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Revisiting the Role of Social Capital in Development

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Abstract

In this paper, I have examined the role of social capital in economic growth and institutional development by using panel data 1990-2010. I have used two variables as measures of social capital - the Indices of Social Development (ISD) data of *a. interpersonal safety and trust* and *b. civic activism*. For measuring institutions, I have used the ICRG *bureaucratic quality* index and the *Polity 2* index of the *Polity IV* data. I have used cross sectional and pooled panel OLS, and panel fixed and random effects models to examine the impacts. My panel data analyses strongly support the positive and significant contributions of civic activism on economic growth. However, my findings do not confirm significant impact of trust on growth. My estimation results give some indicative evidence of significant and positive effects of *civic activism* on the political institution based *polity 2* index, thus lending support in favour of the view that Citizens matter for democracy.

Keywords

Social capital, trust, civic engagement

Acronyms

BERI	Business Environmental Risk Guide
ECD	Economics of Development
EDEM	Economics of Development and Emerging Markets
FE	Fixed Effects
GDP	Gross Domestic Product
GNP	Gross National Product
ICRG	International Country Risk Guide
INGO	International Non Government Organisation
ISD	Indices of Social Development
ISS	Institute of Social Studies
MA	Master of Arts
NBER	National Bureau of Economic Research
Nuffic	Netherlands University Foundation for International Cooperation
OECD	Organisation for Economic Cooperation and Development
OLS	Ordinary Least Squares
PCI	Per Capita Income
PRS	Political Risk Services
R&D	Research and Development
RE	Random Effects
2SLS	Two Stage Least Squares
UIA	Union of International Associations
UNCJIN	United Nations Crime and Justice Information Network
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
US	United States
USA	United States of America
WDI	World Development Indicators
WHO	World Health Organisation
WVS	World Values Survey

1. Introduction

1.1 Background and Rationale

I begin with two quotes:

Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence (Arrow 1972: 345)

Among the laws that rule human societies, there is one that seems to be more precise and clear than all the others. If men are to remain civilised or become so, the art of associating together must grow and improve in the same ratio in which the equality of conditions is increased (De Tocqueville 1956:110).

These statements underscore the significance of social virtues like trust and associational behaviour in economic and political life. Authors like Humphrey and Schmitz (1998) have termed social capital as the '*missing factor*' in explaining why some countries or regions grow faster than others. Fukuyama (1995: 13) has described it as the '*missing twenty percent*' that the mainstream economics cannot explain about the puzzles of economic phenomenon.

Robert Putnam's (1993) landmark work, *Making Democracy Work: Civic Traditions in Modern Italy* shows how a society's historical stock of social capital can impact on its economic and institutional performance. He analysed the impact of regional governance reforms in Italy which had been implemented since 1970s till 1990. He argued that the progress had been much more rapid in the Northern regions which had been more Civic than Southern regions for centuries. As he mentioned,

In the North, norms of reciprocity and networks of civic engagement have been embodied in tower societies, guilds, mutual aid societies, cooperatives, unions, and even soccer clubs and literary societies. These horizontal civic bonds have undergirded levels of economic and institutional performance generally much higher than the South, where social and political relations have been vertically structured" (Putnam 1993: 181).

The role of social capital in development has received increasing attention in literature in the recent decades. There is a burgeoning body of literature which has recognized the positive role of social virtues like trust, solidarity, and civic values in shaping development (Coleman 1988, 1990, Fukuyama 1995, Putnam 1993, Knack and Keefer 1997, La Porta et al. 1996, Granato et al. 1996). It is argued that social capital plays an important role in building efficient institutions and fostering economic development. It reduces transaction costs, facilitates social interactions, and solves the collective action problems (Knack and Keefer 1997, Whiteley 2000). It is said that cooperative norm acts as constraint against narrow self interest of the citizens thus facilitates the provision of public goods. Citizens' awareness and involvement in public

affairs (greater involvement in associations, access to newspaper and media, knowledge about politics, etc), can reduce narrow opportunism of the politicians and bureaucrats thus can shape the nature of political institutions and governance (Knack and Keefer 1997, Putnam 1993).

Despite the growing recognition of the positive contribution of social capital in the social, political, and economic development, it still remains a contested concept (Van Staveren and Knorringa 2007). Many aspects of its multifaceted impacts and determinants are still not very clear. Some literatures have expressed sceptical views about the acclaimed role of social capital in economic development (Moore 1999, Solow 2000)

In this study, I re-examine the role of social capital in influencing *economic growth* and *institutions* by using cross country panel data. The study is expected to add to the recent debates in three broad respects - **First**, most of the empirical literature on the relationship between social capital and growth has applied cross-country regressions. Application of panel data in social capital literature is very scarce. **Second**, most of the literature has used the World Values Survey (WVS) data of *generalized trust* to measure social capital. There are several reasons why the sole reliance on the WVS *generalized trust* indicator is not a good measure of social capital (discussed later). **Third**, the use of the WVS data is not suitable for conducting panel analysis. Few of the studies which have attempted to apply panel analysis have found either negative relationship between social capital and growth or found un-robust results (Roth 2009, Hall and Ahmed 2013), which is in contrast to the findings of most cross-country regressions.

I re-investigate the role of social capital in development by using an alternative dataset - the Indices of Social Development (ISD) data of the International Institute of Social Studies (ISS) of the Erasmus University of Rotterdam, the Netherlands. I have used two variables of the ISD to measure social capital – (a) *interpersonal safety and trust* index; and (b) *civic activism* index (www.indsocdev.org). These indices combine data from various sources in addition to the WVS data and are compatible for conducting panel studies. In the whole sample, I have data on these two variables for 149 countries during 1990-2010 periods (5 yearly data). In the regression estimation samples, I have data on **111 countries** for the *trust-growth* regressions and on **118 countries** in the *civic activism-growth* regressions (with **309 and 423 observations** respectively). Thus I have wider data coverage as compared to the previous studies in the field –Knack and Keefer (1997): 29 countries (N=29); Whiteley (2000): 34 countries (N=34); La Porta et al. (1996):40 countries (N=40); Roth (2009): 41 countries(N=129); and Diermon and Grier (2009): 51 countries (N=119).

1.2 Key Research Questions

The main objective of this study is to examine the impact of social capital on economic growth. More specifically, I want to test the following questions -

- if the ISD *interpersonal safety and trust* impacts on growth of per capita income
- if the ISD *civic activism* impacts on growth of per capita income

One related and complementary research question is to see if social capital also impacts on institutional development. The hypothesis is that if social capital has any growth impacts, then institutional development can be one of the many possible channels through which it can impact upon growth (Knack and Keefer 1997). I have used two institutional measures – the International Country Risk Guide (ICRG) index of *bureaucratic quality*; and the *polity 2* index of the Polity IV data. So, I want to test if social capital has any impact on these two indicators also.

1.3 Organization of the Paper

This paper is organized in Six Sections. The first Section provides introduction which includes the background and rationale and the key research questions. In Section 2, I present a conceptual framework on social capital, trust, and civic engagement including the findings of some empirical literature. I discuss on the methodology and variables in Section 3. Section 4 presents the descriptive statistics including statistics of the whole sample, the estimation samples, the panel procedures, etc. I present the results and analyses in Section 5 which includes analyses on cross sectional and panel results. Finally, I present the conclusion in Section 6.

2 Literature Review

2.1 Conceptual Framework

Social Capital

There are diverse approaches to understanding social capital (Adler and Kwon 2009, Van Staveren and Knorringa 2007). Putnam (1993: 167) defined social capital as '*features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions.*' According to Fukuyama (2001:7), '*social capital is an instantiated informal norm that promotes co-operation between individuals. In the economic sphere it reduces transaction costs and in the political sphere it promotes the kind of associational life which is necessary for the success of limited government and modern democracy.*' According to Inglehart (1997:188), social capital is a '*culture of trust and tolerance, in which excessive networks of voluntary associations emerge.*'

Ostrom (2000) identified **four** elements of social capital that distinguish it from physical capital. **First**, *unlike physical capital social capital does not decrease value in its use rather*

it increases: When individuals learn to work together for their common benefits, this learning does not fade away with their repeated group works and interactions. **Second, social capital is difficult to see and measure:** Physical capital like buildings, machineries, hospitals, schools, etc is easy to understand. But it is difficult for an external observer to see and understand the process in which a group of people interact in their shared norms and understanding. Although the outcome of social capital is easy to understand and measure, the process themselves are difficult to understand. **Third, it is hard to construct social capital through external interventions:** For example, donors funding can be useful in building physical capital like roads, infrastructure, etc. But it is difficult for the donors to build social capital unless they have sufficient local knowledge. Similarly, it may be difficult for the bureaucrats to undertake the cost-effective means of providing public goods and services unless they have sufficient knowledge about public interests and are strongly motivated to uphold that; **Fourth, government institutions can facilitate or destroy social capital through their development efforts:** Say, a local organisation has undertaken an irrigation scheme and set the rules of water sharing themselves through their repeated experiences of negotiation and bargaining. Now, a government project which wants to facilitate the scheme may be counterproductive if the authority imposes their top-down design without giving sufficient space to the community's institution of solving their own disputes.

Given the backdrop of diverse approaches, social capital can be broadly understood as - interpersonal relationships, shared norms and reciprocity, networks, and trust that promote co-ordination and facilitate economic and social activities. The empirical literatures have commonly used the following indicators to operationalise social capital – (a) indicators of generalised trust; (b) memberships in associations/ number of associations, groups, etc. and (c) indicators of civic norms (Van Staveren and Knorringa 2007, Knack and Keefer 1997).

According to the mainstream economic literature, social capital is another alternative form of capital, just likes as physical and human capital. The neoclassical model of social capital is based on the premise of maximising individual preferences. Here, social capital is a resource that is owned by individuals or firms. An individual's utility maximisation problem is resolved through choosing the right social network from among a set of alternative networks, or investing in the social capital till its marginal returns or expected utility is positive (Van Staveren 2000, Van Staveren and Knorringa 2007). Thus the mainstream economics attributes social capital as an instrument of maximising individual's utility or minimising risks and transaction costs, etc. However, some socio-political and anthropological literatures criticise the mainstream economic notion of social capital which presupposes the 'instrumental' role of social capital. They argue that the mainstream economics has narrowed down the role of social capital by placing social virtues like trust, friendship, honesty, etc. into the rational calculation of individual welfare maximization (Van Staveren 2000, Fukuyama 1995:3-21). These literature tend to suggest the 'intrinsic' (although not 'altruistic') rather than the 'instrumental' role of social capital (Van Staveren 2000, Van Staveren and Knorringa 2007).

Social capital provides several benefits – (a) it promotes cooperation and solves the collective action problems thus creating economies of scale; (b) it reduces

transactions costs (such as time and money involved in the monitoring and enforcement of contracts, costs of free-riding and moral hazard in the common-pool resources and public goods); and (c) it provides learning spill-overs like the benefits from teamwork, peer learning, accessing new technology in the network of business and entrepreneurs, etc. (Van Staveren and Knorrinda 2007, Putnam 1993:163-171).

Social capital like strong norms of reciprocity can solve the dilemma of collective actions. We can illustrate the fact with the mode of operation of a rotating credit association. It is a small saving group (typically with twenty members) which collects savings from its members and the common pot of the fund is provided to each member in rotation to finance investments (say, for purchasing a sewing machine, cattle, etc). One could ask why a member of such association should not drop out after getting his own pot. However, the experience of such institutions tells us that the members are typically included in the group based on their past history of reputation. Here, a member's past interaction with the social network is the primary source of information about his/her reputation. In a small and personalised society (like a remote village in Bangladesh), strong norms of ostracism or the existence of a dense network can minimise the risk of default. In a more complex and impersonal society (like Mexico City), such problem can be minimised through nurturing a culture of reciprocity (Putnam 1993:167-168). Effective social norms, sanctions, and rewards can lead to cooperative behaviour as people restrain their self-interested behaviour for the sake of common interests. It can reduce crime, provide safety and security, etc (Coleman 1988).

In a modern complex society, there are many transactions that are costly to monitor and negotiate through formal co-ordination mechanism. Government procurement services often involve complex bureaucratic procedures. High-tech professional services and R&D activities are also difficult to monitor. In a top-down managerial set up, many important decisions cannot be implemented timely due to centralised decision making. In such cases, co-ordination based on informal norms may reduce inefficiency (Fukuyama 2001).

A particular characteristic of social capital is that its returns are not obvious. This is because social capital provides some negative externalities also. As Coleman (1988: S 98) noted, *Like physical and human capital, social capital is not completely fungible but may be specific to certain activities. A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others*'. A strong sense of in-group solidarity may cause hostility to members outside of the group. Thus shared norms may lead to cooperation within the group members but it may cause non-corporation outside of the groups. This is often found in traditional societies like kinship networks, tribal associations, religious sects, etc. Members in these organisations usually hold strong solidarity among them (which is termed as 'thick trust') but do not hold the same with the members outside of their groups. Fukuyama (2001) has described this as the '*narrow radius of trust*'. It may cause inertia and inhibit the flow of information outside of the group (Adler and Kwon 2000). Sometimes, maintaining social relationships may be costly. Students with too many friends may not get good grades in examination due to passing too much time in maintaining friendships. Therefore, weak ties may be preferred to strong ties in some circumstances (Adler and Kwon 2000).

Some literatures have discussed these issues by distinguishing between two types of social capital - 'bonding' and 'bridging' social capital. Bonding social capital (like family, kinship, religious associations) reflects strong ties while bridging social capital (like neighbourhood association) reflect weak ties. Bonding social capital is rooted in the underlying power asymmetries and social hierarchies. It causes entry barriers and cartels, and may result in segmented markets, rent-seeking etc. In contrast, bridging social capital (like 'generalized trust' as opposed to 'thick' or 'particularised trust') facilitates free entrance, free flow of information, and flexible transactions (Van Staveren and Knorringa 2007). Therefore, while measuring the effects of social capital, it is necessary to take into consider its effects net of these negative externalities (Fukuyama 2001, Staveren and Knorringa 2007).

Trust

Trust constitutes an essential element of social capital (Newton 1997). But what is trust? According to Humphrey and Schmitz (1998), trust is about the expectation of an economic agent's opportunistic behaviour – i.e., the belief that the agent will not behave opportunistically. It involves 'risks' and 'vulnerability' on the part of the agent who trusts. Therefore, to trust is to accept the risks involved with the actor's opportunistic behaviour. From an economic viewpoint, trust is rational if the expected gain from trust is higher than the expected loss from distrust. In this sense, trust is not a blind faith (Humphrey and Schmitz 1998). An agent can deal with the risk of a transaction by two instruments – 'sanction' and 'trust'. Sanction is related to the incentives and penalties associated with the agent's trustworthy (or opportunistic) behaviour. While trust facilitates the transactions, sanctions can reduce the risk involved with the transaction (Humphrey and Schmitz 1998).

