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Civic Capital as the Missing Link

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This chapter reviews the recent debate about the role of social capital in economics. We argue that all the difficulties this concept has encountered in economics are due to a vague and excessively broad definition. For this reason, we restrict social capital to the set of values and beliefs that help cooperation—which for clarity we label *civic capital*. We argue that this definition differentiates social capital from human capital and satisfies the properties of the standard notion of capital. We then argue that civic capital can explain why differences in economic performance persist over centuries and discuss how the effect of civic capital can be distinguished empirically from other variables that affect economic performance and its persistence, including institutions and geography.

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Introduction

Since its introduction by Bourdieu in 1972, the term ‘social capital’ has gained wide acceptance in social sciences, and economics, in particular. Economists have used social capital to explain an impressive range of phenomena: economic growth (Knack and Keefer 1996), size of firms (La Porta et al. 1997; Bloom et al., 2009), institution’s design and performance (Djankov et al, 2003), financial development (Guiso et al. (GSZ henceforth) 2004, 2008), crime (Glaeser et al. 1995), the power of the family (Alesina and Giuliano 2007), innovation (Fountain 1997), and the spread of secondary education (Goldin and Katz 2001). This list touches only a very minor subset of the topics that have been linked to social capital. NEP, a weekly announcement service of new economic papers, shows that every couple of weeks between 20 and 30 new papers come out that directly or indirectly rely on social capital to explain some economic phenomenon, for a total of 600 papers in 2008!¹

However, this success has been achieved at the cost of a lot of ambiguity in the use of the term. From time to time, social capital has been identified as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu, 1985) and “features of social life—networks, norms, and trust—that enable participants to act together more effectively to pursue shared objectives” (Putnam, 1990). This ambiguity has also fostered very different views of the ultimate role played by social capital in society. While some, including Putnam (1993), identify social capital as necessarily a positive value, others, such as Bourdieu, emphasize the negative aspects of social capital, such as its fostering of privileged cliques or even gangs.

In his critique to Fukuyama (1995), Solow (1995) effectively summarizes the weaknesses of the current definitions of social capital. “If ‘social capital’ is to be more than a buzzword...- he writes - the stock of social capital should somehow be measurable, even inexactly." Furthermore, if it has to retain the term ‘capital’, social capital has to have a non negative

¹ See <http://www.socialcapitalgateway.org/eng-archive2008.html> a web site that also provides numerous references to the social capital literature and information on initiative and conferences on social capital. Those interested in subscribing to NEP can do so at <http://lists.repec.org/mailman/listinfo/nep-soc>.

economic payoff. In other words, for social capital to continue to be useful in the economic discourse we need to abandon this ambiguity and elaborate a definition that distinguishes social capital from standard human capital and explains the mechanisms through which social capital can be accumulated and depreciated.

After reviewing why the prevailing definitions of social capital do not fit these criteria, in this chapter we introduce a definition of social capital as *civic capital*, i.e. *those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities*. This definition has several advantages. First, it clearly identifies the cultural norms and beliefs that matter: only those that help members of a community to solve collective actions problems. As such, social capital has a positive economic payoff. It also clarifies why the definition deserves the word “capital”—because it is durable. Third, as we will show not only does this definition satisfy the Solow’s critique, but it can be easily incorporated into standard economic models, such as Tabellini (2008).

Besides dispensing with the ambiguities of the concept that exist in other definitions, we argue and document that our definition can overcome one of the main shortcomings of social capital: measurement. Values and beliefs can be measured either through laboratory experiments and/or in standard surveys, though not without problems. These social capital measures have been widely collected, often by social scientists other than economists, and are now readily available for several years and many countries in such popular surveys as the World Values Survey, the European Social Survey, the General Social Survey or Eurobarometer. Furthermore, in recent years field experiments helped highlight the usefulness of a cultural based definition of social capital and lab experiments have contributed in identifying its components.

Finally, we argue that civic capital is the missing ingredient in explaining the persistence of economic development. Civic capital is both empirically and theoretically correlated with the notion of social infrastructure introduced by Hall and Jones (1999) to explain the high labor productivity of developed economies. And civic capital is highly persistent, since all the methods for its transmission (interfamily transmission, formal education, and socialization) take long time. For this reason, communities/countries that, for an historic accident, are rich in civic capital enjoy a comparative advantage for very extended periods of time.

The purpose of this chapter is not to review the immense literature on social capital but rather to give a new perspective on the concept in a way that is particularly useful to economists. Hence, we cannot do justice of even a small number of the many papers written of the topic. Durlauf and Fafchamps (2005) provide an excellent critical assessment of the conceptual issues that emerge in the social capital literature with a focus on the statistical and empirical problems, suggesting some solutions.

The rest of the chapter proceeds as follows. Section 1 discusses various concepts of social capital and highlights their limitations, showing why many do not conform to Solow's requirements. In this section we also introduce our new definition of social capital as civic capital and explain how it overcomes the common critiques. Section 2 deals with the measurement of civic capital and how it can be addressed. Section 3 discusses the origins of civic capital and reviews what we know about its formation. Section 4 reviews the debate about the effects of civic capital discussing issues of identification that this raises. Finally, Section 5 concludes with a tentative discussion on how civic capital can be changed and what policies can affect its accumulation.

1. Definitions of social capital

In his critique of Fukuyama (1995), Solow (1995) writes “if 'social capital' is to be more than a buzzword, something more than mere relevance or even importance is required. Those cultural and social formations should be closely analogous to a stock or inventory, capable of being characterized as larger or smaller than another such stock. There needs to be an *identifiable process of 'investment'* that adds to the stock, and possibly a *process of 'depreciation'* that subtracts from it. The stock of *social capital should somehow be measurable*, even inexactly. Observable changes in it should correspond to investment and depreciation (emphasis added).” As an analogy with “human capital” Solow would also like the concept of social capital to be definable in a way that investment in social capital corresponds to “spending resources now to produce an object that will contribute to production (and profit) in the future.” Finally, a new term is warranted only if social capital is really distinct from other well-established forms of capital, in particular human capital.

In this section we will review the most prominent definitions of social capital used by sociologists, political scientists, and economists. As we will argue these definitions do not satisfy “the Solow criteria” described above.

1.1 The Sociologists’ Definitions

In sociology, social capital refers to the advantages and opportunities accruing to people through membership in certain communities. Bourdieu (1985), credited for having introduced this concept, defines social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu, 1983).² Similarly, Coleman (1990) describes social capital as a resource of individuals that emerges from social ties and their belonging to a certain community.

This definition satisfies most of the Solow criteria. An individual can invest in cultivating relationships and the value of these relationships can deteriorate over time, if they are not maintained (Glaeser et al. (2002)). The stock of these relationships can be (and has been) measured (for a review see Wasserman and Faust, 1997) and so can their economic payoff (see for example Hochber et al, 2007).

This definition fails in the “social” dimension. Bourdieu’s social capital is accumulated by individuals, possessed by the individuals, dissipated by individuals. In other words, it is not substantially different from the definition of human capital. If we do not consider human capital as just the set of notions learned at school, but also as the set of acquaintances, relationships you accumulate at school and outside of school—that is if we slightly expand it to include not only *what* you know but also *who* you know—then the notion of human capital can fully account for the notion of social capital championed by Bourdieu.

Some (e.g., Coleman, 1990) identify the specificity of social capital in the externality involved in the investment process. When A invests in a relationship with B also B acquires a relationship with A. But this externality is not unique to social capital either. As the modern

² Coleman instead attributes the introduction to the term to Loury (1977).

literature on economic growth points out, even investments in physical capital generate important externalities and so do investments in human capital.

A related definition, endorsed by Coleman (1990) and (at least in part) by Putnam (1993) is that social capital is the set of relationships that support effective norms. “Effective norms that inhibit crimes in a city make it possible for women to walk freely outside at night and for old people to leave their homes without fear.”(Coleman, 1990). In the language of economists, social capital is the mechanism of social enforcement (see Spagnolo, 1999).

In this acceptation, social capital can be both a “good” and a “bad.” As Portes (1998) points out, a high level of social capital can lead to exclusion of outsiders and punishment of people who deviate from a downward leveling social norm. In many ghettos, for instance, individuals seeking to join the middle-class mainstream are subject to continuous verbal attacks by the rest of the community (e.g., Bourgois, 1995). This alternative definition of social capital fails the Solow’s criteria in many dimensions. First, it is very hard to distinguish inputs from outputs. While we can measure the degree of effectiveness of social norms, we cannot easily measure the inputs that deliver this outcome. The network of relationships is not sufficient because this network is useless if they do not share the same social norm. Hence, the stock of social capital so defined should be measured as a combination of the power of the existing networks and the strength of shared norms in these networks. We are not aware of any attempt in this direction. Second, as Portes (1998) stresses, in this interpretation social capital may become a social liability.³ Finally, it is not clear what investment and depreciation means in this context. Is the establishing of new relationship an investment or a disinvestment? It depends. If these relationships “close” the network in the sense of Coleman (1990), these investments strengthen the norms and so represent an investment. But if they open the network, making its members less subject to social pressure, then they represent disinvestment. Furthermore, depending on the shared norms and the goal in mind, this “investment” can increase or decrease social welfare. Hence, this is not a viable definition from an economic point of view.

³ Alternatively, social capital can be an asset for some and a liability for others, as it may be the case with certain social clubs with limited membership. Guiso and Zingales (2007) find that social interactions between firms and bankers in an exclusive club facilitates access to credit to members but this may come at the expense of restricted credit availability for non-members. See also Dessì and Ogilvie (2004) for a similar argument in relation to the diffusion of merchant guilds.

1.2 The Political Scientists' definition

In more recent years, the concept of social capital has been adopted and adapted by political scientists like Putnam (1993) and Fukuyama (1995). In their analyses, social capital becomes a property of large groups, even nations, rather than individuals. As such it loses any possible negative connotation to and it is similar to the concept of civic virtue introduced by Machiavelli. This virtue is present in those cities whose inhabitants vote, obey the law, and cooperate with each other and whose leaders are honest and committed to the public good (Putnam, 1993 and 1995).

Since this is the definition that triggered Solow's criticisms, it is not surprising that it fails Solow's criteria in many respects. Even in this case, it is very difficult to distinguish inputs from outputs. Measuring social capital in terms of the level of cooperation or obedience to the law is ambiguous because both these behaviors are also driven by other considerations (economic payoff, legal enforcement, etc.) that are difficult to measure with any degree of precision. If obedience to the law is stronger in the United States than Brazil even after controlling for differences in law enforcement, is it because the United States has more social capital than Brazil or because the amount of law enforcement is poorly measured (as is likely to be the case)? This definition in terms of outcomes also makes it difficult to determine what is an investment or a depreciation in the stock of social capital. If we cannot measure the stock separately from the outcome how can we measure accumulation in the stock?

1.3 Social Capital as Civic Capital

Building on GSZ (2006)'s definition of culture, we define social capital as *those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities*. This definition is similar to the one advanced by Putnam and Fukuyama, but makes it clear that social capital is *not* about networks or just about values, but about values and beliefs, which are shared by a community and persistent over time, often passed on to its member through intergenerational transmissions, formal education, or socialization. Our definition of social capital is similar to the Almond and Verba (1963) concept of civic culture, which they define as "a set of beliefs, attitudes, norms, perceptions and the like, that support participation." Unlike Almond and Verba (1963), however, our definition of civic is not

restricted to political participation, but applies more generally to any type of economic interaction.

The greatest advantage of narrowing down the definition is that it makes civic capital easily measurable. As we will review below, both beliefs and values can be (and have been) measured through surveys and experimental work. Thus, when a community has more (or stronger) values that foster cooperation, we can say that the community has more civic capital. As we will see in the Tabellini (2007b) model, investment in civic capital is the amount of resources that parents spend to teach more cooperative values to their children. A deterioration of this set of values can be seen as depreciation of civic capital.

Since we consider as civic capital only values and beliefs that *help a group overcome the free rider problem in the pursuit of socially valuable activities*, by definition civic capital has a non-negative economic payoff. In other words, civic capital purposefully excludes from the definitions those values that favor cooperation in socially deviant activities, such as gangs.

Finally, civic capital so defined is very different from traditional human capital. First, the process of investment is social. It is parents and other members of a community that instill values and beliefs in an individual, not the individual himself. Second, these values and beliefs do not represent civic capital if they are not *shared* by other members of the community. The set of values and beliefs shared by Swedes (which represent the civic capital of the Swedish nation) might be a liability if carried by a Swede to Italy. In fact, Butler et. al. (2009) find that because cultural beliefs persist, immigrants from high trust countries are more likely to be cheated (and lose) than immigrants from low trust countries.

Our definition of civic capital not only nicely fits Solow's requirements, but it can also be easily incorporated into standard economic models (as did the definition of human capital introduced by Becker (1964) and Ben Porath (1967)). In the next sections we are going to see some examples.

2. Accumulation and depreciation of civic capital

One of the key requirements for a meaningful economic definition of social capital imposed by Solow is the existence of an *identifiable process of 'investment'* that adds to the stock, and a *process of 'depreciation'* that subtracts from it.

In this section we discuss how civic capital fulfills this requirement and how the process for the accumulation of social capital is consistent with methodological individualism (the paradigm of economics) and thus can be easily incorporated in standard economic models. At the same time, this discussion will show that the process of accumulating (and depreciating) civic capital is different from that of accumulation and depreciation of human capital because it has a social dimension to it.

2.1 Civic capital as norms of cooperation: the Tabellini model

Tabellini (2008) builds a very interesting model of the cultural transmission of cooperative values. He relies on and extends the value transmission framework first developed by Bisin and Verdier (2000, 2001) and Bisin et al. (2004), in which parents optimally choose what values to pass onto their children but, in so doing, assess their children's welfare in terms of their own values. In Tabellini's model this creates a strategic complementarity between norms and behavior. If more people cooperate, then the payoff from cooperation increases and this expands the scope of cooperation. In turn, an expansion in the scope of cooperation makes it easier for parents to transmit good values to their children.

In Tabellini's model, the effect of any institutional change (such as the quality of law enforcement) is amplified and protracted over time as a result of cultural transmission. Most importantly, when individuals are allowed to choose their institutions through voting, the equilibrium shows path dependence: if initial conditions are favorable, then individuals will transmit values of generalized cooperation and choose strong legal enforcement; if initial conditions are unfavorable, then individuals will opt for values of limited cooperation and limited enforcement.

2.2 Civic capital as trusting beliefs: the GSZ model

To explain persistence over time, GSZ (2008) focus on the transmission of beliefs over time. Specifically, since trust is a key ingredient in virtually all economic transactions, they build an overlapping-generations model in which parents decide how much trust to transmit to their children

Economic models are generally silent on how people acquire priors (i.e., probability distributions over events with which they have no experience). GSZ (2008) posit that intergenerational cultural transmission plays a major role in the formation of such priors. To analyze the possible distortions in this process, they build an overlapping-generations model where children absorb the prior from their parents and then, after experiencing the real world, transmit it (updated) to their own children. The reason why this overlapping-generations model is not identical to an infinitely living agent is that parents do not weigh future and current benefits exactly the same way as children do.

This intergenerationally transmitted prior affects each individual decision regarding whether to trust other members of the society and participate in an anonymous exchange. If the trust is well founded then an individual reaps substantial gains from trade. But if it is not, she will face a major loss. As a result, a pessimistic prior will induce individuals to withdraw from the market and not invest. This strategy does minimize losses, but it will prevent any update on the trustworthiness of the rest of society.

To protect children from costly mistakes, parents transmit conservative priors to them. From a social point of view, these priors are excessively conservative because parents do not fully incorporate the value of their children learning from experience. In this context GSZ (2008) show that, if the net benefits of cooperation are not sufficiently high, then a society starting with diffuse priors will be trapped in an equilibrium of mistrust. Interestingly, starting from this situation, a positive large shock to the benefit of cooperation can permanently shift the equilibrium to a cooperative one even when the shock is temporary.

This result could rationalize Putnam's (1993) conjecture that the differences in civic capital between the North and the South of Italy could be due to the free city-state experience that ended more than five centuries ago. Furthermore, it can rationalize the long-lasting effect of a history of good institutions even after these institutions have vanished. In the context of GSZ (2008) model, better legal enforcement can be captured as a reduction in the cost of being cheated. Even a temporary reduction in this cost can permanently increase the level of cooperation as the good experience is transmitted across generations. This effect can also explain the long-lasting effect of bad colonial institutions (Acemoglu, Johnson, and Robinson 2001) or of legal origin (La Porta, Rafael, Florencio Lopez de Silanes, Andrei Shleifer, and Robert Vishny 1998).

One limitation of GSZ model is that it assumes that trustworthiness is exogenously given and is not affected by the prevailing level of trust. In reality, there could be two channels through which beliefs can affect trustworthiness. First, a receiver who knows that the sender expects him to cheat is more likely to cheat, as shown by Reuben et al. (2009). Thus, mistrust breeds mistrust. Second, social pressure will make it easier to teach children to be trustworthy (a value) when the expectation (a belief) is that most people will be trustworthy. Both these effects would strengthen the results of the model and the persistence of the equilibrium. These effects also show the complementarity between the GSZ model and Tabellini's (2008) model. Tabellini addresses the transmission of values, while GSZ address the transmission of beliefs. Social capital is formed by both.

Note that the beliefs accumulated in this way are perfectly rational, in the common use of the word rational, which requires beliefs are Bayesian. In fact, the Bayesian paradigm does not deal with the process of belief formation and does not address the question of the rationality of beliefs (Gilboa, Postlewaite, and Schmeidler, 2004). Hence, this approach allows us to integrate our definition of civic capital, which includes beliefs, into standard economic models.

2.3 Civic capital as civic education: the Aghion et al. (2008) model

Aghion et al. (2008) document a very strong correlation between mistrust and the level of regulation. Their explanation for this phenomenon is that there is a substitution between civic capital and regulation. In countries with high level of civic capital, the externalities associated

with production are reduced because people raised with civic values are less likely to pollute and create externalities. More civic people are also those who trust others more. When people are not civic, then the only way to restrict the externalities is through regulation, hence the correlation between mistrust and regulation. In Aghion et al's model, civic capital is a set of virtues that you learn in school.

