k}_{ct} + (1 - \alpha)(\hat{h}_{ct} + \hat{\ell}_{ct}) \quad (5)$$

where $\hat{y}_{ct} = \log(Y_{ct}/N_{ct}) - \log(\tilde{Y}_{ct}/\tilde{N}_{ct})$ stands for the difference between the log of GDP per capita in country c in period t and the log of GDP per capita in the reference country (which is still Sweden) during the same period. The similar definition holds for $\hat{k}_{ct} = \log(K_{ct}/N_{ct}) - \log(\tilde{K}_{ct}/\tilde{N}_{ct})$, $\hat{\ell}_{ct} = \log(L_{ct}/N_{ct}) - \log(\tilde{L}_{ct}/\tilde{N}_{ct})$ and $\hat{h}_{ct} = \log(h_{ct}) - \log(\tilde{h}_{ct})$. Differences in TFP read $\hat{a}_{ct} = \log(A_{ct}) - \log(\tilde{A}_{ct})$. TFP is calculated as the traditional Solow residual of equation (5).

In lines with our previous analysis, causality could go both direction for social attitudes and

the factors of production. Education may strengthen trust for instance if the roots of distrust lie in ignorance (Banfield, 1958) or if educational policies put the emphasis on teaching to the students how to behave cooperatively. Similarly, higher employment rates may indicate a more efficient labor market with lower unemployment rates, breeding trustworthiness.

To tackle this issue, we follow the previous strategy by running 3SLS estimates on the system of equations (3) and (4), the dependent variables of equation (3), becoming alternatively $\hat{y}_{ct}$, $\hat{k}_{ct}$, $\hat{h}_{ct}$, $\hat{\ell}_{ct}$ or $\hat{a}_{ct}$. Importantly, we include country fixed effects in these regressions, in particular to control for the role of the quality of institutions. Country fixed-effects may be important since Hall and Jones (1999) showed in their accounting exercises that social infrastructures account for the main part of total factor productivity. Similarly, the quality of property rights could significantly affect the incentives to accumulate physical and human capital.

Table 5 reports the 3SLS estimated effect of social attitudes on $\hat{y}_{ct}$, $\hat{k}_{ct}$, $\hat{\ell}_{ct}$, $\hat{h}_{ct}$ and $\hat{a}_{ct}$ over the two periods 1949-1952 and 2000-2003. The coefficients of the first stage regression of national trust on inherited trust are statistically significant and of the same order of magnitude than the previous ones. The first striking result is that inherited trust has a positive impact on every component of the changes in GDP per capita: it steadily increases both the capital stock, the employment rate, the average years of education and the level of total factor productivity. For each input, the coefficient associated with trust is significant at the 1 percent level even when one controls for the lagged gap in income per capita and country dummies (except for employment, where trust becomes significant at the 5 percent level). Second, Table 5 shows that the main channels through which social attitudes affect production is TFP and physical and human capital accumulation. Actually, 34 percent (8.084 over 23.681) of the impact of inherited trust on GDP per capita is due to differences in total factor productivity. The impact of inherited trust on differences in education, measured by the number of years of schooling, explains about 34 percent (11.710 time the coefficient $1 - \alpha$, equal to $0.7 = 8.19$ over 23.681), and the impact of trust through physical capital accounts for 27 percent of the differences in income per capita. The influence of employment is by comparison much more marginal since it explains the residual 5 percent of differences in income per capita.

This accounting exercise provides new insight on the economic effect of social attitudes. By comparison with Hall and Jones (1999), we show that social attitudes which are not embedded in invariant institutions, such as their social infrastructures indicator, have also a major effect on TFP. Next, we found a new significant impact of social attitudes on TFP and capital accumulation when the causality link is properly accounted for. This result is at odds with Keefer and Knack (1997) findings based on correlation between national indicators of trust and the factors of production. In particular, the latter authors found that the coefficient associated

with trust was in general not statistically significant in explaining production inputs when they included Hall and Jones (1999) proxies for social infrastructures. Our contribution is to show that controlling for reverse causality is key to isolate the specific significant impact of social attitudes on productivity and capital accumulation. Moreover, this strategy enables us to gauge the consequences of changes in social attitudes on the evolution of institutions favorable to capital accumulation and innovation.