Different types of trust that are commonly discussed in literature are – (a) *thick* trust / *particularised* trust operates within the networks of primary relations, such as family, ethnicity, religious groups, etc. It reflects strong ties and in-group solidarity and it is the basis of bonding social capital; (b) *thin* trust / *interpersonal* trust / *generalised* trust operates within secondary relations, such as among the members of voluntary associations or in larger communities or in the everyday interactions with strangers. It is the basis of bridging social capital. Another type of trust that is also discussed is the *systemic/ institutional/political* trust (trust in the parliament, legal system, bureaucracy, police, political parties, etc.) (Roth 2009, Norris 1999, Van Staveren and Knorringa 2007).

In a context of uncertainty and lack of information, many potential gains are not realised due to lack of mutual trust and confidence. In classic prisoner's dilemma, the actors do not co-operate because of the uncertainty about the action of his rivalry. Yet, they could both be better off from their mutual cooperation. One potential solution to the problem could be the enforcement of a third party, which is supposed to be neutral (such as Hobbe's concept of the State, as cited in Putnam 1993: 163-167). But the problem of third party enforcement is that an impartial third party rarely exists in real world. The state may itself become coercive to compel citizens to act in its own interest. Authors like Oliver Williamson (as cited in Putnam 1993:166-167) suggests the need for developing formal institutions in solving these problems. However, as Putnam (*ibid.*) argues, the development of these institutions essentially depends on the principle of trust.

La Porta et al. (1996) suggested that cooperation is a key to successes in large organisations where people don't interact frequently. For example, cooperation between the academic and administrative departments in a University may cause better institutional outcome. Government with high trust within its different organs (i.e., judiciary, legislative and executive) are supposed to perform well. Similarly, if there is better trust among the managers and workers of a factory, it should have positive impacts on its performance (Putnam 1993:170). Delivery of public goods and services require trust between bureaucrats and citizens (La Porta et al. 1996).

If citizens have more trust and confidence on the government or institutions, they may be inclined to obey the law voluntarily. They may be inclined to pay taxes or less likely to avoid fare in public transports or buy some goods from someone who has stolen those. Conversely, if they have lack of trust on the political parties, the parliament, legal system, police, etc, they may lose their interests to engage in the civic and political spheres (low electoral turnout, political discussions, etc.) (Norris 1999:257-272).

In the low trust societies, people's antipathy to cooperate each other results in certain costs – costs of litigation, negotiation, legal procedures, security and protection, etc. The costs act like a tax on other economic activities which the high trust societies don't need to pay (Fukuyama 1995:27). A general decline in the social trust may cause less support for democracy and lead to political unrests, extremist movements, terrorism, etc. (Norris 1999:257-272).

While analysing the inter-firm relationships in the developing and transition countries, Humphrey and Schmitz (1998) distinguished between two types of trust – (a) minimum trust, and (b) extended trust. According to them, a minimum trust is required for effective market transactions while an extended trust is needed for deeper cooperation across firms. Drawing on experience of the former Soviet Union States in 1990s, they argued that the lack of minimum trust acted in the way of building market relations in these states.

According to Humphrey and Schmitz (1998), trust and sanctions are complementary things and they can operate at the *macro*, *meso* and *micro* levels of inter-firm relationships. They defined macro relations as those which are applicable to all inter-firm relations, meso level as those in the sectoral relations, and micro level as in the inter-firm relations between particular agents. They viewed that better institutional arrangement can generate trust at the macro level relations of firms (e.g., certification by agencies). A client's identity and reputation can provide the basis of trust at the meso level (information about respective family, ethnicity, group or association which the client belongs to, etc). Similarly, a trader's repeated interaction with his partner builds trust at the micro level (e.g., in the relationships in overseas trade, etc). Macro level sanctions involve the enforcement of written contractual provisions. At the meso level, enforcing sectoral regulations or informal norms within the business network can implement sanction (loss of reputation, losing business partner, etc.). Micro levels sanctions appear in the form of loss of future benefits, hostages, etc. (Humphrey and Schmitz 1998).

Civic Engagement

The impact of civic culture on economic growth has long been an area of academic interest since Max Weber's thesis who postulated that the protestant culture (protestant work ethic, Puritanism, and the culture of thrift and frugality) has been the driving force of the Capitalist development in the Northern Europe (Weber 1930, Granato et al. 1996). In the recent past, there has been a revival of interest in the issue from the works of a number of writers like Almond and Verba (1963), Putnam (1993), Fukuyama (1995), Grenato et al. (1996), Swank (1996), etc.

Fukuyama (1995) sketched a narrative account of how certain aspects of culture may contribute to economic success. As he noted, the historical success in the industrialization of Japan and USA should be better understood in their culture rather than the commonly held debate on industrial policy. According to him, although these two societies are commonly belied to be different, they have some similarities –i.e., both these societies have a historical track record of dense associations. These voluntary groups in these societies (which lay in the ‘*middle*’ between the *state* and the *family*) had created high levels of general trust in their early stage of industrialization and were the key to success in creating and managing large scale and professionally managed corporations (Fukuyama 1995: 43-48).

There has been a long tradition among political scientists who argue that the success or failure of a democratic government depends largely on the nature of its citizens. These citizens are interested in public issues and devoted to public concerns. They are not altruistic but self-interested. They can be appropriately termed as ‘enlightened’ or ‘civic’ citizens. They are bonded together by a horizontal relationship of mutual cooperation. They show a culture of trust, solidarity and tolerance to each other (Putnam 1993:86-91).

According to Sawnk (1996), there are three ways how civic culture can impact on economic growth – (a) it can provide a stable democracy with long lasting constitutional regimes and less political violence ,which is favourable for growth; (b) it can create social and economic institutions which are conducive to cooperative economies (like Putnam’s Northern Italy) and thus positive for growth; and (c) it may create a rent-seekers’ cartel through their associational engagement, which may have negative effects on growth.

Putnam (1993:91-115) identified four elements that constitute the idea of ‘civic-ness’ of a community. While assessing the impact of civic engagement on institutional performance in Italy, he used a composite index comprised of these four indicators - a. vibrancy of associational life (e.g., numbers of sports club, cultural society, cooperatives, etc. adjusted for population); b. newspaper readership and access to mass media; c. participation in political life (turnout in elections, referenda, etc); and d. incidence of preference voting (as a proxy of patron- client relationship).

Organisations like neighbourhood associations, sports club, cultural associations, cooperatives, etc constitute horizontal networks of civic engagement. The denser networks of such organisations would mean that citizens are able to co-operate more each other for their mutual benefits. According to Putnam (1993:171-176), the following benefits accrue to the networks of civic engagement – (a) as they provide more interactions and interconnections among the members, they reduce opportunism for individual benefits; (b) they implant certain behavioural norms, reciprocity, and mutual expectations; (c) as they provide better interpersonal communication, it is easy to get information about the trustworthiness of a fellow member; and (d) past history of successful cooperation leads to cooperation in future.

However, horizontal networks of association (neighbourhood association) should be distinguished from vertical networks (like patron-client relationship). Unlike

horizontal networks, vertical networks breed opportunism and dependence rather than mutual trust and reciprocity. Increased memberships in horizontal network should have positive effects on governance. In contrast, increased memberships in vertically network organisation (Mafia organisation) should have negative effects on governance (Putnam 1993:174-175).

Some authors have questioned about the role of voluntary associations in modern life as a source of trust and social capital. According to Newton (1997), associations and clubs in modern life do not necessarily produce high levels of impersonal trust because such organisations are sometimes formal, bureaucratic, and vertical in nature rather than informal, democratic, and horizontal. He distinguished three types of trusts – *thick* trust, *thin* trust, and *abstract* trust. According to him, *thick* trust is personal, *thin* trust is impersonal, and *abstract* trust is imaginary. He emphasized the role of an abstract trust in the modern society to engender civic norms and social capital. However, abstract trust is neither produced in the primary relations of communal society, nor it is produced in the secondary relations of voluntary associations. He argued that the institutions of education and mass media are the two most important sources that produce abstract trust, and therefore, are important for generating impersonal trust and social capital. School is the primary place where the art of cooperation is learnt through a variety of activities like games and sports, team-works, and many collective activities. Similarly education is the source of many good virtues like fraternity, justice, equality, citizenship, universalism, etc. Mass media also generates a civic sense through building awareness on social and political life, etc (Newton 1997).

2.2 Empirical Findings

To measure the impacts of social capital on economic growth, Knack and Keefer (1997) conducted a cross-sectional study on 29 market economies by using WVS data of the first two waves² They used three variables to measure social capital – (a) trust, (b) civic norms, and (c) memberships in groups and associations. To measure trust, they used the WVS data on the question - ‘*Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?*’ They constructed an index of civic norms by assessing people’s behaviour with regard to a number of variables of the WVS data – i.e., people who would (a) ‘*claim government benefits which they are not entitled to*’; (b) ‘*avoid fares in public transports*’; (c) ‘*cheat taxes if got chance*’; (d) ‘*keep money to him if found*’; and (e) ‘*fail to report the incidence of damage which s/he have done accidentally in the parked vehicle.*’ They assessed group memberships by using WVS data on memberships in social welfare associations, religious and cultural organisations, trade unions, political parties, local community associations, human rights and environmental associations, etc. They measured growth of per capita income of the 29 economies during 1980 -1992, after controlling for the primary and secondary enrolment, initial per capita income, and the price level of the investment goods of these countries. They assessed the impacts of social capital on income growth by using OLS and 2SLS methods.

² The WVS data of these two waves were collected during 1981 -1992.

The empirical work of Knack and Keefer (1997) suggests that *trust* and *civic norms* has strong positive effects on economic growth, which works directly through influencing the accumulation of physical and human capital. However, they did not find significant impact of groups and associations on growth. To explore additional links from trust to growth, they used some institutional data – (a) WVS data to construct an index of perceived government performance; (b) the International Country Risk Guide (ICRG) data to measure bureaucratic efficiency and property rights; and (c) the Business Environmental Risk Guide (BERI) data to measure bureaucratic efficiency and contract enforceability. They claimed that *trust* influences growth indirectly through improving the property and contractual rights and raising bureaucratic efficiency and government performance. They argued that the relative influence of *trust* on growth is higher in poorer countries given their less developed financial structure, less secure property rights, etc.

Another study by Dearmon and Grier (2009) found results similar to Knack and Keefer (1997). Although they used panel data, they were restricted to using the pooled cross sectional analysis. They could not employ fixed effects model due to missing observation problems in the WVS data. They used an unbalanced panel of 51 countries with the WVS generalised trust data of 4 waves (1981-2004), Penn World Tables data of Investment/GDP ratio and Barro-Lee education data, which made their cross sectional observations 119 (a substantial improvement over Knack and Keefer (1997) which was only 29). They found that trust has strong significant and positive impacts on economic growth. By interacting trust with education and investment, they found that the coefficient of the interaction term increases. They employed the Jackknife experiments to check the robustness of their results and found that the results were not driven by sample. Thus they validated the earlier claim made by Knack and Keefer (1997) that trust increases the efficiency of investment in physical and human capital.

Whiteley (2000) conducted another cross-sectional study on 34 countries. He computed economic growth of these countries during 1970 -1992 from the Penn World data and constructed a social capital index by using the trust indicators of the WVS 1992. He controlled for the initial per capita GDP (1970), mean share of investment as % of GDP and population growth during 1970- 92, and primary and secondary school enrolments in 1980. He suggested that social capital has significant positive impacts on growth and its effect is as strong as that of human capital.

La Porta et al. (1996) analysed the effects of trust on the performance of large scale organisations. They used the WVS data in the 1990s wave of 40 countries and applied cross sectional OLS regressions. They measured performance by using 4 broad variables with 14 indicators. Controlling for the GNP per capita of 1970, they found that the WVS generalised trust was associated with increased efficiency of the judiciary, reduced corruption, enhanced bureaucratic quality, and increased tax compliance. They found that increased trust significantly increases participation in civic activities and professional associations. They suggested that increased trust causes increased sales of the large scale firms. They also noticed significant and positive impacts of trust in most of the social indicators. Their empirical work suggested that countries with more

hierarchical religious organisations (Catholic Christians, Islam, and other orthodox religions) had low efficiency in the judicial system, high corruption, low tax compliance, low participation in the civic and associational life, low firm efficiency, and inefficient social indicators. Thus they provided support in favour of Fukuyama's (1995) hypothesis that trust increases efficiency of large firms, and Putnam's (1993) hypothesis that trust increases civic cooperation and that hierarchical networks are bad for civic cooperation and trust.

As opposed to the findings of most cross sectional studies, Roth (2009) found a negative association between trust and growth in panel fixed and random effects analysis. He used data from the World Values Survey, European Values Study Groups, and Eurobarometer 25. He constructed an unbalanced panel of 41 countries during 1980 to 2004 with a total number of observations 129. His analysis constitutes 5 yearly average changes in growth versus lagged trust and other control variables (lagged income, and lagged physical and human capital). He conducted sensitivity of his results by excluding influential cases, changing specifications, adding regressors, re-sampling, clustering, etc. and found consistency of his results. He suggested that the negative effect of trust on growth accrue mainly from the results in Developed, OECD countries, liberal market economies, and the Scandinavian countries. The empirical work of Roth (2009) implies an inverted U-curve suggesting a positive effect of *trust* on *growth* in countries with low levels of trust and a negative effect in countries with high level of trust.

Paxton (2002) argued that social capital and democracy are interrelated. She used 3 determinants of social capital - WVS data of 46 countries on (i) *generalised trust* and (ii) *number of associations*; and (iii) the Union of International Associations (UIA) data of the *number of INGOs* in 101 countries. Using cross-lagged panel design models, she argued that social capital affects democracy and democracy affects social capital. She found that associations having external connections show strong positive effects on democracy (association those have connections with external communities like professional, environmental, human rights associations, etc). She also noticed that associations that are isolated (trade unions, religious associations, etc) have strong negative effects on democracy. She argued that an increase in the number of INGOs causes an increase in the democracy score and an increase in the democracy score causes an increase in the INGOs with some lagged effects. She suggested that the INGOs have impacts on democracy because of their internal democratic structure and their linkage with the international democratic norms.

Granato et al. (1996) conducted a study to assess if culture has any effect on economic growth. In line with the Weberian thesis, they hypothesized that some culture promotes motivation for achievement by encouraging thrift and determination, which are favourable for investment and economic growth. In contrast, some cultures promote traditional norms like religious faith and obedience to traditional authority thus discouraging achievement motivation and growth. Accordingly, they hypothesized that material values (like motivation for thrift and determination) should have positive effects and that post-material values (religious beliefs and obedience) should have negative effects on growth. By using WVS (1990) data on 25 countries, they constructed

an index of 'achievement motivation' with these 4 indicators – a. thrift, b. determination, c. obedience, and d. religious values. They proposed a parsimonious model of economic growth which augments the neoclassical and endogenous growth models by taking into account these cultural factors. Their parsimonious model estimated economic growth of these 25 countries during 1960 -1990 and controlled for initial per capita income, investment, human capital (primary and secondary education) and achievement motivation. They applied OLS methods and test the sensitivity of their parsimonious model by altering specifications, dropping influential cases, bootstrap re-sampling etc. They concluded that both economic and cultural factors matter for growth and that models which ignore either of the factors are inadequate for explaining growth.