While authors do not develop the process for the accumulation of civic capital, this aspect can be easily inserted in their model. The economic payoff of a higher level of civic capital in their model is very high, since a higher level of civic capital leads to a reduction of production externalities with lower costs of regulation. However, this payoff occurs to everybody, regardless of the amount of effort they spent in transmitting certain values and beliefs to their children. Hence, the need for some form of public financing for education, an aspect present in all countries.

2.4 The accumulation of civic capital through socialization

Another important form of accumulation of civic capital is socialization. Immigrants in the United States, for example, slowly converge toward the U.S. mean of values and beliefs. In part, this can be the result of exposure to the U.S. type (and/or quantity) of education. In part, it can be the result of socialization with U.S. values and beliefs. Ichino and Maggi (2000), for example, show that Southern Italian workers who move to the North exhibit a work ethic more similar to the Northern ones, while Northern workers who move to the South quickly converge to the lower work ethic standards present in the South. Similarly, GSZ (2004) show that the use and availability of financial instruments is partly responsive to the level of social capital prevailing in the province where a person was born, but partly to the level of social capital prevailing in the province where a person lived. This finding suggests that people do adapt their norms and beliefs in response to the social pressure of the community they live in.

The pressure of socialization in the formation (and deterioration) of civic capital is very different, which can explain the asymmetry in the speed of adaptation of Southern workers moving to the North and Northern workers moving to the South found by Ichino and Maggi (2000). In the case of beliefs, a trusting person will quickly find out at his own expenses that the

environment does not deserve the level of trust he has. By contrast, it will take longer for a mistrusting individual to realize he is missing out on trading opportunities by not trusting (see GSZ, 2008).

In the case of values, the process is more complicated. If civic values are completely embedded in preferences, they should not be modified by socialization. If, however, civic values are supported, at least in part, by the desire to conform to others, then socialization can lead to changes. Exactly how and how fast these values can improve and deteriorate as a result of social pressure is a topic for future research.

2.5 The Effects of Religion

Another potential source of accumulation of social capital is religion. Religion is both a source of moral values and an engine of socialization. As GSZ (2003) show, people who have been raised religiously tend to trust other more and to have stronger moral values, independent of the religion they have been raised into. Similarly, actively religious people trust more and have stronger moral values than non active ones.

Religions might differ in the extent they are able to build trust and help accumulate civic capital. As Putnam (1993) claims, less hierarchical religions might foster horizontal ties among its followers and promote civic capital more. For example, most protestant religions delegate decision rights to the local parish level, teaching people to take responsibility and internalize the common good of their small community. By contrast, the Catholic religion does not share these features.

One aspect of religion that can undermine the development of civic capital is the intolerance it spreads around its followers. As GSZ (2003) show, religious people are more intolerant of diversity than non religious ones, regardless of the type of religion, albeit some religions are worse than others. This intolerance may represent an obstacle to the development of trust and common shared values in countries with different ethnicities.

2.6 Depreciation of civic capital

Physical capital mostly depreciates with use. Human capital does not depreciate with use (in fact it can appreciate with use), but it can depreciate with age, both for the obsolescence of the knowledge accumulated and for the obsolescence of the brain that acquired it. While there is not much literature on the depreciation of civic capital, we can certainly say that civic capital does not depreciate with use, in fact, like human capital, it tends to increase with use. Reduction in the stock of civic capital is likely to take place in three ways.

One way is the change in the economic or social factors that foster the formation and transmission of civic capital. For example, a great influx of immigrants of a different ethnicity can lead to an increase in racial differences that tend to undermine civic capital (Alesina and La Ferrara (1999)). Similarly, an increase in income inequality can have the same effect. In the same way, a dramatic reduction in the benefits from cooperation can have a similar effect.

The stock of civic capital can also be reduced by some major historical event that generates an enduring level of mistrust. Nunn and Wantchekon (2009), for instance, show that slave trade left a legacy of mistrust in the populations whose leader sold some of their people to slave traders. Similarly, the high level of distrust present in some countries (like Argentina and Brazil) could be the result of dictatorships that favor citizens spying on their fellow citizens.

Finally, civic capital can be depreciated by some salient episodes that change people's beliefs and/or change the perception of the moral acceptability of certain behaviors. While we are not aware of any systematic evidence in this sense, the generalized mistrust that ensued following the Madoff scandal is suggestive in this direction (Tatro, 2009).

2.7 "*La Mala Educacion*"

An important aspect, which has not been analyzed very much but should be, is whether different styles of education have different returns in terms of civic capital. For instance, Frank et al. (1993) show experimental evidence indicating not only that economic students tend to exhibit a more selfish behavior, but also that economic training tends to make students behave more selfishly both in the lab and in the field. This is hardly surprising. While economics is only a positive theory of human behavior, it is often presented with a normative flavor to it. Not contributing in a public good game is the "rational" strategy, while cooperating is deemed the

wrong (often labeled “irrational” or “stupid”) strategy. It is hard not to see a normative aspect in this teaching.

More generally, the style of education, emphasizing joint projects, civic value, and cooperation, can foster the creation of civic capital in the formative years. By contrast, a more competitive, individualistic, and not socially oriented teaching style can reduce the effect of education on civic capital.

2.8 Values and beliefs as long lasting civic capital

All these examples show that our definition of civic capital as the set of values and beliefs that foster cooperative behavior fulfils Solow’s requirements. This capital can be accumulated in an investment process that is similar to, but distinct from, the investment of physical or human capital. When parents put (costly) effort in transmitting certain values and priors to their offspring, they invest in civic capital. When the formal education process tries to instill certain values and beliefs in the younger generations, it spends (mostly public) resources to accumulate civic capital. When individuals ostracize and reprimand behaviors they deem to be antisocial, they spend time and effort to teach certain values and beliefs to their fellow citizens, because they are well aware that only a few free riders can destroy a cooperative equilibrium and thus they intervene to preserve the benefit of cooperation. This accumulation process is consistent with methodological individualism (the paradigm of economics) and thus easily incorporated in standard economic models, but is different from human capital because it has a social dimension to it: civic values and beliefs have a return only if shared by other members of the community.

Even more than physical and human capital, civic capital takes time to accumulate and has increasing returns to scale. It takes time to accumulate because two of the three ways in which it is accumulated (intergenerational transmission and formal education) requires the passage of a generation to have an effect. It has increasing returns to scale because the payoff from an individual investment in civic capital positively depends upon the prevailing level of civic capital in a community. The combination of these two factors makes civic capital a leading potential explanation for persistence in the level of development observed around the world. We

are going to return to this in Section 5, after having discussed how civic capital can be measured and how it has accumulated over time.

3. Measuring civic capital

Traditionally, the measurement of social capital has been a very contentious issue. Precisely because the concept is so complex and multidimensional, we can find many different measures in the literature, which capture the many dimensions of these various definitions. One good example of this complexity is a recent attempt by the World Bank to design questionnaires to obtain measures of civic capital to be implemented primarily in developing countries. They identify six families of variables, each meant to capture one dimension of social capital: “Groups and Networks,” “Trust and Solidarity,” “Collective Action and Cooperation,” “Information and Communication,” “Social Cohesion and Inclusion,” “Empowerment and Political Action” (see Grootaert et. al, 2005). Of course, the ambiguity that is reflected in the various definitions is also evident in these measures.

The multidimensionality of the social capital concept has induced many authors to try to measure it by looking at outcomes, e.g., the level of economic cooperation or the diffusion of newspaper readership (Putnam 1993). One problem with these measures is that they are contaminated by other factors. For example, is the level of trust a New Yorker exhibits in her daily economic behavior the result of good law enforcement or the product of a high level of social capital? Similarly, the diffusion of cooperative firms across different communities may reflect different tax incentives to set up cooperative firms or patterns of industrial specializations (it is difficult to run an oil company as a cooperative) rather than the strength of cultural values and beliefs that can sustain a high level of cooperation and exchange.

In this section, we show that our narrower definition lends itself to easier measurements. We can directly measure both values and beliefs and, even if we want to resort to outcome-based measures, we can more easily isolate more accurate proxies.

3.1 Direct measures: values

3.1.1 Survey measures of values

Several surveys such as the World Values Surveys, the European Social Survey, the General Social Survey, Eurobarometer, and the German Socio Economic Panel (among others) collect direct measures of values and beliefs. One important advantage is that some (though not all) of these surveys collect data for many countries. The most recently available wave of the World Values Surveys conducted in 2005 includes 56 countries worldwide. Pooling the 1995-97 and 1999-2000 waves it covers 80 countries. Because of its broad geographical coverage and its longer tradition, the WVS has been widely used in the social capital literature and has often acted as a reference for other surveys that aim to collecting information on values and beliefs.

Not all the values measured in the WVS are relevant for our definition of civic capital, rather only those that induce individuals to cooperate. One way to identify the relevant questions is to focus on those values that induce people to dislike actions that obtain private benefits at high social costs. For instance, people's opinions about cheating on taxes, free riding on public goods, cutting in line, littering and similar behaviors can all be good indicators of the prevalence of norms of morality and thus of people's willingness to internalize the public good. The common features across all these measure is that they are value judgments on activities that result in the appropriation of (possibly limited) private benefits at the expenses of (possibly much larger) costs imposed on other members of society.

To illustrate how some of these norms can provide a measure of civic capital, we use the responses individuals gave n the WVS when asked: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card." Answers range from 1–10, where 1=never justifiable and 10=always justifiable. We chose to focus on seven questions that capture how much people value the public good. These questions are: "Claiming government benefits to which you are not entitled" (var 1); "Avoiding a fare on public transport" (var 2); "Cheating on taxes if you have a chance" (var 3); "Accepting a bribe in the course of their duties" (var 4); "Lying in your own interest" (var 5); "Throwing away litter in a public space" (var 6); "Speeding over the limit in built up areas" (var 7).

To make these variables reflect increases in civic capital, we recoded them so that 10 means “never justifiable” and 1 “always justifiable.” The sample means for these variables are summarized in Table 1, Panel A, which also shows the number of countries for which these variables are available.⁴ As the mean values show, there is a general dislike for opportunistic behaviors, but there is ample variation in the intensity of the values. Interestingly, as Panel B shows, all these values are positively correlated consistent with answers reflecting a general norm of “good behavior;” but the correlation is far from perfect, suggesting that each one has some independent information. To summarize these values in a single index of civic capital, we have extracted the first principal component using the three variables (1, 2 and 4) that are available for most countries. All individual measures are also highly correlated with the principal component (Table 1, panel B). Table 2 reports the country means of variables 1, 2 and 4 as well as the principal component for all countries for which they are simultaneously available and Figure 1, panel A plots the values across countries of the principal component. There is wide variation with a tendency for more economically developed countries to have higher civic values.

One issue with these specific measures is that people may have poor incentives to reveal their true values: after all, why one should not please the interviewer by saying that he considers as never justifiable littering in public spaces even if he is one that actually throws away litter? This could explain the average high values of the indexes in Table 2. Furthermore, it is plausible that those who lie to the interviewer are precisely the ones with lower civic values, as telling the truth at own cost is a dimension of civiness—a tendency that would bias the index towards low geographical variability.

One way to verify that these measures are not biased is to compare them with other measures of values that are presumably less subject to this problem. For instance, Tabellini (2009) constructs measures of cultural capital using the answers to three WVS questions aimed at capturing cultural traits that ought to encourage welfare enhancing social interactions: *respect*, *obedience*, and *control*. The variable *respect* is defined as being equal to 1 if the respondent indicates the quality “tolerance and respect for other people” as being one of the top five qualities children are encouraged to learn at home. A high share of people that value respect is

⁴ While variables 1, 2 and 4 are available for at least 79 of the 81 countries covered by the two rounds, the other variables have a lower geographical coverage.

taken as a sign of a stronger culture of extended morality. *Obedience* is the fraction of people that regards obedience as an important quality that children should be encouraged to learn. According to Tabellini (2009), higher values of this index indicate lower cultural capital, since a coercive cultural environment stifles individual initiative and cooperation within a group. Finally, *control* is the answer to the question “Some people feel they have completely free choice and control over their lives, while other people feel that what we do has no real effect on what happens to them.” The idea is that in hierarchical societies, where people can only count on their family members and the rest of society is perceived as inimical, success is perceived more as the result of luck than of personal effort.

Table 2, Panel A reports summary statistics for these three indicators and Figure 1, Panel B shows the variation across countries of their first principal component, which again shows a lot of diversity and a clear correlation with the level of a country’s economic development.⁵ These measures are less subject to reporting bias. Interestingly, both the principal component based on the civicness values and on Tabellini’s values are highly positively correlated.

3.1.2 Experimental measures of values

The values that are at the base of civic capital can also be measured through controlled experiments, either in the lab or in the field. Camerer and Fehr (2003) provide a very useful overview of the methodologies for measuring social norms in a variety of games that involve cooperation.

A typical game that can be informative about peoples’ adherence to norms of civic behavior is the public good game. People in a group of N (the number of participants in the experiment) are each given a sum S ; each participant can contribute this endowment to a common fund managed by an administrator. If the administrator receives more than a given (and known) threshold $0 < \lambda < 1$ of the overall endowments $N \times S$, for instance 80%, than everyone receives back more than S —e.g. twice as much, a measure of the return to cooperation—otherwise they receive nothing. Individually, each participant has an incentive to free ride, keep

⁵ Tabellini (2009) also uses trust as a measure of civic cultural traits and in constructing his principal component.

S and hope the others will all contribute to the fund, reaping the benefits of the public good. If more than λN participants free ride, however, no public good can be produced and all lose. Hence, *shared* norms of extended morality and civicness can temper individual incentives and lead the majority to cooperate by contributing their endowment. The stronger these norms are, the larger λ is, and the higher the civic capital in the group is, making it easier to produce the public good. Thus λ can be seen as a continuous measure of the civic norms of a community. If the game is played in different communities, differences in λ can be used to study the effect of civic capital on outcomes, as done by Carpenter and Seki (2005), Karlan (2005), and Fehr and Leibbrandt (2008).

Compared to survey-based measures of norms, such as those illustrated above, measures of civic capital obtained from experimental games have several advantages. First, the game imposes some structure which facilitates interpretation of the behaviors observed or the answers obtained. This is not often the case when individuals are asked qualitative questions of the sort illustrated above as it is common in many surveys. Obviously, better designed survey questions can reduce the relevance of this problem. For instance, a question such as: *“If 90% of the members of your community contribute \$10 to a city hall project each, including you, could reap a benefit that is worth \$50 (for instance you and your family have access to a new park). But if less than 90% contribute, then the project fails. Would you contribute your 10 dollars?”* comes close to replicating the public good game and can thus be more easily interpreted than qualitative questions on free riding.

A second advantage of experimental games measures is that answers can be made incentive compatible by having participants playing with true money and providing them with appropriate monetary incentives, while paying subjects in survey is both unpractical and expensive. Unpractical because it is difficult to manage a large number of small payments. Expensive because even small payments can turn into large sum when the number of respondents run into the tens of thousands.

On the flip side, experiments have limitations that surveys do not have. Perhaps the most important one is the difficulty to run experiments on representative samples or even on samples other than undergraduates at major universities. If one is concerned in obtaining a measure of the

predominant cultural values of a large society, issues of representiveness may be of first order importance.

The validity of using laboratory experiments to measure social preferences has been questioned by Levitt and List (2007). In their view, several factors distort the behavior of subjects in the lab. In particular, Levitt and List (2007) claim that lab experiments are biased by the so-called “experimenter effect.” Subjects in the lab sometimes may try to please the experimenter, responding to subtle social cues that the investigator provides in the instructions and administration of the game (Rosenthal, 1976; Hoffman et al., 1994). This critique is particularly strong when applied to measures of social preferences as the subjects may be induced to “look good” in the eyes of the experimenter by exhibiting pro-social behavior, even if they would behave as self-interested individuals outside the laboratory.

However, Baran et al. (2009) find a strong correlation between the reciprocity measure in a trust experiment and reciprocity manifested through a “give back” donation campaign in an MBA program. Most importantly, they show that the behavior in the field is correlated with the social desirability scale, a questionnaire-based index that measures how much a person tries to please others, while behavior in the lab is not. This evidence suggests that the experimenter effect if exists is not so pronounced in standard economic games.

3.2 Direct measures: beliefs

Willingness to cooperate and act together with others depends critically on one’s beliefs about the opponent’s behavior. In particular, beliefs about the “fairness” and the “trustworthiness” of other people one may find herself interacting with are key ingredients in many economic (and non-economic) transactions. If members of a community have reasons to believe others are unfair, they may be reluctant to grant coordination and decision power for fear of abuse. Similarly diffuse mistrust beliefs can discourage people’s willingness to invest and hamper economic success. Thus, fairness and, even more so, trust have attracted the attentions of economists and social scientists interested in studying the effects of cultural capital. Besides relevance, from the measurement point of view there is one important reason to pay attention to

fairness and trust beliefs: they are much less ambiguous concepts, and because of this easier to measure and, as we see, to compare.

In particular, trust can be given a very specific probabilistic content. As stated by Gambetta (1988), “When we say we trust someone or that someone is trustworthy, we implicitly mean that the probability that he will perform an action that is beneficial...is high enough for us to consider in engaging in some form of cooperation with him.” Gambetta (2000) definition of trust makes two important points: first, trust, being a belief, can be measured as a probability; since probabilities are cardinal, they have a very specific quantitative content. Thus, as a measure of civic capital one can say whether there is more or less of it in a given community by comparing the average probability that people trust other members of the community with the average in another community. Second, higher values of this probability enhance cooperation, as implied by civic capital. Because of these features trust has been widely used in the literature as a measure of social capital.

3.2.1 *Measuring trust in surveys*

When measuring trusting beliefs, it is important to distinguish between personalized trust and generalized trust. Personalized trust is the trust that one has towards a well identified individual- e.g. his boss, his fund manager, or a specific class mate. Generalized trust is instead the trust that a given person has toward a generic and unknown (randomly drawn) member of a broader community, such the other Americans or people of another country (e.g. the trust the French have towards the British).

Most research has focused on generalized trust, since the earlier rounds of the WVS only asked a question pertaining to that: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” with *'Most people can be trusted'* and *'Need to be very careful'* as possible answers. In this question, “people” means other people of the same country. These dichotomous qualitative answers are particularly useful to characterize the fraction of people that express trust in a community.