Table 6: Decomposition of the impact of social attitudes on production inputs: 3SLS estimates. Trust in home countries is instrumented by trust of second-generation Americans, lagged GDP gap and country dummies.

3SLS Estimates	GDP	Capital	Employment	Education	TFP
	(1)	(2)	(3)	(4)	(5)
Trust in home countries	23.681 ^{***} (3.612)	21.106 ^{***} (4.427)	1.671 ^{**} (.719)	11.710 ^{***} (1.709)	8.084 ^{***} (2.324)
Lagged gap in GDP	-1.776 ^{***} (.433)	-1.719 ^{***} (.5539)	-.170 ^{**} (.086)	-1.168 ^{***} (.204)	-.438 ^{***} (.291)
Country dummies	Yes ^{***}	Yes ^{***}	Yes ^{***}	Yes ^{***}	Yes ^{***}
Adj-R ²	.836	.858	.834	.856	.645
Observations	45	42	45	45	42

4.4 Trust and institutions

This section further explores the additional channels through which social attitudes might affect economic development. In a challenging paper, Rodrick et al. (2004) asserted that “institutions rule, or the primacy of institutions over geography and economic integration in economic development”. Our empirical strategy enables us to stress the specific contribution of another factor, social attitudes, when controlling for the other potential candidates such as institutions and geography captured by our country fixed effects. There are good reasons to think that some ingredient of norms and attitudes are embedded into invariant institutions such as the legal origins. This component is obviously indistinguishable, but our strategy sheds light on the role of changes in social attitudes independently of invariant features. What we capture are thus norms, attitudes or beliefs which are not embodied in, say, history and invariant institutions, but which affect directly economic development. For instance property rights might be expected to be respected in countries in which cooperative attitudes are deeply ingrained even if they are not enacted into laws. Rodrick et al. (2004) gave the example of the flourishing investment from entrepreneurs in China compared to Russia even if the former country still retains a socialist legal system while the second has enacted a formal private property right regime.

Now, it might also be the case that social attitudes cause macroeconomic performance by

influencing changes in other traditional factors of growth such as changes in institutions. To investigate this issue, we need time-varying indicators for institutions since the post-war period. To the best of our knowledge, no institutional indicator on the regulation of property rights exists for such a long period. The traditional proxies used in the literature, such as the International Country Risk Guide (ICGR) providing information on the corruption of the government, date back since the early 1980s at best. Yet we can use information provided by Gurr (1990) on changes in the executive constraints in different countries since the 19th century. Countries are scored on a 1 to 7 scale depending on the extent to which the executive of a country is allowed to rule by decree or needs the consent of others before acting. This variable has the value-added to be highly correlated with the traditional property right indexes (Knack and Keefer, 1997) and to display time-variation over the post-war period. We use the value of this indicator under the two sub-periods 1949-1952 and 2000-2003.

Table 7 reports the 3SLS estimates of the system of equations (3) and (4) over the two periods 1949-1952 and 2000-2003. The dependent variable of equation (3), is now the gap in the executive constraints indicator relatively to Sweden. Trust in the home countries is still instrumented by trust of second-generation Americans. All regressions include fixed effects and past economic conditions captured by the lagged value of the income per capita gap relatively to Sweden.

Table 7 - col.1 shows that the first stage regression remains similar to previous estimates with a statistically highly significant correlation between trust by country of ancestry and trust in the home countries. Table 7 - col.2 shows a positive influence of changes in trust on the evolution of executive constraints. The effect is statistically significant at the 1 percent level.

Our instrumental strategy allows us to argue that a higher level of inherited trust is conducive to more efficient institutions that favor economic development. Nevertheless, inherited trust is likely to be influenced also by the quality of past institutions, as suggested by the significant correlation of lagged GDP with inherited trust in the first stage regression.

5 Robustness checks

5.1 Cultural transmission and immigrants characteristics

A key ingredient of our empirical strategy is that social norms and attitudes such as trustworthiness are partly transmitted from the parents to the off-springs whatever the economic and institutional framework, while another part is shaped by the current environment such as the level of economic development. This section checks the robustness of this result by assessing the speed of cultural transmission across generations by distinguishing four generations of

Table 7: Impact of social attitudes on institutions: 3SLS estimates. Trust in home countries is instrumented by trust of second-generation Americans, lagged GDP gap and country dummies.

