CULTURE, INSTITUTIONS AND DEVELOPMENT.

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Abstract: This paper presents a survey of the literature on culture in economics, emphasizing the effects of culture as well as the origins of cultural development. Research finds culture to have a large set of effects on economic behaviors, outcomes and formal institutions. A large body of research finds culture to be slow-moving. Our understanding of the determinants of cultural change and cultural diversity are still quite partial. Development policies should be adapted to existing cultures without trying to change them.

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1. INTRODUCTION

A very active literature has developed in the last fifteen years on the effects of culture on institutions and development. While previously economists abstained from analyzing the economic effects of culture, they increasingly recognize that differences in values and beliefs across the world have many economic implications, be it in influencing attitudes towards thrift, work and effort, innovation, trade, the role of women, openness towards other countries and other cultures, or in affecting political and legal institutions. International data bases such as the World Values Survey have made it possible to examine cross-country differences for a large array of cultural values and beliefs.

This report exhaustively surveys this recent literature in order to : 1) identify what are the important themes that emerge from this literature; 2) examine the most important policy implications of those themes for economic development, 3) identify the research gaps and the most fruitful research paths forward for this literature, 4) discuss in particular the most relevant policy issues arising in terms of the interaction between diversity in cultural norms and institutional reforms.

Research on culture in economics started from different angles. The pioneering game-theoretic work of Greif (1994) showed the effects of differences between individualist and collectivist beliefs in the late medieval Mediterranean period by comparing systematically how differences between the collectivist beliefs of the Maghribi traders in the Muslim world and the individualistic beliefs of the Genoese traders affected contract enforcement, social stratification and openness in trade. The study of belief-induced game-theoretic equilibria leading to self-sustaining beliefs showed powerfully how differences in cultural beliefs can matter and be persistent. The experimental literature found early on stark country differences in outcomes of bargaining games. The pioneering study was that by Roth et al. 1991 documenting differences in outcomes of the ultimatum game in Israel, Japan, Slovenia and the U.S. (see also Henrich et al. 2001). Empirical research trying to understand the determinants of individual preferences, in particular related to trust, led to the finding that national fixed effects tend to play a more important role than individual characteristics (see e.g. Tabellini, 2008; Algan and Cahuc, 2014). This finding led to the suggestion that culture plays an important role in determining people's preferences. Evidence was also produced showing specific effects of culture on people's behavior distinct from institutions. Thus, Fisman and Miguel (2007) showed on the basis of differences in New York parking violations by UN diplomats that there was a strong link between country corruption scores and behavior by UN diplomats in the same institutional setting. Similarly, Miguel et al. (2008) showed that professional soccer players who come from countries with a history of civil conflict in their home country are more likely to behave in a violent way on the soccer field.

Before going any further, how is culture commonly defined in economics research? A commonly used definition is the following. *Culture is the set of values and*

beliefs people have about how the world (both nature and society) works as well as the norms of behavior derived from that set of values.

Let us dwell on the various components of this definition and how it translates in traditional economics jargon. Values are about what gives fundamental meaning to somebody in life. Values obviously affect preferences (ex.: the value of effort affects labor-leisure choices) but not only so as to affect individual choices. Values affect social norms, which strongly affect people's behavior, be it in their fertility choices, savings choices, female labor supply, the extent of peer pressure against behavior that deviates against extant social norms. Beliefs are about how people believe others will behave under particular contingencies, but they are also about nature, the extent of scientific versus superstitious or religious beliefs. Obviously, beliefs affect individual behavior. People who expect others to behave opportunistically will tend to behave opportunistically and vice versa. This definition of culture is a comprehensive definition. It is close to religion in the sense that religion offers a view of how the world works as well as precepts of behavior. Culture is perhaps somewhat more inclusive than religion in the sense that it covers all beliefs and values that people have. Culture also evolves somewhat more than religion, at least compared to the fundamental religious texts, even though culture affects the interpretation one makes of religious texts, which obviously varies over time. To avoid any misunderstanding, when economists talk about culture, they do not mean the culinary or clothing habits that are prevalent in a particular country, nor its artistic production, even though the latter are all to a certain extent affected by prevalent values and beliefs. Culture thus only affects a subset of what economists usually understand by preferences. Also, culture is often used in many settings such as "organizational culture" or "enterprise culture", "ghetto culture". Even though these settings are relevant for the analysis of culture, they usually refer to a particular subset of behaviors in the context of their workplace or their neighborhood. When we talk about culture, we will usually not refer to these cultural subsets but instead with the more comprehensive concept defined above.

Culture is mostly transmitted from parents to children (vertical transmission but also via peers (horizontal transmission). Bisin and Verdier (2001) have produced the canonical economic model of cultural transmission. It is generally agreed that vertical transmission plays a greater role than horizontal transmission. Therefore, culture tends to be slow-moving over time compared to formal institutions such as political institutions which can change rapidly at times (Roland, 2004).

Several methodologies have been used in economic research on culture. The first method is the cross-country approach. It exploits the several large international data bases that provide a comprehensive coverage of values. The advantage of the cross-country approach is that it makes it possible to perform a comprehensive and extensive comparison of a very broad set of the values available for a very large set of countries. The disadvantage is that these data bases are either not available across time, or if they are, only for the last few decades. They allow thus only for a spatial comparison, not for a comparison across time. To the extent that researchers are interested in understanding the effects of culture, this disadvantage could be important. This is less the case if one

believes that culture is slow-moving, and thus that recent measures of culture are good proxies for older measures. Nevertheless, in order to convincingly measure the effect of culture on measures that are relevant to understand institutions and development, one needs to have good instrumental variables. This is in general very difficult to find in a macroeconomic context since many variables affect each other mutually in a web of complex interconnections. It is thus very difficult to find a variable that would affect a particular economic variable only indirectly through a cultural variable, and only through that cultural variable. Because of this difficulty of finding convincing instrumental variables in a macro-economic context, one often faces a trade-off between the internal validity and the external validity of a particular research endeavor. A smaller spatial scope of research, focusing for example only on within country, or within region, heterogeneity makes internal validity easier but at the cost of external validity and vice-versa, cross-country studies have a potentially large external validity, but this often comes at the cost of internal validity.

The second method is based on the epidemiological approach pioneered by R. Fernandez (see e.g. Fernandez 2011). Based on its similarity with epidemiological research analyzing the spread of diseases, it analyzes the spread of culture based on the country of origin of the migrants. The epidemiological approach to culture has mainly been applied to the U.S. because it is a country of migrants. It looks at how cultural traits from the county of origin of ancestors influences subsequent generations of US citizens. An advantage of this approach is that individuals coming from different cultural backgrounds will face similar environments in the U.S. This makes it easier to isolate the effect of culture on their behavior. The only disadvantage of the epidemiological approach is that it only measures individual actions and behavior, not aggregate effects.

The third method is bases on laboratory experiments across countries, or across nationalities such as foreign students in US universities (see e.g. Glaeser at al. (2000 or Bornthorst et al. (2010). As is usual in laboratory experiments, the participants are asked to participate in games related to the experiment at hand and their response is analyzed as a function of their cultural origin. Laboratory experiments on the effects of culture as on other issues have the usual advantages and disadvantages. One creates a controlled environment, which makes it easier to measure particular effects. On the other hand, one can claim that such environments are too artificial to reflect human interactions in the real world.

This is not the first survey on the effects of culture. Algan and Cahuc (2014) focus on the trust component of culture and its effects. Fernandez (2011) surveys the epidemiological approach to culture. Alesina and Giuliano (2015) survey the link between culture and institutions. Compared to these other surveys, this paper offers a comprehensive survey of the effects of *different* cultural dimensions, and covers also the question of the determinants of cultural change as well as the origins of cultural diversity.

In a first part, we examine exhaustively the literature in terms of a) which cultural variables are used and, b) the variable affected by culture. We build on that basis a compact table in matrix form summarizing visually the existing literature. This visual

tool is useful to identify existing research concentrations as well as existing holes in the literature. Among the main variables that have been analyzed, the most important one is that of generalized trust. It has been interpreted in various ways: culture of cooperation, culture of active political participation, generalized morality (as opposed to morality limited to one's ingroup), none of these interpretations necessarily contradicting each other. A second variable for which a literature has developed is the effect of the individualism-collectivism dimension. This literature exploits the data built by Dutch sociologist Hofstede. A large literature exists in cross-cultural psychology, using laboratory experiments to test various aspects of the differences between individualist and collectivist cultures. There is also a literature based on the work of cross-cultural psychologist Shalom Schwartz, which is closely related to the variables identified by Hofstede. Even though we plan to summarize a large part of this literature in matrix form, we need to acknowledge that there is substantial heterogeneity among existing studies. Some studies are only theoretical while most others are only empirical. The quality of existing empirical studies is also quite variable. We will reflect on these issues when mentioning the research.