Figure 2 shows how this measure varies across countries. There are three interesting features to notice: first, there is an enormous variability in the fraction of people that trust others; this ranges from as low as 3 percent in Brazil to as high as 67 percent in Denmark. Second, there is very strong correlation, visible at glance, between average trust and a country level of economic development, which has obviously attracted the attention of economists and that, *prima facie*, is consistent with civic capital having an economic payoff. Third, average generalized trust correlates well with the principal components of the indicators for civic capital (Figure 3, Panel A) and that of generalized morality (Figure 3, Panel B), which is evidence that all these measures capture the underlying civic capital.

The last wave of the WVS also includes some questions about personalized trust: “I’d like to ask you how much you trust people from various groups,” which include a) the family; b) the neighbors; c) people one knows personally; d) people one meets for the first time. Answers are provided on a 1-4 scale ranging from no trust to complete trust and somewhat trust in between.

Table 4 shows mean country values for these measures of trust. Not surprising, trust in family members is higher than in people one knows personally, which in turns is higher than trust in neighbors, and trust in strangers. Equally unsurprising, at the country level, generalized trust (fraction of people who respond that most people can be trusted) is most highly correlated with trust towards strangers, then with trust towards neighbors, trust towards somebody one knows, and finally with the trust toward a family member. More interestingly, there is relatively little cross country variation in the trust in family (st. dev of 0.1 with a mean of 3.8), while trust in strangers has more variability (st. dev of 0.26, with a mean of 2.0).

If we want to measure a country’s or a community’s civic capital, which is the right measure of trust? From a theoretical point of view, the right measure is generalized trust. For institutions and markets to work properly, people need to trust strangers. High levels of personal trust not joined by high levels of generalized trust are generally the result of strong in group ties (e.g., Greif, 1993). Hence, high trust towards people one is close to—such as the family members or people that one knows personally—relative to trust towards people one meets for the first time can be taken as a weak norms index of generalized morality (Banfield, 1958; Alesina and Giuliano, 2008).

One possible limitation of the WVS question is that people can only say whether they trust or not, but cannot express the intensity of the belief. Some surveys allow for a richer spectrum of answers: for instance, the recently constructed US trust index (Sapienza and Zingales, 2009) is based on the WVS questions but allows people to answer on a scale between 1 (“I do not trust them at all”) and 5 (“I trust them completely”). The European Social Survey allows for an even finer partition with answers to the WVS questions on a scale between 0 (no trust at all) and 10 (complete trust). Intensity of beliefs can be useful to get a better characterization of their distribution within a population and thus provide an indication of how homogeneous, and thus *shared*, are these beliefs within a certain community. Figure 4 shows the distributions of trust for the 26 countries surveyed in the round II of the European Social Survey used by Butler et. al. (2009). Several points are worth noticing: a) in all countries people hold heterogeneous beliefs with some people trusting a lot and some not trusting at all; b) the shape of the distributions differ markedly across countries not only their means; c) the degree of heterogeneity also differs across countries with distributions more concentrated in the Scandinavian countries which have also a high level of average trust.

One large scale survey—Eurobarometer—has collected information on trust since the rise of the European Union with a very interesting twist. In order to monitor the sentiments of the Europeans as the process of integration and enlargement of the E.U. evolved, Eurobarometer has asked respondents of different nationalities to report not only how much they trust their fellow citizens but also how much they trust the citizens of each of the countries in the European Union. More specifically, they were asked the following: "I would like to ask you a question about how much trust you have in people from various countries. For each, please tell me whether you have a lot of trust, some trust, not very much trust or no trust at all." The set of countries sampled varies over time with the enlargement of the European Union: there were 5 in 1970 (France, Belgium, The Netherlands, Germany and Italy), when the first survey was conducted, and has grown to 17 in 1995, the last survey to which we have access.⁶

⁶ In some of the surveys, this same question was also asked with reference to citizens of a number of non-European Union countries, including the United States, Russia, Switzerland, China, Japan, Turkey, and some Eastern and Central European countries which at the time were prospective entrants into the Union (Bulgaria, Slovakia, Romania, Hungary, Poland, Slovenia, and Czech Republic). See Guiso Sapienza and Zingales (2009) and the online appendix to the paper for details.

Following Guiso, Sapienza, and Zingales (2009) who first used these data, we have recoded the answers to the trust question setting them to 1 (no trust at all), 2 (not very much trust), 3 (some trust), and 4 (a lot of trust) and have then aggregated responses by country and year computing the mean value of the responses to each survey. Table 3 shows the average level of trust that citizens from each country have toward citizens of other countries. There is considerable variation in the level of trust exhibited from one country to another. The average level of trust ranges from a minimum trust of 2.13 (the trust of Portuguese toward Austrians) to a maximum of 3.69 (the trust of Finns toward Finns). Besides this variability, Table 3 shows three regularities. First, there are systematic differences in how much a given country trusts and how much it is trusted by others (see the last row and last column of Table 3). For instance, the Portuguese and the Greeks are those who trust the least and the Swedish those who trust the most. Second, there is tendency of people from one country to trust more their fellow citizens. Third, there is a correlation between trusting and being trusted. Nordic countries are at the top of the level of trustworthiness and tend to trust others the most. While not definitive proof, this fact suggests that people excessively apply the level of trustworthiness of their own countrymen to people from other countries. This result is also consistent with experimental evidence in Glaeser et al. (2000) and Sapienza, Toldra, and Zingales (2008).

While these data provide a measure of specific trust, not generalized, they have been used to shed light on the cultural determinants of trust (Guiso, Sapienza and Zingales, 2009). With regard to civic capital formation, one interesting issue that can be studied with these data is whether political inclusion can affect the beliefs people have about the trustworthiness of other populations that before were not part of the same political entity.

As in every survey, there may be some doubts about the way people interpret the trust question. In a trust game (see below), the level of trust maps into the amount of money one is willing to risk. Here, this mapping is missing. One can address this doubt by asking the trust question so as to eliminate the ambiguity that may be present in the wording of the WVS-trust question. For instance in one of the modules of the 2003 Dutch National Bank Household survey (DNB survey), a sample of 1,990 individuals were asked both the WVS question and the following one: "Suppose that a random person you do not know personally receives by mistake a sum of 1000 euros that belong to you. He or she is aware that the money belongs to you and

knows your name and address. He or she can keep the money without incurring in any punishment. According to you what is the probability (a number between zero and 100) that he or she returns the money?" This question maps trust into a probability that a generic person behaves honestly, allowing for a clear interpretation and a natural metric for measuring trust beliefs. Answers to this question are positively correlated with the WVS question, suggesting that the latter indeed captures beliefs about the trustworthiness of fellow citizens.

In recent surveys it is becoming more standard to ask trust questions in such a way that they better reflect people's assessment about the probability of being cheated by an anonymous opponent. For instance the 2005 Mexican Family Life Survey—a newly designed multi-thematic survey that interviews over 40,000 Mexican citizens—asks the following probabilistic question: "If you lost your wallet with \$200 pesos in it, how probable is it that you will get it back with all of your money and everything else inside it if someone who lives close to you found it?" with answers between 0 (will not get it back for sure) and 100 (get it back for sure). Probabilistic trust questions have the advantage of increasing comparability of the answers both across people and social groups and, since their elicitation requires reference to an explicit event (such as returning a lost wallet), avoids the "vagueness" that may characterize questions like the ones asked in the WVS.

A second doubt about the WVS question is that it may reflect people's ability to detect others' trustworthiness. The 2003 DNB also asks respondents "How good are you (very good, good, not very good, not good at all) in detecting people who are trustworthy?" Answers to this question are not correlated with those to the trust question, suggesting the latter does not reflect differences in ability to detect trustworthiness, but rather the subjective probability that a random person is trustworthy.⁷

⁷ Another criticism to the WVS trust question is that the respondents have the choice between trusting and being cautious rather than between trust and distrust. Hence, it may be mixing two different phenomena, trust and cautiousness (see Yamagishi et al., 1999), which may be not be mutually exclusive. One implication is that the interpretation of the WVS trust question may differ among societies if cautiousness does even if they trust equally (Miller and Mitamura, 2003). The simplest way to deal with this issues is to change the wording of the question and ask, for example, "How much do you trust other people in your country?" providing an appropriate scale, as done for instance by Naef and Shupp (2009) using the German Socio-Economic Panel.

Perhaps, a more serious objection raised against questions of the sort asked in the WVS is that they may be poor measures of trust beliefs and rather reflect some combination of beliefs about others trustworthiness (what we would like to be picking up) and individual preferences—a point forcefully made by Fehr (2009). Actual trust behavior, as measured for instance by the amount of money that a person would be willing to lend to an unknown individual, obviously depends both on the belief the lender has about the borrower’s trustworthiness as well as on the lender’s willingness to bear the risk that the borrower does not repay. When faced with “social risk” – that is the risk that a loss is caused by another person rather than nature - what matters is betrayal aversion (Bohnet and Zeckhauser, 2004) – that is the dislike for the risk of being cheated, not risk aversion. By using the German Socio-Economic Panel (which collects measures of trust, risk preferences and betrayal aversion), Fehr (2009) finds that the people who are more risk averse and more betrayal averse also trust less, where trust is measured as in the WVS. This finding is consistent with answers to these questions reflecting also individual preferences, perhaps because when asked people mentally simulate the act of trusting rather than isolating their belief about others’ trustworthiness. If risk aversion and betrayal aversion were heterogeneous across individuals, but not across cultures, then one could still use variation in average generalized trust measures of the WVS type for cross countries comparisons. However, evidence from 6 countries (Brazil, China, Oman, Switzerland, Turkey and the United States) collected by Bonnet et al (2008) seems to suggest that risk and betrayal preferences do differ, though sample sizes are not large enough to draw strong conclusions (see also Naef et al. 2008). These findings suggest that when designing survey questions to measure trust beliefs, wording should be such that it is clear to the respondent what one is concerned about: his beliefs about others’ trustworthiness. In this regard, probability questions of type asked in the Mexican survey could be a step ahead.

3.2.2 Measuring trust in trust experiments

As with preferences one can use lab or field experiments to measure trust. Since it was first proposed by Berg, Dickhaut, and McCabe (1995), the trust game has become a routine tool to obtain measures of trust. In a trust game an individual, the sender, is endowed with a sum of money E . He is paired with another player (typically anonymous), the receiver. The sender has to

choose how much of his endowment he wants to send to the receiver. If he sends $0 \leq S \leq E$ the sum gets multiplied by a factor $\lambda > 1$ (typically 2 or 3) before reaching the receiver; this is meant to capture the creation of surplus from trusting and investing. The receiver then decides, without the sender observing his action, how much of the sum he gets, λS , he wants to return to the sender. The fraction of the endowment sent— S/E —is bounded between 0 and 1 and provides a *behavioral* measure of trust that has a clear interpretation. The trust game also allows researchers to obtain a measure of trustworthiness, by taking the fraction of λS that is returned to the sender.

The main advantage of the trust game is that one can obtain a more easily interpretable measure of trust. Furthermore, since one can ask the sender also to report his expectations about the amount she thinks the receiver will return, the trust game allows researchers to neatly separate beliefs and preferences (the latter being embedded in the behavioral trust). This has helped clarify the meaning of the WVS questions and provide some external validity to it. Glaeser et al. (2000), for instance, argue that the World Values Survey trust question is not correlated with the sender behavior in the standard trust game but reflects instead correlated behavioral trustworthiness in the game. However, Sapienza, Toldra, and Zingales (2008) argue that the sender behavior in the trust game is not a good measure of trust beliefs, because, being a behavioral measure, it is also affected by other regarding preferences. Using the sender's expectation about the receiver's behavior, Sapienza, Toldra, and Zingales (2008) show that this expectation strongly correlates with the World Values Survey trust question and other similar trust questions.⁸ To better understand what survey and trust game measures actually mean, Naef and Shupp (2009) have a randomly selected group of the German Socio-Economic Panel play a standard trust game. They find that trust in the experiment is best correlated with the survey measure of trust when people are asked how much they trust strangers. This is useful, as it is precisely trust in anonymous members of a community that civic capital is about.

3.2.3 Other beliefs

Though a large literature has focused on trust, other beliefs, such as fairness or expectations about others corruption, are likely to be as important in encouraging extended social interactions

⁸ There is very large literature that uses the trust game to measure trust behaviour and, less often, trust beliefs. A good account of this literature is provided by Fehr (2009) and Naef and Shupp (2009).

and willingness to cooperate with others. Several surveys now ask questions about expected fairness and other potentially important beliefs. For instance, the last round of the WVS obtains a qualitative measure of expected fairness by asking: “Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair? Please show your response on this card, where 1 means that “people would try to take advantage of you” and 10 means that “people would try to be fair.”⁹ Fairness beliefs are positively correlated with trust, but correlation is far from perfect (on the 2005 WVS correlation with country averages of generalized trust is 0.6 and with trust towards people met for the first time is 0.43).

Summing up, this discussion has shown that once social capital is redefined as civic capital, that is as the set of beliefs and preferences that are shared by a community and that facilitate community members’ achievement of common interest goals, it can be measured. We can obtain measures for the diffusion of norms of civicness and generalized morality as well as measures of trust beliefs and fairness that help characterize the stock of civic capital in a community, which is required by Solow in his criticism of social capital. Needless to say, these measures are far from being free of problems; there are issues of interpretation, comparison across countries, selection of which indicators to use etc. But these issues are probably no more severe than the ones that one we face when building a measure of aggregate physical capital, as shown by the capital controversy debate of the 1960s to which Solow himself contributed with the same constructive criticism that he has provided to the social capital debate.

3.3 Indirect measures

As we discussed earlier, outcome-based measures of civic capital are difficult to interpret, because they are contaminated by the effects of other institutions. When we observe that Swedes evade taxes less than Brazilians, we do not know to what extent this is the effect of Sweden’s higher social capital or superior tax enforcement. For an outcome-based measure to qualify as a good indicator of civic capital, the relationship between the input (civic capital) and the measured output should be stable and unaffected by other factors, such as legal enforcement. These conditions are not generally present. There are, however, particular situations where they are likely to be met.

⁹ The fairness questions started to be asked in the WVS 2000 wave but answers were dichotomous; other surveys, notably the ESS and the GSS, ask also beliefs about fairness.

One such instance is donation of blood or organs. Since there is no economic payoff to either donation and there is no legal obligation to donate, the decision to donate can be seen as a direct measure of how much people internalize the common good. Donating organs and/or blood provides insurance to others, with no direct compensation for the person providing it. Therefore, it is the ultimate example of valuing the common good. For these reasons, GSZ (2004) and GSZ (2009) use them as measures of civic capital.

Another example is voter turnout. Since there is no direct economic payoff to voting, this measure captures the extent to which people in a community are willing to pay a personal cost to enhance the common good. For this reason, Putnam (1993) uses electoral participation in referenda as a measure of the underlying civicness.

Consistent with the idea that these measures are capturing the same underlying norms, they tend to be highly correlated. Figures 5 and 6 plot the distribution of participation in referenda and blood donation across the 95 Italian provinces. As Figure 5 shows voter turnout is higher in the north of Italy (north of the Apennines), weaker in the center (from the Apennines to Rome), and very weak in the south (south of Rome). It is indeed this difference within Italy that attracted the attention of Banfield (1958) first and Putnam (1993) subsequently. Figure 6 shows the geographical distribution of the indirect measure based on blood donation. The geographical pattern that we see in Figure 6 is very similar to the one shown in Figure 5 using a totally different indicator. Despite the different nature of these variables, their cross-correlation is as high (0.64), as one would expect if indeed they are the reflection of the same set of cultural norms of civic behavior. Notice however that the correlation is far from perfect, suggesting that indirect indicators are affected by measurement error. Hence, if one were to rely on measures of this sort in applied work one could gain some insights by obtaining several indirect indicators and looking at common components (see Tabellini (2009)).

Another example of a legitimate outcome-based measure of civic capital is Fisman and Miguel (2010) paper on parking violations by United Nations officials in Manhattan. Until 2002, diplomatic immunity protected U.N. diplomats from parking enforcement actions. Only cultural norms prevent U.N. diplomats from parking illegally. Hence, the number of parking violations per diplomat is a good measure of the strength of the social norms in each country. As Fisman

and Miguel (2010) show, this measure is correlated with other, less clean, outcome-based measures such as corruption.

3.4 Are these measures useful?

Economists are interested in civic capital because they think might help explain differences in economic development. Thus, a necessary, albeit not sufficient condition, for these measures to be of interest is that they are correlated with indicator of economic and institutional performance. To check whether this is the case, Table 4 looks at the correlation between these measures and several economic and institutional indicators.

To begin with we look at the correlation between income per capita in 2007 and three sets of measures of civic capital: a measure of expectations (trust in stranger), a survey-based measure of norms (the principal component of the answers to three World Value Survey questions on values), and an outcome-based measure (the number of parking violations per UN diplomat). As Table 4.a shows, both trust and parking violations have a statistical significant correlation with productivity, no matter whether we measure productivity per capita or per worker. By contrast, the principal component of norms does not appear to be correlated. If we substitute trust in strangers with the general trust question, the effect is similar, but weaker.

As Figure 7 shows, this effect of trust appears to be limited to the more developed countries. While there is a very strong correlation between trust and economic development for countries with a per capital GDP above \$20,000, there is no correlation below that level. One possible explanation is that trust is particularly useful in more sophisticated transactions. For example, one can effectively run a sugar plantation without much trust, while it is difficult to engage in financial transactions without it. Consistent with this hypothesis, GSZ (2009) find that mutual trust between countries is more important in international trading of more differentiated goods.

In Table 4.b we correlated various institutional measures with the same right hand side variables. To distinguish between the direct effect of civic capital and its indirect effect via a generalized increase in income per capita, for each left hand side variable we report two regressions, one controlling for income per capita, the other not.

The main result is that trust seems to be positively correlated with all the measures of institutional development, from bureaucratic delays to corruption, from tax evasion to an index of government anti-diversion policies. This correlation is statistically different from zero, regardless of whether we control for per capita income. By contrast, the measure of parking violations is negatively correlated with the measure of institutional development, but this correlation becomes statistically insignificant when we control for per capita income. Finally, the survey-based measure of norms is not correlated with any measure of institutional development.