TABLE 1
Summary of related empirical studies

Author (s)	Dependent variable	Explanatory variables	Methods applied	Major findings
Knack and Keefer (1997)	GDP growth (1980-92)	<ul style="list-style-type: none"> Trust=% of people trusting others (WVS data) Civic = index of civic norms (computed from WVS data) Memberships in groups and associatios Initial GDP (1980) Trust*GDP (1980) Primary enrolment (1960) =human capital Secondary employment(1960) =human capital Price of investment goods(1980) =physical capital 	<p>Cross country</p> <p>OLS, 2SLS[N=29]</p>	<ul style="list-style-type: none"> Trust and civic norms has positive effects on growth Trust/civic norms impacts on growth by influencing accumulation of physical and human capital Trust indirectly influence growth through improving property rights, bureaucratic quality, and government performance Impact of trust is higher in poorer countries
Whiteley (2000)	Log of mean GDP growth per capita (1970-92)	<ul style="list-style-type: none"> Log investment Log primary school enrolment Log secondary school enrolment Log population growth Log trust index Log real GDP per capita 1970 	Cross country OLS [N=34]	The effect of social capital is at least as strong as human capital on growth
La Prota et al (1996)	<ul style="list-style-type: none"> Government performance (judiciary, corruption, bureaucratic quality, tax compliance) Civic participation (civic activities, engagement in professional organization) Total sales of top 20 large organization as % of GNP 	<ul style="list-style-type: none"> Log per capita GNP Trust Religious hierarchy 	<ul style="list-style-type: none"> Cross Country OLS [N=40] Sensitivity analysis (bootstrap, subset regressions, etc) 	<ul style="list-style-type: none"> Trust increases efficiency of the government and large organization. It increases participation, and social efficiency Hierarchical religion reduces efficiency of government and large organization and it reduces participation and social efficiency

Author (s)	Dependent variable	Explanatory variables	Methods applied	Major findings
Roth F (2009)	<ul style="list-style-type: none"> Social indicators (Quality, adequacy of infrastructure; log infant mortality rate; high school completion; log inflation; GDP growth) Average GDP growth over five years interval (1980-2004)	<ul style="list-style-type: none"> Trust Squared trust Initial Income Human Capital Price of investment (log of each of these variables as one period lagged) Time dummy for each wave 	<ul style="list-style-type: none"> Cross-Sectional OLS (N=41) Pooled panel OLS (N=129) Panel Fixed Effect (N= 129) Panel Random Effect (N=129) Sensitivity analysis 	Trust has negative/inverted U shaped relationship with growth
Dearmon and Grier (2009)	Log of Real GDP per capita	<ul style="list-style-type: none"> Log of Real GDP per capita lagged by one period Log (n+g+d) Log investment/GDP ratio Log education Log trust 	<ul style="list-style-type: none"> Pooled OLS 2SLS (N=119) Sensitivity analysis (Jackknife experiments) 	Trust has strong positive effect on growth. Trust increases the efficiency of physical and human capital.
Granato et al (1996)	Growth of per capita income (1960-1989)	<ul style="list-style-type: none"> Per capita GDP (1960) Investment Primary Education (1960) Secondary education (1960) Cultural values (index of achievement motivation) = WVS indicators of thrift, determination, obedience and religious values 	<ul style="list-style-type: none"> Cross country OLS[N=25] Sensitivity analysis = omission of influential cases, robust regression, extreme bound analysis, bootstrap re-sampling 	Both cultural and economic variables matter for growth
Paxton (2002)	<ul style="list-style-type: none"> Democracy (1991) Connected association (1990) Isolated association (1990) 	<ul style="list-style-type: none"> Democracy (1982) Connected association (1980) Isolated association (1980) Trust (1980) Industrialization (1980) 	<ul style="list-style-type: none"> Cross-lagged panel [N=46 (WVS data trust/association)] 	<ul style="list-style-type: none"> Connected associations increase growth Isolated associations decrease growth
	<ul style="list-style-type: none"> Democracy (1965,1977,1991) 	<ul style="list-style-type: none"> Democracy (1960, 1965, 1977) 	<ul style="list-style-type: none"> Cross-lagged panel 	<ul style="list-style-type: none"> INGOs increase democracy

Author (s)	Dependent variable	Explanatory variables	Methods applied	Major findings
	<ul style="list-style-type: none"> No of INGOs (1965, 1977,1991) 	<ul style="list-style-type: none"> No of INGOs (1960, 1965,1977) 	[N=101(UIA data of INGO)]	<ul style="list-style-type: none"> Democracy increase INGOs

3 Methodology

Identifying credible estimates of the impacts of social capital involves a number of challenges –

First, unlike physical capital, social capital is an intangible object. Quantifying and measuring intangible objects like trusts, norms, personal relations, etc. is not easy. Even when they can be measured through some quantifiable indicators, it is difficult to measure them through one or two single indicators. Usually social capital variables constitute multidimensional social phenomenon and therefore need compilation of many indicators rather than one or two indicators to measure them (Foa and Tanner 2012).

Second, unlike physical capital, the changes in social capital are not rapid. Usually trusts, norms, etc. are a society’s given endowment of resources which take relatively longer times to change. Therefore, the less variability of the social capital over time makes the panel regression less attractive. Perhaps, this is one reason why social capital literatures are mostly focused on cross country regression rather than panel studies. Another issue is related with the less availability of time series data on social capital across countries.

Third, although the social capital variables are predominantly exogenous in character, they are subject to continuous slow changes through changes in institutions, governance, industrialisation, economic development, etc. Social capital and institutions are mutually reinforcing (Paxton 2002), and therefore, are subject to many possible endogeneities. For example, trust can be built through democratic political institution (Muller and Seligson 1994). People behave in a more trustworthy way where the institutions function well – we see less fraud, cheating, or deception where the law enforcing agencies and the judicial system is better. Thus it is necessary to separate out the net contribution of trust after adjusting for the contribution of institution (Moore 1999). Again, a society’s cultural values may affect its economic development (Granato et al. 1996); but the development itself, in turn, may affect its cultural values, attitudes, trust, tolerance, etc. (Inglehart and Baker 2000). Therefore, removing endogeneities is a critical concern while estimating the social capital effects on economic development, which requires good instruments. But it is difficult to establish time variant good instruments to make them applicable in the panel data regressions. Within these constraints, this study attempts to estimate some impacts of social capital, and therefore, have some limitations.

3.1 Estimation Strategy

The basic models that have been used to estimate the impact of social capital on growth and institutions are Panel Fixed Effects (FE) models. An advantage of using this model is that it controls for the time invariant country fixed effects in panel data. I have considered two separate regressions– equation (1) is to measure the effect of social capital on growth, and equation (2) is to measure the effect of social capital on institutions.

$$Gr_{it} = \alpha_0 + \alpha_1 \ln Y_{t-1} + \alpha_2 \text{Physical Capital}_{it-1} + \alpha_3 \text{Human Capital}_{it-1} + \alpha_4 \text{Social Capital}_{it-1} + \alpha_5 \mathbf{X}_{it} + \lambda T_i + u_t + e_{it} \dots\dots\dots(1)$$

$$\text{Institution}_{it} = \theta_0 + \theta_1 \ln Y_{t-1} + \theta_2 \text{Physical Capital}_{it-1} + \theta_3 \text{Human Capital}_{it-1} + \theta_4 \text{Social Capital}_{it-1} + \mu T_i + v_t + \varepsilon_{it} \dots\dots\dots(2)$$

Where $Gr_{it} = (\ln Y_{it} - \ln Y_{t-1})$ = growth of real GDP per capita. Social capital is measured by two indices – Indices of Social Development (ISD) *interpersonal safety and trust*, and *civic activism* (discussed later). \mathbf{X}_{it} is the vector of other macroeconomic control variables; u_t , v_t represent unobserved country fixed effects, and T_i represents time fixed effects.

Model (1) is similar to Roth (2009) who has used panel data. Broadly, it follows the works of Knack and Keefer (1997), Whiteley (2000), and Dearman and Grier (2009), who have used cross-country regressions. However, a related issue is how the initial per capita income (PCI) in the Growth model would be controlled in the panel data. In the cross-sectional regression, there is no problem, as I regress compound growth of the entire period (1990 -2010) on the initial PCI (1990). But in the panel, the situation is not the same as it takes into account both the cross-sectional and time dimension. If I take only the initial PCI (1990), I have to put PCI 1990 values for all the remaining time periods instead of their actual values. Then the PCI will loss variation for each individual country for the entire of the remaining time periods (1995, 2000, 2005, and 2010), in which case it is not feasible to estimate the model properly. To avoid this problem, I have taken the PCI 1990 as the proxy for the initial income of 1995-2000 time periods; the PCI 1995 to proxy for the initial income of 2000 – 2005 periods, and so on. In other words, the value of PCI in the first year of the preceding 5 years interval is serving the proxy for the initial income of the next 5 years. Here, I have followed Roth (2009) and Hall and Ahmed (2013), who have used lagged income while using panel data. The reason for taking the lagged values of the other variables is to reduce endogeneity (discussed below).

The model in equation (2) is similar to Knack and Keefer (1997), although it differs slightly due to difference in cross-country versus panel regression. While using cross country data, Knack and Keefer (1997), controlled for initial GDP, and initial enrolment in primary and secondary levels to measure the impact of trust on a number of different governance institutions (like confidence in government, ICRG and BERI bureaucratic efficiency, ICRG property rights, and BERI contract enforceability

indices). In addition to their income and human capital variables, I have augmented the model by including physical capital also. While Knack and Keefer (1997) have used the variables in their levels in cross-country analysis, I have taken their lagged values in panel setting to reduce endogeneity.

The application of OLS in the fixed effects model depends on the assumption that the idiosyncratic errors (e_{it} or ϵ_{it}) are not correlated with the explanatory variables; they are homoscedastik; and that there is no serial correlation (Wooldridge 2009:480-481).

However, even though the explanatory variables are uncorrelated with the idiosyncratic errors, applying OLS in FE models may produce inefficient estimate. This is because the time invariant fixed effects (μ_i or ν_i) may cause autocorrelation of the composite error terms [i.e., $(\mu_i + e_{it})$ or $(\nu_i + \epsilon_{it})$]. Random effects (RE) model corrects for this autocorrelation and thus assumes that the unobserved country fixed effects are uncorrelated over time (Wooldridge 2009:489-491). Therefore, in addition to estimating the FE model, I have used RE models.

Besides using FE and RE model, I have used pooled cross sectional analysis while using the panel data. Although pooled OLS does not consider changes over time and unobserved country heterogeneity, one advantage of using it is that we can have large number of observations (Wooldridge 2009:444-445). In the cross sectional analysis, I have also used the simple OLS method.

3.2 Issues of Endogeneity

One limitation of my empirical model is that it may suffer from some endogeneity problems. Endogeneity may cause if an important explanatory variable is omitted and if there is simultaneity or reverse causality (Wooldridge 2009: 506-567). I have used lagged values of the explanatory variables to reduce the potential endogeneity problems. For example, income growth may itself influence the accumulation of physical and human capital or public spending. Thus by taking the lagged values of these variables, I could reduce the reverse causality. But there might be other factors which has not been included in the model but may have influenced the accumulation of physical, human, and social capital, and at the same time have influenced growth. Although using lagged values might reduce such problems, but still there might be some endogeneity due to these omitted variables. In such case, the OLS assumption that $Cov(x_i, u_i) = 0$ would not be valid and the estimates would be biased (Wooldridge 2009: 506-567).

One solution to the problem could be to introduce an instrumental variable for each endogenous regressor in the model. The identifying restriction of the instrumental variable (IV) requires that the instrument should be highly correlated with the endogenous regressor(s) but are uncorrelated with the dependent variable (here, income growth) unless through the endogenous explanatory variable (s) (Woodridge 2009:506-509). In other words, if the residual factors (u_i) have simultaneous influence on trust (or civic engagement, etc) and growth, I have to introduce a variable that is highly correlated with trust (or civic engagement, etc) but uncorrelated with growth.

Some studies have used the IV regressions to identify the growth effects of institutions or social capital on economic performance. Acemoglu et al. (2001) used European settler's mortality rate in their ex-colonies as the instrument for measuring the effects of exogenous institutions on economic performance. They hypothesized that the mortality rates of the settler soldiers, bishops, etc. were a major determinant of institution-building in the colonies. The Europeans settled and built efficient institutions (secure property rights, rule of law, etc.) in the colonies like Australia, New Zealand, Canada, USA, etc. where mortality rates of the settlers were low. In contrast, they built poor institutions in some African and Latin American states where the mortality rates were high. Thus these early institutions are a major determinant of the current institutions of these states. They used these mortality rates of the settlers as a source of exogenous variation in current economic institutions, which have nothing to do with the current economic performance of these ex-colonial states but through these institutions. Some studies have used a country's 'distance from the equator' as instrument for good institution. The basis of their argument is that a country's geography is a determinant for its institutions (Hall and Jones 1999, Acemoglu et al. 2001).

Knack and Keefer (1997) have used the 'percentage of a country's population in the largest ethnolinguistic group' and the 'percent of law students in post secondary education' for measuring the effects of trust on economic performance. The hypothesis is that the ethnolinguistic fractionalisation represents a country's heterogeneity across different groups thus having high impact on trust but not directly on growth. Similarly, the ratio of law students represents the demand for lawyers, which should be higher in the low trust and crime prone societies but they should not have direct effects on growth.

However, these studies are based on cross-country regressions. As I have used panel data for a wide range of countries, finding time varying instrument(s) having high correlation with the explanatory variables and no correlation with growth as well as having compatible with my dataset is difficult. I didn't come across any panel studies in social capital literature that have used such instruments. The lack of tackling with the endogeneity may be considered one limitation of the model.

3.3 Description of variables

Trust: I have measured *trust* by the index of *'interpersonal safety and trust'* as provided by the **Indices of Social Development (ISD, June 2013)** of the International Institute Social Studies (www.indsocdev.org/). However, most of the empirical literature on social capital has used the World Values Survey (WVS) data to measure *trust* (<http://www.worldvaluessurvey.org/wvs.jsp>). They commonly use the WVS data of *generalized trust* as an indicator of social trust. The *question* that is typically used to measure *trust* is *'generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?'* Thus the percentage of people who have responded 'yes' is taken as the proxy for measuring *trust* at the country level.

However, there are serious criticisms of measuring generalised trust by using this indicator. Because, this single indicator cannot internalise the context within which the respondent answers. Trust is a multidimensional complex phenomenon, and is therefore linked with the underlying social, economic, and political contexts. Therefore, the WVS question that *'if most people can be trusted?'* can convey different implications and meanings to respondents living in the different socioeconomic contexts. The sole reliance on the perception of the individual on a single indicator without contextualising the circumstance thus cannot provide a good measure of trust (Van Staveren 2007, Moore 1999). Moreover, when respondents are asked *'can most people be trusted'*, their response depends on whom they mean by 'most people' i.e., whether they mean their friends and family members or strangers. In low trust societies, people are more likely to interact with their friends and families, whereas in the high trust societies, they are expected to interact more with the strangers (Knack and Keefer 1997). Thus the answer depends very much on the particular contexts in consideration as well as the respondent's memory about the most people they experienced with. All these may lead to different bias and errors in simple generalisation.