Next, we discuss some major themes that have emerged in the literature. A first theme is the inertia of culture. Culture, as a whole, usually changes only very slowly, even though some particular, more narrow dimensions of culture (attitudes towards death penalty, attitudes towards women, tolerance for smoking) may change faster. In contrast, while political and legal institutions also exhibit substantial inertia, they may be subject to periods of very radical change (a revolution, a coup). The reason for culture being slow-moving is that cultural transmission is mostly vertical, and takes place between parents and children. There is a horizontal component to cultural transmission, based on peers, but it generally plays a much smaller role. Cultural inertia is now well documented and the paper will survey the findings from that literature. Cultural inertia has important implications. A first one is that culture may be a fundamental determinant of institutions, and there is a literature looking at the effects of cultural variables on the quality of institutions but also on democratization. A second implication, which is very important for development policy, is that it is probably counterproductive to want to change cultural attitudes in a fast way. A better approach might be to build on local cultures and design institutions that are more adapted to these local cultures.

A second theme that needs to be examined is what variables determine cultural change. This is a broad question, but for which the existing literature is yet rather sparse. A major topic is the effect of economic change as well as social change on cultural values. A related question is why cultural change occurs under some circumstances, but not under other circumstances.

A third theme that is important is to explain is the origin of particular cultures. This is only partly related to the previous theme. Why is there more trust in some countries than in others? Why did some countries develop an individualistic culture and why did others develop a collectivist culture? Questions like these have so far mostly remained unanswered, but there is some research examining for example the role of particular early agricultural technologies on gender equality and inequality. Some studies

have also analyzed the effect of particular long historical spells such as the length of time particular territories were under the authority of a particular empire (the Roman or Chinese Empires, the Ottoman Empire, the Austro-Hungarian or the Russian empire).

2. THE ECONOMIC EFFECTS OF CULTURE.

In this section, we look at the effect of particular dimensions of culture on economic and institutional variables. We organize this discussion with the help of Table 1. Columns represent cultural dimensions and rows the economic variables affected by culture. A particular cell thus contains a reference to a paper (or multiple papers) analyzing the effect of a particular cultural dimension on a variable affected by culture.

TABLE 1. Economic effects of culture.

	Trust	**individualism/coll.**	**Autonomy/embeddedness**	**gender roles**	**strength of family ties**	**culture of honor**
income per capita, TFP, growth	Knack and Keefer (1997), Hall and Jones (2009)	Gorodnichenko Roland (2016)				
Exports and investment	Guiso et al. (2004)	Gorodnichenko et al/ (2015)				
financial market development	Guiso et al. (2004), Cole et al. (2012)					
innovation (RD/GDP)	Hall and Jones (2009)	Gorodnichenko Roland (2016)				
Firm organization (delegation)	Cingano and Pinotti (2012), Bloom et al. (2012)					
labor market	Algan and Cahuc (2009)					
democracy		Gorodnichenko Roland (2015)				
institutions of regulation	Aghion et al. (2011),				Alesina et al. (2010)	
quality of institutions		Kyriacou, Klasing (2012)	Licht et al. (2003)			
accountability	Nannicini et al. 2013		Licht et al. (2003)			
savings	Guiso et al. (2006)					
redistribution (includes pensions)	Alesina and Angeletos (2005)				Galasso and Profeta (2011)	
LFP of women				Fernandez and Fogli (2009), Fernandez (2007)	Alesina Giuliano (2007)	
Fertility choices				Fernandez and Fogli (2006), Fernandez and Fogli (2009),		
sex ratio				Edlund et al. (2009)		
corruption			Licht et al.. (2003)			
geographical mobility					Alesina-Giuliano (2007)	
violence						grosjean (2015)
efficiency of coordination						Brooks et al. (2015)

As one can see from Table 1, the cultural dimension that has until now by far been most studied in economics is trust. It is either understood as generalized morality, i.e. norms of morality that are universally valid independent of socio-economic, family or ethnic background, as civic culture in society or as the willingness to cooperate. Arrow famously stated in 1972: "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."

There is a large experimental literature analyzing trust games played in laboratories. Standard game theory suggests that cooperation is not easy to sustain, especially if people do not face repeated interactions with the same people. This has been contradicted by the result of trust games, showing that people cooperate, even in one-shot games (see e.g. Boyd et al. 2003, Fehr, 2010). Theoretically, cooperation can be sustained by preference for reciprocity (Fehr and Schmidt (2009). Trust has also been linked to social capital (Putnam, 1993). Laboratory experiments have been designed to distinguish between altruism, reciprocity and trust.

In the empirical literature, research on trust is based on answers to the following survey question: "Generally speaking, would you say that most people can be trusted, or that you can't be too careful when dealing with others?" This question is present in a very large number of surveys, thus making it possible to compare the answers: the European Social Survey, the General Social Survey in the U.S., the World Values Survey, Latinobarómetro, the Afrobarometer and the Australian Community Survey. Such surveys form the basis for cross-country studies, as well as within country studies, on the effects of trust.

As one can see fro Table 1, societies with more trust have been found to be associated with higher income per capita, innovation, financial market development, redistribution, exports and investment. Higher trust is associated with stronger delegation within organizations, stronger accountability of politicians and different labor market institutions.

The second cultural dimension that has been studied so far is the individualism/collectivism dimension. The notions of individualism and collectivism are quite widespread but take different meanings in different contexts. Greif (1994) introduced them in his path-breaking comparison of contract enforcement among the Genovese and the Maghribi traders in the late Middle Ages in the Mediterranean. He restricted his comparison then to differences in beliefs about strategies of contract enforcement and hiring practices. Current research on individualism and collectivism is inspired more by the cross-cultural psychology definition of individualism and collectivism that has made a large use of the data put together by Dutch sociologist Hofstede. He surveyed people with equivalent jobs in different countries in the same company so as to measure cultural differences. To avoid cultural biases in the way questions were framed, the translation of the survey into local languages was done by a team of English and local language speakers. With new waves of surveys and replication studies, Hofstede's measure of individualism has been expanded to almost 80 countries.[1] Hofstede's index, as well as the measure of individualism from other studies, uses a broad array of survey questions to establish cultural values. Factor analysis is used to summarize data and construct indices. In Hofstede's analysis, the index of individualism is the first factor in questions about the value of personal time, freedom, interesting and fulfilling work, etc. This component loads positively on valuing individual freedom, opportunity, achievement, advancement, recognition and loads negatively on valuing harmony, cooperation, relations with superiors. The Hofstede individualism score measures the

[1] The most current version of the data is available at http://www.geert-hofstede.com/.

extent to which it is believed that individuals are supposed to take care of themselves as opposed to being strongly integrated and loyal to a cohesive group. Individuals in countries with a high level of the index value personal freedom and status, while individuals in countries with a low level of the index value harmony and conformity.

Although Hofstede's data were initially collected mostly with the purpose of understanding differences in IBM's corporate culture, the main advantage of this measure of individualism is that it has been validated in a number of studies.[2] For example, across various studies and measures of individualism (see Hofstede (2001) for a review) the United Kingdom, the USA and Netherlands are consistently among the most individualist countries, while Pakistan, Nigeria and Peru are among the most collectivist.

Cross-cultural psychologists consider that the distinction between individualism and collectivism covers many dimensions so as to represent in a comprehensive way cultural differences across the world. Without expanding too much on it (for a recent survey, see Roland, 2016), individualism and collectivism have opposed visions of the self, of mode of self-knowledge, of self-consistency and adaptability, of the need for self-enhancement, control strategies, emotional rewards, analytic versus holistic modes of thinking, as well as a number of behavioral and relational differences.

As can be seen from Table 1, countries with higher individualism scores are associated with higher levels of innovation and long run growth, higher quality of institutions and are more likely to have democratized earlier. Cultural differences along the individualism/collectivism dimension are also associated with lower levels of cross-country vertical integration within multinational firms.

Very closely related to the Hofstede data on individualism/collectivism are the data assembled by cross-cultural psychologist Shalom Schwartz. He developed a core set of values that have common meanings across cultures and can provide a basis for the comparison of cultures across countries. Schwartz's value survey consists of 56–57 value items that ask respondents to indicate the importance of each as "a guiding principle in my life." Between 1998 and 2000, Schwartz gathered survey responses from K–12 schoolteachers and college students, for a total of 195 samples drawn from 67 nations and 70 cultural groups. Each sample generally includes 180–280 respondents, for a total of over 75,000 surveys. From the data generated by those surveys, he has constructed a "cultural map," which displays the important cultural dimensions he identified. Embeddedness of the individual in the traditional community emphasizes a high degree of respect for tradition and security. At its opposite are autonomy, both intellectual and affective. Intellectual autonomy emphasizes self-direction, whereas affective autonomy emphasizes mostly hedonism and stimulation. Hierarchy is valued in societies where stability of the social order is paramount. It emphasizes power, tradition, and conformity.

[2] See for example Hoppe's (1990) study among members of parliaments, labor and employer leaders, academics and artists in 18 countries, Shane's (1995) study across 28 countries for international companies other than IBM, Merrit's (2000) study on commercial airline pilots in 19 countries, de Mooij's (2003) survey among consumers in 15 European countries and van Nimwegen's (2002) research among employees of ABN-AMRO bank in 19 countries.