In sum, if we are interested in studying the effect of civic capital on economic outcomes, the survey-based measure of trust seems to be the most promising indicator. By contrast, a survey-based measure of norms does not seem to add any value. One plausible explanation is that people are more inclined to distort their answers to questions regarding moral values, because they are sensitive to the judgment of the interviewer. The advantage of the trust question instead is that it does not have any obvious answer that is more socially acceptable.

4. The Origins of Civic Capital

In Figure 1 and 2 we show the enormous variability in values and beliefs across countries. This raises the question of where these differences in civic capital come from. This is a very difficult question since it is the same as asking what factors may trigger the adoption and diffusion among the members of a community of cultural norms of generalized morality and cooperation. In this section we start by showing some cross country evidence on the main correlates of civic capital. As in all cross country regressions, it is impossible to make any causal statement. To try to address the causality, we will resort to review some within country studies that shed more light on this dimension.

4.1 Correlates of Civic Capital

We will start by analyzing the one dimension of civic capital that appears more correlated with economic performance: trust in strangers. For this variable we rely on the World Value Survey measure, hence our sample is constrained by the WVS country coverage. To account for

possible feedback effects between economic performance and civic capital, in studying the correlates of civic capital we will control for log of GDP per capita (measured in 1997).

As described in Section 2, one of the potential sources of accumulation of civic capital is education. To capture the level of education accumulated over time, we measure the primary enrollment in the 1920a as computed by Benavot and Riddle (1988). As Table 6 shows, this is positively and significantly correlated with of measure of civic capital: today's level of trust in strangers. One standard deviation increase in 1920 enrollment is associated with a 70% of a standard deviation increase in trust in strangers.

In column 2 we add the level of ethnic fractionalization. As Alesina and La Ferrara (1999) show, ethnic diversity is negatively correlated with trust. We find the same coefficient, but it is not significant in this regression. In Column 3 we also control for the number of years a country has been a democracy since independence. As we argued, historical experience of political participation has a positive effect on civic capital. As predicted, the effect is positive, but it is not statistically significant. Ethnic fractionalization, however, becomes significant. Finally, in column 4 we control for the prevalence of two hierarchical religions: Catholicism and Islam. The percentage of Catholic in a country is negatively correlated with trust, while the percentage of Muslims not. When we include these controls the effect of years of democracy since independence turns significant. Together these variables account for 45% of the cross country variation of civic capital, supporting all the various channel of accumulation of civic capital reported in Section 2.

In Table 6.b we show the same set of regressions with the parking violation measure of civic capital taken from Fisman and Miguel (2010). The educational level appears to be negatively associated with the number of parking violation per diplomat, albeit this effect is significant only when we do not insert too many controls. Besides that, only the percentage of Muslim is positively correlated with the number of parking violations.

Finally, In Table 6.C we show that the principal components of the civic values measured via survey is not correlated with any of the variables above, except for the percentage of Muslim in the country, which has a positive effect.

A more elaborated analysis of the relationship between political history and civic capital is provided by Tabellini (2009). He focuses on variation in norms and beliefs across regions of Europe. He measures civic capital with the level of the WVS trust and with the principal component of the measures of obedience, respect and control discussed in Section 3. Since he uses within country variation, he can exclude (by inserting country level fixed effects) that current cultural values reflect heterogeneous formal institution, as would be case, for instance, if legal codes offer different degrees of legal protections which in turn affect the willingness of individuals to trust their counterparts in a trade.

The key idea, reminiscent of Putnam (1993) and Banfield (1958) is that autocratic and hierarchical regimes that perpetuate thanks to imposition and brutal force rather than consensus are natural vehicle of creation of a culture of mistrust. Because they subdue individuals they are inimical of self determination and individual autonomy, which discourages individual initiative and willingness to collaborate and join forces with others that do not belong to the narrow family circle. In such environment widespread illiteracy is seen as reinforcement of these negative attitudes "...because it isolates individuals and it reduces their ability to control and understand the external environment".

Consistent with distant political history playing a role, Tabellini (2009) finds that historically more backward regions – that is regions with higher illiteracy rates more than 200 years ago and with a long history of relatively poor political institutions - tend to have today worse cultural traits: they have lower generalized trust, less respect for others, less confidence in the individual and a lower value of the of these indicators together as measured by their first principal component. Thus a long history of bad political climate can result in cultural norms that are adverse to extended exchanges, that is in a lower value of civic capital.

One big advantage of Tabellini (2009) study is that it shows that general political histories can be behind the differences in cultural norms and beliefs that dominate current societies. The shortcoming of this general approach is that its measure of political institutions – an index of constraints on the executive – can reflect far too many historical episodes which may affect the limits rulers had in exercising their power in the distant past and thus be unable to provide a clear description of how these norms are set up and adopted.

4.2. Natural Experiments

While interesting, these correlations do not provide a reliable test of the determinants of civic capital. To do so, the literature has relied on a combination of natural and field experiments. In what follows we will provide a brief description of the methodology and the findings.

4.2.1 History

As discussed in Section 2, large shocks to the benefits of cooperation can induce a change in the norms and beliefs that support cooperative behavior. History can provide some natural experiments in this sense.

One such a shock is represented by the collapse of the Holy Roman Empire at the beginning of the second millennium. As the opportunities for trade expanded, the North and South of Italy were subjected to two very different treatments. While the South was governed by an efficient and autocratic monarchy (the Norman Kings), the North was left in power vacuum. In some northern cities, the response to the lack of government was the formation of small groups of individuals who agreed with an informal pact to provide mutual help and collaborate to solve problems of common interest. Slowly, more stable institutions started to emerge from these agreements. In the mid-twelfth century a new word came into use to describe them: “commune”. The word *commune* is a synonym for republic (*res publica*, i.e. common property) and is used with this meaning. This sense of responsibility for the common good that citizens of independent towns developed and consolidated over two centuries of self-government is the “civicness” Putnam refers to and the limits to the power of the executive that Acemoglu and Johnson (2005) deem necessary for development.

Putnam (1993) uses this historical episode to justify today’s large differences in civic capital between the North and the South of Italy, which we reported in Figures 5 and 6. Appealing as it may seem, Putnam’s explanation is just an inference based on only two data points. In a recent contribution GSZ (2008) try to overcome this problem.

Rather than just comparing civic capital between the North and South of Italy GSZ exploit variation *within* the North. As Figure 8 shows, not all major cities located in the North at the turn of the first millennium actually became free cities: some did not and either remained under the control of the emperor (at least for a while) or fell under the control of one of feudal lords that survived the communal experience and that even gained power relatively to the emperor. Furthermore, not all cities that became free cities enjoyed independence and self government for the same length of time. GSZ exploit this variation to test whether civic capital today is affected by a distant episode in history. They find that Center-Northern cities that became free cities have significantly higher levels of civic capital today. For example, the number of voluntary associations is 25% higher in cities that were free city-states, consistent with Putnam conjecture.

This correlation by itself, however, is insufficient to attribute this variation to historical experience. Past history may be a proxy for some unobservable characteristics that affect both the chances a city became independent in the middle ages and the level of civic capital today. To address this problem GSZ find two instruments that affect the cost of becoming independent at that time, but are unlikely to affect the level of civic capital today: whether a city was the seat of a Bishop and whether the city had been founded by the Etruscans. The first variable captures the variation in the cost of coordination, since it is documented (Tabacco, 1987) that the presence of a bishop facilitated the necessary coordination of the prominent local families to provide the public goods and made it easier to transform a city into an independent commune. The second variable is a proxy for how easy a city was to defend. Since the Etruscans, a pre Roman civilization, was organized as free city states, they chose to locate their cities in positions that were easy to defend.

Using these two instruments GSZ are able to confirm that cities that became a commune have more civic capital today. Furthermore, since the affirmation of the Norman Kingdom in the South, prevented the formation of free city-states in the South they can then test the validity of their instruments, by looking at their effect in the South, where free city-states did not occur. That these instruments have no effect in the South suggests as GSZ find is evidence of the validity of the exclusion restriction, lending strong support to Putnam conjecture.

Nunn and Wantchekon (2009), instead, provide a very interesting historical natural experiment of how civic capital can be destroyed. They focus on slave trade to explain mistrust within Africa. They argue that today's level of trust among different African ethnicities is the reflection of the past exposure to the risk of being captured and sold as slave in the 18th and early 19th century. Because of the high payoff of selling people to slave traders, indigenous sold even people of their same ethnic group, close friends, and relatives – those who are less likely to expect to be betrayed and are thus easier to be surprised. This engendered climate of suspicion – Nunn and Wantchekon (2009) argue – may have resulted in an evolution of mistrust towards others and towards local leaders.

To assess the effects of this historical experience Nunn and Wantchekon (2009) use data from the 2005 wave of Afrobarometer – a survey similar to Eurobarometer and the World Values Survey that covers 17 African. They find that Africans whose ancestors faced a higher chance of being captured and sold as slave today trust their relatives, neighbors, and local council less. This conclusion is further strengthened by instrumenting the intensity of slave trade with the distance from the coast.

4.2.2 Geography

A second source of “natural” shocks to the benefit of cooperation is provided the geographical environments. The efficient exploitation of certain natural resources can only be achieved if several people, possibly a whole community, are willing to cooperate.

For example, in mountainous areas where the main crop is slow-growing trees it is impossible to support a fragmented land ownership without a very high degree of cooperation, since farmers need to take turns in cutting their trees and pool and divide the proceeds. As Ostrom (1990) shows, this solution requires a considerable amount of cooperation and mutual trust. This experience of cooperation and trust, repeated over centuries, can increase the level of civic capital. By contrast, sheep breeding does not require any cooperation to be efficiently carried out. Sheppard can do most of the work alone or just with the help of a few relatives. In these areas generalized trust is typically low and cooperatives are few.

An example of this approach is provided by Durante (2009). He shows that areas of Europe with higher climate variability have higher level of trust. In his view, this correlation

arises because climate variability generates a higher need for insurance, which can only be delivered if there is enough cooperation.

4.3. Field experiments

An alternative approach to identify the causal determinants of civic capital is fields experiments. These experiments have the advantage of a truly exogenous and properly randomized treatment. However, they do not have the luxury of sustaining this treatment for a long period of time. To the extent civic capital need time to form, these experiments are bound to fail to find any effect.

One such an experiment took place within the Conditional Cash Transfer program (CCT) in Columbia called *Familias en Acción*. As part of its objectives, beneficiary mothers participate in the so-called '*Encuentros de Cuidado*' where they discuss about topics of mutual interest and collaboration is encouraged. This experience can foster civic capital if treated people earn the benefits of mutual trust through experimentation and extrapolate this knowledge to other collective action decisions not directly subsidized by the program.

To test whether this is actually the case, Attanasio et. al. (2009) compare people's behavior in a public good game between two similar villages, one treated with the CCT program for two years and the other not.¹⁰ They find that fraction of people who contribute to the public good is 30 percentage points larger in the treated village. This result is consistent with the hypothesis that people in the treated village accumulate civic capital which becomes productive when an opportunity to use it arises.

Of course there are caveats here as well. First, the treatment and control, while similar, were not randomly selected, though the results Attanasio et al (2009) obtain are robust to controlling for observables. Second, it is unclear whether the observed difference in behavior is long lasting. What would happen if the program stopped? How long should the program last in order for the observed behavior to be engrained into the culture of the beneficiaries? Thus, while field experiments may prove useful in addressing some of the questions about the formation of

¹⁰ The game was played in two stages. In each stage participant were given a token. They could keep the token or contribute it to the public good. Keeping it results in a \$5 return; contributing it returns 40 cents for each person that contributes his token. Each experiment session gathers 25 people. Thus, if less than 12 contribute not contributing is a dominant strategy, whatsoever. Free riding is always return maximizing. Social and private surplus is maximized if all contribute.

civic capital, they are unlikely to be able to replace field data that rely on large surveys and historical episodes.

5. The Economic Effects of Civic Capital

Civic capital as defined in this paper exhibits strong correlation with level-measures of economic development – such as GDP per capita. This is remarkable since economic models have proved able to explain at best only half of the massive differences in GDP per capita across countries with differences in (traditional) factor endowments. The other half is the Solow residual when applied to levels (instead of growth rates) of GDP and identifies the “measure of our ignorance” in the cross sectional dimension (see Caselli (2005) for an excellent survey).

In an early attempt at finding the missing factor that could bridge the “measure of ignorance”, Hall and Jones (1999) argue that one should focus on differences across countries in what they call *social infrastructure*, that is the set of institutions and government policies that result in “.. an environment that supports productive activities and encourages capital accumulation, skill acquisition, invention, and technology transfer”. Obviously, not only formal institutions of the sort first emphasized by North (1990) can contribute to provide such an environment but also informal mechanisms, including the trust market participants have on each other and the cultural norms of respect of others they were educated to follow.

As Table 7 shows, there is a strong correlation between the measures of social infrastructure (as defined empirically by Hall and Jones (1999)) and our measures of civic capital. The same is true if we run directly the labor productivity (the dependent variable in Hall and Jones (1999)) and our measures of civic capital.

The empirical challenge is to find convincing sources of exogenous variation in our measures of civic capital that can overcome the potential failure of the exogeneity assumption either because civic capital may reflect the working of institutions (e.g. trust more where legal structure is better), or be correlated with unobserved factors that affect also performance (e.g. education quality), or because it is at least partially reverse-caused by current economic forces (Glaeser et. al. 2002).

As noticed by Durlauf (2002), one impediment to the search of valid instruments is that while these papers “...often employ instrumental variables to account for the endogeneity of social capital..” they “.. typically do not incorporate a separate theory of the determinants of social capital formation..” and thus “..” one cannot have much confidence that unobserved heterogeneity is absent in the samples under study”.

5.1. *Civic capital and identification*

One of the advantages of narrowing down the definition of social capital to the set of cultural norms and beliefs that make cooperation among individuals easier is that it can help pinning down the causal economic effects of civic capital by suggesting potential identification strategies. As we showed in Section 3, this definition of civic capital lends itself to be incorporated into standard economic models that provide explanations of its accumulation which can be used to provide identification restrictions when testing the effects of social capital on economic outcomes.

In much of the literature that studies the effect of social capital on economic performance a key problem is how to separate the effect of social capital from that of formal institutions. As the model by Tabellini (2008) implies, the cultural values that promote cooperation and exchange and pro-market institutions are complementary, implying that countries with strong values and high trust also choose institutions that support these values making them attractive to the population. Hence, in cross-countries estimates it is hard to tell apart the effect of social capital on income per capita (or growth) from that of institutions.

The work by Knack and Keefer (1997) – which has the great merit of having brought to economists’ attention the potential relevance of trust beliefs and civic capital for understanding cross-country differences in economic success – is a good example of this problem. They use cross country variation in GDP levels and growth and in levels of generalized trust and civic capital from the WVS (similar to the ones discussed in Section 4) and find that indeed countries with higher GDP per capita and higher growth rates do indeed have higher civic capital a higher levels of trust. Needless to say, higher trust does not necessarily reflect an effect of cultural norms as it may capture better institutional design: in countries with stronger legal protection it is

natural that people trust each other more, and so trust may be picking up the effect of better institutions rather than higher cultural capital. Controlling for institutional quality (as they indeed do) may not suffice to capture the effect if institutions are not properly measured or some relevant dimension of institutions is not controlled for. Instrumenting trust with ethno-linguistic diversity, as Knack and Keefer (1997) do, could in principle provide a way out but raises the issue of what is the basis for excluding ethno-linguistic diversity from the growth regression and for arguing that it is a good causal predictor of cultural capital. Absent a theory of social capital formation, it is hard to tell.

Inspired by the notion of civic capital and the theoretical models of Section 3, the recent literature has followed two approaches to deal with this issue. The first relies on the theoretically grounded link between past political institutions and current cultural traits to find appropriate instruments. The second is based on movers and the idea of “cultural portability”. A third, less developed approach that has been followed relies on field experiments. We discuss them in turn.

5.1.1 Past history as a source of instruments

As discussed in Section 4 long-term historical episodes are a casual source of civic capital accumulation and, if properly isolated, they can be good candidates for acting as instruments for today norms and beliefs shared by a community. In fact, since culture is transmitted slowly from one generation to the next, distant but relevant historical episodes can have predictive power on today’s norms and beliefs.

This is the strategy followed by Tabellini (2009) to identify the effect of civic capital on economic growth and development. As we have discussed in Section 4, Tabellini (2009) shows that differences across regions of Europe in the current endowment of civic capital can be explained with differences in long-term history, such as the literacy rates that prevailed at the end of the XIXth century and indicators of political institutions in the period from 1600 to 1850. Using these measures as instruments he finds that regions with higher endowment of civic capital have higher GDP per capita today and have experienced faster GDP growth. The contribution of civic capital is also large as it can, for example, explain much of the difference in GDP per capita between Lombardy – one of the most economically developed regions of Italy – and the Italian

backward regions in the South, and contribute half of a percentage point to the growth differential of the two areas between 1977 and 2001.

Since Tabellini (2009) uses regional variation and these regions are part of countries with common institutional design, he can exclude that civic capital captures the effect of *formal* institutions as they are absorbed by country fixed effects. Furthermore, controls for current levels of education and for the historical level of economic development suggest that civic capital is unlikely to reflect persistent differences in human capital and in productivity. What is key for identification is that the historical instruments don't have a direct effect on today's output but affect the latter only because they affected the cultural traits of these populations centuries ago which are then reflected – though intergenerational transmission – in today culture. We will return to this assumption below.

Guiso, Sapienza and Zingales (2008) rely on a similar strategy to identify the effect of civic capital on average per capita income. After having shown that past history of communal independence explains differences across cities in the North of Italy, they use this variation to identify the effect of civic capital on GDP per capita in year 2001, instrumenting today civic capital with past history of independence. Indeed they find that differences in civic capital can explain a good fraction of the differences in income per capita across towns in the North of Italy, as shown in Figure 9. Since they look at variation across cities of an area that has long shared the same formal institutions, they can exclude that differences in civic capital reflect differences in institutions rather than in shared values and beliefs. However, while both in Tabellini (2009) and GSZ (2008) one can rule out that civic capital reflects differences in formal institutions, one cannot exclude that differences in culture across regions capture differences in the *actual performance* of institutions that are formally the same (this possibility is less likely in GSZ (2008) since the area they look at is also quite homogeneous along these dimensions).