Another problem associated with the using of WVS data is due to high frequency of missing observations. There are only a very limited number of countries for which data on all the six waves have been collected. The number of countries for which the WVS data is available in different waves constitutes 60 in w-6, 58 in W-5, 41 in W-4, 57 in W-3, 18 in W-2 and 10 in W-1³. Therefore, conducting *panel* analysis based on the WVS data is not very attractive due to very limited number of observations. A recent study that makes use of the WVS data in panel have admitted this fact and stressed the significance of going beyond WVS data to measure trust – *'WVS' trust data suffer severe missing observation problem and the panel fixed effect estimation using such data produce highly unrobust results. Future research in social capital therefore needs to expand their measure of social capital beyond the WVS trust indicator'* (Hall and Ahmad 2013: 55). This problem of missing data in the WVS is acknowledged in other studies who have attempted to use the WVS in panel data (Dearmon and Grier 2009).

³ 'W' refers to respective wave.

Additional complexities arise in WVS panel analysis due to the timing of data collection in different countries, because the year of data collection is different for different countries. The WVS website provides longitudinal data in the following time periods: w-1(1981 -1984), w-2(1990-1994), w-3(1995-1998), w-4(1999-2004), w-5(2005-2009), and w-6(2010-2014). For example, in the first wave (1981-84), say, we have data for Argentina in 1984, Australia in 1981, South Korea 1982, and so on. Therefore, when someone attempts to make a panel by using this data, s/he has to assume that *trust* is constant over different years in the same wave. Thus it is assumed that *trust* in Argentina in 1984 is comparable with *trust* in Australia in 1981. This is not a problem if we make a naive comparison, but when the panel takes into account changes across time, this sort of assumption creates some problems in adjusting different variables in coherent ways especially when we have to control for other variables.

Thus given the unsuitability of the WVS data, I have attempted to conduct a panel analysis based on the ISD data. The ISD provides data for a wide range of countries during 1990-2010 in five years interval (i.e., 1990, 1995, 2000, 2005, and 2010). The ISD data of *interpersonal safety and trust* is constructed with **42 indicators** comprising indicators of general social trust as well as reported levels of crime victimization and feelings of safety, homicide rates, risks of theft, robbery, etc. Data is pooled from a variety of sources including Afrobarometer, Asian Barometer, World Values Survey, Economist Intelligence Unit, International Crime Victim Survey, Interpol, and so on (www.indsocdev.org). The index is ranked on a 0 -1 scale. A higher value in the index represents better trust and vice versa. An assumption of the ISD interpersonal safety and trust is that safety and trust go hand in hand. Thus if a society is more safe, there is more general trust.

The ISD index is computed with two types of indicators – one type of indicators can be termed as ‘actionable’ indicators. These indicators can be measured directly (for example, respondents experienced theft during last 5 years). The other indicators are ‘perception based’, which are basically taken from the public opinions surveys, expert assessments etc (‘respondents who feel secure in the neighbourhood, ‘Economist intelligence rating on social distrust’, etc) (Foa and Tanner 2012). Someone might argue about the justification for mixing real variables with perception based indicators. However, this does not seem to be the problem as the indicators are constructed by their ordinal values rather than the cardinal values. Another advantage of mixing the real indicators with the perception indicators is that, by doing so the index can internalise the contexts of perception. So, when feeling of safety and trust is added with the experience of theft or crime, this gives more sense about the perception.

The types of indicators used for constructing the ISD index of *interpersonal safety and trust* include - % people feel most people can be trusted; % people never felt unsafe at home/never been attacked; rating of social distrust by Economist Intelligence Unit; % people feel safe during walk alone at night; % people experienced events like theft of car/ burglary/robbery/assault/ sexual offence, etc in 5 years; Interpol rape rate; Interpol/WHO/UNCJIN homicide rate; % people experienced attempted abduction

(homicide)/street crime, etc; US State Department crime advisories; % managers who believe that crime is a prime obstacle to business, etc (<http://www.indsocdev.org/home.html>; accessed on 01 July 2015) **(The full list of the indicators used for constructing the index is given in Appendix 6).**

Given the lack of data coverage on social indicators, the ISD index provides data on five types of social institutions. The ISD are composite indices which pool data on 200 indicators on these five types of social institutions and from 25 different sources. The ISD five composite indices are - (a) *civic activism*; (b) *clubs and associations*; (c) *intergroup cohesion*; (d) *interpersonal trust and safety*; and (e) *gender equity*. Composite indices are particularly useful in circumstances where an individual indicator is not sufficient to represent some complex multidimensional phenomenon or where there is limited data coverage for an individual indicator (Foa and Tanner 2012). For example, the rate of enrolment in primary or secondary schools might be useful to proxy for the human capital variables; but it is quite difficult to provide statistics on social capital or governance institutions through some one or two indicators. Even if such measurable indicators are available, the sole reliance on such indicators is often constrained by the limitedness of data. For example, WVS provides data on *generalised trust* for a very limited number of countries while Economist Intelligence Unit provides a ranking on social distrust for a wide range of countries. In such cases, combining indicators and pooling data from a wide range of sources to get an aggregate composite index might be useful (Foa and Tanner 2012).

The ISD is constructed based on ‘*matching percentile*’ method as developed by Lambsdorff (2006) in the corruption perception index. It is an iterative process by which countries are ranked based on the values of an earlier (‘master’) indicator and then indicators are added successively. While adding an additional indicator, a country is ranked on the scores of that indicator and then is assigned an equivalent value of the ranking of the master indicator. Finally the values are averaged to get the index. A country is ranked and indexed for an indicator if the indicator is matched by at least 3 independent sources. The same process is repeated 1,000 times by altering the master indicators (‘bootstrapping’) (Foa: ‘Indices of Social Development Handbook’⁴, Foa and Tanner 2012, Lambsdorff 2006).

The process of constructing the ISD index is explained in Box 1. It shows how the countries are ranked and indexed. For example, say, in the initial/master indicator, countries are ranked as follows – Netherlands (0.55), Brazil (0.42), Bangladesh (0.35), Nepal (0.32), and Sudan (0.30). Now if an additional indicator *Var 2* is added, countries will be ranked and then given the corresponding equivalent value in terms of the ranking of the master indicator. So for *Var 2*, the matched score of Bangladesh (which is ranked 1) will be 0.55, which is the corresponding value of the country ranked 1 in master indicator. Similarly the values for Sudan, Nepal, Netherlands, and Brazil will be

⁴ Foa, R.(undated) ‘Indices of Social Development Handbook’ (<http://www.indsocdev.org/resources/Indices%20of%20Social%20Development%20Handbook.pdf>; accessed on 01 October 2015).

0.42, 0.30, 0.32, and 0.35 respectively for *Var 2*. The same logic is applied for the rest of the variables (see Box 1).

In a context of limited data coverage, the matching percentile methods of constructing composite indicators is attractive due to several reasons – **First**, because the method is non-parametric, it is possible to have unbiased score even when there is limited number of observations. This is an advantage over the regression based aggregation methods (like regression principle component analysis, factor analysis, etc) because such methods have to drop missing observations and are therefore likely to produce biased results with limited number of observations. **Second**, it can add indicators for which there is large number of missing observations. This is more so when we have a large number of missing observations for a highly accredited variable (Foa and Tanner 2012). **Third**, a single indicator from a single source may have potential measurement errors due to reporting bias, sampling error, low concept validity, etc. Assuming that errors are not correlated with data sources and that errors are constant across different items, this method of combining multiple indicators can reduce the potential measurement error associated with a single indicator (Foa: ‘Indices of Social Development Handbook’⁵).

BOX 1								
Computing methodology of the ISD index								
Step 1: Ranking								
Country	Master Variable	Rank	Var 2	Rank	Var 3	Rank	Var 4	Rank
Bangladesh	0.35	3	0.50	1	0.40	2	0.35	2
Sudan	0.30	5	0.45	2	NA	NA	NA	NA
Nepal	0.32	4	0.30	5	0.30	4	NA	NA
Netherlands	0.55	1	0.38	4	0.35	3	0.45	1
Brazil	0.42	2	0.40	3	0.57	1	0.30	3
Step 2: Indexing								
		Matched score	Matched score	Matched score				Avg. Score
		(Var 2)	(Var 3)	(Var 4)				
Bangladesh		0.55	0.42	0.42				0.46
Sudan		0.42	NA	NA				NA
Nepal		0.30	0.32	NA				0.31
Netherlands		0.32	0.35	0.55				0.41
Brazil		0.35	0.55	0.35				0.42

(Reference: Foa et al. (2011)⁶)

⁵ Foa, R.(undated) ‘Indices of Social Development Handbook’ (<http://www.indsocdev.org/resources/Indices%20of%20Social%20Development%20Handbook.pdf>; accessed on 01 October 2015).

⁶ The idea of this example is taken from Foa, R., A. de Haan, I. van Staveren, E. Webbink, and H. Hardenbol (2011) ‘Indices of Social Development’, Launch, International Institute of Social Studies, The Hague (16 March 2011).

Although this method has some advantages, it might have some potential limitations also. **First**, a disadvantage of the composite index is that it encompasses so many variables that it is difficult to single out what the index score particularly stands for. **Second**, while ranking a particular indicator, matching percentile method does not consider the missing observations for that indicator and ranks countries based on the available observations on that indicator. It may cause potential error in the ranking of a variable as we don't know the potential ranking of the country which has not been considered for a particular variable. Perhaps, if we had the data, the ranking for a particular indicator could be otherwise than what has been made on the basis of the available observations. **Third**, the matching percentile method cannot always reduce the drawback that results from the potential measurement errors of a single indicator because the minimum required number of sources has been assigned at only 3 to qualify in the index.

In spite of these, the indices seem to be a good working tool for the reasons delineated above and given the dearth of data on social capital. Moreover, the authors of the ISD have conducted numerous diagnostic analyses to test the robustness of these indices, which suggest high degree of reliability of the ISD. They compared the 'actual' ISD indices with some 'imputed' indices which have been generated after imputing the missing observations based on certain socio-economic factors. They found that these indices are highly correlated with the imputed indices thus suggesting the robustness of these indices (Foa and Tanner 2012).

Civic Engagement: I have measured civic engagement by the ISD *civic activism* index. The index is also constructed following the same procedure as like the *interpersonal safety and trust* (i.e., *matching percentile* method). The index consists of 33 different indicators collected from different sources including Afrobarometer, Civicus, Latinobarometer, International Telecommunication Union, Global Civil Society project, World Values Survey, etc. This index is also measured in 0-1 scale and the higher value means better civic involvement. The indicators include data on citizen's access to media, involvement and activities of the INGOs, involvement in peaceful demonstrations, etc.

The following types of indicators have been used - Civil Society ratings by Civicus ; % people participated/ready to participate in peaceful demonstrations; % people signed/ready to sign petitions; density of international organizations / memberships with the INGOs/ employment in the NGO sector; % people accessed newspapers; % people accessed radio news; % people accessed TV news; % people used books to know current world issues; % people used internets/email to know current world issues, etc. (<http://www.indsocdev.org/home.html>; accessed on 01 July 2015) **(The full list of indicators is given in Appendix 7).**

Institutions: According to Acemoglu et al. (2001, 2005), institutions are the fundamental causes that explain the large differences in income across countries in the long run. The hypothesis is that countries with better institutions (with secured property rights, less distortionary policies, etc) can invest more in the accumulation of

physical and human capital and grow faster than those with poor quality institutions. Acemoglu et al. (2005) suggested that the political institutions should be distinguished from economic institutions. Some authors have termed economic institutions as the institutions of governance (Murshed et al. 2015). In line with these views, I use two concepts of institution – (a) political/democratic institution; and (b) economic/governance institution.

According to Knack and Keefer (1997), in addition to social capital's direct effect on growth (which works through accumulation of physical and human capital), it can indirectly impact on growth through institutional development – i.e., increased confidence in government, increased bureaucratic efficiency, secured property rights and increased contract enforceability. Putnam (1993:83-116) found that increased stock of social capital (i.e., better civic engagement) improves the quality of governance and democracy.

According to these arguments, I want to examine if social capital has any impact on institutional quality. I have measured institutions by two indices – (a) The International Country Risk Guide (ICRG) index of *bureaucratic quality*. The ICRG index is a widely used measure of institution, which measures the institution of *governance*. The ICRG data is accessed through the PRS (Political Risk Services) group (<http://www.prsgroup.com>)⁷. The index is scored on 0-4 scale. A higher value in the index indicates better institution. The higher score in the ICRG bureaucratic quality refers to greater autonomy of the bureaucracy to implement policies without the influence of the government (Howel 2013). (b) The second type of institutional indicator that I have used is the *polity 2* index of the *polity IV* data, which measure the extent of democracy and autocracy of the political regime (<http://www.systemicpeace.org/inscrdata.html>; accessed on 28 August, 2015). The index gives a combined democracy and autocracy score of a political regime. It ranges from -10 (perfect autocracy) to +10 (perfect democracy) (Marshall et al. 2014)

Per Capita Income: Per capita income is usually taken in the growth regressions to control for the 'catch up' effects. According to Solow model, countries with low initial per capita income should grow faster than countries with high per capita income, called the convergence hypothesis (Ray 1998: 47-94; Jones 1998: 18-65). So I control for the per capita income and hypothesize a negative sign of the coefficient according to the logic of Solow model. I have measured per capita income by using data of per capita GDP at constant 2005 US dollar, as provided in the World Development Indicators (WDI) of the World Bank (<http://data.worldbank.org/data-catalog/world-development-indicators>; accessed on 30 July, 2015).

Physical capital: Increased savings and investment in physical capital is the key to increase growth according to the Harrod-Domar model (Ray 1998:51-57). Therefore,

⁷ I have accessed the data from the EDEM research group of the International Institute of Social Studies (ISS), The Hague, The Netherlands.

I expect a positive sign of the physical capital variable. I have measured physical capital by the *gross fixed capital formation (% of GDP)* data of the WDI of the World Bank⁸.

Human Capital: Human capital is an important instrument of growth in the new growth theories, called the endogenous growth models. These theories consider that increased investment in human capital (health, education) increases productivity through influencing labour-productivity and technological progress (Ray 1998: 99-125). Thus I expect a positive sign of the coefficient of human capital. To measure human capital, I have used the average years of schooling of the 15+ years of population of the Barro Lee data set¹ (<http://www.barrolee.com/>; accessed on 28 August, 2015) to measure human capital.

Government expenditure-GDP ratio: Government expenditure is an important policy tool for enhancing growth in the Keynesian economics. If the economy has spare capacity, government can increase national income by stimulating effective demand through increasing its public spending, which works through a multiplier process. However, the role of government policies is denied in the supply side economics (Bannock et al. 1998). I have controlled for this variable as it is an important macroeconomic variable, which might have impacts on growth. I have used the data of '*general government final consumption expenditure (% of GDP)*' of the WDI data to measure government expenditure-GDP ratio.

Trade openness: The impact of trade openness on economic growth occupies a central position in the recent development literature. While some literature have argued that trade is beneficial for growth others have considered it is harmful (Dollar and Kraay 2004, Rodriguez and Rodrik 2000). So, the associated sign is a matter of empirical question. I have used the '*trade-GDP ratio (%)*' of the WDI data (where trade is the sum of export and import of goods and service) to measure trade openness.