At its opposite is egalitarianism, which emphasizes universalism. Mastery is about self-assertion and is based on the values of achievement. Harmony is its opposite and also fosters the values of universalism. Note that most of the variation in his data come from the opposition between embeddedness and intellectual and effective autonomy. Empirically, these cultural dimensions strongly correlate with collectivism and individualism in the Hofstede data.

As can be seen from Table 1, a higher level of autonomy has been found to be associated with higher quality of institutions along a broad number of dimensions

Let us briefly comment on the other dimensions in Table 1. An important distinction, when examining cultural values is to what extent effort versus luck affects individual outcomes. These beliefs obviously affect people's actions, but they also affect their preferences in different ways. Higher beliefs in the role of effort tend to be associated with lower levels of redistribution.

Values and beliefs in gender roles vary a lot across countries and are an important component of cultural differences. While modern Western culture emphasizes equality between men and women, other more traditional cultures confine women to the household and give them fewer rights than to men. Cultural differences on gender roles are a source of cultural clashes in today's world. Very interesting research has been done in this area. The epidemiological method (see above) has been applied intensively here since cultural differences on gender roles affect household choices such as labor force participation of women or fertility choices. Different beliefs in gender roles are associated with differences in labor force participation of women, fertility choices and sex ratios.

Family values relate to the strength of family ties. In some cultures, family ties are very strong, while they are looser in others. When family ties are strong, the family plays a larger role as an economic unit, whereas when they are looser, there is larger reliance on market relations instead. The strength of family ties can be measured in different ways. The World Value Survey contains many questions about the importance of family, attitudes towards parents, responsibilities of children towards their family, etc.. Research has found that the strength of family ties has various economic effects. Stronger family values have been found to be associated with lower geographical labor mobility, more rigid labor market regulations, lower labor force participation of women and less generous pension systems.

A culture of honor is one where people feel compelled to defend their honor, by violent means usually, if they feel they have been insulted or offended. A culture of honor tends to generate violent behavior, which has been confirmed by empirical studies.

Several observations can be made on the basis of Table 1.

First of all, despite the fact that this literature is very recent, there appear to be comprehensive and diverse effects of cultural differences on a large number of important

variables: from growth and innovation to demography, labor markets, political attitudes and institutions. Causality is difficult to establish completely convincingly in a cross-country context, but it is difficult to deny that culture has important effects and is associated to many variables economists care about.

Second, the effect of culture on institutions (democracy, regulation, corruption, quality of institutions, …) seems important. This is not really surprising given the slow-moving character of culture. Culture is bound to shape institutions one way or the other, but the causality is likely to go in both directions. We will examine these topics further below.

Third, the number of different cultural variables does not appear that large compared to the number of outcome variables examined in the literature. This is interesting because culture has many dimensions as it touches all aspects of life. Nevertheless, that does not mean that a large number of cultural dimensions should necessarily have economic effects. When looking at Table 1, we see that some cultural variables are limited in scope: trust, values on gender roles, family values, culture of honor. Others are more comprehensive. This is the case of individualism and collectivism and of the Schwartz cultural dimensions. As noted above, these are however strongly correlated. Individualism is also strongly correlated with trust. This is not surprising since trust has been interpreted as generalized morality, which is what one would expect in a society with a individualist culture where people see each others as citizens with equal rights. It is probably not surprising that the many cultural dimensions are strongly correlated with each other. This means that when we do research on culture, unless we are interested in a particular cultural dimension, it makes sense to use a general index like that of Hofstede or Schwartz.

Two remarks should be made here. First of all, these general cultural indicators give mostly a ranking of countries. Of course, this ranking is based on an existing set of cultural values, but we cannot exclude the fact that the indicator measures in fact more that what it actually measured. Indeed, if many cultural dimensions are strongly correlated with each other, we do not need to include all cultural measures in a cultural indicator - especially those that have not been measured- since the ranking will be the same with a comprehensive set of measures compared to a more restricted set of measures. The second remark, which is related to the first one, is that cultural psychologists, who have much more experience than economists in researching cultural differences and their effects, consider that the individualism-collectivism cleavage is the most relevant one to understand international cultural differences (see for example, Heine, 2007; in economics see Klasing, 2012). To them, this is not surprising as individualism and collectivism reflect two fundamentally different world views with numerous implications that can be traced back conceptually to the distinction between the independent self versus the interdependent self (Markus and Kitayama, 1991), as foundation to individualist and collectivist culture.

It is worth making a final remark about "missing" columns or rows in Table 1. For example, there are not yet studies on the economic effects of time preferences or risk

preferences, even though there is research on the determinants of these cultural differences. These gaps will likely be filled.

3. THE INERTIA OF CULTURE.

The topic of the inertia of culture has come up repeatedly in the previous section. The canonical models used to show the inertia of culture are those by Bisin and Verdier (2000, 2001) and Bisin, Topa and Verdier (2004). These are models of strategic transmission of values by parents. Standard evolutionary models of cultural transmission in the tradition of Boyd and Richerson (1985) generally predict convergence to the culture of the majority population via a simple evolutionary dynamics. In the spirit of and Verdier, parents may choose to transmit to their children values that will help them fit and thrive in the environment in which they live. This will help accelerate cultural assimilation, but parents from minority groups who care deeply about their culture will want to strongly transmit their values to their children. As a result, one will not observe cultural convergence. Bisin et al. (2016) show that attachment to one's own cultural identity is stronger in mixed rather than segregated neighborhoods in the UK. The Bisin and Verdier framework thus explains quite well the inertia of culture via vertical transmission.

Tabellini (2007) proposes another model of cultural transmission that involves complementarities between norms and social behavior. The more people exhibit a cooperative behavior the larger the payoff from cooperation. This in turn makes parents more willing to transmit values of cooperation. Hauk and Saez-Marti (2001) had proposed a similar mechanism to analyze transmission of corruption. Somewhat different is the model by Guiso et al. (2004). It is also related to culture of cooperation and thus to trust. The model proposes to analyze both how distrust may persist, but also how it may change in a few generations. In their model, parents transmit conservative priors to their children, biased towards distrust, because they do not want their children to suffer from negative experiences, and thus transmit values that will protect them but prevent them from learning too much about others. Once a positive shock occurs that leads people to experiment more, they may find out that the value of distrust inherited from their parents was unwarranted, and thus transmitting values of trust to their offspring. There may thus be very long periods of persistent distrust, but this may change all of a sudden in a few generations. The model proposes to rationalize the experience of city-states in Northern Italy in the Renaissance period. That experience did not last that long as the Counterreformation subsequently initiated a dark period, but seems to have had a lasting effect. The model is justified by empirical evidence showing that the gap in trust between older and younger people is smaller in low trust countries compared to high trust countries, showing an experience effect (measured by the young-old gap) that is different.

Empirically, the inertia of culture is well established, in particular in the epidemiological literature showing in the US a persistence of cultural traits people inherited from the country of their ancestors (Fernandez, 2011; Tabellini, 2008, Alesina and Giuliano, 2009, Guiso et al. 2006). Dohmen et al. (2007, 2008) found strong

correlation of values and beliefs between parents and children on *trust and risk* using data from Germany. Ljunge (2014) found similar results on *trust* in a sample of 29 European countries with 87 countries of ancestry. Farre and Vella (2013) give evidence on the inertia in the transmission of *gender values* in the US, Fong (2001), Luttmer and Singhal (2011) and Eugster et al. (2011) give evidence on vertical cultural transmission of *preferences for redistribution*.

Some of the research related to the inertia of culture goes further back in time and looks at the historical cultural roots of various kinds of behavior. As already stated above, Grosjean (2014) showed how the significantly higher levels of homicide in the US South relate to a culture of violence inherited from the first European migrants to the US. In contrast to other regions, migrants to the US South were mostly Scottish-Irish cattle herders. Like in other regions of the world populated mostly by herders (Sardinia, Albania, …), a culture of violence had developed over time. Indeed, cattle can be stolen much more easily than land, and herders developed a culture of honor and violence to deter potential thieves from attacking them to steal their cattle. The fascinating thing is that the effects of this culture can still be seen today in the US South among the descendants of those Scottish-Irish herders, even though the motive (develop an aggressive behavior to protect oneself from potential thieves) has disappeared a long time ago. Grosjean also shows that the persistence of the culture of violence can only be found in those locations were the Scottish-Irish migrants and their descendants were in majority. In other words, the culture of violence persists as a community phenomenon. Wherever the descendants of these herders were in the minority and immersed in another culture, they assimilated and adapted to the values and behavior of the majority in their community.