There is however a more serious problem with this approach that invests the validity of the exclusion restriction for the instrument(s) for civic capital. For the instruments to be valid it must be that the historical episodes that built up civic capital did not at the same time foster the accumulation of other forms of capital that have lasted up to today and still exert a direct effect on income. For instance, in the GSZ (2008) context, having been a free city in the 13th century may have resulted in accumulated assets of some sort that still *directly* affect income today,

besides affecting it indirectly because of its boost on civic capital. Using the bishop city and the Etruscan city indicators which proved to be good instruments for the historical determinants of civic capital is not a solution either. In fact, even if they affect civic capital only because they facilitated the emergence of the free city (and thus qualify as instruments in a civic capital regression), they also boosted all the unobservable assets that may continue to affect a city income today (which may invalidate them as instruments in an income regression). The only way to account for this is to obtain direct measures of these assets and try to control for them.¹¹ The general point is that historical shocks to civic capital could have also shocked other types of capital as persistent as civic capital and which may have an independent, direct effect on income.

5.1.2 *Movers and cultural portability as an identification strategy*

An alternative strategy to identify the effect of civic capital on economic outcomes and separate it from the effect that institutions – both their design and their actual functioning – have on the economy is to rely on one unique feature of cultural norms and beliefs that is embedded in the models of Section 3: once ingrained in the brain of individuals norms and beliefs tend to move with them and continue to affect their actions when people locate in a new environment, where different norms and beliefs prevail. On the other hand institutions are not portable: they do not move with *single* individuals as they leave their country or region, though they can be transplanted when *many* people move to colonize a new country. Therefore focusing on movers' and using information on the prevailing norms and beliefs in their country of origin one can separate the effect of civic capital from that of institutions. The institutions that matter are those of the country or region where the person lives; the norms and beliefs that matter – given cultural persistence - are *also* those of the place where the person originates. This approach, known sometimes as the epidemiological approach (Fernandez, 2007), has been successfully used in the recent emerging literature on culture and economics to identify the effect of other cultural norms on economic outcomes e.g. by Carroll et. al (1999), GSZ (2004), Giuliano (2007), Ichino and Maggi (2000), and Fernandez and Fogli (2009).¹²

¹¹ For instance, GSZ (2008) address this issue by controlling for the most likely type of asset (besides social capital) that free cities created and that still generates income: historical attractions and arts that result in a richer tourist industry in the city, captured by the number of annual visitors to the city (scaled by population).

¹² Several studies do indeed document that cultural norms and beliefs are carried over when people move and persists in the new environment. Rice and Feldman (1997) and Putnam (2000) document that the civic values of US-

There are two points to notice about this approach. First, since also the norms and beliefs of the place where the person interacts may matter for his/her economic decisions, this approach is likely to provide a lower bound estimate of the effect of civic capital. Second, the set of norms and beliefs that foster cooperation may even be caused by the institutions in the country of origin (which would be consistent with Tabellini (2008a) finding that trust attitudes of third generation US immigrants is explained by the political institutions prevailing around or before 1900 in the ancestor's country of origin) but if they affect mover's behavior in the country of destination it is because beliefs and norms matter independently of the institutions that forged them.

Guiso, Sapienza and Zingales (2004) rely on this idea to identify the effect of civic capital on financial development, measured by the intensity people rely on financial markets. They use data on individual Italian investors and on their reliance on financial instruments, knowing where they live and make their decisions as well as their place of birth. This allows them to identify the movers. The great variation in civic capital within Italy illustrated in Figures 5 and 6, offers a good opportunity for testing while the fact that they rely on within country variation implies that formal institutions are held constant. Thanks to the presence of movers, differences in the actual working of institutions – such as the efficiency of the local courts, which may affect people's beliefs and their choices as well and that was a problematic issue with the previous strategy – can be perfectly controlled for by inserting dummies for the place where they live and make decisions. They find that civic capital in the province where movers come from has very strong effects on the use and availability of financial contracts in the province where they live: people that moved from provinces with higher civic capital make larger investments in stocks, rely more on checks to settle transactions and have an easier access to the loans market, consistent with this people being willing to take more social risk as they trust more and to deserve more credit for being more trustworthy.

These results help also us understand better the channels through which higher civic capital can result in higher GDP per capita: because it fosters financial development, and through it, economic growth. This result is also consistent with Paulson and Osili (2006) which finds

immigrants are correlated with those in the country of origin of their ancestors and Guiso, Sapienza, and Zingales (2006) show that trust of second generation immigrants to the US varies with the country of origin of the ancestors and is strongly correlated with trust currently prevailing there. Uslander (2008) provides similar evidence but adds that the generalized trust of today's Americans depends more strongly on the trust inherited from their ancestors than on the trust of the people they currently live close to.

that participation in stock markets of second generation Americans depends on the institutions in the ancestors country of origin which have promoted cultural beliefs conducive to higher trust and by Guiso, Sapienza and Zingales (2008) who find that in a sample of Dutch investors people who trust more invest more in stocks.

In a recent contribution Algan and Cahuc (2008) make an ingenious use of the movers approach to obtain time variation in trust which they then use to eliminate the unobserved formal and informal institutions that pose identification problems in cross-country regressions. To describe this strategy, consider the nature of the problem in a cross country regression of income per capita at time t in country c :

$$Y_{ct} = \alpha_0 + \alpha_1 S_{ct} + \alpha_2 X_{ct} + \alpha_3 F_c + \alpha_4 F_t + v_{ct}$$

where S_{ct} is a measure of civic capital such as trust as measured in the WVS, that (by assumption) varies across countries and over time, X_{ct} is a vector of controls that vary across countries and over time and F_c and F_t are country and time fixed effects which absorb the effects on per capita GDP of time-invariant institutions and factor endowments and aggregate time varying productivity. Obviously, what matters for output at time t is the civic capital prevailing at time t , (i.e. the set of norms and beliefs of the generation that is currently active in the labor market).

The problem with this regression is that those norms and beliefs are most likely correlated with the contemporaneous error term v_{ct} – for instance because positive current shocks to productivity, particularly if permanent, also affect the level of trust of the current generation. However, due to cultural persistence and the fact that values and priors of the current generation (the one responsible for today GDP) are acquired from the previous generation, if one could observe the trust of the previous generation – call it S_{ct}^l - one could use it to replace S_{ct} in the GDP per capita regression. Since these are the beliefs of the previous generation and they were transmitted when today GDP was not yet produced, it is reasonable to assume they are orthogonal to v_{ct} .

The clever idea of Algan and Cahuc (2008) is to use the attitudes of different cohorts of second generation Americans whose ancestors migrated from various countries to obtain an estimate of the inherited component of the beliefs of the active generation in each of the countries of origin. In fact, the beliefs of, say, today Italians living in Italy, are correlated with the beliefs of second generation Americans of Italian origin. However, while the beliefs of the Italian population have evolved according to what has happened in Italy meanwhile, those of Americans of Italian origin only respond to shocks to the US economy. Hence, it should be the case that they are orthogonal to the error term in the GDP regression. Inherited trust is estimated for two (benchmark) periods, 1935-38 and 2000-2003, using data from US General Social Survey and information on the age and ancestry of the respondents, under the assumption of a generation gap of 25 years.¹³ They then attach these estimates to each of the countries in their sample and run a regressions for GDP per capita as:

$$Y_{ct} = \alpha_0 + \alpha_1 S_{ct}^I + \alpha_2 X_{ct} + \alpha_3 F_c + \alpha_4 F_t + v_{ct}$$

where t includes data on GDP per capita in 1935 and 2000 (using a 10-year centered average).

Since the regressions include country fixed effects, any persistent difference across countries that affects both its productivity and its cultural norms and beliefs – such as the nature and quality of its institutions – is captured by these fixed effects and only the time variation in inherited trust is used to identify the causal effect of civic capital on income. Controlling also for changes in the quality of institutions and changes in education (to make sure that changes in inherited attitudes do not reflect remote changes in these variables), they find that civic capital has a positive and statistically significant effect on GDP per capita. Furthermore these effects are also sizeable, as illustrated in Figure 11, which reproduces Algan and Cahuc (2008) Figure 6,

¹³ With the information available in the GSS Algan and Cahuc (2008) can identify second, third and fourth generation American-born with foreign ancestors. They use the beliefs of all to obtain their estimates of inherited trust. Inherited trust in 1935-1938 reflects the beliefs of second generation Americans born before 1910 (i.e. whose parents arrived for sure one generation before 1935), of third generation Americans born before 1935 and of fourth generation Americans born before 1960. In the same way, inherited attitudes in 2000-2003 are those inherited by: second generation Americans born between 1910 and 1975, by third generation born after 1935 and by fourth generation Americans born after 1960.

which shows the percent change in per capita GDP relatively to the level observed in 2000-2003 that a country would have experienced if the level of inherited trust in that country were the same as the ones inherited by the current Swedes. For instance, GDP per capita in Africa would have been 546% higher and that in Russia and Mexico around 60% higher had these countries inherited as much trust as the Swedes, lending support to the famous statement by Kenneth Arrow (1972) who wrote “.. it can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence” (p. 357).¹⁴

5.1.3 *Using field experiments to identify the effect of civic capital.*

A third and so far less investigated strategy to identify the economic effects of civic capital is to rely on field experiments where one obtains both measures of civic values which can be contrasted with observed behavior. A good example of how this strategy can be used is offered by Karlan (2005) who uses a field experiment conducted on a sample of borrowers that participated in the Peruvian microcredit program Foundation for International Community Assistance.

Karlan (2005) first obtains experimental measures of trustworthiness from a trust game as discussed in Section 3, and finds that players identified as trustworthier in the game are more likely to repay their loans one year later. This result is consistent with the idea that because civic capital disciplines borrowers and investors behaviors, it promotes financial development, and through this channel, economic development. Furthermore, since the measures of trustworthiness that Karlan (2005) uses are obtained from a field experiment where institutions play no role by construction, differences in trustworthiness across individuals can only reflect differences in the preferences and values that people have and that result in different incentives to default. This evidence further provides support that higher civic capital has economic real effects.

What is missing in Karlan (2005) is the link between the behaviour of the receiver in the trust game and its underlying values. Butler et. al. (2009) provides such a link. They run a trust game experiment and in a separate questionnaire they ask participants in the experiment to report

¹⁴ Of course, as in GSZ also in this case this strategy is likely to yield a lower bound estimate of civic capital since the estimated effects only uses the inherited component of trust.

how much effort on a scale between 0 and 10 their parents put in teaching them a set of civic values such as always behave as a model citizen (e.g. by not throwing trash on the ground) or be fair with others. They find that players whose parents put more efforts in teaching civic values are more trustworthy when playing as receivers in the trust game.

In sum, we believe that much progress has been made to pin down the causal effects of civic capital on economic outcomes and identification strategies have benefited from the narrower definition of social capital and the simultaneous theoretical advances that have followed. None of the strategies is free of problems but they do not seem more serious than the ones one meets when addressing issues of causality in other domains – such as, for instance, the estimation of production functions. Each of these strategies has its merits and shortcomings; so for instance, field experiments are likely to provide more controlled evidence but, while they can speak about the channels through which civic capital may affect the economy, they are likely to be less useful at providing estimates of its overall effect on a country output. The other two approaches, though exposed to stronger exogeneity requirements, are better designed to provide such an estimate.

6. Conclusions

The growing literature on social capital has been plagued by ambiguity on what social capital is. This ambiguity has made it difficult for this concept to be fully accepted in the mainstream economic debate. In this chapter we propose a narrower definition of social capital that satisfies the criteria of an economic definition of capital (Solow, 1995) and clearly differentiates social capital from physical and human capital. We argue that this so-defined civic capital is an important omitted factor of production. In fact, it can help explain the Solow residuals when applied to levels (instead of growth rates) of GDP.

While we consider this avenue very promising, we are very aware that much remains to be done. First of all, our definition is still far from delivering measures that can be readily used in national accounts. The most promising component of such a measure is trust. Trust is well-founded economically, it is easy to measure, and seems to be correlated with the variables of interests. Other survey-based measures of values seem less satisfactory. While some outcome-

based measures look promising, more work needs to be done to obtain reliable and consistent measures.

The second important area for future research is the mechanisms through which civic capital accumulates and depreciates. The evidence gathered so far seems to suggest that a positive shock to the benefits of cooperation can have effects that last several centuries. What ensures such a high degree of persistence, however, remains still unclear. A better understanding of these mechanisms is crucial if we want to think about designing policies that might foster the formation and preservation of civic capital. But a better understanding is also crucial in avoiding policies that, while producing short term benefits, undermine civic capital, with negative long term effects. For example, a tax pardon, which grants immunity for past tax evasions in exchange for a small fee, can be a very smart fiscal policy in the short term, since it will increase tax revenues without increasing the marginal tax rates, but it might deteriorate the stock of civic capital of a nation, with very negative long term consequences.

The political economy of civic capital formation is per se a very important and unexplored area for future research. In a democracy with periodic elections and frequent turnover, the politicians' horizon will be short, much shorter than the time of formation of civic capital. This might explain why it is so difficult for a country to accumulate civic capital and why it remains low even among some economically developed countries.

References

- Alesina, Alberto and Paola Giuliano (2007), "The Power of the Family", Harvard University, mimeo
- Alesina, Alberto and Edward L. Glaeser (2004). *Fighting Poverty in the US and Europe*. Oxford University Press.
- Alesina A., W. Easterly, A. Devleeschauwer, S. Kurlat and R.T. Wacziarg, "Fractionalization", *Journal of Economic Growth*, 8, 155-194, 2003
- Benavot A. and P. Riddle, "The Expansion of Primary Education, 1870-1940: Trends and Issues", *Sociology of Education*, Vol. 61, No. 3, 191-210, Jul. 1988
- Algan, Yann and Pierre Cahuc (2008) "Cultural change and Economic development", WP
- Attanasio, Orazio, Luca Pellerano and Sandra Polanía (2009), "Building Trust? Conditional Cash Transfers and Social Capital", University College London, mimeo
- Banfield, Edward C. (1958). *The Moral Basis of a Backward Society*. Free Press.
- Becker, Gary (1964). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago, University of Chicago Press.
- Berg, Joyce, John Dickhaut and Kevin McCabe (1995), "Trust, Reciprocity and Social History", *Games and Economic Behavior*, 10: 122-42.
- Ben-Porath, Yoram (1967), "The Production of Human Capital and the Life Cycle of Earnings", *Journal of Political Economy*, 75(4), 352-365.
- Bisin, Alberto and Thierry Verdier (2000). "Beyond the Melting Pot: Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits." *Quarterly Journal of Economics*. 115(3), 955-988.
- Bisin, Alberto and Thierry Verdier (2001). "The Economics of Cultural Transmission and the Evolution of Preferences." *Journal of Economic Theory*. 97(1), 298-319.
- Bohnet, Iris, and Richard Zeckhauser (2004). "Trust, Risk and Betrayal," *Journal of Economic Behavior & Organization*, 55, 467-484.
- Bohnet, I., F. Greig, B. Herrmann, and R. Zeckhauser (2008). "Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States," *American Economic Review*, 98, 294-310.
- Bornhorst, Fabian, Andrea Ichino, Karl Schlag, and Eyal Winter (2005). "Trust and Trustworthiness Among Europeans: South - North Comparison" Working paper, European Institute.
- Botticini, Maristella, and Aloysius Siow (2003). "Why Dowries?" *American Economic Review*. 93(4), 1385-1398.

- Bourdieu, Pierre (1983). "The forms of capital." In *Handbook of Theory and Research for the Sociology of Education* edited by John G. Richardson. Greenwood Press. 241-58.
- Bourgois, P, 1995, *In Search of Respect: Selling Crack in El Barrio*. New York: Cambridge University Press, Boston MA.
- Boyd, Robert, and Peter J. Richerson (1985), "Culture and the Evolutionary Process" University of Chicago Press, Chicago.
- Boyd, Robert, and Peter J. Richerson (1995), "Why Does Culture Increase Human adaptability?" *Ethology and Sociobiology*, 16 125–143.
- Butler, Jeff, Paola Giuliano and Luigi Guiso (2009), "The Right Amount of Trust", NBER WP n 15344.
- Camerer, C. and E. Fehr (2003): "Measuring Social Norms and Preferences using Experimental Games: A Guide for Social Scientists," in: *Foundations of Human Sociality – Experimental and Ethnographic Evidence from 15 Small-Scale Societies*, edited by Henrich, Boyd, Bowles, Camerer, Fehr, Gintis and McElreath. (WP version at: <http://www.iew.unizh.ch/wp/iewwp097.pdf>)
- Caselli, Francesco (2005), "Accounting for Cross-Country Income Differences", in P. Aghion and S. Durlauf (eds.) "Handbook of Economic Growth", North Holland Amsterdam
- Carroll, Chris, D., Rhee, C. and Rhee, B. (1999), "Does Cultural Origin Affect Saving Behavior? Evidence from Immigrants", *Economic Development and Cultural Change*, 48(1), pp. 33—50.
- Cipriani, Marco, Paola Giuliano and Olivier Jeanne (2007). "Like Mother Like Son? Experimental Evidence on the Transmission of Values from Parents to Children." *IZA*. Discussion paper No. 2768
- Coleman, James (1990). *Foundations of Social Theory*. Harvard University Press.
- Dessì Roberta, and Sheilagh Ogilvie (2004). "The Political Economy of Merchant Guilds: Commitment or Collusion?",
- Dessì Roberta (2007), "Collective Memory, Cultural Transmission and Investments", University of Toulouse, mimeo
- Djankov, Simeon, Edward Glaeser, Rafael La Porta, and Florencio Lopez-de-Silanes and Andrei Shleifer (2003), "The New Comparative Economics", *Journal of Comparative Economics*,
- Dohmen, Thomas, Armin Falk, David Huffman and Uwe Sunde (2007). "The Intergenerational Transmission of Risk and Trust Attitudes." *IZA*. Discussion Paper No. 2380
- Durlauf, Steven N. and Fafchamps (20xx), "Social Capital", *Handbook of Economic Growth*, North Holland
- Durlauf, Steven (2002), "On the Empirics of Social Capital", *The Economic Journal*, 112 (November), pp. 459–479.