4 Data Description

4.1 Descriptive Statistics: Panel Data

The whole sample consists of an unbalanced panel of 149 countries comprising 5 yearly data from 1990 to 2010 on social capital, institutions, physical and human capital and other macro variables. Table 2 presents the descriptive statistics of data of total sample and also in 2010 sample. It shows that the total number of observations is the lowest for the trust variable (534) whereas it is the highest for the civic activism variable (709) in the whole sample. Therefore, in order to reduce the missing number of observations, I have made two separate estimation panels for computing the growth regressions –

⁸ It includes land improvements; purchases of plant, machinery, and equipment; and the construction of roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings (<http://data.worldbank.org/data-catalog/world-development-indicators>; accessed on 30 July, 2015).

The first panel is comprised of trust and associated variables but without civic activism and institutional variables; the second panel is comprised of the civic activism and associated variables but without trust and institutional variables (Table 3). The list of countries in the whole sample as well as in the growth estimations samples is given in Appendices 1-3.

The first estimation panel is meant for examining the relationship between trust and economic growth and the second panel is for the relationship between civic activism and economic growth. I have dropped the missing observations associated with any variables from each of these two growth estimation samples. The descriptive statistics of these two estimation samples is shown in Table 3. It shows that the final number of observations in the first panel, after dropping the missing observations, is 429 for all variables (except growth which is 309). The final number of observations for the second estimation panel is 546 for all other variables and is 423 for growth variable (Table 3).

In order to see if there is significant difference between the whole sample and these two estimation samples, I have conducted mean difference tests (t-tests) for all variables. The results of these tests show that there are no significant mean differences for a majority of the variables except per capita income and human capital variable in the first estimation sample (Table 3). Although these two variables exhibit significant differences, a visible inspection shows that the differences are not so unbalanced. Moreover, by splitting the whole sample, I can reduce the number of missing observations for the second estimation panel.

TABLE 2
Summary statistics (all sample)

Variable	All sample (1990-2010)			All sample (2010)		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Per capita income (PCI)(at \$ 2005)	682	11143.20	16376.85	138	12454.78	16770.39
Interpersonal safety and trust (0-1 scale)	534	0.50	0.10	139	0.47	0.11
Civic activism (0-1 scale)	709	0.52	0.10	143	0.52	0.06
Physical capital (% GDP)	677	22.60	10.35	136	23.18	8.10
Human capital (mean yrs. of schooling)	635	7.78	2.71	127	8.74	2.62
Govt. expenditure (% GDP)	674	16.15	6.27	136	16.25	5.66
Trade openness (% GDP)	693	85.13	54.12	139	91.20	56.41
Polity2 (-10 to+10 scale)	630	3.33	6.87	130	4.11	6.40
ICRG bureaucratic quality (0-4 scale)	583	2.29	1.12	121	2.31	1.05

TABLE 3
Summary statistics of the growth estimation samples

	<i>Estimation panel 1</i>			<i>Estimation panel 2</i>		
	Obs.	Mean (Std. dev.)	t-test (p-value)	Obs.	Mean (Std. dev.)	t-test (p-value)
Interpersonal safety and trust (0-1 scale)	429	0.51 (0.10)	1.54 (0.12)	-	-	-
Civic activism (0-1 scale)	-	-	-	546	0.53 (0.11)	1.76 (0.08)
Per capita income (at \$2005)	429	13524.53 (16056.17)	2.38 (0.02)	546	11317.79 (15212.33)	0.19 (0.85)
Physical capital (% GDP)	429	22.17 (5.36)	0.80 (0.43)	546	21.81 (6.25)	1.57 (0.12)
Human capital (mean yrs. Of schooling)	429	8.51 (2.46)	4.45 (0.00)	546	7.82 (2.78)	0.25 (0.80)
Govt. expenditure (%GDP)	429	16.14 (5.46)	0.03 (0.98)	546	16.02 (5.66)	0.38 (0.71)
Trade openness (% GDP)	429	86.20 (57.63)	0.32 (0.75)	546	83.45 (53.38)	0.55 (0.59)
Growth	309	0.12 (0.13)	0.76 (0.45)	423	0.10 (0.15)	0.83 (0.41)

Note: Figures in the parenthesis denotes standard deviations for means and p-values for t-tests.

Table 2 presents the summary statistics of the variables in 2010 to give some idea about the recent state of the variables used in the dataset. It shows that the average per capita income of the sample countries is \$ 12,455 in 2010 (at constant \$ 2005). The high average per capita income reflects the fact that some high income countries (like Liechtenstein, Luxembourg, Bermuda, Norway, etc) are in the sample. Similarly some countries with very low per capita income (Ethiopia, Eritrea, Mozambique, etc.) are also in the sample of countries. This makes a high standard deviation of the per capita income variable (\$ 16,770).

The average value of the trust index is 0.47 in 2010, with a standard deviation of 0.11. Countries with high trust and safety in 2010 include UAE (0.68), Switzerland (0.65), Hong Kong (0.65), Denmark (0.64), Belgium (0.61), etc. Countries with low scores in the index constitute Cote d'Ivoire (0.23), Papua New Guinea (0.24), Jamaica (0.24), Venezuela (0.27), Cameroon (0.28), Brazil (0.29), etc (See details in Appendix 10).

The average score of civic activism index in 2010 is 0.52, with a standard deviation 0.06. Among countries with high civic involvement, the following are noticeable - Seychelles (0.75), Sweden (0.68), Australia (0.66), Norway (0.66), Finland (0.65), Switzerland (0.65), USA (0.64), Netherlands (0.62), etc. Countries like Myanmar (0.40), Uzbekistan (0.42), Bangladesh (0.42), Bhutan (0.42), Yemen (0.43), Cambodia (0.43), etc. constitute among those with low civic norms (See details in Appendix 10).

The average *polity2* score is 4.1 with a standard deviation 6.4. The high standard deviation is due to the range of the polity score (-10 to +10). The three part classification of the polity is defined as ‘autocracy’ (-10 to -6), ‘anocracy’ (-5 to +5) and ‘democracy’ (+6 to +10). Thus the mean value of +6.4 indicates that the sample countries, on average, are slightly above the democracy scale. The high standard deviation indicates high variation in the regime characteristics of the countries. The average value of the ICRG *bureaucratic quality* index is 2.3. The ICRG index is scaled on 0-4 score. So the mean value indicates that countries, on average stand at the middle of the scale with a standard deviation of 1.1.

On average, the sample countries’ fixed capital formation constitutes 23.2 % of GDP in 2010 sample. The average schooling is 8.7 years. The average government expenditure GDP ratio is 16.3% and the trade-GDP ratio is 91.2 %.

4.2 Descriptive Statistics: Cross-Section Data

Table 4 presents the descriptive statistics associated with cross sectional growth regressions. It shows that the number of countries is only 42 when the impact of trust on growth is estimated for 1990-2010 periods, but it increases to 67 if it is estimated for 1995-2010 periods. This is because of more missing values of the trust variable in 1990. This is why I have run the trust-growth regressions for the two time periods (both 1990-2010 and 1995-2010) to see how the result changes when the number of countries increases. However, this is not the case with civic activism, as I don’t have missing observation for 1990.

It should be noted that only 12 out of the 42 countries (29%) in the growth regression 1990-2010 constitute low and middle income groups (according to WDI income classification)⁹ The other countries are in the high income non-OECD and OECD countries **(The list of all 42 countries is in Appendix 4)**. However, as I consider the growth regression 1995-2010, the number of countries in the low and middle income group increases to 23 but the proportion still remains marginally above one-third of the countries (34%)¹⁰ **(The list of all 67 countries is in Appendix 5)**.

TABLE 4
Summary statistics (cross section sample)

⁹ These 12 countries are - Brazil, Bulgaria, China, Costa Rica, Ecuador, Egypt, India, Indonesia, Peru, Philippines, Sri Lanka, and Tanzania.

¹⁰ These countries are – Albania, Bolivia, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Ecuador, Egypt, El Salvador, Guatemala, India, Indonesia, Kyrgyz Republic, Moldova, Panama, Paraguay, Peru, Tanzania, Uganda, Ukraine, and Zimbabwe.

	Observations	Mean	Std. Dev.
<i>Cross section sample for growth calculation (1990 -2010)</i>			
Interpersonal safety and trust (1990)	42	0.54	0.02
Civic activism (1990)	100	0.54	0.13
Govt. expenditure (1990)	100	21.98	7.11
Physical capital (1990)	100	6.74	2.70
Human capital (1990)	100	16.43	6.33
Trade openness (1990)	100	66.34	38.96
Growth (1990-2010)	100	0.39	0.30
<i>Cross section sample for growth calculation (1995-2010)</i>			
Interpersonal safety and trust (1995)	67	0.55	0.03
Civic activism (1995)	67	0.60	0.13
Govt. expenditure (1995)	67	16.69	5.35
Physical capital (1995)	67	22.35	5.58
Human capital (1995)	67	8.55	2.04
Trade openness (1995)	67	73.75	50.63
Growth (1995-2010)	67	0.38	0.24

5 Results and Analysis

5.1 Trust and Growth: Cross-Sectional Analysis

To analyze the cross-sectional relationship between trust and growth, I have computed the growth of per capita income for two time periods -1990- 2010 and 1995-2010. Growth has been calculated as: *log of per capita income in 2010 minus log of per capita income in 1990 (or 1995)*. This growth rate has been regressed against the initial value of trust, log per capita income, and physical and human capital, and other control variables at their levels. Table 5 presents the result of OLS regression. Model 1 and 3 control for trust, physical and human capital, and log income in 1990 (or 1995). Model 2 and 4 control for two other variables – government expenditure, and trade openness. In all specifications, the signs of the coefficients of trust indicate positive relationship between trust and growth. The result does not indicate significant growth impact of trust during 1990-2010. However, if I consider growth during 1995-2010 instead of 1990-2010, the number of observation increases from 42 to 67 and the trust coefficient trust into being significant at 10% level.

The size of the coefficient of *trust* in model 1 indicates that a one standard deviation increase in trust is associated with a 0.12 standard deviation increase in growth over a period of twenty years ($0.02 \times 6.030 = 0.12$), which is 40% of the standard deviation of growth¹¹. According to model 2, a one standard deviation increase in trust increases growth by also the same standard deviation. The corresponding increases in growth are 0.08 standard deviations both in models 3 and 4 ($0.03 \times 2.52 = 0.08$), which are 32% of the standard deviation of growth¹².

¹¹ Table 4 shows that the standard deviation of trust and growth are 0.02 and 0.30 respectively for the growth model (1990-2010).

¹² From table 4, we can see that the standard deviations of trust and growth have been estimated to be 0.03 and 0.24 respectively for the growth model (1995-2010).

TABLE 5
Relationship between trust and growth in cross-sectional analysis

	OLS results			
	Growth (1990-2010)		Growth (1995-2010)	
	(1)	(2)	(3)	(4)
Initial value of interpersonal safety and trust	6.030 (3.22)	5.943 (3.57)	2.520* (1.11)	2.519* (1.24)
Log initial income	-0.194*** (0.05)	-0.191** (0.07)	-0.120*** (0.03)	-0.119*** (0.03)
Initial physical capital	-0.003 (0.01)	-0.003 (0.01)	0.002 (0.01)	0.002 (0.01)
Initial human capital	0.043 (0.02)	0.042 (0.02)	0.042*** (0.01)	0.044** (0.01)
Initial govt. expenditure		-0.001 (0.01)		-0.001 (0.01)
Initial trade openness		0.000 (0.00)		-0.000 (0.00)
Constant	-1.370 (1.52)	-1.336 (1.64)	-0.362 (0.54)	-0.356 (0.58)
N	42	42	67	67
R-squared	0.539	0.540	0.254	0.254

Note: Values in the parentheses indicate robust standard errors. The asterisk signs (***, **, and *) indicate significance at 1%, 5%, and 10% levels respectively.

It is observed that the coefficient of the initial per capita income is significant at 1% levels in models 1 and 3 and at 5% levels in models 2 and 4. It thus provides support in favour of the convergence hypothesis. It is somewhat puzzling as the sign of the physical capital is negative in models 1 and 2, although the results are statistically insignificant. The signs of human capital are positive which is in line with conventional wisdom and the results are significant in models 3 and 4. The two other variables seem to have no impacts on growth, although the sign of government expenditure is negative. Although models 1 and 2 explains much of the variations in growth as compared to 3 and 4 (54% versus 25%), they have less number of observations. The inclusion of the two other variables (models 2 and 4) does not seem to add much explanatory powers.

5.2 Trust and Growth: Panel Analysis

Table 6 presents the results of pooled OLS regression. It suggests that the sign of the trust coefficient is positive but not significant at conventional level. The magnitudes of the coefficients in both models suggest that a one standard deviation increase in trust in the previous 5 years is associated with a 0.014 standard deviation increase in growth in the next 5 years ($0.10 \times 0.14 = 0.014$), which is 10.8 % of the standard deviation of growth¹³.

TABLE 6
Relationship between trust and growth in pooled panel analysis

Growth	Pooled OLS	
	(1)	(2)
Lag interpersonal safety and trust	0.140 (0.08)	0.137 (0.08)
Log of lag PCI	-0.043*** (0.01)	-0.042*** (0.01)

¹³ Table 3 shows that the standard deviations of trust and growth are respectively 0.10 and 0.13 for the growth estimation panel 1.

Lag physical capital	0.003 (0.00)	0.003 (0.00)
Lag human capital	0.013*** (0.00)	0.013*** (0.00)
Lag govt. expenditure		-0.001 (0.00)
Lag trade openness		0.000 (0.00)
Constant	0.239*** (0.05)	0.246*** (0.05)
N	309	309
No of countries	111	111
R-squared	0.153	0.156

Note: Values in parentheses indicate robust standard errors. The asterisk signs (***) indicate significance at 1% level.

The hypothesis of convergence is supported at 1% level in both the models. The impact of human capital variable in previous period is positive and significant on the growth of subsequent period at 1% level. The impact of physical capital is positive but not significant. Trade openness and government expenditure at the preceding period has no impacts on the growth of next period.

Table 7 shows the results of panel fixed and random effect models. Models 1- 2 show results of FE estimations and models 3-4 show results of RE estimations. The results of these models suggest that the sign of the coefficient of trust is negative in all 4 specifications. Thus the results of fixed and random effect models indicate contrasting findings as opposed to the results of cross-sectional and pooled OLS regressions where the associated signs are positive. However, the results are not statistically significant except model 3 where it is significant at 10% level. Although it is conceptually difficult of understand why trust should have significant negative impacts on growth, such findings also exist in literature. Roth (2009), for example, found similar sort of findings in panel analysis of trust-growth relationships by using World Values Survey data. The contradictory result about the impact of trust on growth might be an indication of the complex nature of social capital or lack in the operationalising trust. The result calls for a need to further investigate the impact especially in panel data, which involves the challenge in operationalizing trust as well as collecting time series data on trust at the macro levels.