Related to this research is the earlier work by Fischer (1989) on the long run effects of the initial cultures of the different waves of migration to the US and their institutional effects. The first wave, between1629 and 1641, were the puritans who settled in Massachussetts. They believed in the importance of education and order and adapted the new institutions to their beliefs. This resulted in relatively high tax rates, a large size of government, frequent town meetings and a strong and swift justice. The second wave, between 1642 and 1675, were the so-called Cavaliers who migrated to Virginia. Many of them migrated to North America motivated in order to find estates as the system of primogeniture gave all land to first born males. Their beliefs were different from those of the Puritans, with whom they were in conflict in England. They believed that inequality is natural and should not be opposed. They also adopted different institutions from the Puritans: low taxes, low levels of education and a lack of formal justice. The third wave was formed by the Quakers (1675-1725) who settled mostly in Delaware. Their culture was one putting high priority on personal freedom. They introduced institutions of limited government, equal rights and practiced a less harsh justice. The fourth wave was formed by the Scottish-Irish (1717-1775) who we mentioned above. They believed in freedom from the law and right to armed resistance, which led to vigilante justice. As we can see, the different waves of migration to the US were characterized by different cultural backgrounds, resulting in differences in institutions adopted. It is fascinating to

realize that these cultural and institutional differences still play a fundamental role in US politics today.

Another fascinating piece of evidence related to long term cultural inertia is that of Voigtländer and Voth (2014) on the persistence of *antisemitism* in Germany. In the mid fourteenth century, in the aftermath of the Black Plague that decimated Europe, Jews were systematically blamed for it and were decimated in progroms throughout Northern Europe. Voigtländer and Voth found that those towns that killed Jews most after the Black Plague were also more likely to have a higher intensity of anti-semitic attacks in Interwar Germany, in particular during the Nazi period.

One may wonder which cultural traits show more persistence than others. A recent paper by Giavazzi et al. (2014) addresses that question. They use data from the General Social Survey in the US to trace evolutiues over several generations. They found that deep religious values such as family and moral values, but also political orientation (liberal or conservative) vary very little relative to the prevailing US norms. On the other hand, attitudes towards cooperation, redistribution, children's independence, pre-marital sex, beliefs about the role of effort and frequency of religious practice converge faster towards the US norm. They also found that the speed of convergence varied depending on the country of origin of the ancestors.

4. What explains cultural change?

Whereas it is now well established that culture does not change very rapidly, and that cultural inertia is very strong, cultural change does take place. There are periods in time where hardly any change takes place and periods where faster change takes place. Why? What do we know about cultural change? Not much so far, and most of it comes from historical episodes that took place centuries ago. A lot of research on the determinants of cultural values is about the determinants of individual preferences. As much as it is interesting, it is important to distinguish between the determinants of individual preferences and the determinants of how culture changes in a particular community, polity or country.

At the theoretical level, Doepke and Zilibotti (2008) had analyzed the emergence of bourgeois values of patience and hard work. They look at the dynamic evolution of cultural transmission among artisans, landlords and workers. They find that artisans end up the most patient and with highest value for had work. Industrialization allows for this group to thrive while landlords stay attached to a culture of leisure. Here, preference transmission is dictated by altruistic parents in response to the economic circumstances they are facing. Another theoretical analysis is that by Besley and Ghatak (2016) who analyze how worker motivation (intrinsic or extrinsic) evolves with the reward structures offered on the market place. In a similar vein, Victor Hiller (2011) studies the impact of differences in preferences for autonomy at work on industrialization and the size of the modern industrial sector . Hiller (2014) also examines the effect of female labor supply on gender norms and how the latter reproduce via the gender gap in education.

We already mentioned the work of Guiso et al. (2004) on how the experience of Italian city-states may have led to important cultural change in Northern Italy in the direction of more trust and better civic attitudes. Becker at al. (2011) analyzed the difference between the influence of the Habsburg versus the Ottoman Empire, in terms of the culture of trust and corruption. They found that in the regions that once lay within the boundaries of the Habsburg Empire, public administration is still perceived as more transparent, less corrupt and better trusted by the population than in areas that used to belong to the Ottoman Empire. Between the eighteenth and the twentieth century, the Habsburg Empire employed public administrators with a higher level of education, competence and integrity. The effects of these reforms are still felt today hundred years after the disappearance of the Habsburg Empire. Grosfeld and Zhuravskaya (2015) look at the effects of the Russian Empire, the Habsburg Empire and the Prussian Empire in contemporary Poland where before WWI territories belonged to one of these three Empires. They find that territories that belonged to the Habsburg Empire have significantly stronger support for democracy today compared to territories that belonged to the Russian Empire and are also more religious.

Grosfeld et al. (2013) find in the former territory of the "Pale of Settlement" where Jews were allowed to live in the Russian Empire before the Holocaust, that current residents have lower support for the market economy, are less entrepreneurial and more trusting. They find that this is related to the anti-Semitic culture among non Jews who lived in those territories.

In a similar vein, Grosjean (2011) gives evidence from a gravity model on data from the Life in Transition Survey (LITs) in Eastern and Central Europe showing that the cultural distance between any two localities is reduced by one third only if these two localities have been in the same Empire for more than 100 years.

Nunn and Wantchekon (2011) using data from the Afrobarometer show that there is significant less trust in African countries that suffered more from the Slave trade. This is remarkable since slave trade stopped more than 150 years ago.

Tabellini (2010) and Cassar et al. (2013) in different studies found that good institutions may lead to the transmission of values of cooperation. Tabellini (2010) shows that regions of Europe that had institutions with more limited executive in the past have a higher level of civic attitudes today and Cassar et al. (2013) report results from experimental market games in Italy and Kosovo showing that a better institutional setup leads to less cheating.

Michau (2013) presents a model where the generosity of unemployment benefits and work ethics coevolve. One result is that high unemployment benefits dull parents' incentive to transmit a strong work ethic to their children. In related research, Lindbeck and Nyberg (2006) found, using data from the World Value Survey and OECD statistics that the welfare state had negative effects on the transmission of work ethic.

Overall, our understanding of the determinants of cultural change remains very limited. Evolutionary models help understand the dynamics, but say little about initial triggers for change (technology, institutions, climate,war,…) We know even less about the determinants of cultural change in developing countries.

The most consistent historical evidence that has been put forward concerns the roles played by large empires. Why were large empires successful at cultural change? Think of the spread of Christianity under the Roman Empire, Islam under the Caliphate and the Ottoman Empire, orthodox religion under the Russian Empire or Confucianism in China. This is all the more paradoxical since in the last two hundred years, the world has experienced revolutionary technological and demographic changes. Nevertheless, the modern world has not invented or spread a new fundamentally different culture. The culture of the modern Western world is fundamentally inherited from the Renaissance period, which was a mixture of Christian religion and Greek and Roman culture of the Antiquity. One can even state in a more lapidary way that the culture of the modern world is judeo-Christian. So, why were these Empires so successful at spreading new cultures over centuries while the modern world has not?

We do not have any good answer to that question, and only partial ones. Saleh (2015) points to the role of the poll tax in the Caliphate imposed on all non Muslim inhabitants. In Egypt, poor Copts converted to Islam to avoid paying the tax, so that only a minority of richer Copts did not convert.

I will advance here a hypothesis that seems reasonable to me. In the early empires, the education of elites was usually entirely in the hands of the ruler. Education implied first the ability to read and to write, and this was done in the context of a completely religious education based on the Bible, the Koran or whatever holy texts are central to that religion. This means several things. First of all, members of the elite were totally immersed in religion in their formative years. Second, the religious knowledge acquired gave them power over others, which gave them an incentive to want to transmit this religious knowledge. After a while, religious values and beliefs were transmitted vertically from parents to children, but also horizontally through education. Via a trickle-down process, religious knowledge and values were transmitted to ordinary people, and their offspring ended up receiving it both via vertical and horizontal transmission. Thus, by using religious knowledge as the main vehicle for education, religious values became widespread and got transmitted generation after generation in the Empires. To a large extent, these values are still transmitted today.

It would, however, be very hard, in a country today to transmit a new culture that would be radically different from that of the Empires, and this for multiple reasons. First of all, in the age of Empires, territories were invaded before spreading the Empire's religion. Second, that religion was the only path to knowledge and education. After WWII, large-scale invasions have become rare and are ostracized by the international community. Moreover, modern communication has made it possible to access many sources of knowledge. All this gives an advantage to the cultural status quo, or even if there is some erosion of existing cultures, it prevents big cultural revolutions from taking

place. The twentieth century witnessed the attempts to introduce radically new visions of the world compared to those inherited from history: communism and Nazism. Both failed miserably due to economic and/or military defeat. The current spread of radical Islam is mostly restricted to Muslim communities.

5. The origins of cultural diversity

Why are people in Western countries more individualistic and people in Asia more collectivist? Why do we observe differences in trust in different countries and regions? Not only is it important to know why and how culture changes, it is also important to know why particular cultural traits were adopted in some countries while others were adopted in other countries. Understanding the origins of cultural diversity and cultural divergence across the world is probably even more challenging than understanding the determinants of cultural change. This is in part because it requires a comparative perspective, i.e. the same theory or set of mechanism must explain different outcomes at the same time. Not surprisingly, we know even less about the origins of cultural diversity than about the determinants of cultural change. Most of the research in the area tends to focus on geographical variation as the main reason for cultural differences.

Ostrom (1990) was one of the first to venture in this area. She argued that trust was about norms and that more trust developed in communities in more upland regions because they needed to rely more on coordination to survive. A larger and impressive empirical study with that flavor is the one by Durante (2010) who emphasized the role of climate volatility in shaping values of cooperation. He hypothesized that stronger values of cooperation would evolve in places where people were facing ore risks. In an agricultural setting, this means more climate volatility. He indeed found that sub-regions of Europe that had a larger climate volatility between 1500 and 1700 had higher levels of trust and less strong family ties today.