	Trust in home countries (1)	Executive constraints (2)
Trust in home countries	.208*** (.068)	
Trust of second-generation Americans by country-of-ancestry		30.239*** (4.297)
Lagged gap in GDP	Yes ***	Yes ***
Country dummies	Yes ***	Yes ***
Adj-R ²	.974	.789
Observations	45	45

Americans: fourth-generation Americans (all grand-parents born in the United States), third-generation Americans (all grand-parents born abroad but parents were born in the United), second-generation Americans (at least one parent born in the home country), and new immigrants.

Table 8 reports probit estimates of the probability that the respondent believes in the trustworthiness of others depending on ancestors' country of origins and the wave of immigration of the ancestors. The estimates are run on the GSS database over the period 1977-2002. Sweden is still considered as the reference country of origin and we control for age, gender, education, education of the parents, employment status and income deciles. Standard errors are corrected for clustering at the country level.

Remarkably, Table 8 indicates a high persistence in inherited social attitudes. The country of origins of ancestors is still statistically significant at the 1 percent level for third-generation and fourth generations Americans, even after controlling for individual characteristics such as the education of parents. But importantly, Table 8 also suggests a certain homogenizing effect from the country of residency on social attitudes as the time spent in the United States increases. The economic size of the coefficients associated with the country of origins decreases as the wave of immigration dates back to longer periods. For instance there is an order of magnitude difference in the coefficient associated with Italian or Mexican origins between fourth-generation Americans and first generation ones. This analysis thus provides empirical support to our identifying assumption that social attitudes might be viewed as shaped by two forces, the current national environment and inherited attitudes from the forebears, the size of the second effect progressively vanishing as time passes.

Another potential issue raised by our strategy is that our sample of immigrants could be not representative of the home countries' population. Their social attitudes and other socio economic

characteristics may differ significantly from those of their country of origins at the time of their arrival in the US. The most direct test to check the representativeness of the migrants consists in focusing on first-generation Americans, that is immigrants who were born in their home country and migrated to the United States. We then compare their individual level of trust and their characteristics with that of their counterparts who are living in the corresponding home country. The comparison is run on the working age population over the period 1977-2002 for the GSS database, providing data for the United States, and the waves 1980, 1990 and 1999-2001 for the WVS database which provides information for the home countries.

Figure 5 reports the correlation between trust of immigrants with that of people remaining in home countries, controlling for individual characteristics including age, age squared, education, income category, policy orientation and employment status. Countries of origins with less than 15 observations in the GSS database have been dropped to ease the comparison. As it happens, the correlation is fairly high, leading to a $R^2 = 62.5$ percent, suggesting that immigrants do not differ significantly from their counterparts along their social attitudes. These results show that the social attitudes of first generation immigrants are indeed strongly correlated with those of their country of origins. This correlation is consistent with the impact of the country of origins on the social attitudes of the second-generation American found above.

5.2 Individual payoffs of social attitudes

This section investigates to what extent the causal impact found at the aggregate level between social attitudes and economic outcomes is consistent with estimates at the individual levels. Namely we investigate to what extent individuals who declare a higher level of trust in the individual databases are also more likely to have a higher income, to be more educated, to be employed rather than unemployed, or to be an entrepreneur.

A potential concern with such an analysis is still the direction of causality. Wealthier or more educated people might also tend to be more trustworthy. To address this problem, we use the same instrumental variables approach as the one used in our previous macro estimates. Namely we now use the average level of trust in the home country as an instrument for the level of trust of Americans whose ancestors came from the corresponding country of origins. The instrumental variable, that is the average level of trust in the home countries for the working age population, is measured on the WVS database over the waves 1980, 1990, and 2000. The estimations on the causal effect of trust on individual economic outcomes are run on the GSS database over the period 1977-2002 for all working age individuals who were born in the United States.