TABLE 7
Relationship between trust and growth in panel analysis

Growth	Fixed Effects		Random Effects	
	(1)	(2)	(3)	(4)
Lag interpersonal safety and trust	-0.283 (0.17)	-0.352* (0.15)	-0.055 (0.12)	-0.079 (0.12)
Log of lag PCI	-0.499*** (0.12)	-0.474*** (0.12)	-0.045*** (0.01)	-0.045*** (0.01)
Lag physical capital	-0.000 (0.00)	-0.001 (0.00)	-0.000 (0.00)	-0.001 (0.00)
Lag human capital	0.026 (0.02)	0.017 (0.02)	0.017*** (0.00)	0.018*** (0.00)
Lag govt. expenditure		-0.011*** (0.00)		-0.002 (0.00)
Lag trade openness		0.001* (0.00)		0.000 (0.00)
Constant	4.248***	4.278***	0.379***	0.414***

	(1.01)	(1.00)	(0.08)	(0.08)
N	309	309	309	309
No of countries	111	111	111	111
R-squared	0.339	0.397	0.1948	0.1550
Hausman [models 1 and 3 (without robust errors)]	chi2(7)= 111.96 (Prob>chi2 = 0.0000)			
Hausman [models 2 and 4 (without robust errors)]	chi2(9) (Prob>chi2 = 0.0000)			

Note: Values in parentheses indicate robust standard errors. The model considers time effects also. The R-squared value indicates within R-squared for FE model and between R-squared for RE model. The asterisk signs (***, and *) indicate significance at 1%, and 10% levels respectively.

The sign and significance of PCI support in favour of convergence, with 1% levels of significance in all of the models. The effects of human capital are positive and they are significant in the RE models. The physical capital shows very minuscule impact and the sign is not as expected. The inclusion of the government expenditure and trade openness (in model 2) increases some explanatory powers, and the coefficient of government expenditure is negative and significant at 1% level. It indicates that increase in public spending has negative association with growth in the subsequent periods. In model 2, trade openness is significant at 10% level and positive but the magnitude of the impact is very small. The FE models explains about 34-40% of the within variations while the RE models explain 16-19% of the between variations. The Hausman test results indicate that the estimates of the FE model are consistent and efficient (Table 7).

5.3 Civic Activism and Growth: Cross-Sectional Analysis

Table 8 presents the results of the cross-sectional regressions about the effect of civic activism on growth. It suggests a positive sign of the coefficient of civic activism in both specifications which is not significant. The value of the coefficient of civic activism in model 1 tells that a one standard deviation increase in its value is associated with a 0.11 standard deviation increase in growth over a period of twenty years ($0.13 \times 0.822 = 0.11$), which is 36.7 % of the standard deviation of growth¹⁴. Model 2 also suggests the increase (0.11) in the standard deviation of growth by the same magnitude due to one standard deviation increase in civic activism.

The sign of log income is negative thus indicating convergence. Physical capital show positive impacts and is significant at 10% level in model1 and at 5% level in model2. The impact of human capital is not significant. Model 1 explains only 11% of the variation. When the two other variables are controlled for (in model 2), the relative explanatory power increases to 18%.

¹⁴ Table 4 shows that the standard deviations of civic activism and growth are estimated to be 0.13 and 0.30 respectively for the cross sectional growth model 1990-2010.

TABLE 8
Relationship between civic activism and growth in cross sectional analysis

Growth (1990-2010)	OLS result	
	(1)	(2)
Civic activism (1990)	0.822 (0.42)	0.862 (0.46)
Log initial PCI (1990)	-0.083* (0.04)	-0.076 (0.04)
Physical capital (1990)	0.009* (0.00)	0.010** (0.00)
Human capital (1990)	-0.004 (0.02)	-0.005 (0.02)
Govt. expenditure (1990)		-0.013** (0.00)
Trade openness (1990)		0.001 (0.00)
Constant	0.446* (0.22)	0.486* (0.21)
N	100	100
R-squared	0.109	0.175

Note: Values in parentheses indicate robust standard errors. The asterisk signs (**, and *) indicate significance at 5% and 10% levels respectively.

5.4 Civic Activism and Growth: Panel Analysis

Table 9 shows the results of the pooled OLS regression. Both models 1 and 2 indicate significant (at 5% and 1% levels respectively) and positive effects of civic activism on growth. The size of the coefficient of civic activism in model 1 suggests a 0.06 standard deviation increase in growth in the next 5 years ($0.11 \times 0.504 = 0.055$) due to a one standard deviation increase in civic activism in the previous 5 years, which is 37 % of the standard deviation of growth¹⁵. According to model 2, the corresponding increase is also 0.06 standard deviations. The result again validates the hypothesis of convergence at 1% level. The significance of the other control variables is not so profound. The relative explanatory powers of these two models constitute 11% and 13% respectively.

¹⁵ From table 3, the standard deviations of civic activism and growth are 0.11 and 0.15 respectively for the growth estimation panel 2.

TABLE 9
Relationship between civic activism and growth in pooled panel analysis

Growth	Pooled OLS	
	(1)	(2)
Lag civic activism	0.504** (0.15)	0.533*** (0.16)
Log of lag PCI	-0.034*** (0.01)	-0.034*** (0.01)
Lag physical capital	0.002 (0.00)	0.002 (0.00)
Lag human capital	-0.001 (0.01)	-0.001 (0.01)
Lag govt. expenditure		-0.002 (0.00)
Lag trade openness		0.000* (0.00)
Constant	0.008 (0.07)	0.021 (0.07)
N	423	423
R-squared	0.113	0.126

Note: Values in parentheses indicate robust standard errors. The asterisk signs (**, and ***) indicate significance at 1% and 5% levels respectively.

The results of panel fixed and random effect models (in table 10) strongly support in favour of the findings of pooled OLS regressions (in table 9). They suggest that civic activism has highly statistically significant and positive impacts on growth (at 1% level) across all the specifications. According to model 1 and 2, a one standard deviation increase in civic activism in the preceding 5 years causes a 0.06 standard deviation increase in growth in the subsequent 5 years ($0.11 \times 0.55 = 0.060$), which is 40 % of the standard deviation of growth. The magnitude of the coefficients in models 3 and 4 dictate that a one standard deviation increase in civic involvement associates 0.07 and 0.08 standard deviations increases in growth respectively, which are 46.7% and 50.9% of the standard deviations of growth¹⁶.

The impact of lagged income is negative at 1% level in all specifications thus supporting convergence. The other variables don't have significant impacts. The FE results explain about 49% of the within variation in model 1 and 51% the within variations in model 2. The Hausman test results suggest that the estimates of the FE model are consistent and efficient.

TABLE 10
Relationship between civic activism and growth in panel analysis

	Fixed Effect		Random Effect	
	(1)	(2)	(3)	(4)
Lag civic activism	0.553*** (0.12)	0.550*** (0.11)	0.663*** (0.15)	0.694*** (0.15)
Log of lag PCI	-0.638*** (0.10)	-0.622*** (0.10)	-0.053*** (0.01)	-0.054*** (0.01)
Lag physical capital	-0.001 (0.00)	-0.001 (0.00)	-0.002 (0.00)	-0.002 (0.00)
Lag human capital	0.007 (0.02)	0.005 (0.02)	0.003 (0.01)	0.003 (0.01)
Lag govt. expenditure		-0.006		-0.003

¹⁶ Table 3 shows that the standard deviations of civic activism and growth are 0.11 and 0.15 respectively.

		(0.00)		(0.00)
Lag trade openness		0.001		0.000*
		(0.00)		(0.00)
Constant	4.899***	4.842***	0.131	0.153
	(0.75)	(0.75)	(0.08)	(0.08)
N	423	423	423	423
No of countries	118	118	118	118
R-squared	0.491	0.509	0.043	0.035
Hausman [models 1 and 3 (without robust errors)]		chi2(7)= 1057.20 (Prob>chi2 = 0.0000)		
Hausman [(models 2 and 4 (without robust errors)]		chi2(9)= 43.26 (Prob>chi2 = 0.0000)		

Note: Values in parentheses indicate robust standard errors. The model considers time effects also. The R-squared value indicates within R-squared for FE model and between R-squared for RE model. The asterisk signs (***) indicate significance at 1% levels.

It is sometimes argued that panel FE results may not give good estimates once the per capita income (PCI) and human capital variables are controlled for (Durlauf et al. 2004, as cited in Murshed et al. 2015). It is argued that there is no need to control for their fixed effects as the PCI and human capital already captures the unobserved heterogeneity across countries. As such, I have run FE models without controlling for the PCI and human capital variables (Table 11). The results suggest that the coefficients are still significant at 1% levels and the magnitude of the coefficients does not change much. However, the relative explanatory power declines considerably.

TABLE 11
Relationship between civic activism and growth in panel alternative specifications (without income and human capital variables)

	Fixed Effect results			
	(1)	(2)	(3)	(4)
Lag civic activism	0.533*** (0.13)	0.521*** (0.12)	0.519*** (0.12)	0.505*** (0.12)
Lag physical capital	-0.006* (0.00)	-0.006* (0.00)	-0.007* (0.00)	-0.007* (0.00)
Lag govt. expenditure			-0.011* (0.00)	-0.011* (0.00)
Lag trade openness			0.001 (0.00)	0.001 (0.00)
Lag human capital		-0.015 (0.02)		-0.017 (0.02)
Constant	-0.107 (0.08)	0.003 (0.15)	0.029 (0.14)	0.156 (0.21)
N	423	423	423	423
No of countries	118	118	118	118
R-squared	0.146	0.148	0.187	0.189

Note: Values in parentheses indicate robust standard errors. The model considers time effects also. The R-squared indicates within R-squared value. The asterisk signs (***, *) indicate significance at 1% and 10% levels respectively.

In order to compare the results of the growth impacts of civic activism by economic status of the countries, I have divided the whole estimation sample by economic classification of the countries. The categorisation of the sample countries is based on WDI data income group classification. WDI classifies countries according to 5 economic groups – (a) low income, (b) lower middle income, (c) upper middle income, (d) high income (non-OECD), and (e) high income (OECD). In my panel estimation sample (2) of 118 countries (n=423), I have 9 countries in low income (n=35), 30 countries in lower middle income (n=109), 26 countries in upper middle

income (n=92), 21 countries in high income non- OECD (n=69), and 32 countries in high income OECD groups (n=118). Thus I have divided these 118 countries in two broad economic categories – low and middle income countries (including lower and upper middle countries = 65 countries) and high income countries (both OECD and non-OECD countries=53 countries).

Table 12 presents the pooled OLS and panel fixed and random effects results for these two groups of countries. The results show that the significance of civic activism on growth is relatively higher and more pronounced in the high income countries than the low and middle income countries. In the high income countries, pooled OLS and RE coefficients of civic activism are significant at 5% and 1% levels respectively whereas the FE coefficient is significant at 10% level. In the low and middle income countries, the pooled OLS and RE coefficients of civic activism shows low level of significance (10% level both) but the FE coefficient is not significant. Although the level of significance is lower in the low and middle income countries, the relative magnitudes of the coefficients are not lower always. The pooled OLS and RE coefficients of civic activism in low and middle income countries are higher than the corresponding coefficients in the high income countries. However, the FE coefficient of civic activism is higher in the high income countries than the low and middle income countries.

TABLE 12
Relationship between civic activism and growth by economic status of countries

Growth	High Income countries			Low and middle income countries		
	(OECD and non-OECD)			Pooled OLS	Fixed Effects	Random Effects
	Pooled OLS	Fixed Effects	Random Effects			
Lag civic activism	0.400** (0.14)	0.341* (0.13)	0.471*** (0.12)	0.742* (0.34)	0.277 (0.25)	0.648* (0.30)
Log of lag PCI	-0.078** (0.02)	-0.418*** (0.12)	-0.098*** (0.02)	-0.029* (0.01)	-0.617*** (0.14)	-0.048* (0.02)
Lag physical capital	-0.005 (0.00)	-0.013** (0.00)	-0.010 (0.01)	0.003* (0.00)	0.002 (0.00)	0.001 (0.00)
Lag human capital	0.008 (0.00)	0.056* (0.02)	0.015* (0.01)	-0.003 (0.01)	0.011 (0.02)	-0.005 (0.01)
Lag govt. expenditure	0.001 (0.00)	-0.016* (0.01)	-0.001 (0.00)	-0.004 (0.00)	-0.004 (0.00)	-0.004 (0.00)
Lag trade openness	0.001*** (0.00)	0.002* (0.00)	0.001*** (0.00)	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
Constant	0.584*** (0.12)	3.810*** (0.83)	0.795*** (0.10)	-0.060 (0.15)	4.162*** (0.87)	0.096 (0.13)
N	187	187	187	236	236	236
No of countries	53	53	53	65	65	65
R-squared	0.188	0.490	0.1225	0.095	0.534	0.1240

Note: Values in parentheses indicate robust standard errors. The model considers time effects also. The R-squared value indicates within R-squared for FE model and between R-squared for RE model. The asterisk signs (***, **, and *) indicate significance at 1%, 5%, and 10% levels.

5.5 Civic Activism and Institutional Development

In the preceding section, I have found that civic activism has significant impacts on growth in the panel regressions. One plausible explanation of how civic activism translates into growth is that it could have beneficial impact on institutional development. However, it is not necessarily that civic activism can impact on growth only through one or two institutional dimensions. As a matter of fact, there may be many possible channels through which civic activism may affect economic growth. According to Putnam (1993), civic involvement matters for economic and institutional performance. Similarly, according to Fukuyama (1995) and Granato et al. (1996), cultural values can shape the level of economic development. In many respects, the civic activism index used in this study captures the ideas of Putnam (1993) and Fukuyama (1995). Therefore, the objective in this section is to examine if civic activism translates into better political and economic governance.

I have used two institutional indicators - ICRG bureaucratic quality index which captures the institutions of governance; and *polity 2* index of the political institution based *polity IV* data. Table 13 shows the interrelationships between civic activism and institutional indicators. It suggest that there are high degree of significant association between *civic activism* and *polity2* (0.69) and between *civic activism* and *bureaucratic quality* (0.72). The partial regression plots between civic activism and political institution also indicates positive relationships between civic activism and institutional development (Figures 1 and 2).

TABLE 13
Spearman correlation coefficients

	Civic activism	Polity2	Bureaucratic quality
Civic activism	1.0000		
Polity2	0.6908***	1.0000	
Bureaucratic quality	0.7152***	0.5955***	1.0000
N=533			

To examine if there are significant impacts of civic activism on institutions, I have run separate regressions by taking institutions as dependent variables – (a) ICRG bureaucratic quality on civic activism; and (b) Polity 2 on civic activism. In each case, I have run 3 different regressions – pooled OLS, and panel fixed and random effects. Thus I have run a total 6 regressions and controlled for other variables in each regression (lagged PCI, and lagged physical and human capital variables)¹⁷.

¹⁷ From the partial regression plots, one could possibly argue that I could better run ordered models (like ordered logit/probit). However, my main research objective in this paper is to look at the social capital effects on growth. To examine the effect on institution is my complementary research question. Thus the simple models serve my purpose to see the effects of civic activism on institutional development.