- Fernandez, Raquel,(2007), “Women, Work and Culture”, *Journal of the European Economic Association*, 5(2-3), pp. 305-332.
- Fernandez, Raquel and Alessandra Fogli (2009), “Culture: An Empirical Investigation of Beliefs, Work, and Fertility”, *American Economic Journal: Macroeconomics*, 1:1, pp: 146–177
- Fernández, Raquel, Alessandra Fogli and Claudia Olivetti (2004). “Mothers and Sons: Preference Formation and Female Labor Force Dynamics.” *Quarterly Journal of Economics*. 119(4), 1249-1299.
- Fernández, Raquel and Alessandra Fogli (2005). “Culture: an Empirical Investigation of Beliefs, Work, and Fertility.” *National Bureau of Economic Research*. Working Paper No. 11268.
- Fernández Raquel (2008), “Culture as Learning: The Evolution of Female Labor Force Participation over a Century”, New York University, mimeo
- Fehr, Ernst, Urs Fischbacher, Bernhard von Rosenblatt, Juergen Schupp, Gert Wagner, 2003, “A Nation-Wide Laboratory. Examining Trust and Trustworthiness by Integrating Behavioral Experiments into Representative Surveys”, CESifo working paper 866.
- Fehr, Ernst (2009), “On the Economics and Biology of Trust“, Presidential address at the 2008 meeting of the European Economic Association , *Journal of the European Economic Association*,
- Fountain, Jane E. (1997) “ *Social capital: A Key Enabler of Innovation in Science and Technology*”, in L.M. Branscomb and J. Keller, eds., *Investing I Innovation: Toward a Consensus Strategy for Federal Technology Policy*, MIT Press Cambridge Mass.
- Fukuyama, Francis (1995). *Trust: The Social Virtues and the Creation of Prosperity*. Free Press.
- Fukuyama, Francis (1997). “Social capital and the modern capitalist economy: Creating a high trust workplace.” *Stern Business Magazine*. 4(1).
- Gambetta, Diego (2000) ‘Can We Trust Trust?’, in Gambetta, Diego (ed.) *Trust: Making and Breaking Cooperative Relations*, University of Oxford, 213-237.
- Giuliano, Paola (2007), "Living Arrangements in Western Europe: Does Cultural Origin Matter?", *Journal of the European Economic Association*, 5(5): 927-952.
- Glaeser, Edward L., Bruce Sacerdote and Jose A. Scheinkman (1995), “Crime and Social Interactions”, *Quarterly Journal of Economics*, 111: 507-48
- Glaeser, Edward L., David Laibson, and Bruce Sacerdote (2002). “An Economic Approach to Social Capital,” *Economic Journal*. 112, 437-458.
- Goldin, Claudia and Larry Katz (2001). ‘Human Capital and Social Capital: the Rise of Secondary Schooling in America, 1910–1940’, in (R. Rotberg, ed.), *Patterns of Social Capital*, Cambridge: Cambridge University Press.
- Granovetter, Mark (1985). “Economic action and social structure: The problem of embeddedness,” *American Journal of Sociology*. 91(3), 481-510.

- Grootaert Christiaan, Deepa Narayan, Veronica Nyhan Jones and Michael Woolcock (2005), "Measuring Social Capital. An Integrated Questionnaire", World Bank WP N. 18
- Fisman, Ray and Edward Miguel, 2006, "Cultures of Corruption: Evidence from Diplomatic Parking Tickets", Columbia working paper.
- Guiso, Luigi and Luigi Zingales (2007). "The Value of Social Networks in Bank Lending" University of Chicago, mimeo.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales (2003). "People's Opium? Religion and Economic Attitudes." *Journal of Monetary Economics*. 50(1), 225-82.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales (2004). "The Role of Social Capital in Financial Development." *The American Economic Review*. 94(3), 526-556.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales (2005). "Cultural Biases in Economic Exchange." *National Bureau of Economic Research*. Working paper, 11005.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales (2006). "Does Culture Affect Economic Outcomes?", *Journal of Economic Perspectives* (2006) 20: 23-48.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales (2007a). "Long-Term Persistence." University of Chicago, mimeo.
- Guiso, Luigi, Paola Sapienza and Luigi Zingales (2008) , "Trusting the Stock Market" *Journal of Finance*, .
- Hall, R.E., and C.I. Jones (1999): "Why do some countries produce so much more output per worker than others?", *The Quarterly Journal of Economics* 114(1): pp. 83-116.
- Karlan, D. (2005) : "Using Experimental Economics to Measure Social Capital and Predict Financial Decisions" , *American Economic Review*, 95, 1688-99.
- Knack, S. and Keefer, P. (1997). 'Does social capital have an economic impact? A cross-country investigation', *Quarterly Journal of Economics*, vol. 112 (4), pp. 1252–88.
- Knack, Stephen and Paul Zak (1999) "Trust and Growth." Claremont University Working Paper
- Inglehart, Ronald and Christian Welzel (2005), "Modernization, Cultural Change and Democracy", Cambridge University Press, New York,
- La Porta, Rafael, Florencio Lopez de Silanes, Andrei Shleifer, and Robert Vishny (1998). "Law and Finance." *Journal of Political Economy*, 1131-1150.
- La Porta R., F. López de Silanes, A. Shleifer and R. Vishny, "The Quality of Government", *Journal of Law Economics and Organizations*, 15, 222-279, 1999
- Miller, A. S., and T. Mitamura (2003). "Are Surveys on Trust Trustworthy?," *Social Psychology Quarterly*, 66, 62-70.

- Naef, M., and J. Schupp (2009). "Can we Trust the Trust Game? A Comprehensive Examination" *Working Paper N. 5, Royal Holloway College, London*.
- North, Douglass C. (1990), *Institutions, Institutional Change, and Economic Performance*, Cambridge: Cambridge University Press.
- Ostrom, Elinor (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990
- Portes, Alejandro (1998). "Social Capital: Its Origins and Applications in Modern Sociology." *Annual Review of Sociology*. 24, 1-24.
- Pryor, Frederic L. (2005), "Culture and Economic Systems", mimeo.
- Putnam, Robert D. (1993). *Making Democracy Work*. Princeton University Press.
- Putnam, Robert D. (1995) , *The Case of Missing Social Capital*, Harvard University working paper.
- Putnam, R. (2000), "Bowling alone: The collapse and revival of American community". New York: Simon and Schuster.
- Rice, Tom W. and Jan Feldman (1997). "Civic Culture and Democracy from Europe to America." *Journal of Politics*, 59, 1143-1172.
- Roland, Gérard (2004). "Understanding Institutional Change: Fast Moving and Slow Moving Institutions." *Studies in Comparative International Development*. 38(4), 109-131.
- Schupp, Jürgen, and Gert G. Wagner (2002). *Maintenance of and Innovation in Long-Term Panel Studies. The Case of the German Socio-Economic Panel (GSOEP)*. Allgemeines.
- Solow, Robert (1995). "Trust: The Social Virtues and the Creation of Prosperity (Book Review)." *The New Republic*. 213, 36-40.
- Soroka, Stuart N., John F. Helliwell, and Richard Johnston. "Modeling and Measuring Trust." In *Diversity, Social Capital, and the Welfare State*, edited by Fiona Kay and Richard Johnston. In press, University of British Columbia Press.
- Spagnolo, Giancarlo (1999). "Social Relations and Cooperation in Organizations." *Journal of Economic Behavior and Organization*. 38, 1-25.
- Tabellini, Guido. (2008a), "Institutions and Culture", *The Journal of the European Economic Association*, Presidential Lecture to the European Economic Association, April
- Tabellini, Guido (2008b). "The Scope of Cooperation: Values and Incentives." *Quarterly Journal of Economics*, pp. 905-950
- Tabellini, Guido (2009). "Culture and institutions: economic development in the regions of Europe." *Journal of the European Economic Association*, forthcoming.

Uslaner, Eric M. (2008), "Where You Stand Depends Upon Where Your Grandparents Sat: The Inheritability of Generalized Trust", *Public Opinion Quarterly*, 72,

Yamagishi, T., Kikuchi, M. and Kosugi, M. (1999). Trust, gullibility, and social intelligence, *Asian Journal of Social Psychology* 2(1): 145{161.

Williamson, Oliver E. (2000), "The New Institutional Economics: Taking Stock, Looking Ahead", *Journal of Economic Literature* Vol. 38, pp. 595-613..

Figure 1: Civic capital across countries

Panel A figure shows the principal component across countries of the indexes 1, 2 and 4 of civiness described in Table 1. Panel B shows the principal component of the three indicators of cultural capital respect, obedience and control used by Tabellini (2009) and described in Table 1

Panel A. Civic capital

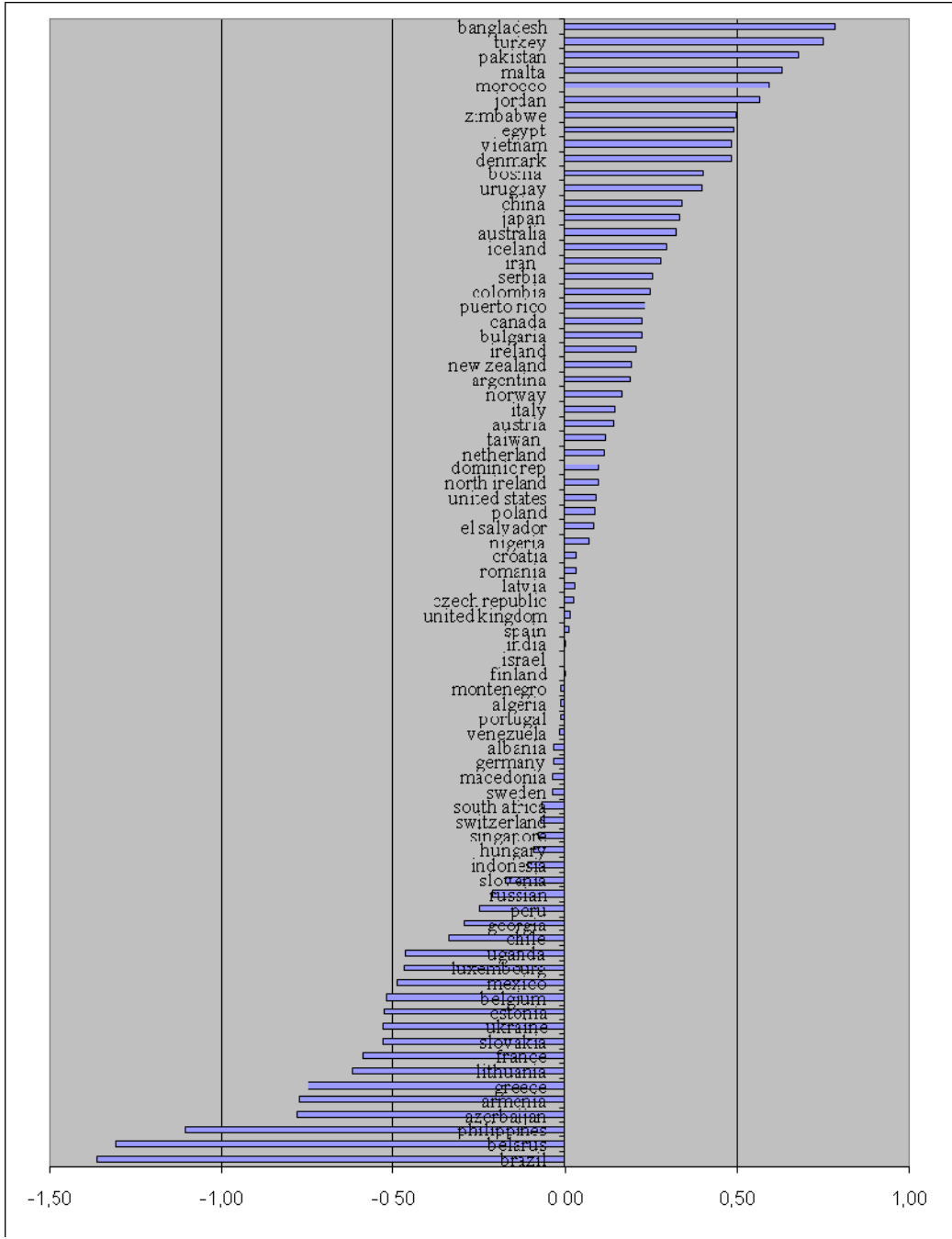


Figure 3: Trust and cultural values

Panel A shows the scatter plot and the regression line between generalized trust in the WVS and principal component of civic values; Panel B shows the plot and regression lines between trust and the principal component of the three measures of Tabellini n(2009) cultural values.

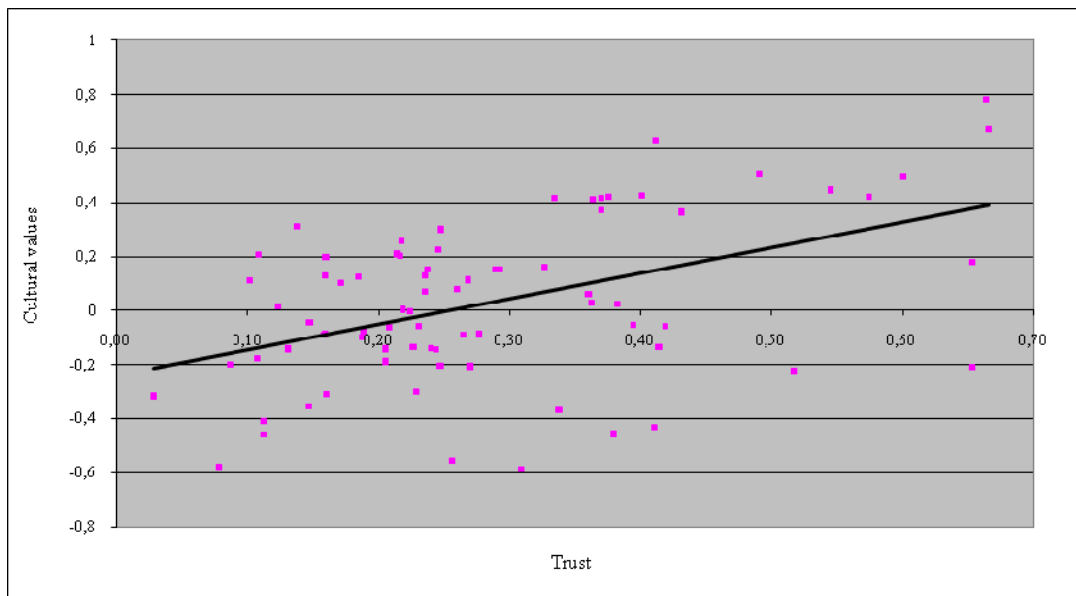
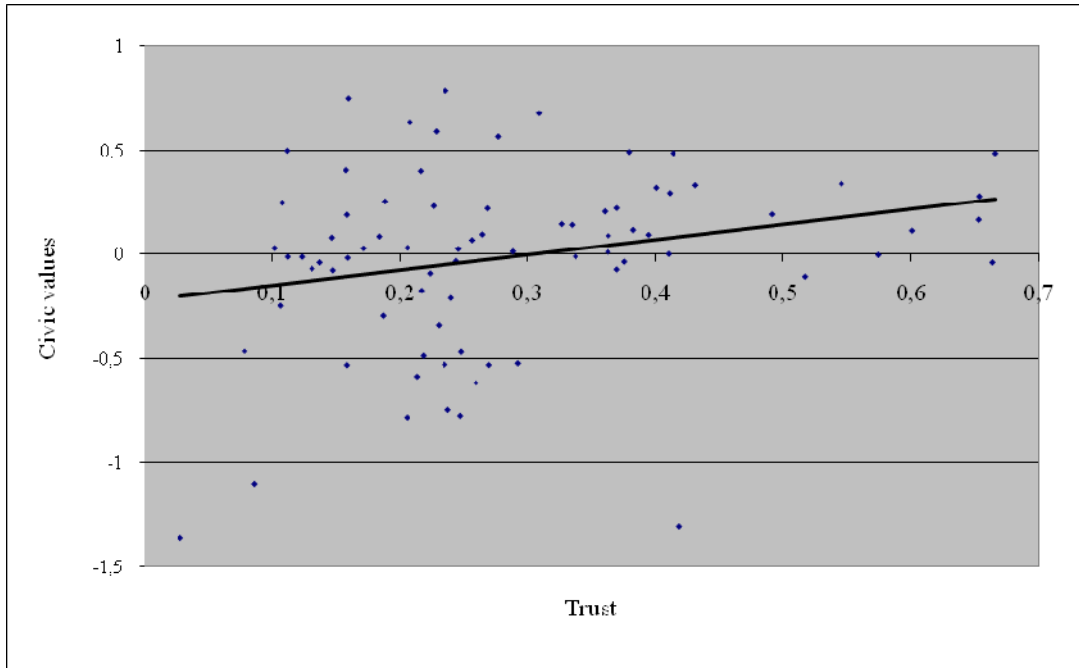


Figure 4: Trust beliefs: density functions by country.