Table 9 reports the two stage least squares estimates. In the first stage estimate, the de-

Table 8: Cultural transmission across generations

Country of origin	Trust in other=1							
	Fourth-generation		Third-generation		Second-generation		First-generation	
	(1)		(2)		(3)		(4)	
	Coeff	Std Error	Coeff	Std Error	Coeff		Coeff	
Africa	-.257***	(.001)	-.235***	(.020)	-.273***	(.012)	-.280***	(.005)
Arab			.039*	(.023)	-.051*	(.025)	-.184***	(.014)
Austria	.085***	(.011)	.065***	(.006)	.047***	(.004)	-.107***	(.009)
Canada	.009	(.002)	.032*	(.017)	.025**	(.012)	-.185***	(.007)
China			-.317***	(.027)	-.119***	(.023)	-.203***	(.012)
Check Rep.	-.077***	(.000)	-.205***	(.008)	.033*	(.005)	-.074**	(.027)
Denmark	.021***	(.001)	.132**	(.013)	.402*	(.004)	-.219***	(.017)
Finland	-.013***	(.002)	-.122***	(.016)	.092*	(.011)		
France	.023***	(.001)	-.104***	(.009)	-.035**	(.015)	-.184***	(.014)
Germany	.027	(.001)	-.010*	(.005)	-.085***	(.005)	-.134***	(.013)
Greece			-.337***	(.005)	-.168***	(.012)	-.115***	(.010)
Hungary	.033***	(.002)	-.124***	(.013)	-.018***	(.006)	-.044***	(.015)
India					-.162***	(.021)	-.223***	(.012)
Ireland	.008***	(.001)	-.017***	(.003)	.051***	(.006)	-.101***	(.014)
Italy	-.023***	(.001)	-.197***	(.013)	-.083***	(.006)	-.202***	(.012)
Latin Am	-.260***	(.002)			-.260***	(.014)	-.295***	(.007)
Mexico	-.031***	(.002)	-.178***	(.020)	-.181***		-.255***	(.013)
Netherlands	-.046***	(.002)	-.115***	(.013)	.081***	(.009)	.034***	(.026)
Norway	.126***	(.001)	.128***	(.012)	.140***	(.003)	.089***	(.022)
Poland	.019	(.000)	-.053***	(.014)	-.050***	(.004)	-.158***	(.012)
Philippines					-.229***	(.014)	-.282***	(.006)
Portugal	.236***	(.005)	.048**	(.022)	-.131***	(.013)	-.132***	(.017)
Puerto Rico	-.272***	(.001)	-.305***	(.028)	-.235***	(.017)	-.243***	(.014)
Spain	-.048***	(.001)			-.097***	(.017)	-.189***	(.009)
Sweden		Reference						
U.K	.043	(.002)	-.054***	(.009)	-.016**	(.008)	-.123***	(.019)
Pseudo-R ²	.0961		.085		.0865		.087	
Observations	7176		855		1924		1580	