FIGURE 1

Partial regression plot of Polity 2 and lagged civic activism

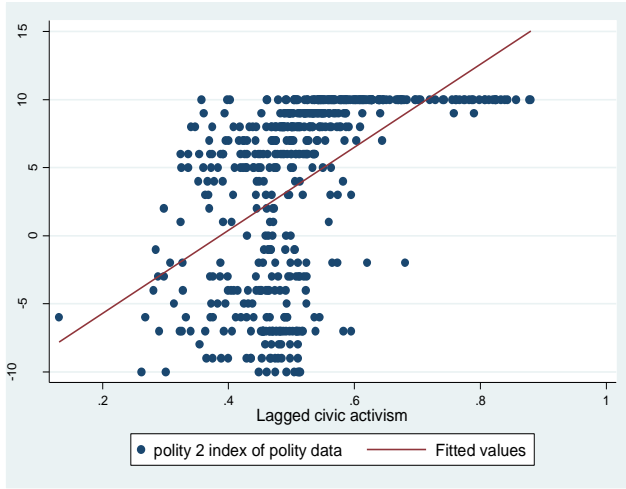


FIGURE 2

Partial regression plot of ICRG bureaucratic quality and lagged civic activism

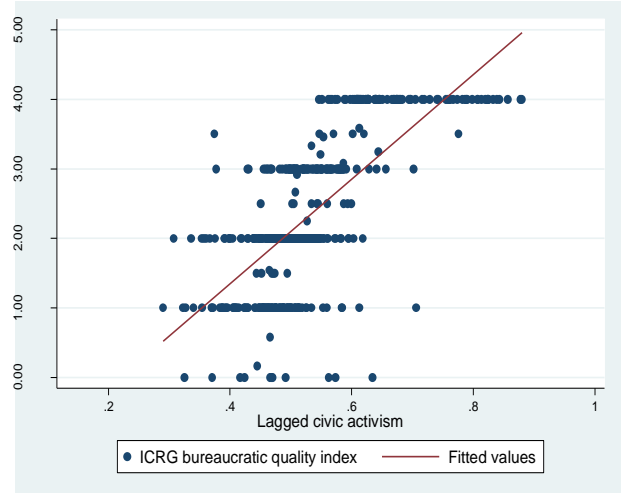


Table 14 presents the results. It indicates that the impact of civic activism is significant across all three specifications for the *polity 2* variable. While the pooled OLS and RE results indicate significance at 1% level, the FE result indicates significance at 10% level. For bureaucratic quality, the impact of civic activism is significant according to OLS and RE results (5% level in each case) but they are not significant according to FE results. Thus it can be said that the impact of civic engagement is more pronounced on political institution (democracy) rather than the governance institution (bureaucracy).

TABLE 14

Relationship between civic activism and institutional quality

	Bureaucratic quality			Polity 2		
	Pooled OLS	Fixed Effects	Random Effects	Pooled OLS	Fixed Effects	Random Effects
Lag civic activism	3.656*** (0.47)	0.376 (0.52)	1.323** (0.47)	24.012*** (3.80)	4.048* (1.78)	7.983*** (1.92)
Log of lag PCI	0.278*** (0.04)	0.754 (0.38)	0.384*** (0.06)	-0.901** (0.34)	-1.722* (0.81)	-0.450 (0.41)
Lag physical capital	0.016* (0.01)	0.005 (0.01)	0.012 (0.01)	0.072 (0.04)	-0.018 (0.02)	-0.016 (0.02)
Lag human capital	0.017 (0.02)	-0.060 (0.08)	0.035 (0.03)	0.887*** (0.14)	0.399 (0.34)	0.918*** (0.22)
Constant	-2.347*** (0.25)	-3.594 (3.01)	-1.902*** (0.36)	-8.894*** (1.52)	13.249 (6.94)	-2.832 (2.32)
N	396	396	396	415	415	415
No of countries	109	109	109	113	113	113
R-squared	0.567	0.064	0.6196	0.313	0.100	0.2715
Hausman		chi2(7) = 25.06			chi2(7) = 172.72	
		Prob>chi2 = 0.0007			Prob>chi2 = 0.0000	

Note: Values in parentheses indicate robust standard errors. The model considers time effects also. The R-squared indicates within R-squared for FE model and between R-squared for RE model. The asterisk signs (***, **, and *) indicate significance at 1%, 5%, and 10% levels.

6 Conclusion

In this paper, I have examined the impact of social capital on economic growth and institutional development. I have used two indicators of social capital - a. ISD index of *interpersonal safety and trust* as an indicator of generalized social trust; and b. ISD index of *civic activism* as an indicator of civic engagement. I have examined the relationships by utilizing cross sectional OLS, pooled panel OLS and panel fixed and random effects models.

Regarding the impacts of trust on growth, the findings are not robust across different specifications. The cross sectional and pooled panel analysis suggest less (at 10% level) or no significant but positive coefficient of trust. In contrast, the panel fixed and random effects models show negative signs of the coefficients (although not significant in most cases). Thus on the basis of these results, it is difficult to conclude about the significance and direction of the impacts of trust on growth.

Unlike trust, I have found evidence in favour of positive and significant impacts of civic activism on growth. Although the cross sectional regression results are not significant, they are positive. The insignificant cross sectional results might be driven due to less number of observations. However, the results in the pooled panel, and panel fixed and random effects models strongly support in favour of the positive contribution of civic involvement in economic growth. The whole (estimation) sample results indicate significance at 1% and 5% levels, across a number of different specifications.

In order to assess the impact of civic involvement in institutional development, I have used two institutional indicators – ICRG index of bureaucratic quality, and the *Polity 2* index of the Polity IV data. For the *polity2* variable, the impact is significant across all specifications. For the bureaucratic quality, the impact is significant in the pooled OLS and RE models but not in the FE model. Thus the result shows stronger support in favour of the effect of civic involvement in influencing political institution (democracy) rather than bureaucratic quality.

One drawback of my empirical model is that it may suffer from some endogeneity problems. However, I have tried to reduce the problem by taking the lagged values of trust, civic activism, and other control variables, given the difficulty to find any suitable instrument in the panel data growth regression on social capital.

Finally my work has some implications–

First, the apparent paradoxical result associated with the trust variable underscores the significance of further investigation of the impact of trust. The result may indicate that the crude comparison of trust at cross-country regressions may not be suitable. Thus the empirical investigation may focus more on micro evidences rather than relying heavily on cross-country analyses where it is difficult to disentangle trust from a myriad of institutional factors. There is need for coherent theoretical understanding about the social capital effect at macro levels, which would take into account its negative externalities also. There is need for contextualizing trust, gathering and compiling time series data on social capital, and designing appropriate methodologies for operationalising trust at macro levels.

Second, my findings on the strong significant effect of civic involvement on growth in the panel regressions demand further theoretical and empirical insights in this field. At the empirical level, further investigation is required to credibly establish the exogenous effects of civic involvement by finding appropriate instruments in panel regressions.

Third, There is considerable lack of data on social capital which acts as a major constraint to conduct scientific empirical studies at macro levels. An objective analysis of the multidimensional impacts and determinants of social capital requires the collection and accumulation of data through regular surveys at country, regional, and global levels. Although there have been some periodic surveys, there is lack of harmony with regards to the definitions, methods, timing, etc associated with these data. Therefore, the national and international research organizations and networks have their roles to meet up this deficit.

Finally, although social capital like networks of civic engagement is primarily exogenous and is deeply embedded in a society's cultural norms and attitude (Fukuyama 1995), deliberate efforts are essential for promoting such networks and activities. Citizen's awareness on civic and political rights and their engagement in public issues and debates can nourish a civic culture, which is essential for democratic governance and better economic outcomes (Putnam 1993). This calls for the role of a strong civil society, mass media, international development organizations and INGOs. In recent times, new dimensions of social networks have been emerging with the development of internet and social media which have been unfolding many new opportunities and at the same time causing new challenges. Further analyses are required about changing nature of civic networks resulting from these changes and their impacts.

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Appendix

Appendix 1 List of countries (whole sample: 149 countries)

Albania	Croatia	Iran, Islamic Rep.	Mongolia	Slovenia
Algeria	Cuba	Iraq	Morocco	South Africa
Argentina	Cyprus	Ireland	Mozambique	Spain
Armenia	Czech Republic	Israel	Myanmar	Sri Lanka
Australia	Denmark	Italy	Namibia	St. Vincent and the Grenadines
Austria	Dominica	Jamaica	Nepal	Sudan
Azerbaijan	Dominican Republic	Japan	Netherlands	Swaziland
Bahamas, The	Ecuador	Jordan	New Zealand	Sweden
Bahrain	Egypt, Arab Rep.	Kazakhstan	Nicaragua	Switzerland
Bangladesh	El Salvador	Kenya	Nigeria	Syrian Arab Republic
Barbados	Equatorial Guinea	Korea, Rep.	Norway	Tajikistan
Belarus	Eritrea	Kuwait	Oman	Tanzania
Belgium	Estonia	Kyrgyz Republic	Pakistan	Thailand
Bermuda	Ethiopia	Latvia	Panama	Tonga
Bhutan	Fiji	Lebanon	Papua New Guinea	Trinidad and Tobago
Bolivia	Finland	Lesotho	Paraguay	Tunisia
Bosnia and Herzegovina	France	Libya	Peru	Turkey
Botswana	Gabon	Liechtenstein	Philippines	Uganda
Brazil	Georgia	Lithuania	Poland	Ukraine
Bulgaria	Germany	Luxembourg	Portugal	United Arab Emirates
Burkina Faso	Ghana	Macedonia, FYR	Qatar	United Kingdom
Cambodia	Greece	Madagascar	Romania	United States
Cameroon	Guatemala	Malawi	Russian Federation	Uruguay
Canada	Guyana	Malaysia	Rwanda	Uzbekistan
Cape Verde	Honduras	Mali	Saudi Arabia	Venezuela, RB
Chile	Hong Kong, China	Malta	Senegal	Vietnam
China	Hungary	Mauritius	Serbia and Montenegro	Yemen, Rep.
Colombia	Iceland	Mexico	Seychelles	Zambia
Costa Rica	India	Moldova	Singapore	Zimbabwe
Cote d'Ivoire	Indonesia	Monaco	Slovak Republic	

Appendix 2 List of 32 countries excluded in growth estimation panel 1

Azerbaijan, Bahamas The, Belarus, Bermuda, Bhutan, Bosnia and Herzegovina, Burkina Faso, Cape Verde, Cyprus, Dominica, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Georgia, Iceland, Jamaica, Lebanon, Liechtenstein, Macedonia FYR, Madagascar, Myanmar, New Zealand, Nigeria, Papua New Guinea, Serbia and Montenegro, Seychelles, St. Vincent and the Grenadines, Tajikistan, Uzbekistan, Venezuela RB, and Vietnam.

Appendix 3 List of 29 countries excluded in growth estimation panel 2

Azerbaijan, Bahamas The, Belarus, Bermuda, Bhutan, Bosnia and Herzegovina, Burkina Faso, Cape Verde, Dominica, Equatorial Guinea, Eritrea, Ethiopia, Georgia, Iceland, Ireland, Jamaica, Liechtenstein, Macedonia FYR, Madagascar, Monaco, Myanmar, Nigeria, Serbia and Montenegro, Seychelles, St. Vincent and the Grenadines, Turkey, Uzbekistan, Venezuela RB, Vietnam.

Appendix 4 List of 42 countries in the cross-sectional trust-growth regression (1990-2010)

Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Costa Rica, Czech Republic, Denmark, Ecuador, Egypt Arab Rep., Finland France, Germany, Greece, India, Indonesia, Israel, Italy, Japan, Korea Rep., Malta, Mauritius, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Russian Federation, Spain, Sri Lanka, Sweden, Switzerland, Tanzania, Trinidad and Tobago, United Kingdom, United States.

Appendix 5 List of 67 countries in the cross-sectional trust-growth regression (1995-2010)

Albania, Argentina, Australia, Austria, Belgium, Bolivia, Botswana, Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Denmark, Ecuador, Egypt Arab Rep., El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Korea Rep., Kyrgyz Republic, Latvia, Malaysia, Malta, Mauritius, Mexico, Moldova, Netherlands, New Zealand, Norway, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Singapore, Slovak Republic, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tanzania, Trinidad and Tobago, Uganda, Ukraine, United Kingdom, United States, Uruguay, Zimbabwe.

Appendix 6 Indicators used for constructing the ISD index of interpersonal safety and trust

Afrobarometer

Felt unsafe in home, proportion saying 'never'
Had stuff stolen from home, proportion saying 'never'
Been attacked, proportion saying 'never'

Asian Barometer

Proportion of respondents who say that 'in general, most people can be trusted'
Proportion of respondents who say that most people try to be fair, rather than take advantage of you when given the chance

Economist Intelligence Unit

Economist Intelligence Unit rating on social distrust

International Crime Victim Survey

Percentage respondents feel 'very safe' or 'fairly safe' walking alone in their area after dark
Percentage respondents feel 'very safe' or 'fairly safe' while at home after dark
Percentage respondents who avoid places when they go out
Percentage respondents who take company with them when they go out
Percentage respondents experienced a car theft in last 5 years
Percentage respondents experienced theft from car in last 5 years
Percentage respondents experienced damage to car in last 5 years
Percentage respondents experienced motor theft in last 5 years
Percentage respondents experienced burglary in last 5 years
Percentage respondents experienced attempted burglary in last 5 years
Percentage respondents experienced garage theft in last 5 years
Percentage respondents experienced robbery in last 5 years
Percentage respondents experienced personal theft in last 5 years
Percentage respondents experienced sexual offence in last 5 years
Percentage respondents experienced assault in last 5 years

Interpol

Interpol homicide rate
Interpol rape rate
Interpol rate of serious assault
Interpol rate of aggravated theft
Interpol rate of breaking and entering
Interpol vehicle theft rate

World Health Organisation

WHO homicide rate

Latinobarometer

Respondent or someone in their family assaulted in the last 12 months
Percentage of respondents who feel secure in the neighbourhood in which they live
Percentage of respondents who have been the victim of a street crime
Percentage of respondents who have been the victim of burglary
Percentage of respondents who have been the subject of attempted homicide
Percentage of respondents who have been the subject of attempted abduction

US State Department

State Department crime advisories, coded 1-5
United Nations Criminal Justice Information Network

UNCJIN homicide rate

World Development Indicators

Percentage of managers surveyed for whom crime is a major business constraint

World Values Survey, Afrobarometer, Latinobarometer

Proportion of respondents who say that 'in general, most people can be trusted'

World Values Survey

Proportion of respondents who say that most people try to be fair, rather than take advantage of you when given the chance

Proportion of respondents who do not very much or do not at all trust their neighbourhood

Proportion of respondents who do not very much or do not at all trust people they know personally

Proportion of respondents who do not very much or do not at all trust people they meet for the first time

Source: <http://www.indsocdev.org/interpersonal-safety-and-trust.html>

Appendix 7 Indicators used for constructing the ISD index of Civic Activism

Afrobarometer

Proportion of public who have listened to radio news 'in the last day' or 'several times in the last week'

Proportion of public who have watched TV news 'in the last day' or 'several times in the last week'