Source: Butler et. al (2009) based on the European Social Survey Wave II

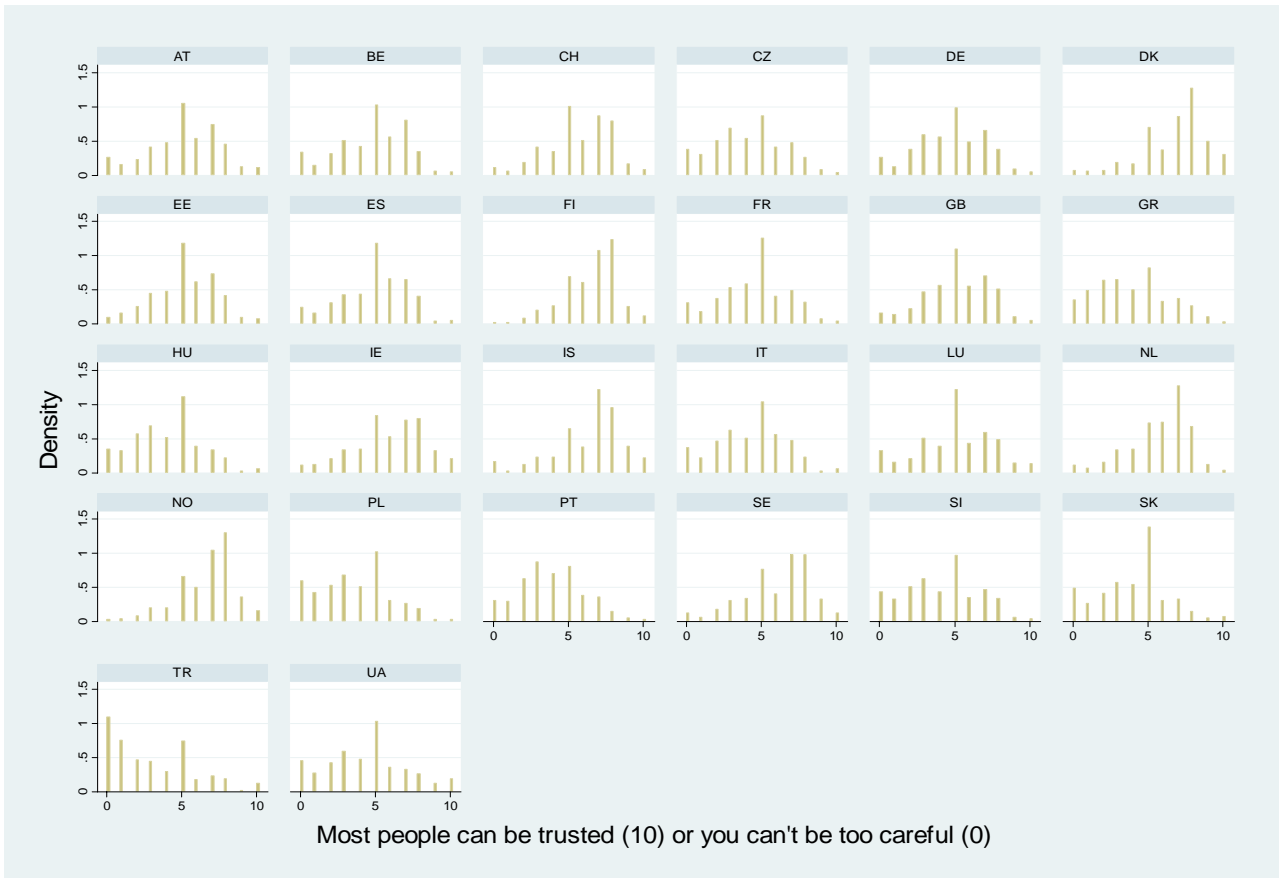


Figure 5: Referenda turnout across Italian provinces

Voter turnout in a province is the average percentage of people that participated in all the referenda that occurred in Italy between 1946 and 1989. Referenda cover a very broad set of issues, ranging from the choice between republic and monarchy (1946) to divorce (1974) to abortion (1981), from hunting regulation (1987), to the use of nuclear power (1987), to public order measures (1978, 1981). Darker areas correspond to higher social capital.

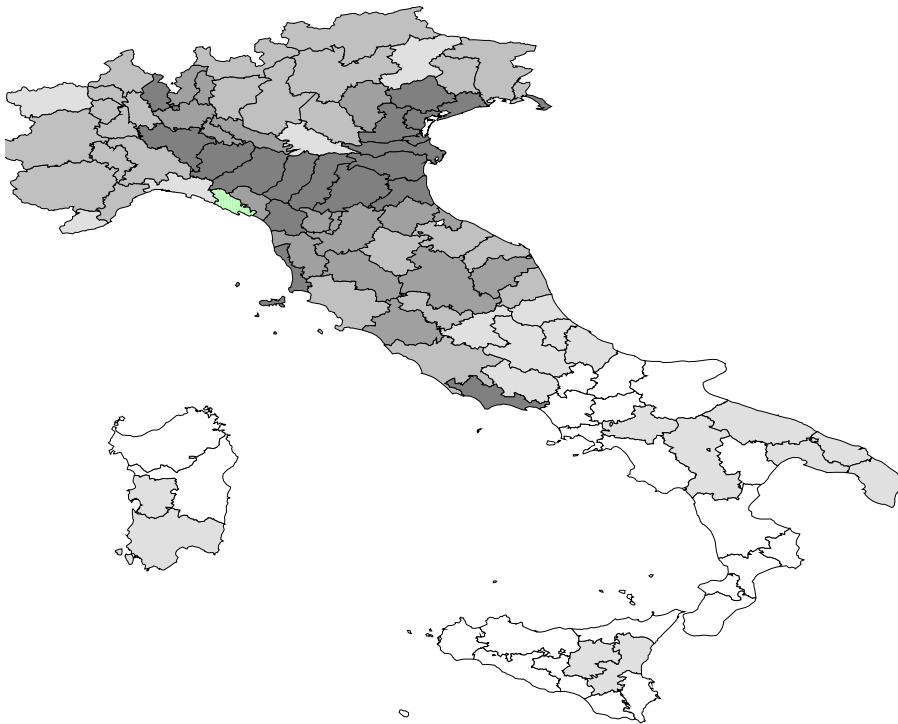


Figure 6: Blood donation across Italian provinces

Number of blood bags per million inhabitants; the indicator ranges from 0 to .11; darker areas correspond to provinces with more social capital. *Source: GSZ (2004)*

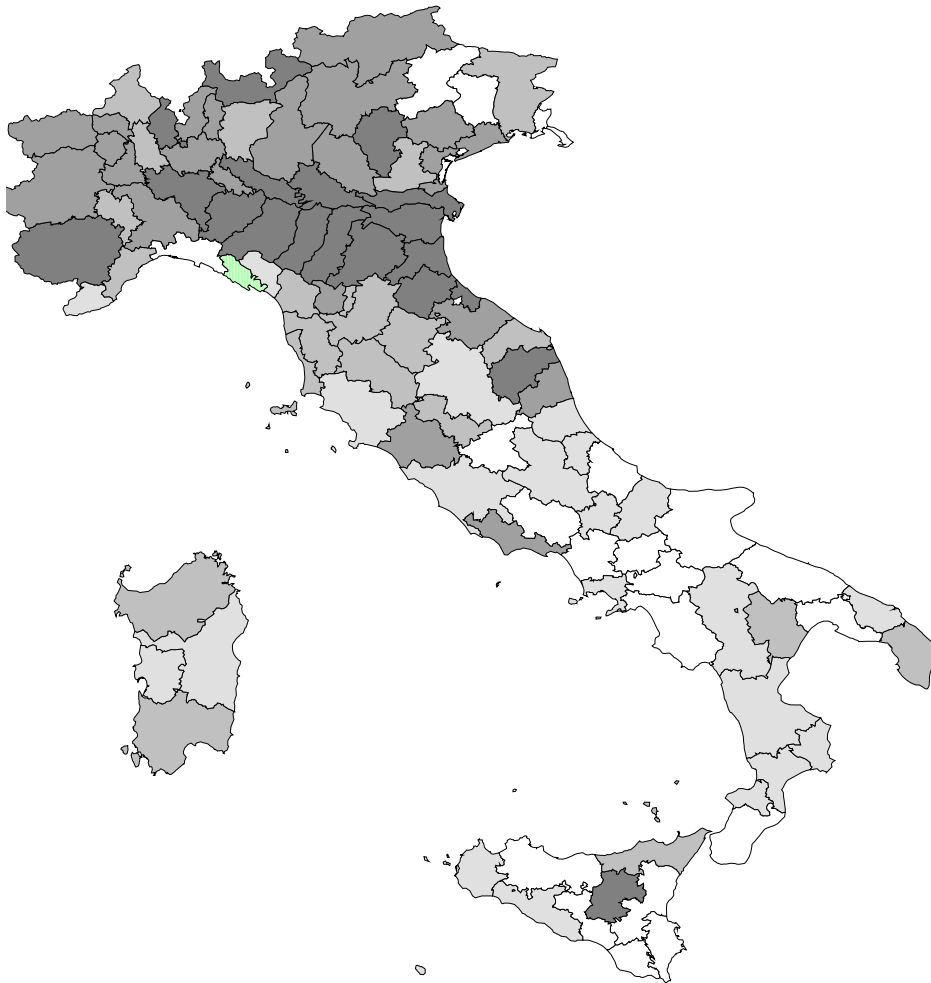


Figure 8 – Historical map of Italy at around year 1167

The figure shows the map of Italy at around year 1167. The red line marks the borders of the country that where the Holy Roman Empire of Germany. All the towns marked with a full dot were commune. Towns in red were commune that belonged to the Lombard League, those in blue were allied to the Emperor. The green areas mark the territories of various Principati and Feudi. The Southern part of Italy not belonging to the Empire was under the Norman Kingdom of Sicily.



Figure 10: The effect of social capital on income per capita across cities in Northern Italy

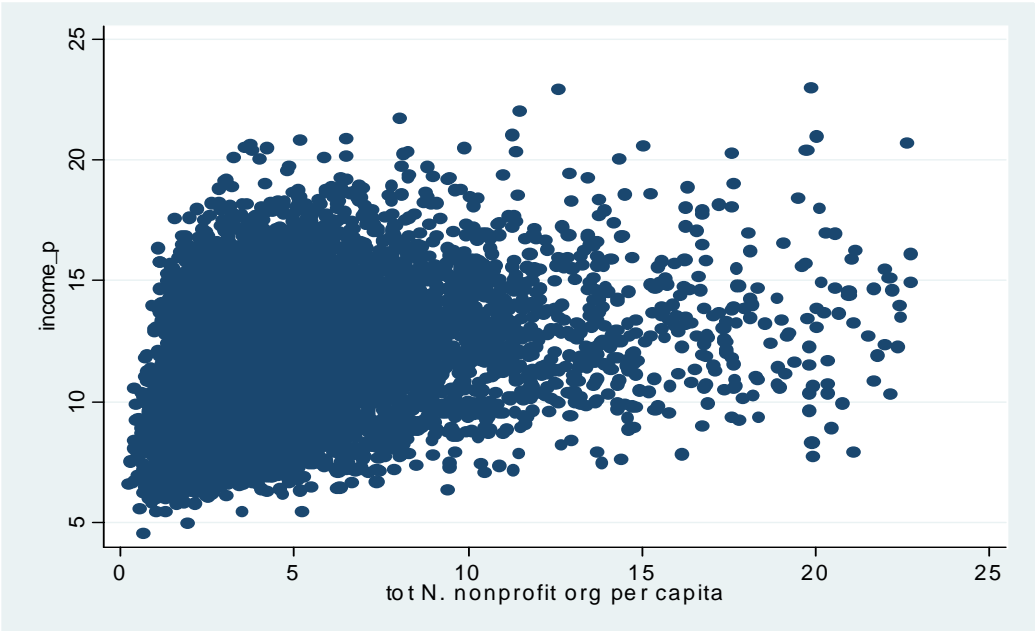


Figure 11: The Causal Effect of Civic capital on per capita GDP

The figure shows the predicted variations in GDP per capita over the period 2000-2003 in a given country if it had the same level of inherited social attitudes as Sweden, as estimated by Algan and Cahuc (2008).

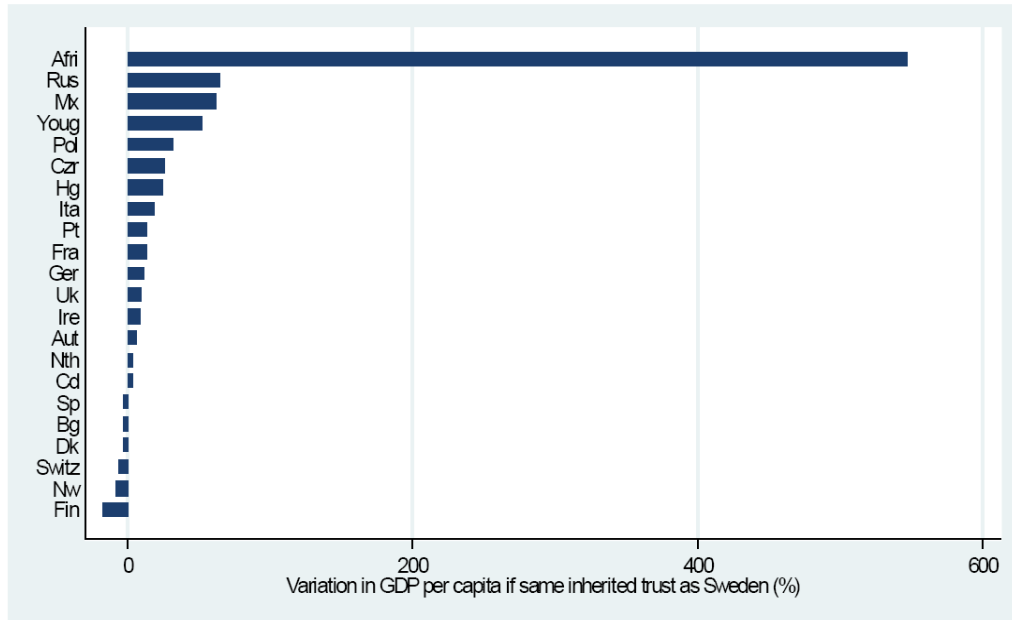


Table 1: Measuring Civic Values

Values reported are based on the following question: “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card.” Answers are in the range 1-10, with 1 = never justifiable and 10= always be justifiable. We have recoded the answers so that 10 means never justifiable and 1 always justifiable. “Claiming government benefits to which you are not entitled”(var 1). “Avoiding a fare on public transport” (var 2). “Cheating on taxes if you have a chance”(var 3). “Accepting a bribe in the course of their duties” (var. 4). “Lying in your own interest”(var 5). “Throwing away litter in a public space”(var 6). “Speeding over the limit in build up areas”(var 7).

Panel A

	Mean	Median	Sd	N. of observations	N. of countries covered
<i>Civic capital measures</i>					
1. Claiming government benefits you are not entitled to	8.70		2.20	108,829	79
2. Avoiding a fare on public transport	8.53		2.40	90,977	64
3. Cheating on taxes	8.72		2.25	111,490	80
4. Accept a bribe	9.30		1.68	113,190	81
5. Lying in your own interest	8.20		2.23	40,386	33
6. Throwing away litter in a public place	9.16		1.63	40,674	33
7. Speeding over the limit in build-up areas	8.71		1.74	40,510	33
8. Principal component of civic values 1,3 & 4					
<i>Tabellini (2009) cultural capital indicators</i>					
1. Respect	0.69		0.46	118,319	81
2. Obedience	0.38		0.49	118,315	81
3. Control	6.67		2.51	110,484	80
4. Principal component of norms	-5.86e-09		1.05	110,308	80

Main beliefs

Generalized trust	0.27	0.44	114,203	81
Fairness	0.42	0.49	49,872	37

Panel B: cross correlations among civic capital measures

Civic Variable	1	2	3	4	5	6	7	8
	Gov. benefits	Avoid a fare	Cheat on taxes	Accept bribe	Lying	Littering	Speeding	PC 1,3&4
1. Claiming gov. benefits	1							
2. Avoid a fare	0.28	1						
3. Cheat on taxes	0.43	0.37	1					
4. Accept a bribe	0.32	0.34	0.39	1				
5. Lying in own interest	0.30	0.37	0.44	0.40	1			
6. Littering	0.23	0.34	0.21	0.30	0.27	1		
7. Speeding	0.24	0.38	0.30	0.31	0.29	0.34	1	
8. PC 1,3 & 4	0.73	0.45	0.82	0.74	0.50	0.32	0.37	1

Table 2. Measures of civic capital

Country name	Claim government benefits	Cheat on taxes	Accept a bribe	Principal component of civic values
greece	6.96	7.84	9.07	-0.75
indonesia	7.12	9.46	9.55	-0.11
mexico	7.28	8.69	8.87	-0.49
philippines	7.40	7.84	7.66	-1.10
peru	7.51	8.89	9.28	-0.25
belarus	7.52	6.78	7.91	-1.31
france	7.62	7.96	8.92	-0.59
chile	7.67	8.83	8.95	-0.34
armenia	7.76	7.32	8.87	-0.77
brazil	7.80	7.41	6.98	-1.36
estonia	7.80	7.82	9.07	-0.53
algeria	7.98	8.99	9.54	-0.01
macedonia	8.01	8.70	9.51	-0.04
venezuela	8.02	9.18	9.38	-0.02
slovakia	8.09	8.85	8.08	-0.53
georgia	8.09	8.26	9.25	-0.29
luxembourg	8.13	7.65	9.18	-0.47
slovenia	8.18	8.66	9.22	-0.17
ukraine	8.20	7.59	8.98	-0.53
singapore	8.23	8.96	9.25	-0.08
iran	8.30	9.53	9.74	0.28
el salvador	8.31	9.09	9.53	0.08
montenegro	8.37	8.45	9.67	-0.01
argentina	8.40	9.12	9.73	0.19
belgium	8.45	7.39	9.02	-0.52

lithuania	8.51	7.16	8.92	-0.62
azerbaijan	8.58	7.38	8.14	-0.78
spain	8.62	8.75	9.35	0.01
taiwan	8.63	9.04	9.43	0.12
poland	8.64	8.86	9.47	0.09
south africa	8.65	8.77	9.09	-0.07
finland	8.65	8.45	9.56	0.00
india	8.66	8.86	9.12	0.00
switzerland	8.67	8.35	9.41	-0.07
russian	8.75	8.02	9.22	-0.21
puerto rico	8.81	8.99	9.67	0.23
dominic rep	8.81	9.05	9.11	0.10
united states	8.83	8.78	9.44	0.09
china	8.87	9.43	9.66	0.34
vietnam	8.87	9.69	9.85	0.49
serbia	8.88	8.91	9.71	0.25
latvia	8.88	8.64	9.32	0.03
Austria	8.91	8.90	9.43	0.14
Japan	8.91	9.54	9.47	0.33
Sweden	8.92	8.58	9.15	-0.04
north Ireland	8.92	8.64	9.44	0.09
Portugal	8.95	8.56	9.22	-0.01
Germany	9.00	8.63	9.06	-0.04
Uganda	9.01	7.42	8.76	-0.47
united kingdom	9.03	8.57	9.22	0.01
Nigeria	9.03	8.97	9.09	0.07
Colombia	9.05	9.08	9.51	0.25
Albania	9.08	9.12	8.62	-0.03
Italy	9.12	8.61	9.50	0.15
Canada	9.12	8.98	9.45	0.22
new Zealand	9.13	8.69	9.54	0.19
Bulgaria	9.17	9.01	9.37	0.22
Ireland	9.17	8.71	9.60	0.21
Romania	9.18	8.21	9.48	0.03
Egypt	9.18	9.42	9.86	0.49
Uruguay	9.19	9.24	9.71	0.40
czech republic	9.19	8.98	8.82	0.03
Morocco	9.20	9.75	9.86	0.59
Iceland	9.25	8.77	9.73	0.29
Australia	9.29	8.84	9.73	0.32
Zimbabwe	9.29	9.44	9.77	0.50
bosnia	9.33	9.24	9.63	0.40
Jordan	9.36	9.49	9.88	0.57
Hungary	9.36	8.91	8.41	-0.09
Norway	9.36	8.29	9.68	0.17
Croatia	9.38	8.26	9.29	0.03
Pakistan	9.47	9.81	9.85	0.68