Marginal effects with robust standard error. GSS: ***:1%, **: 5%, *: 10%

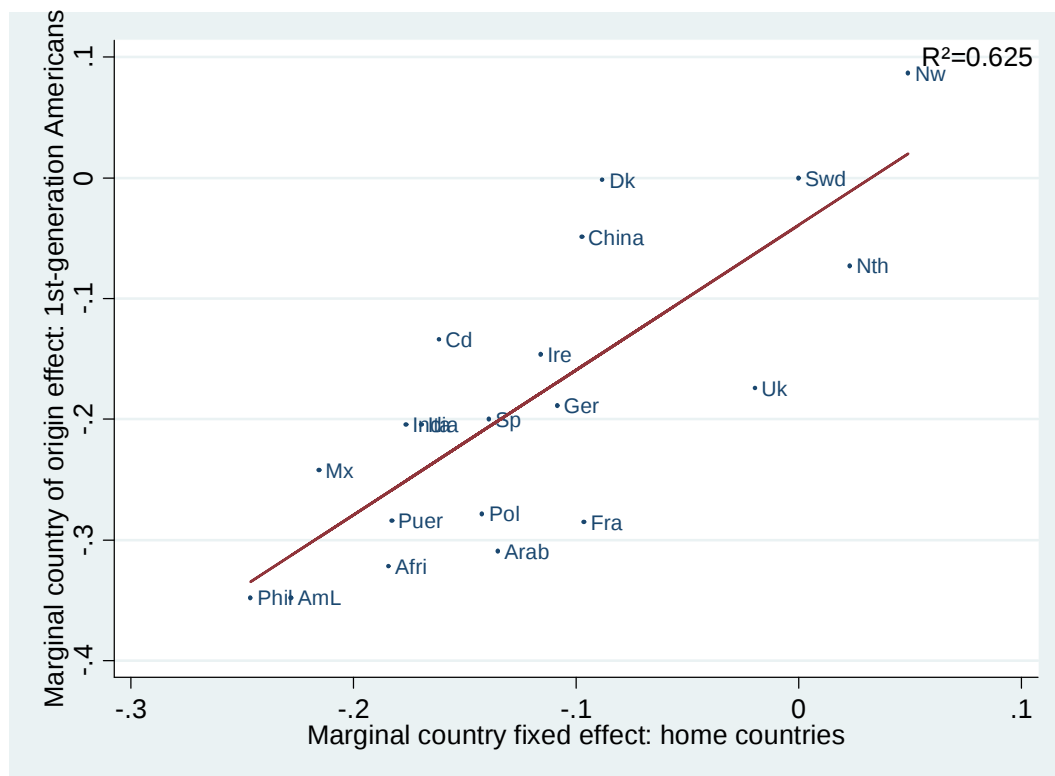


Figure 5: Correlation between trust of first-generation Americans and trust in home countries.
Source: GSS 1977-2002, WVS 1980-2001

pendent variable is a dummy equal to one if the respondent answered that most people can be trusted to the trust question and zero otherwise. The main explanatory variable corresponds to the average value of trust in the home countries and is associated to each individual depending on her country of origin. We also control for demographic variables (age and gender), the education of parents, and religious affiliations.

Table 9 - Col. 1 reports the first stage probit regression of individual trust depending on average trust in the home countries and other individual characteristics. In lines with the previous estimates, the social attitudes in the home countries turn out to be a highly significant instrument for explaining current individual social attitudes. The coefficient associated with trust in the home countries is statistically significant at the one percent level and economically sizeable. By contrast, traditional instruments for social attitudes used in the previous literature, such as the religious affiliation or the past level of education (captured here by the level of education of parents) are not statistically significant in most cases.

Table 9 - Col. 2 reports the second stage estimate of the impact of trust on individual economic outcomes. In the second stage, we plug in the predicted values of trust implied by the regression reported in Column 1. Social attitudes have a positive significant impact on the probability to belong to a higher income deciles, to become employed rather than unemployed, and to become an entrepreneur rather than a worker. The fact to trust other increases by 24 percent the probability to become entrepreneur and by 12 percent the probability to be employed (marginal coefficients not reported in the table). These effects are respectively statistically significant at the 1 percent level and 5 percent level.

5.3 Social interactions

It is likely that the strong macroeconomic impact of inherited trust documented above relies on social interactions: trust fosters cooperation only if trusting individuals interact with individuals who have themselves a high level of trust in other and develop cooperative attitudes. To find some evidence of social interactions we analyze the correlation between different measures of individual economic performance available in the World Value Survey and a variable that measures the interaction between the individual trust of people and the average trust in their country. In the presence of social multiplier effects, the returns to trust should be higher in countries in which the average level of trust is higher.

In order to measure the correlation between individual economic performance and the interaction of individual trust with aggregate trust, we ran probit estimates of the probability to have a full time job, to be unemployed and to belong to the highest part of the income distribution (scaled on three categories: low income, middle income, high income). In Table 10-Col.1, the

Table 9: Effect of social attitudes on individual economic outcomes: IV estimates

	Individual trust First stage (1)	Individual economic outcomes - Second stage (2)		
	Trust (1-0)	Income deciles	Employed (1-0)	Entrepreneurs (1-0)
Individual trust		1.058***	.371*	1.283***
IV by trust in home countries (1)		(.375)	(.200)	(.272)
Trust in home countries	.529*** (.053)			
Age	.004*** (.000)	.203*** (.010)	.098*** (.009)	.038 (.006)
Age2	-.001*** (.000)	-.002*** (.000)	-.001*** (.000)	.000** (.000)
Men	.019*** (.010)	.391*** (.051)	.515*** (.037)	.317*** (.037)
Education		.165*** (.019)	.065*** (.006)	.003 (.007)
Education of the mother	.011*** (.002)	.012 (.008)	.001 (.005)	-.013 (.010)
Education of the father	-.001 (.001)	.013 (.012)	-.000 (.005)	.004 (.006)
Non-religious		Reference		
Catholic	.060*** (.019)	.623*** (.098)	.001 (.060)	-.030*** (.069)
Protestant	.007 (.018)	.376*** (.092)	.029 (.058)	-.024 (.063)
Jews	.004 (.054)	.511* (.273)	.340** (.189)	.522*** (.158)
Budhist	.008*** (.143)	.452 (.724)	.340 (.524)	-.134 (.551)
Muslim	.103 (.261)	1.618 (1.316)	-.072 (.685)	.570 (.675)
Observations	8864	8261	8751	6099