In a different vein, Alesina et al. (2011) found that soil type affected the choice of use of the plough or the hoe in working the fields. Regions where farming relied a lot on the plough have developed gender roles less favorable to women. Men worked the field because working the plough required a lot of strength and women stayed at home. Many centuries later, countries that had plough-intensive agriculture have more traditional gender roles: lower labor force participation of women and stronger discrimination towards women. This stands in contrast to regions where the hoe was used more frequently. There, women worked on the land as well as men. Those regions developed stronger norms of equality between men and women. The amazing thing is that we still observe these differences today. One can argue that existing gender roles might have encouraged the role of the plough in societies with more discriminating values towards women. However, they argue that the use of the plough is mostly dependent on the type of crop, which itself depends on soil conditions. The plough is more adapted for crops where the land needs to be tilled rather quickly, which is the case for wheat, barley and rye. Geographical conditions thus led to gender roles that have shaped values on gender

roles. The work by Grosjean (2014) cited above is in the same spirit. A culture of violence developed more in those areas where raising cattle is more developed than growing crops.

Another geographical variable that has been argued to affect cultural values is geographical isolation. Ashraf and Galor (2011) developed a model and gave empirical evidence showing that societies that were geographically more isolated benefited from more homogeneity, which was beneficial to economic coordination, but this isolation led to cultural rigidity, which made these societies less ready for the industrialization period. Societies that were indeed less isolated were exposed more to cultural diversity, which made them more adaptable for industrialization. They construct and index of geographical isolation, based on the time it would take to travel from each square kilometer to the capital of a country. They construct an indicator of cultural diversity based on answers from the World Values Survey in different countries. They show that geographical isolation is associated to less cultural diversity, and that the latter is associated with higher trade openness, share of migrants and log of income per capita.

The research mentioned so far provides clues on differences in particular values or beliefs, such as trust, violence, gender roles or cultural diversity. Other research looks at the emergence of more systematic cultural differences across countries. A very interesting paper by Greif and Tabellini (2015) looks at the difference between China and Europe in terms of cultural values and institutions. In ancient China, the basic organization of collectivities and urban concentrations was based on the clan, i.e. extended kinship relations, whereas in pre-modern Europe, the cities, whose members were not based on any particular kinship group played an important role. European cities invested in legal infrastructure, taxed citizens and provided public goods like safety and defense, justice, education and poor relief. In China, the same functions were performed by the clan elders. Greif and Tabellini argue that this different organization of society led to important cultural divergence. In particular, the clan-based organization of cities led to the development of norms of limited morality. Norms of cooperation were only valid towards members of the clan who were part of the community. In European cities in contrast, norms of morality became universal as they applied to any citizen, independently of his kinship background. They build a model where a slight difference in the prevalence of limited morality over generalized morality will result in a bifurcation towards clan-based versus citizen-based urban environment. There in turn will lead to important cultural divergence. They document that kinship norms had been stronger in China compared to Europe. Obviously, one wonders how to explain this initial difference. Nevertheless, the analysis is quite compelling. While their emphasis is on the difference between limited and general morality, it is also consistent with the difference between collectivism and individualism. Indeed, collectivism emphasizes loyalty and conformity to the ingroup, be it the clan or the tribe, whereas individualism takes as basis individuals as citizens with equal rights and responsibilities. Generalized morality is an attribute of individualism and limited morality is an attribute of collectivism. While it raises many questions, the Greif and Tabellini framework provides a historically compelling analysis of cultural divergence between China and Europe.

Somewhat related is the work by Gorodnichenko and Roland (2015, 2016). In their empirical analysis of the effects of individualism and collectivism on innovation and long run growth, on one hand, and on democratization on the other hand, propose instrumental variables for individualism and collectivism that may explain some of the cultural divergence. One such explanation is based on the work of Fincher et al. (2008) who show that stronger historical pathogen prevalence in certain regions of the world gave a definite advantage to the spread of collectivist values. The idea is that areas with high pathogen prevalence would lead to high mortality unless human collectivities developed rigid norms related to contact with strangers, sexual behavior, openness to experimentation, strict adherence to collective norms, etc.. In other words, a stronger pathogen prevalence would have encouraged the emergence of collectivist values. A similar story can be told relative to the frequency of particular genes in populations (in particular genes related to propensity to depression in the face of stressful event or related to the intensity of psychological suffering from social exclusion) which various studies have argued to favor the emergence and consolidation over time of a collectivist culture in order to protect individuals from the negative consequences of these particular genetic endowments. These ideas are interesting in the sense that they provide exogenous sources of variation for the emergence of individualist versus collectivist culture. Nevertheless, they can only be part of the story when it comes to explain the determinants of cultural divergence.

Another hypothesis relative to the origin of collectivist culture is the rice production hypothesis developed by Talhelm et al. (2014). The idea is that areas where farmers grew rice crops required much more collaboration because rice-growing is very labor-intensive and necessitates careful irrigation. The study found on the basis of surveys of 1162 Chinese students that those who came from rice-growing regions had more collectivist values and beliefs relative to students coming from regions where wheat was grown. The results are intriguing. This raises the question of why Northern China, which was the cradle of Chinese civilization, developed a collectivist culture.

Finally, another explanation of the cultural divergence between individualism and collectivism is proposed by Olsson and Paik (2015). They find that the length of time since the Neolithic transition from hunter-gatherer societies to agricultural societies is a good predictor of collectivism. Their theory is that the establishment of agricultural societies fosters collectivist values and behaviors. Agricultural production led to a higher population density, which necessitated strong norms of behavior, usually associated with autocratic rulers. Agricultural societies were often threatened by outside predators, which required a strong defense capacity. Therefore, early agricultural societies tended to develop collectivist norms. Individuals with more individualistic preferences would prefer to flee these societies and settle in the periphery to enjoy more freedom. The extension of agriculture led to the imposition of collectivist norms, which led in turn individualists to move out, and so on. As a result, the societies that became agricultural earlier are more collectivist than those that introduced agriculture later on. They find that regions that adopted agriculture earlier tend to value obedience more and feel less in control of their lives. Moreover, they have had little experience of democracy. This is an interesting theory, but the data all pertain to Europe and the Middle East, where the latter

is more collectivist than the former. One would like to see what we find for the whole world, since the difference between Asia and Europe is the most important one, when it comes to individualism and collectivism. Moreover, since all countries with a sufficiently high GDP per capita have experienced the Neolithic transition thousands of years ago, one wonders why the difference in timing of the Neolithic transition would make such a difference.

The evidence so far on the origins of cultural diversity across the world is still only very partial. One needs to understand much better, in a comprehensive way, the sources of divergence between the most important cultural families on the planet. The answer will most likely be a combination between different factors: the random production of philosophies and the evolutionary survival of some depending on the local geographical environment, the institutional environment, the technological endowment, and possibly elements of genetic endowment. There really is a need for deep historical research combining archeology, anthropology, climate science, genetics and history of religion and philosophy.

One path, maybe the most promising path is to study the coevolution of institutions and culture in a historical perspective. A recent model by Bisin and Verdier (2016) encourages us to go in this direction. Recent empirical work in the context of history (Murrell and Schmidt, 2011) and development (Lowes et al. 2017) has been done in that direction.

6. Path-finding directions of future research.

In this section, we draw conclusions based on the above survey on what should be path-finding directions of future research. We try to be as exhaustive as possible, and propose some prioritization at the end of the section.

6.1. A finer measurement of the effects of culture.

There are many reasons why it is not easy to precisely measure the effects of culture. First, culture is a social phenomenon. It is not just the addition of individual preferences, network effects are important in the spreading of culture, and measuring network effects is always very tricky and difficult. Second, culture moves slowly. There are no sudden shocks that introduce new cultures or new cultural values overnight. Therefore, it is difficult to disentangle the effects of culture from many other possible confounding variables. This does not mean that one should abstain from doing work on culture. It is a subject that is too important to be ignored. More precise measurement will imply a stronger focus on subnational analysis, or comparisons between different sides of cultural borders facing similar economic and geographical circumstances. This should be a very useful direction of research. The haunting trade-off between internal and external validity will nevertheless always be there.

6.2. Use the epidemiological method also outside the US.

The epidemiological method is methodologically quite clean and should be used much more outside the US. Many countries in the modern world are composed to a larger extent than one thinks of migrants from many countries of origin. This is clearly true for France, Germany and England for example. Studies using the epidemiological method would be very helpful in other contexts than the US, if only to validate studies done for the US. Even if the epidemiological method is methodologically very sound and innovative, it is limited to analyzing the persistence and spread of culture as well as the effect of culture on individual behavior and actions. It does not allow to analyze the effects of culture on aggregate variables implying collective actions since collectivities are composed of people with many different countries of ancestry.