Netherland	9.51	8.26	9.44	0.11
Denmark	9.62	9.00	9.85	0.49
Malta	9.64	9.47	9.90	0.63
Bangladesh	9.65	9.94	9.97	0.79
Turkey	9.76	9.82	9.88	0.75
			9.58	0.00
Israel				
Mean	8.68	8.70	9.29	-0.02
Standard deviation	0.65	0.68	0.53	0.43
Correlation with				
principal component	0.75	0.86	0.87	

Table 3. The trust matrix

	Trust from:															
	Aus	Bel	UK	Den	NL	Fin	Fra	Ger	Gre	Ire	Ita	Nor	Por	Spa	Swe	Average
Aus	3,56	2,83	2,89	3,22	2,90	3,29	2,70	2,98	2,32	2,93	2,66	.	2,13	2,65	3,53	2,90
Bel	2,95	3,28	2,91	3,18	3,18	3,07	3,07	2,84	2,60	2,93	2,64	3,18	2,66	2,73	3,23	2,96
UK	2,61	2,84	3,29	3,22	3,00	3,18	2,55	2,69	2,34	2,81	2,51	3,27	2,66	2,31	3,43	2,85
Den	2,95	3,01	3,13	3,39	3,29	3,30	2,96	2,97	2,56	2,99	2,70	3,53	2,66	2,73	3,57	3,05
NL	2,95	2,90	3,16	3,33	3,28	3,14	2,94	2,90	2,55	3,00	2,77	3,26	2,70	2,85	3,33	3,00
Fin	2,94	2,92	2,98	3,20	3,25	3,69										
Fra	2,62	2,92	2,32	2,86	2,72	2,92	3,18	2,85	2,78	2,81	2,66	2,93	2,91	2,37	3,04	2,79
Ger	3,09	2,75	2,62	3,12	2,84	2,89	2,74	3,50	2,31	2,78	2,63	2,99	2,54	2,66	3,13	2,84
Gre	2,52	2,45	2,54	2,61	2,59	2,68	2,53	2,51	3,21	2,50	2,40	2,52	2,41	2,47	2,88	2,59
Ire	2,55	2,75	2,61	3,02	2,80	2,92	2,72	2,59	2,55	3,33	2,37	3,01	2,51	2,57	3,26	2,77
Ita	2,43	2,40	2,51	2,53	2,35	2,51	2,43	2,36	2,33	2,65	2,80	2,65	2,55	2,61	2,81	2,53
Nor	3,00	2,91	3,06	3,50	3,30	3,48	2,97	2,92	2,40	2,93	2,78	.	2,22	2,79	3,65	2,99
Por	2,50	2,53	2,74	2,67	2,74	2,67	2,59	2,48	2,60	2,65	2,32	2,60	3,29	2,51	2,97	2,66
Spa	2,58	2,59	2,47	2,66	2,64	2,61	2,68	2,66	2,71	2,64	2,64	2,56	2,59	3,32	2,86	2,68
Swe	3,05	2,99	3,03	3,41	3,34	3,35	2,99	2,99	2,51	2,92	2,89	.	2,24	2,84	3,59	3,01
Average	2,82	2,80	2,82	3,06	2,95	3,05	2,80	2,81	2,55	2,85	2,64	2,95	2,55	2,67	3,25	

Table 4: Personalized versus generalized trust

Country	Trust	Trust people	Trust	Trust	Generalized trust	Family - stranger	Personally know -stranger	Neighborhood - stranger	
	Family	Know personally	Neighborhood	stranger					
France		3.74	3.62	3.12	2.32	0.19	1.42	1.30	0.80
Britain		3.84	3.48	2.96	2.35	0.30	1.49	1.13	0.61
West Germany		3.77	3.19	2.84	2.10	0.41	1.67	1.09	0.74
Italy		3.86	2.72	2.73	1.93	0.29	1.92	0.79	0.80
Netherlands		3.54	3.16	2.82	2.03	0.44	1.51	1.12	0.79
Spain		3.91	3.25	2.92	2.11	0.20	1.79	1.14	0.81
Usa		3.71	3.26	2.90	2.30	0.40	1.40	0.96	0.60
Mexico		3.68	2.84	2.50	1.68	0.16	1.99	1.16	0.82
South Africa		3.82	3.01	2.86	2.04	0.17	1.78	0.97	0.82
Australia		3.82	3.40	2.89	2.39	0.48	1.43	1.01	0.49
Sweden		3.93	3.47	3.29	2.69	0.68	1.24	0.79	0.60
Argentina		3.87	3.18	2.84	2.07	0.17	1.80	1.12	0.77
Finland		3.90	3.39	3.21	2.47	0.59	1.44	0.92	0.75
South Korea		3.87	2.97	2.76	1.87	0.30	2.00	1.10	0.89
Poland		3.70	2.96	2.80	2.06	0.19	1.64	0.90	0.75
Switzerland		3.79	3.28	3.01	2.41	0.51	1.38	0.87	0.61
Brazil		3.59	2.68	2.48	1.64	0.09	1.94	1.04	0.84
Chile		3.82	2.73	2.56	1.67	0.12	2.14	1.06	0.89
India		3.83	3.04	3.21	2.03	0.23	1.82	1.01	1.18
East Germany		3.77	3.16	2.88	1.97	0.28	1.81	1.19	0.91
Slovenia		3.79	2.99	2.70	1.71	0.18	2.09	1.28	0.99
Bulgaria		3.89	3.13	2.90	1.98	0.22	1.91	1.15	0.92
Romania		3.73	2.54	2.47	1.76	0.20	1.98	0.79	0.71
China		3.87	3.02	3.12	1.91	0.52	1.96	1.11	1.21
Taiwan		3.86	3.11	2.92	2.06	0.24	1.80	1.04	0.86
Turkey		3.95	2.93	2.86	1.77	0.05	2.18	1.16	1.09

Ukraine	3.76	2.97	2.84	1.91	0.28	1.87	1.07	0.93
Russia	3.90	3.03	2.73	1.75	0.27	2.15	1.27	0.98
Perù	3.69	2.43	2.20	1.49	0.06	2.19	0.94	0.71
Ghana	3.64	2.76	2.73	1.88	0.09	1.75	0.87	0.85
Moldova	3.78	2.84	2.53	1.71	0.18	2.08	1.13	0.82
Thailand	3.78	2.82	3.04	1.90	0.42	1.88	0.92	1.14
Indonesia	3.79	3.05	2.89	2.00	0.43	1.80	1.05	0.89
Vietnam	3.88	2.85	3.20	2.10	0.52	1.79	0.74	1.09
Colombia	3.79	2.74	2.56	1.71	0.14	2.08	1.03	0.85
Serbia	3.91	3.11	2.79	2.01	0.15	1.90	1.09	0.77
New Zealand	3.90	3.57	3.11		0.51		3.57	3.11
Egypt	3.96	3.33	3.42	2.09	0.18	1.87	1.24	1.33
Morocco	3.89	3.11	3.28	1.89	0.13	2.00	1.22	1.39
Jordan	3.96	3.00	3.24	1.95	0.31	2.02	1.05	1.29
Cyprus	3.86	3.04	2.75	1.66	0.13	2.19	1.38	1.09
Trinidad	3.66	2.95	2.59	1.84	0.04	1.82	1.11	0.74
Andorra	3.80	3.13	2.42	1.90	0.21	1.90	1.23	0.52
Malaysia	3.84	2.85	2.94	1.78	0.09	2.06	1.07	1.16
Burkina Faso	3.79	2.73	2.92	2.01	0.15	1.78	0.72	0.91
Ethiopia	3.86	2.80	3.12	2.08	0.24	1.77	0.72	1.04
Mali	3.90	3.12	3.18	2.23	0.17	1.68	0.89	0.95
Rwanda	3.69	2.99	3.13	2.19	0.05	1.50	0.80	0.94
Zambia	3.59	2.67	2.66	1.75	0.12	1.84	0.92	0.91

Table 5: Civic capital and economic development*A. Productivity*

VARIABLES	Real GDP per capita	Real GDP per worker	Real GDP per capita	Real GDP per worker
	(1)	(2)	(3)	(4)
Trust toward strangers	22,184*** [6,331]	37,183*** [11,329]		
Violation	-144.8*** [44.90]	-239.6*** [82.90]	-133.1*** [47.93]	-227.4** [90.51]
Principal component civic values	-701,7 [986.4]	-1.138 [1,814]	-189,6 [967.4]	-139,9 [1,814]
Generalized trust			26,044** [11,135]	36,470* [19,970]
Constant	-25,587** [12,535]	-38,744* [22,553]	11,775*** [3,392]	25,946*** [6,199]
Observations	42	42	45	45
R-squared	0,31	0,264	0,257	0,193

Notes: GDP figures refer to 2007 (Source: Penn World Table 6.3). Trust and civic values data are from the World Values Survey. Violation is the number of parking violations per UN diplomat (Source: Fisman and Miguel, 2010).

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

B. Government efficiency

VARIABLES	Bureaucratic delays		Corruption		Tax compliance		GADP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trust toward strangers	2.321***	1.497**	4.765***	3.720***	1.550**	0.869	0.327***	0.237***
	[0.505]	[0.537]	[0.946]	[0.717]	[0.626]	[0.560]	[0.0984]	[0.0449]
Violation	-0.0134***	-0.00504	-0.0218**	-0.00873	0.00119	0.00691*	-0.00171**	-0.00018
	[0.00387]	[0.00430]	[0.00882]	[0.00655]	[0.00428]	[0.00387]	[0.000763]	[0.000336]
Principal component civic values	0.073	0.0186	-0.17	-0.122*	-0.214	-0.254	0.0301	-0.00029
	[0.223]	[0.149]	[0.110]	[0.0699]	[0.206]	[0.166]	[0.0342]	[0.0130]
Log of GDP		0.820***		1.117***		0.624***		0.132***
		[0.260]		[0.259]		[0.188]		[0.0144]
Constant	0.136	-6.105***	-2.89	-11.46***	-0.129	-4.777***	0.0403	-1.027***
	[0.974]	[2.040]	[1.854]	[1.875]	[1.252]	[1.657]	[0.187]	[0.127]
Observations	28	28	38	38	27	27	37	37
R-squared	0.359	0.604	0.428	0.676	0.175	0.425	0.349	0.85

Notes: Bureaucratic delays (red tape) data is the average of the years between 1972 and 1995. The scale is from 0 to 10 and low ratings indicate lower levels of red tape in the bureaucracy of the country (Source: La Porta et al., 1999). Corruption refers to corruption in government. Low ratings indicate "high government officials are likely to demand special payments" and "illegal payments are generally expected toward lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, policy protection or loans". The scale is from 0 to 10 and data refer to the average of the years between 1982 and 1995 (Source: La Porta et al., 1999). Data for tax compliance refer to 1995. The scale is from 0 to 6, where higher scores indicate higher compliance (Source: La Porta et al., 1999). GADP is the index of government anti-diversion policies (Source: Hall and Jones, 1999). It is an equal-weighted average of 5 categories for the years 1986-1995: i) law and order, ii) bureaucratic quality, iii) corruption, iv) risk of expropriation, v) government repudiation of contracts. Each of the 5 categories has higher values for governments with more effective policies for supporting production. The index is measured on a scale from 0 to 1. Trust and civic values data are from the World Values Survey. Violation is the number of parking violations per UN diplomat (Source: Fisman and Miguel, 2010).

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Where does civic capital come from?

A. The sources of trust

VARIABLES	Trust toward strangers			
	(1)	(2)	(3)	(4)
Enrollment rate in 1920	0.00660*** [0.00140]	0.00646*** [0.00137]	0.00417* [0.00226]	0.00474** [0.00229]
Ethnic fractionalization		-0,249 [0.163]	-0.340** [0.152]	-0.303** [0.139]
Years of democracy since independence			0,00147 [0.00120]	0.00186* [0.000991]
Percentage Catholic				-0.00269** [0.00101]
Percentage Muslim				0,000141 [0.00112]
Log of GDP	-0.0786* [0.0429]	-0.0983** [0.0453]	-0.110** [0.0432]	-0.103** [0.0490]
Constant	2.523*** [0.368]	2.801*** [0.411]	2.933*** [0.387]	2.896*** [0.456]
Observations	44	43	42	42
R-squared	0,245	0,285	0,313	0,449

Notes: Trust figures are from the World Values Survey. Enrollment rate is the fraction of people aged 5 to 14 enrolled in primary education in 1920 (Source: Benavot and Riddle, 1988). Years of democracy since independence is the number of years since independence in which the country is democratic. A country is defined as democratic in a specific year if in that year the variable polity2 in the Polity IV dataset is strictly positive. Ethnic fractionalization reflects the probability that two randomly selected people from a given country will not belong to the same ethno-linguistic group (Source: Alesina et al., 2003). The higher the number, the more fractionalized the society. The definition of ethnicity involves a combination of racial and linguistic characteristics. Percentage Muslim and percentage Catholic identify the percentage of the population in each country that belonged to Roman Catholic and Muslim religion in 1980 (Source: La Porta et al., 1999).

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

B. The sources of respect for rules

VARIABLES	Violation			
	(1)	(2)	(3)	(4)

Enrollment rate in 1920	-0.216**	-0.197**	-0,145	-0,0841
	[0.0917]	[0.0920]	[0.113]	[0.106]
Ethnic fractionalization		16,24	15,93	16,44
		[10.17]	[10.34]	[10.03]
Years of democracy since independence			-0,0641	-0,0357
			[0.0492]	[0.0496]
Percentage Catholic				-0,0253
				[0.0439]
Percentage Muslim				0.165*
				[0.0919]
Log of GDP	-4.355**	-2,334	-1,726	-1,356
	[1.782]	[1.836]	[1.906]	[2.010]
Constant	60.95***	35.13**	30.96*	22,07
	[15.71]	[17.70]	[18.17]	[19.09]
Observations	131	130	128	128
R-squared	0,114	0,124	0,128	0,168

Notes: Violation is the number of parking violations per UN diplomat (Source: Fisman and Miguel, 2010). Enrollment rate is the fraction of people aged 5 to 14 enrolled in primary education in 1920 (Source: Benavot and Riddle, 1988). Years of democracy since independence is the number of years since independence in which the country is democratic. A country is defined as democratic in a specific year if in that year the variable polity2 in the Polity IV dataset is strictly positive. Ethnic fractionalization reflects the probability that two randomly selected people from a given country will not belong to the same ethno-linguistic group (Source: Alesina et al., 2003). The higher the number, the more fractionalized the society. The definition of ethnicity involves a combination of racial and linguistic characteristics. Percentage Muslim and percentage Catholic identify the percentage of the population in each country that belonged to Roman Catholic and Muslim religion in 1980 (Source: La Porta et al., 1999).

Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

C. The sources of moral norms

VARIABLES	Principal component of civic values			
	(1)	(2)	(3)	(4)
Enrollment rate in 1920	0.0207 [0.0124]	0.0197 [0.0128]	0.00908 [0.00893]	0.0149 [0.0100]
Ethnic fractionalization		-0.687 [0.657]	-0.948 [0.661]	-1.075 [0.663]
Years of democracy since independence			0.00844 [0.00919]	0.00914 [0.00978]
Percentage Catholic				-0.0092 [0.00996]
Percentage Muslim				0.00878* [0.00486]
Log of GDP	-0.44 [0.437]	-0.458 [0.439]	-0.55 [0.534]	-0.506 [0.517]
Constant	3.548 [3.555]	3.982 [3.521]	4.821 [4.355]	4.332 [4.303]
Observations	46	45	44	44
R-squared	0.055	0.058	0.084	0.155

Civic values data are from the World Values Survey. Enrollment rate is the fraction of people aged 5 to 14 enrolled in primary education in 1920 (Source: Benavot and Riddle, 1988). Years of democracy since independence is the number of years since independence in which the country is democratic. A country is defined as democratic in a specific year if in that year the variable polity2 in the Polity IV dataset is strictly positive. Ethnic fractionalization reflects the probability that two randomly selected people from a given country will not belong to the same ethno-linguistic group (Source: Alesina et al., 2003). The higher the number, the more fractionalized the society. The definition of ethnicity involves a combination of racial and linguistic characteristics. Percentage Muslim and percentage Catholic identify the percentage of the population in each country that belonged to Roman Catholic and Muslim religion in 1980 (Source: La Porta et al., 1999). Robust standard errors in brackets. *** p<0.01. ** p<0.05. * p<0.1.

Table 7: Civic Capital and Social Infrastructure

VARIABLES	Social infrastructure	Log of labor productivity
	(1)	(2)
Trust toward strangers	0.393*** (0.128)	0.982* (0.506)
Violation	-0.003*** (0.001)	-0.009** (0.004)
Principal component civic values	0.037 (0.037)	0.204 (0.158)
Constant	-0.214 (0.266)	7.252*** (1.015)
Observations	40	38
R-squared	0.297	0.193