dependent variable is the probability to work full time for people aged from 20 to 65 years old. Trust is significantly correlated with full employment when the average trust in the country is not interacted with the level of individual trust. However, when this interaction is accounted for, the individual level of trust is no longer significant by itself. It is only the interaction term that is significant. Moreover, the coefficient of the interaction term is significantly larger than the coefficient of trust in the regression without the interaction term. This phenomenon is consistent with the existence of social interactions: the returns to trust are higher when individuals are surrounded by trusting people. Table 10-Col.2 and Col.3 show that the same result arises when the dependent variable is the unemployment rate or the probability to get a high income.

Table 10: Interaction of individual trust with the average level of trust in each country. Probit estimates. Controls included are gender, age, age squared, country dummy, period dummy. Robust standard errors between parentheses.

	(1)		(2)		(3)	
	Full emp = 1		Unemp. = 1		High income = 1	
Trust	.0902 ^{***}	.0180	-.1795 ^{***}	-.0345	.2036 ^{***}	.0258
	(.0102)	(.0305)	.01647	.0448	.01040	.0325
Trust*Av Trust		.1942 ^{**}		-.4006 ^{***}		.4674 ^{***}
		(.0775)		.1154		.0809
Observations	82888	82888	82888	82888	78829	78829
Source WVS, 1980-2000: ***: 1%, **: 5%, *: 10%						

6 Conclusion

This paper has provided a new empirical strategy to uncover the causal effect of cooperative and social attitudes on economic development. By using the level of trust of second-generation Americans as an instrument for social attitudes in the home countries, we have been able to identify an exogenous variation in social attitudes which varies both across-countries and over-time. The time-varying dimension of social attitudes has enabled us to identify genuine causal relation from social attitudes towards macroeconomic performance by controlling for country fixed effects. Moreover, this strategy enables to isolate the specific contribution of social attitudes relatively to other traditional candidates - institutions and geography - captured by the country fixed effects. By using this methodology on a panel of 30 countries over the period 1949-2003, we found that social attitudes have a significant causal impact on macroeconomic outcomes.

A challenging questions is the channel through which social attitudes affect economic development. This paper has quantified the direct link from social attitudes to economic development through production inputs. Most of the effect transits through total factor productivity and

physical and human capital. Yet social attitudes could also have an effect on macroeconomic performance through institutions such as positive social infrastructures and property rights. This paper has provided some tentative evidence on such effect of social attitudes on legal constraints restricting the executive power. Yet enlarging the causal link from social attitudes to institutions requires more research on the long-run evolution of institutions such as property rights legislation. Conversely this research agenda might be promising to study the reverse effect of changes in institutions on the evolution of cooperative attitudes. This is a prerequisite to identify which institutions and public policies are conducive of cooperative attitudes and could thus favor economic development.

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A Data Appendix

Table 11: Summary statistics for second generation Americans: GSS database 1977-2002

Country of origins	Obs	Trust	Men	Age	Education	Emp.	Unemp.	Inactive
Africa	107	.192	.514	38.68	12.75	.679	.066	.255
Austria	83	.531	.506	62.18	11.54	.315	.026	.657
Arabic	36	.452	.638	34.33	13.12	.457	.028	.514
Canada	140	.487	.584	55.06	11.72	.450	.05	.50
China	115	.437	.504	37.08	14.23	.707	.056	.235
Czech Republic	94	.508	.425	65.14	11.11	.228	.028	.742
Denmark	32	.785	.343	62.75	12.76	.391	.043	.565
Finland	50	.571	.360	63.34	10.63	.348	.023	.627
France	44	.521	.363	48.02	12.21	.555	.027	.416
Germany	331	.412	.407	59.76	12.09	.396	.012	.596
Greece	61	.333	.540	48.42	14.32	.615	.019	.365
Hungary	71	.454	.450	57.32	11.88	.430	0	.569
India	83	.400	.662	37.33	14.06	.817	.024	.158
Ireland	141	.551	.468	59.83	13.56	.437	.010	.552
Italy	471	.404	.447	59.15	11.88	.357	.031	.610
Mexico	360	.251	.461	37.31	11.68	.708	.061	.230
Netherlands	61	.538	.393	58.98	11.69	.440	.02	.54
Norway	68	.611	.426	67.63	12.30	.209	0	.790
Phillipines	112	.266	.375	43.83	14.71	.772	.027	.20
Poland	273	.479	.483	60.56	11.74	.404	.01	.586
Portugal	31	.321	.419	47.70	11.43	.666	.041	.291
Puerto Rico	211	.183	.396	36.98	12.33	.554	.078	.366
Spain	98	.403	.459	41.70	13.7	.747	.034	.218
Spanish Latin America	196	.219	.403	37.30	13.56	.729	.052	.218
Sweden	66	.564	.378	65.71	12.51	.431	0	.568
United Kingdom	268	.522	.429	56.17	13.23	.452	.014	.533
Average	1808	.398	.438	51.38	12.34	.520	.032	.448
Std. Dev		.489	.496	19.12	3.64	.499	.177	.447