6.3. More comprehensive measures of culture.

An important task is to better understand the link between different dimensions of culture and have as comprehensive a measure as possible of cultural differences across the world. Cultures are derived from different views of the world that usually form a relatively consistent whole. The most comprehensive measure that we have so far is the Hofstede individualism/collectivism index, and the related Schwartz data. Even these measures do not cover the whole array of values associated to a culture. This measure is nevertheless more comprehensive than other measures in the literature that focus only on particular values or subsets of values. One of the reasons the individualism/collectivism index is very popular in other social sciences that have used it extensively is that the ranking of countries it produces is very robust. Other studies for which similar value surveys have been done for other professions (teachers, lawyers, air hostesses, …) yield similar rankings in terms of individualism and collectivism. Since these data are based on subjective surveys, the information provided by the rankings is the most important one, more important than the difference in scores between any two countries. As discussed above, the robustness in these rankings may mean that there are unmeasured values that are strongly correlated with the measured values, so that the rankings reflect in fact a more comprehensive measure of cultural differences. That being said, efforts are still needed to come up with comprehensive measures.

One area where there is a gaping hole in the economics literature on culture is the lack of measurement of indigenous cultures in developing countries. Here, economists must learn from the data gathered by anthropologists. Mainstream development economics has tended to ignore the cultural background of communities in developing countries, focusing solely on importing technology and human capital. One should analyze the data gathered by anthropologists to identify and classify cultural families in developing countries, based on the views of the world represented by these cultures and the effects it may have on economic behavior of individuals and communities.

6.4. More laboratory experiments on culture.

More international laboratory experiments are needed to understand better the effects of culture. I am not at all a specialist of laboratory experiments, and do not have much to say about it. It nevertheless makes it possible to test directly some hypotheses of the effects of culture on forms of economic behavior. The few laboratory experiments done using participants with different cultural backgrounds have provided interesting insights. As cross-cultural psychologists have done a large number of experiments, especially in testing the differences between individualism and collectivism, there is no need to replicate their studies, but one must think of interesting scenarios that can be played in the laboratory where cultural differences might yield differences in economic behavior and outcomes.

6.5. Does globalization lead to cultural convergence or to the strengthening of cultural identities?

This is a very important question. Globalization leads not only to exchange of goods and services, but also to exchange of information and ideas. Like never before, people are exposed to the ways of thinking, habits, values and beliefs of other people all across the world. Does this extraordinary availability of information lead to some process of cultural convergence, whereby people "pick and choose" among the cultural values on the global market place of ideas, in a similar way that they purchase commodities produced all across the globe? This is one hypothesis. The other hypothesis is that globalization may appear as a threat to the survival of local cultures. This perceived threat may then instead lead people to cling on to their traditional values in a rigid way. If the latter hypothesis is true, then globalization may not be sustainable in the long run, as different communities may try to cut themselves off from the outside world, as was the case for China and Japan several centuries ago. This question has, to our knowledge, not come up at all in the literature on culture and development. This is, however, a first order question. It is relevant both internationally, but also within countries. From a normative perspective, cultural exchange can only enrich people as they learn from others, even if they decide to hang on to their own values. Cultural exchange is, however, a two-way street that requires tolerance and understanding on both sides of the exchange.

A related question, which is currently of first order effect, is the effect of various policies of cultural integration and assimilation. In advanced economies that have been experiencing large inflows of migrants from poor countries, policies of integration vary strongly, from simple coexistence of communities (multiculturalism) to policies of forced assimilation (prohibition of the Islamic veil and insistence on strong adoption of secularism like in the French model of laïcité). We do not have a good understanding of the effect of these policies. Multiculturalism has been accused of undermining the cohesion of a country, and the recipe for future intercommunity conflict. On the other hand, policies of forced assimilation may lead to radicalization of minorities, preventing a peaceful integration of migrants and rejecting them to the margins of society. We clearly need research to understand what are the best policies for integrating migrants. Surely, the speed of inflow is a key policy variable, but there may be shocks like the large inflow of Syrian refugees in Europe since 2015 that cannot be prevented.

Analyzing this question ideally requires a dynamic general equilibrium approach where decisions to trade and to migrate respond to existing cultural values, which unleash economic forces that may affect the evolution of cultural values over time, leading either to forms of cultural and economic convergence or divergence.

6.6. Which cultural values change faster and which change slower?

Skeptics of the idea of cultural inertia will tend to show counterexamples where a particular subset of cultural values changes fast: attitudes towards cigarettes, values on gender roles. One should dig further in the direction started by Giavazzi et al. (2014) to understand better which cultural values tend to be more inert than others and why. This will also be very important to understand the dynamics of cultural change.

In addition, it is important to make a difference between opinion surveys and measurements of cultural values. These are often confused. Opinion polls are quite volatile and change depending on the economic situation and other variables that change in the short run. Temporary changes in opinions in certain areas, or in voting intentions are in no way representative of changes in values. Even though this difference makes sense, we have not yet developed methods to deal with this issue.

6.7 Understanding better the sources of cultural diversity.

Understanding better the sources of cultural diversity is of crucial importance to better understand the effects of culture. Cross-country studies on the effects of culture are often received with skepticism because our measures of culture are mostly recent and instrumental variables at the macroeconomic level are rarely completely clean, in terms of the exclusion restriction. The remnants of the Marxist intellectual tradition seeing culture as determined by economic factors are still very present in the economics profession, albeit unconsciously. There is no doubt that culture has a lot of inertia, but if we understand better the historical origins of modern cultures, we will be in a situation to better understand its effects.

Understanding the roots of cultural diversity is, however, a huge nut to crack. Cultural evolution is tightly interwoven in the long run history of countries. Investigating how different conditions led historically to different cultures requires a massive data gathering approach combining political and economic history, geography, archeology and anthropology.

6.8 Research Priorities.

The biggest priority, in my view, is research on better understanding the sources of cultural diversity. This trumps all other questions as this will help shed light on the other path-finding research questions identified. It will help understand the singularities and commonalities between various cultures as well as their determinants. To put it in

another way, it will help understand what are the fundamental pillars of different cultures and why they matter. It will also help understand cultural evolution and its determinants.

Next, I think that laboratory experiments to understand the effects of cross-cultural variation will be very important, certainly in terms of expected academic payoff. They should be combined with the epidemiological approach. Here, games with large numbers of players, one recent innovation in laboratory experiments will help widen the usefulness of the epidemiological approach so as to understand the cultural effects on group behavior.

Finally, understanding better cultural coexistence in a globalized world, and in the context of large migration flows, is a key policy question of our time.

7. Some Policy conclusions.

In this section, I define some policy conclusions that can already be drawn from the vast research undertaken in the last decade on culture and economics.

7.1. Taking culture as given instead of pushing for cultural change.

A first and very important conclusion is that taking culture on board means first of all to take into account the effects of different cultures when designing development policies. One should take cultures as given and see what are the best development policies given the prevailing culture. Particular policies or institutional reforms must be tailored to fit the existing cultural environment. This is how they work best.

The most important mistake one may tend to make when integrating culture in development policies, is to try to change existing cultures so as to obtain one's desired policies. Pushing for cultural change can be dangerous and counterproductive. The well documented inertia of culture explains the difficulty and multiple failures in transplanting institutions (see e.g. Berkowitz et al. 2003; Francois, Zabojnik, 2005). While some particular cultural values can change quite fast (within one generation), as a rule whole cultures do not change fast at all. Policies that promote cultural change can only deliver effects in the long run via elite education, the propagation of role models for young people to emulate and a slow trickle-down process. Betting on fast cultural change to make policies work is a recipe for failure.

7.2. Institutional change may trigger gradual cultural changes.

Institutional change may under certain conditions lead to gradual changes in cultural norms as shown by Aldashev et al. (2012). This is a subtle issue. Drastic institutional change, forced from above, that clashes with the existing culture, will meet resistance and will likely fail. Nevertheless, it is possible that some institutional change,

that acts like a nudge, may lead gradually to changes in behavior. These changes in behavior may then persist and be consolidated if they result in gradual cultural changes. These institutional changes are more likely to be successful and also to affect cultural values, because they do not represent a radical break with the incumbent culture, but push it in a direction in which particular groups of actors can recognize their interests and fight for changes in values. Laws that lead to empowerment of women in countries where they are suffering from discrimination can thus be a strong vehicle for cultural change. These laws serve to legitimize more equal gender values. They can thus be more effective than "soft" empowerment measures because the formal institutions give support to those people who want to push for different values, thus giving them a larger and lasting bargaining power.

In that context, media may play a role in the diffusion of cultural values and the possible promotion of cultural change (see the companion EDI survey by Eliana la Ferrara, 2017)

7.3. The need for internationally accepted norms of respect of cultural diversity.

The world is multicultural and will in all likelihood stay that way. Cultures may compete peacefully with each other, but it would be silly to think that one culture will come to dominate others or that some cultures will drastically adapt to others. Instead of aggressively asserting one own culture's superiority and rejecting others, one needs to develop bilateral norms of respect where both sides recognize mutual cultural differences, but agree to coexist peacefully, respecting each other's dignity and right to one's own beliefs and values. The same is true within each country. Everybody's right to their own beliefs and values should be recognized as long as the actions derived from it does not conflict with local legal arrangements.

APPENDIX. DETAILED DISCUSSION OF THE ECONOMIC EFFECTS OF CULTURE.

This appendix discusses more in detail the economic effects of culture as referenced in Table 1.

A1. TRUST.

Effects on income per capita and growth. In different studies, Knack and Keefer (1997) and Algan and Cahuc (2010) gave evidence that more trust leads to higher income per capita and growth. The former instrument trust with an ethno-linguistic variable. These days, we would question the validity of the exclusion restriction since ethno-linguistic variables may affect income per capita directly, or through other means than trust, for example through human capital, or through other cultural variables. Algan and Cahuc (2010) use another strategy and estimate the evolution of trust in the home country of US citizens by exploiting the timing of arrivals of immigrants. They regress the evolution of income per capita on variation in trust, measured by the difference between the current level of trust in a country and a proxy for the past level of trust, measured by the inherited trust of US citizens whose ancestors came from that country in different time periods. This delivers a measure of the effect of trust on income per capita, which is significant.

Trade and investment. Guiso et al. (2009) use bilateral measures of trust between European countries and find that, everything else equal, a lower level of bilateral trust leads to less trade and less foreign direct investment between countries. Trust between countries is affected by cultural distance, past history and genetic distance. Unfortunately, these bilateral trust measures exist only for Europe and we do not know if these results would be valid for the world as a whole. Giuliano et al. (2013) found that the effect of genetic distance on trade disappears once one controls correctly for measures of geographical distance.

Financial market development. Guiso et al. (2004) have found that higher trust is associated to stronger financial market development. They find that Italians who come from regions where trust is high (Northern regions) are more likely to use the financial system: bank accounts, checks, mortgage contracts, stock portfolios and bank credit. An interesting aspect of their research is that these results hold when people move from a high trust to a low trust region and vice versa. It is not clear how these results carry over outside Italy, but one can make arguments for why they should. Cole et al. (2013) found in a randomized field experiment in India that farming households fail to take up rainfall insurance contracts, in part because of lack of trust: demand is somewhat higher when the insurance product is offered by someone they trust.

Organization of the firm. The level of trust may also affect the organization of firms. If there is more an atmosphere of trust between employees, then there will be more delegation of tasks and responsibilities to the lower levels and thus a more decentralized organizational form. Using firm data on Italy, Cingano and Pinotti (2012) construct

measures of delegation for a representative sample of firms based on a survey done by the Bank of Italy, filtering out industry and regional effects. They find that regions with a higher level of trust have on average a higher level of decentralization and a larger firm size. They instrument trust by institutional variables from regions' historical past, like in Tabellini (2010). They find similar results for a sample of industries across 15 European countries, using the European Social Survey which contains trust survey data as well as data on the perception of employees of how much delegation authority they enjoy.

Labor relations. Trust has also been found to affect labor relations. Algan and Cahuc (2009) found that a higher level of civic virtue was associated with a higher flexibility in labor markets as well as with a higher level of labor income insurance as protection for workers. Low civic virtue is instead associated to worker protection through rigid labor market regulations. Their theory is that if citizens have civic virtue, they will not abuse unemployment benefit systems. The government will therefore provide adequate unemployment insurance. If on the other hand, there is a mentality of cheating and people do not seriously look for jobs when unemployed, then protection of workers will instead better be provided by regulations that protect jobs. They find that there is a significant relation between the level of unemployment insurance and labor market flexibility on one hand, and a measure of civic virtue on the other hand. The later is derived from the World Values Survey that contains a question on whether people consider it justifiable to claim benefits from the government even when one is not entitled to them. They also find that evolution of civic virtue between 1980 and 2000 is positively related to changes in labor insurance. Finally, they instrument civic virtue in a country by the predicted civic virtue of US citizens based on their country of origin and can claim a causal effect from civic virtue on the form of labor market protection.

Institutions. There are a number of papers that analyze the impact of trust on the quality of institutions. This is an important topic, because institutions are known to have a major impact on growth and economic performance. Finding a causal effect of culture on institutions can thus shed light on the determinants of the quality of institutions. The effect of culture on institutions is a recurrent topic in this literature. Here, we treat exclusively with research on the effect of trust on institutions. We discuss further below the effect of other dimensions of culture. Tabellini (2008) analyzed the effect of trust on the quality of institutions. He interprets trust as "generalized morality" as opposed to "limited morality". Generalized morality is characterized by norms of conduct that apply universally towards all other citizens, independently of their family or social background. These norms of behavior are not personal, based on family or tribal relationships, but based on citizenship. Expectations of dealing with people in a culture of generalized morality lead in turn to norms of behavior where people can in general be trusted because they share this common set of values. Limited morality instead has strong ethical norms within the family, the tribe or the clan, but people outside this ingroup are not to be trusted. This distinction reflects cultural values that are typical of Northern versus Southern Italy. The norms of limited morality in Southern Italy had been documented by the classical work of Banfield (1958) on "amoral familism": strong norms of morality within the family, opportunistic behavior with the rest of society. The argument is that in a society with norms of generalized morality, not only are people to behave in a more

cooperative way, but politicians and public administrators behave more in the interest of the public, and are expected to behave in a non corrupt way. Tabellini found that a higher level of trust was associated with a better quality of institutions, measured by a composite of institutional measures used by Hall and Jones (1999). To measure a causal effect from trust to the quality of institutions, he uses two instrumental variables, both based on linguistic differences that have been argued to reflect cultural differences. The first difference is whether or not the use of pronouns is mandatory in sentences. This reflects a stronger distinction between individuals and others and a better recognition of the individual as a distinct entity. The second difference is whether or not there is a distinction between the second person of the singular and the second person of the plural, the *tu-vos* distinction as exists in Latin. When this distinction exists, it is supposed to reflect more hierarchical values in society. On that basis, Tabellini finds a significant causal effect from trust to the quality of institutions.

There are many different kinds of institutions and thus different angles of focus. Aghion et al. (2010) for example found a link between trust and regulation. In a society with low trust, there will be a high demand for regulation because people will not trust government officials not to be corrupt and thus demand limits on their behavior. As a consequence, one will find an association between a high level of regulation and corruption. In this theory, they are not directly related to each other but are related to the general level of trust in society. Empirically, they find an association between measures of trust from the World Values Survey and measures of regulation, be it regulation of entry or price regulation. Pinotti (2012) gets similar results showing that less trust increases the demand for regulation. He interprets this as beliefs about the strength of negative externalities affecting market regulation. He shows that there is no negative relation between the extent of regulation and measures of economic performance, once one controls for trust.

Aghion et al. (2011) also analyze the relation between trust on one hand, and union density and minimum wage regulation on the other hand. They find that if there is a low level of trust, this will lead to the setting of high minimum wages by the government because there is little trust that negotiation between employers and unions will lead to good results. High minimum wages in turn reduce incentives to become trade union member and discourage workers from engaging in collective negotiations.

Electoral accountability: Putnam (1993) had already shown that lower levels of civil society development and social capital were associated to a lower quality of public good procurement in Italy. Nannicini et al. (2013) showed evidence, also based on Italy, showing that lower levels of trust were associated to lower levels of electoral accountability. They build a model where different regions have a varying proportion of civic and uncivic voters. Civic voters care about social welfare and are less tolerant of corrupt behavior by politicians. Uncivic voters on the other hand care more about how politicians will cater to their narrow personal interest. They show that higher levels of social capital, measured by the level of blood donations per capita but also by density of non governmental organizations in electoral districts, are associated to better politician behavior, measured by being subject of criminal indictment (request by the judicial

system to lift an elected representative's immunity), absenteeism in parliament and number of bills submitted.

A.2. INDIVIDUALISM AND COLLECTIVISM.

Gorodnichenko and Roland, among others, have written a number of papers examining the economic effects of the differences between individualism and collectivism.

Innovation and long run growth. In Gorodnichenko and Roland (2011, 2016), empirical evidence is given suggesting a possible robust causal effect from individualism and collectivism to innovation and long run growth. The theory is based on endogenous growth theory. It is assumed that in countries with an individualist culture, there is a social status reward to innovation as people strive to stand out from the crowd. It is also assumed that countries with a collectivist culture have an advantage in coordination of manufacturing activity. In an endogenous growth context, the latter has a static effect, raising income per capita, but the former has growth effects as it raises the innovation rate and thus gives a dynamic advantage. They confirm that countries with a individualist culture have higher income per capita, higher TFP growth and innovation rates, using different measures of innovation, and controlling for variables that are usually important in growth regressions (institutions, geography, human capital, …). As the relation between culture and growth can go both ways, they use different instrumental variables to establish a causal effect. A first instrumental variable is the frequency of certain genes in a population (the frequency of the S-allele in the serotonin transporter gene 5HTTLPR making people more prone to depression when confronted with stressful events). A second instrumental variable is the frequency of the G allele in polymorphism A118G in μ-opoid receptor gene creating a stronger psychological pain from social exclusion. A third instrumental variable is historical pathogen prevalence in a particular geographical area. According to recent advances in genetics and psychology, these genetic variables appear to *directly* affect personality traits. Chiao and Blizinsky (2010), Way and Liebermann (2010) and others argue that communities with a higher frequency of these two genes and with a higher pathogen prevalence developed social norms to adapt to this genetic and epidemiological environment. Since those variables are only available for a limited number of countries, another instrumental variable that is more widely available worldwide is a measure of genetic distance between the population in a given country and the population in the United Kingdom, which is the second most individualistic country in the world. Obviously, parents transmit their genes as well as their cultural values to their offspring. Populations that interbreed a lot should be genetically and culturally close because a similar parental transmission mechanism is at work in both cases. Therefore, measures of genetic distance can be seen as a proxy measure of differences in cultural values. Since there are no identified direct genetic causes for why some countries became wealthier than others, genetic distance can be argued to satisfy the exclusion restriction. In this case, they use genetic distance based on frequencies of blood types, which is available for the largest number of countries. A potential drawback of genetic distance is that there could be channels other than

individualism through which genetic distance can be indirectly related to long-run growth (e.g., another cultural dimension).