Table 12: Summary statistics by country of residency: WVS database

Country of residency	Obs	Trust	Men	Age
Algeria	1 014	.102	.508	32.77
Argentina	2 843	.184	.479	42.77
Austria	2 903	.327	.488	46.88
Canada	4 264	.457	.468	43.01
China	3 287	.550	.551	38.92
Colombia	2 914	.103	.500	35.40
Czech Republic	2 718	.268	.481	46.15
Denmark	2 634	.577	.510	43.42
Finland	2 426	.558	.492	41.95
France	3 275	.223	.488	43.17
Germany	5 870	.375	.456	45.54
Greece	1 050	.238	.424	35.94
Hungary	909	.224	.487	47.79
India	3 944	.367	.557	35.82
Ireland	2 350	.420	.463	45.34
Italy	4 359	.320	.491	43.06
Mexico	5 397	.250	.523	34.10
Morocco	994	.208	.493	29.18
Netherlands	2 433	.532	.460	34.10
Nigeria	3 511	.212	.547	30.69
Norway	4 337	.657	.520	42.74
Philippines	1 181	.086	.501	38.55
Poland	3 105	.230	.464	46.60
Portugal	2 023	.175	.446	44.00
Puerto Rico	1 630	.117	.354	44.60
Spain	8 386	.350	.489	43.43
Sweden	3 533	.639	.527	44.19
United Kingdom	2 640	.384	.474	45.09
Zimbabwe	851	.112	.517	32.78
Average	90704	.298	.485	41.46
Std. Dev		.457	.499	16.44

Table 13: Aggregate Summary statistics on macroeconomic performance: Periods 1949-52 and 2000-2003

Country	Income per capita	Capital stock per capita	Education (years)	Employment rate (over total population)
Africa	972.9031	3 085.658	5.337	.433
Austria	12 434.67	3 7350.270	8.703	.451
Arabic	2 126.112	4 555.007	1.967	.338
Canada	15 222.44	38 504.780	11.546	.425
China	2 199.453	7 372.988*	3.638	.444
Czech Republic	6 402.364	48 382.030*	8.807	.471
Denmark	15 043.470	42 802.59 0	9.318	.477
Finland	12 244.260	38 430.38 0	8.540	.465
France	13 599.530	38 745.150	9.572	.430
Germany	11 757.130	34 690.770	10.130	.434
Greece	7 483.725	18 964.08 0	7.857	.351
Hungary	5 118.611	24 145.320*	6.964	.422
India	1 318.472	2351.747	2.974	.365
Ireland	13 461.480	25 023.700	7.945	.424
Italy	11 453.910	34 209.290	7.316	.383
Mexico	4 805.527	9 640.011	4.685	.319
Netherlands	13 894.050	37 760.830	9.307	.429
Norway	15 700.930	46 400.650	10.043	.463
Philippines	1 812.672	3 916.997	4.852	.381
Poland	4 956.501	16 804.530*	7.645	.437
Portugal	8 047.235	24 600.430	4.695	.454
Puerto Rico	8 300.491	.		.343
Spain	9 375.395	25 450.530	6.248	.398
Spanish Latin America	3 662.944	4 281.194	4.782	.326
Sweden	14 018.810	35 811.920	9.322	.483
United Kingdom	13 921.630	32 444.090	10.855	.455
*Data only for the period 2000-2003				