Democratization. Gorodnichenko and Roland (2015) build a simple model with the following trade-off: collectivist cultures, compared to individualistic cultures, have a higher probability of solving their collective action problem, but have less propensity to orient revolt towards changing the political system. The model predicts that collectivist cultures, in contrast to individualistic cultures, will be more reluctant to revolt against a "good" autocrat delivering strong economic development. Therefore collectivist cultures are likely to end up in the long run with either a good autocracy or with democracy. Individualistic cultures on the other hand will in the long run end up only with democracy. Despite a lower probability of success of collective action, individualistic cultures will introduce democracy on average earlier than collectivist cultures. They bring empirical evidence that fit those predictions. As instrumental variable for individualism and collectivism, they use historical pathogen prevalence, which, as discussed above, was shown by psychologists to foster a collectivist culture. Using this instrument, individualism is shown to have a positive effect on a country's average polity score over the period 1980-2010, controlling for measures of conflict, religion, income, institutions, inequality, education and various measures of fractionalization. Similar results are obtained when the dependent variable is the number of years a country has been democratic. Individualism is also negatively associated with a transition from autocracy to autocracy and with revolt against autocracy. These results are somewhat at odds with modernization theory, the dominant theory of democratization in political science, which suggests that countries all become democratic as income rises (Lipset, 1959), or that there are no reversals of democracy past a certain income level (Przeworski and Limongi, 1997). They suggest that there is a clear cultural component in this process. Countries like China where the culture is collectivist may not become democratic for a very long time, even after income has reached high levels, and may follow the path of "efficient" autocracies like Singapore.

Institutions. Kyriacou (2015) does an exercise similar to Tabellini (2008) and Licht et al. (2007), which we review below, analyzing the impact of individualism on the quality of institutions, as measured by ICRG indicators used frequently in the literature on institutions. This is not too surprising as individualism is positively correlated with trust. Many of the features associated with generalized morality can be derived from individualism. Individuals need rights in order to express their individuality, and thus see themselves as citizens equal before the law. Interestingly, he finds that the effect of individualism on GDP per capita disappears, once one controls for the quality of institutions. This would mean that the effect of individualism on GDP per capita would work solely through its effect on the quality of institutions. This result differs from Gorodnichenko and Roland (2016). These differences are related to differences in the choice of instruments. Kyriacou instruments individualism by the prohibition of the pronoun drop, used also by Tabellini, and the quality of institutions by legal origins, instead of settler mortality. Klasing (2012) tests the effect of different measures of culture on the quality of institutions: trust, religion, Hoftede's cultural measures as well as those

of Schwarz discussed below. She instruments culture by a weighted average of cultural attitudes in neighboring countries. She finds that only individualism and power distance (the extent to which inequality in the distribution of power is tolerated, another Hofstede index) are strongly and statistically significant predictors of observed cross-country differences in institutional quality.

Outsourcing in international trade. Cultural differences matter in international economics, as we saw above in the case of bilateral trust. Gorodnichenko et al. (2015) look at the effect of cultural distance on decisions of multinational firms to outsource its supplies from independent suppliers or from its own subsidiary in a foreign country. They construct a model showing that there is a basic trade-off at work: vertical integration leads to better coordination within the firm but entails frictions between managers in the different countries that are more costly when cultural differences are greater. They find that the share of intrafirm imports in the US declines with cultural distance at the firm level as well as at the industry level. They also find, using the Bureau Van Dijck Orbis data, that share ownership of parent companies in daughter companies decreases with cultural distance. The cultural distance they use is the Hofstede individualism-collectivism index. Other measures of cultural distance turn out to be less significant.

A.3. AUTONOMY/EMBEDDEDNESS.

Effect on institutions. Licht et al. (2003) were the first to analyze the effect of culture on institutions. They used the Schwartz data for this purpose. Their idea is that in societies whose prevailing culture emphasizes the moral equality of individuals and legitimizes individual's pursuit of their own preferences, one is likely to find greater compliance with formal legal rules, exercise of discretionary power undistorted by bribes, and feedback mechanisms of accountability. They were the first to use as instrumental variable the prohibition of the pronoun drop, a variable used also by Tabellini (2008) and Kyriacou (2015).

A.4. LUCK VERSUS EFFORT.

Redistribution. Alesina and Angeletos (2005) built a political economy model where belief in effort paying off leads to low taxation and high individual effort. A stronger belief in the role of luck relative to effort leads to political demand for redistribution, which in turn tends to dull incentives, thereby confirming beliefs that the role of effort in success is less important. They use the model to explain why Europe has a more developed welfare state than the U.S.

A.5. GENDER ROLES.

Effects on labor force participation of women. Fernandez et al. (2004), Fernandez (2007) and Fernandez and Fogli (2009) have examined the role of culture in determining the labor force participation of women in the US. In Fenandez and Fogli (2009) for

example, there is a consistent finding that households with ancestors in countries with lower participation rates of women in 1950 have a lower participation rate in the US. They control for other variables, such as the level of education, which play a role in determining labor force participation of women. Note that the ancestry of the husband matters more than that of the wife.

Fertility choices. Fernandez and Fogli (2006, 2009) do a similar exercise for fertility choices. They find that culture, as measured by fertility rates in the ancestors' country of origin affects current fertility choices, even after controlling for other variables that have been found significant in the literature on fertility choices, such as for example the number of siblings of a woman.

Preference for boys and the sex ratio. Since Amartya Sen (1990) alerted the world to the phenomenon of "missing women", i.e. an imbalanced sex ratio favoring males over females in a large number of countries, such as India and China, researchers have been investigating the consequences of unbalanced sex ratios in developing countries. One well-known example is China. Following the adoption of the "One child" policy, selective abortions have led to a high male-to-female sex ratio given the preference for boys. Edlund et al. (2013) for example found that the increase in the sex ratio has led to an increase in crime.

A.6. FAMILY VALUES

Institutions of regulation. Alesina et al. (2010) found that labor market regulations were stricter in societies with stronger family ties. The reason is that individuals are very reluctant to work far away form their families. This leads to support regulations that make labor markets more rigid and that limit labor mobility.

Female labor force participation. Alesina and Giuliano (2007) found that in countries with stronger family ties, female labor force participation was lower as women tend to participate more in the economic activities of the household. This is still valid in the US for second generation immigrants, after controlling for individual characteristics such as age and education.

Extent of public pensions: The strength of family ties also affects the demand for public pensions. Galasso and Profeta (2010) have analyzed the link between both. The argument is that with weak family ties, pensions act as a safety net, since people can rely less on solidarity within the family. Instead, with strong family ties, there is less initial demand for public pensions, but when pension systems are introduced, the elderly are given generous replacement rates as substitute for their children taking care of them. Again, exploiting data from the US, they find that countries with looser family ties have stronger preference for public pensions.

Marriage decisions: Strong family ties create obligations to pool resources inside the extended family. Luke and Munshi (2006) found, in studying remittances in Kenya that

high ability individuals who are obliged to send large sums to their families, tend to delay marriage to escape these obligations before marriage.

A.7. CULTURE OF HONOR.

Homicide. Pauline Grosjean (2014), following path-breaking work by psychologists Nisbett and Cohen (1996), showed that the higher homicide rate in the U.S. South relative to the North could be traced back to the different origin of migrants in the nineteenth century. They were from Scottish-Irish origin and from families of herders. In societies were herding is an important part of economic activity (for example Sardinia, Albania), a culture of honor is more widespread. The reason is that it is easier to steal cattle than land, and cattle herders have needed to develop forms of violent behavior to protect their cattle against would be thieves. The interesting thing is that this culture of honor has persisted more than hundred years after people migrated to the US, resulting in more violent behavior to "defend one's honor" and thus higher homicide rates.

Coordination The culture of honor can also be an impediment to efficient collaboration between people. Brooks et al. (2015) report on coordination games that they have been running in India, in Uttar Pradesh province in 2005. They found that upper caste Indians had a harder time solving coordination problems, and that this was related to their culture of honor.

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