Proportion of public who have read newspaper news 'in the last day' or 'several times in the last week'

Civicus

Civicus civil society rating — Structure

Civicus civil society rating — Environment

Civicus civil society rating — Values

Civicus civil society rating — Impact

International Telecommunications Union

Radios per capita

Radios per household

Latinobarometer

Proportion of public who 'have' or 'would be prepared' to take part in a peaceful demonstration

Proportion of public who 'have' or 'would be prepared' to sign a petition

Respondent says they use the radio to inform themselves about politics

Respondent says they use the newspaper to inform themselves about politics

Respondent says they use the television to inform themselves about politics

Percentage of respondents who watch TV news a great deal or very much

Percentage of respondents who read newspaper news a great deal or very much

Percentage of respondents who listen to radio news a great deal or very much

Average number of days spent watching TV news, per week

Average number of days spent reading newspaper news, per week

Average number of days spent listening to radio news, per week

Global Civil Society Project

Density of international organisation secretariats of international non-governmental organisations in given country

Extent to which organisations and individuals in each country are members of INGOs, number of INGOs with members in that country

SAIS

Percentage of the workforce employed in the NGO sector

UNESCO

Newspapers per capita

World Values Surveys, Latinobarometer

Proportion of respondents who either 'have done' or 'might' sign a petition

World Values Surveys

Proportion of respondents who either 'have done' or 'might' join a boycott

World Values Surveys, Afrobarometer, Latinobarometer

Proportion of respondents who 'have done' or 'might' attend a peaceful demonstration

World Values Surveys

Proportion of respondents who have used a daily newspaper in the last week to find out what is going on in the world

Proportion of respondents who have used news broadcasts on radio or TV in the last week to find out what is going on in the world

Proportion of respondents who have used printed magazines in the last week to find out what is going on in the world

Proportion of respondents who have used in depth reports on radio or TV in the last week to find out what is going on in the world

Proportion of respondents who have used books in the last week to find out what is going on in the world

Proportion of respondents who have used internet or email in the last week to find out what is going on in the world

Source: <http://www.indsocdev.org/civic-activism.html>

Appendix 8 The ICRG Index

The International Country Risk Guide (ICRG) of the Political Risk Services (PRS) group provides monthly data on political, financial and economic risks of 140 countries. The risk ratings are conducted mainly for businessmen and investors, who are particularly interested in these statistics for their analysis and risk ratings for doing business, etc. It has a historical dataset of these risk ratings for a wide range of countries since 1984. The ICRG composite index is made of 22 indicators and classified into three subcategories of indices – the political, financial and economic risk indices. The composite index ranges from 0-100 scores with higher value in the score means better institution. The political risk component is given 0-100 scores, and the financial and economic components each are given 0-50 scores; and then the whole index (200 scores) is divided by 2 to get the composite score. The ICRG bureaucratic quality index belongs to the political risk component indicators of the ICRG indices. The other indicators include in this subcategory of indicators include - government stability (12 points), socioeconomic conditions (12), investment profile (12), internal conflict (12), external Conflict (12), corruption (6), military in Politics (6), religious tensions (6), law and order (6), ethnic tensions (6), democratic accountability (6), and bureaucracy quality (4)

(Source: <http://www.prsgroup.com/>; <https://www.prsgroup.com/wpcontent/uploads/2014/08/icrgmethodology.pdf>).

Appendix 9 Polity 2 Index of the Polity IV data

The *Polity IV* data of the *Polity Project* provides time series data on regime characteristics of all the major independent states since 1800 to 2014. The most recent country coverage of the data is 167 countries. The Polity data provides six component measures namely the following: AUTOC (institutionalized autocracy); DEMOC (institutionalized democracy); POLITY (combined polity score=DEMOC minus AUTOC); POLITY 2 (a modified version of the combined POLITY score= DEMOC minus AUTOC); DURABLE (Regime Durability), and PERSIST (Regime Persistence). The POLITY 2 score is a combined score that ranges from (-) 10 to (+) 10. The score is understood as a three-part categorization of the regime characteristics – ‘autocracies’ (-10 to -6), ‘anocracies’ (-5 to +5), and ‘democracies’ (+6 to +10).

(Source: <http://www.systemicpeace.org/polityproject.html>; Polity IV project dataset User’s manual by Marshall et al 2014).

Appendix 10 ISD Index of interpersonal trust and safety and civic activism: 1990 -2010

Country	Interpersonal safety and trust					Civic activism				
	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
Albania		0.52	0.46	0.47	0.44	0.37	0.38	0.54	0.49	0.51
Algeria			0.52	0.48	0.41	0.51	0.50	0.47	0.47	0.47
Argentina	0.54	0.52	0.47	0.40	0.37	0.60	0.59	0.54	0.53	0.53
Armenia			0.62	0.54	0.57	0.36	0.43	0.41	0.45	0.45
Australia	0.54	0.55	0.59	0.51	0.52	0.79	0.83	0.65	0.61	0.66
Austria	0.55	0.57	0.65	0.53	0.59	0.65	0.76	0.60	0.59	0.58
Azerbaijan		0.52	0.62	0.55	0.52	0.13	0.29	0.46	0.47	0.53
Bahamas, The		0.49	0.34	0.37		0.51	0.52	0.61	0.55	0.57
Bahrain				0.53	0.54	0.51	0.47	0.59	0.52	0.51
Bangladesh			0.50	0.38	0.42	0.39	0.45	0.42	0.44	0.42
Barbados			0.49	0.39		0.64	0.66	0.58	0.53	0.54
Belarus		0.52	0.55	0.50	0.54	0.50	0.47	0.47	0.49	0.49
Belgium	0.55	0.57	0.67	0.57	0.61	0.72	0.74	0.62	0.61	0.60
Bermuda		0.54	0.56						0.54	0.56
Bhutan				0.57	0.57	0.30	0.26	0.31	0.44	0.42
Bolivia		0.50	0.40	0.34	0.40	0.55	0.55	0.51	0.50	0.52
Bosnia and Herzegovina			0.54	0.46	0.44	0.39	0.37	0.50	0.51	0.51
Botswana		0.52	0.47	0.42	0.40	0.40	0.44	0.48	0.49	0.50
Brazil	0.48	0.49	0.35	0.27	0.29	0.59	0.57	0.53	0.52	0.52
Bulgaria	0.54	0.53	0.54	0.45	0.44	0.55	0.56	0.55	0.52	0.52
Burkina Faso				0.27	0.33	0.42	0.37	0.43	0.46	0.48
Cambodia			0.50	0.39	0.36	0.32	0.30	0.37	0.44	0.43
Cameroon				0.27	0.28	0.46	0.41	0.45	0.47	0.47
Canada	0.54	0.56	0.63	0.52	0.60	0.81	0.77	0.64	0.60	0.61
Cape Verde				0.43	0.42	0.37	0.35	0.40	0.48	0.49
Chile	0.54	0.53	0.54	0.44	0.42	0.55	0.52	0.53	0.53	0.52
China	0.58	0.60	0.67	0.55	0.58	0.51	0.52	0.52	0.49	0.50
Colombia		0.49	0.30	0.25	0.30	0.54	0.54	0.53	0.50	0.50
Costa Rica	0.53	0.52	0.50	0.44	0.46	0.53	0.53	0.54	0.50	0.51
Cote d'Ivoire			0.51	0.32	0.23	0.46	0.44	0.47	0.49	0.50
Croatia		0.56	0.60	0.52	0.55	0.38	0.58	0.56	0.50	0.53
Cuba				0.46	0.48	0.51	0.51	0.46	0.46	0.45
Cyprus			0.73	0.55	0.57	0.55	0.55	0.56	0.57	0.55
Czech Republic	0.54	0.55	0.58	0.52	0.55	0.66	0.59	0.56	0.57	0.56
Denmark	0.55	0.56	0.65	0.59	0.64	0.74	0.82	0.67	0.63	0.60
Dominica			0.56	0.43						
Dominican Republic			0.52	0.38	0.39	0.47	0.50	0.46	0.49	0.49
Ecuador	0.53	0.52	0.42	0.34	0.39	0.52	0.53	0.54	0.50	0.50
Egypt, Arab Rep.	0.55	0.56	0.67	0.53	0.52	0.54	0.54	0.52	0.51	0.51
El Salvador		0.50	0.34	0.28	0.29	0.51	0.49	0.49	0.49	0.46
Equatorial Guinea				0.27	0.29	0.43	0.39	0.37		
Eritrea			0.64	0.49			0.27	0.39	0.46	0.45
Estonia	0.52	0.53	0.50	0.46	0.51	0.51	0.57	0.59	0.56	0.56
Ethiopia			0.51	0.42	0.41	0.47	0.39	0.39	0.44	0.43
Fiji			0.65	0.50	0.52	0.55	0.56	0.54	0.52	0.53
Finland	0.56	0.58	0.64	0.58	0.63	0.80	0.78	0.67	0.62	0.65
France	0.54	0.54	0.60	0.51	0.54	0.79	0.76	0.64	0.58	0.60
Gabon				0.34	0.35	0.43	0.45	0.45	0.47	0.47
Georgia	0.52	0.55	0.56	0.45	0.47	0.42	0.43	0.48	0.46	0.47
Germany	0.55	0.56	0.62	0.54	0.57	0.81	0.84	0.64	0.60	0.60
Ghana				0.41	0.42	0.50	0.46	0.44	0.50	0.51
Greece	0.56	0.59	0.66	0.53	0.52	0.57	0.58	0.63	0.56	0.55
Guatemala		0.51	0.31	0.27	0.32	0.41	0.47	0.47	0.50	0.50
Guyana				0.33	0.31	0.52	0.50	0.49	0.51	0.51
Honduras			0.39	0.30	0.33	0.49	0.43	0.47	0.50	0.49
Hong Kong, China	0.56	0.59	0.71	0.62	0.65				0.58	0.61
Hungary	0.54	0.55	0.57	0.50	0.51	0.55	0.63	0.55	0.54	0.53
Iceland			0.70	0.60	0.64	0.69	0.72	0.66	0.61	0.60

Country	Interpersonal safety and trust					Civic activism				
	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
India	0.56	0.58	0.64	0.52	0.53	0.52	0.55	0.50	0.50	0.50
Indonesia	0.57	0.59	0.66	0.50	0.47	0.48	0.46	0.48	0.51	0.51
Iran, Islamic Rep.				0.57	0.57	0.47	0.46	0.49	0.50	0.50
Iraq				0.38	0.37	0.50	0.47		0.49	0.50
Ireland		0.60	0.70	0.58	0.59	0.61	0.63	0.61	0.55	0.55
Israel	0.55	0.55	0.58	0.44	0.48	0.61	0.62	0.62		0.54
Italy	0.55	0.55	0.65	0.49	0.49	0.78	0.70	0.60	0.59	0.59
Jamaica			0.49	0.29	0.24	0.54	0.59	0.52	0.50	0.50
Japan	0.58	0.60	0.70	0.59	0.61	0.70	0.77	0.65	0.61	0.61
Jordan			0.64	0.52	0.54	0.51	0.52	0.47	0.48	0.48
Kazakhstan			0.45	0.40	0.43	0.28	0.40	0.38		
Kenya				0.26	0.29	0.49	0.50	0.49	0.49	0.49
Korea, Rep.	0.55	0.56	0.63	0.56	0.58	0.71	0.63	0.56	0.57	0.57
Kuwait		0.61	0.77	0.57	0.61	0.58		0.54	0.51	0.52
Kyrgyz Republic		0.52	0.46	0.40	0.42	0.30	0.29	0.37	0.46	0.45
Latvia	0.51	0.52	0.50	0.44	0.49	0.56	0.53	0.54	0.53	0.54
Lebanon				0.43	0.36	0.61	0.62	0.51	0.50	0.51
Lesotho			0.43	0.34	0.37	0.34	0.35	0.41	0.43	0.47
Libya				0.55	0.57	0.47	0.45	0.48	0.45	0.45
Liechtenstein								0.70		
Lithuania	0.53	0.52	0.49	0.44	0.47	0.57	0.49	0.54	0.51	0.53
Luxembourg			0.58	0.51	0.57	0.64	0.68	0.64	0.58	0.60
Macedonia, FYR		0.56	0.55	0.49	0.50	0.39	0.32	0.53	0.50	0.55
Madagascar				0.36	0.41	0.39	0.37	0.40	0.46	0.46
Malawi				0.41	0.33	0.44	0.35	0.43	0.45	0.47
Malaysia		0.60	0.59	0.48	0.52	0.57	0.56	0.52	0.52	0.53
Mali				0.42	0.44	0.42	0.37	0.42	0.47	0.50
Malta	0.55	0.56	0.65	0.56	0.58	0.53	0.54	0.58	0.57	0.56
Mauritius	0.55	0.57	0.63	0.48	0.51	0.50	0.52	0.52	0.51	0.53
Mexico		0.52	0.47	0.38	0.40	0.58	0.53	0.50	0.53	0.52
Moldova		0.52	0.43	0.39	0.41	0.42	0.47	0.48	0.45	0.47
Monaco				0.49	0.55					
Mongolia			0.48	0.39	0.43	0.36	0.36	0.40	0.46	0.46
Morocco			0.64	0.51	0.57	0.50	0.49	0.49	0.49	0.49
Mozambique			0.34	0.34	0.35	0.34	0.32	0.42	0.47	0.48
Myanmar				0.50	0.52	0.34	0.32	0.35	0.41	0.40
Namibia			0.43	0.34	0.36	0.37	0.39	0.48	0.48	0.52
Nepal				0.49		0.36	0.34	0.42	0.49	0.49
Netherlands	0.54	0.56	0.65	0.55	0.57	0.76	0.82	0.67	0.61	0.62
New Zealand	0.52	0.53	0.61	0.56	0.54	0.68	0.73	0.63	0.59	0.61
Nicaragua		0.51	0.47	0.36	0.37	0.48	0.50	0.49	0.49	0.48
Nigeria			0.48	0.38	0.37	0.51	0.50	0.46	0.47	0.50
Norway	0.57	0.60	0.68	0.57	0.65	0.76	0.82	0.68	0.67	0.66
Oman				0.61	0.65	0.47	0.45	0.48	0.48	0.48
Pakistan			0.58	0.45	0.33	0.42	0.44	0.44	0.47	0.47
Panama		0.53	0.55	0.45	0.44	0.49	0.50	0.53	0.50	0.50
Papua New Guinea				0.30	0.24	0.38	0.37	0.39	0.45	0.44
Paraguay		0.52	0.44	0.38	0.40	0.44	0.58	0.48	0.51	0.50
Peru	0.54	0.53	0.45	0.37	0.40	0.56	0.53	0.53	0.51	0.52
Philippines	0.55	0.55	0.61	0.49	0.46	0.51	0.48	0.49	0.51	0.51
Poland	0.54	0.56	0.57	0.48	0.50	0.55	0.55	0.51	0.54	0.55
Portugal	0.54	0.54	0.58	0.48	0.52	0.51	0.49	0.56	0.55	0.54
Qatar			0.72	0.68	0.63	0.46	0.45	0.51	0.51	0.50
Romania		0.54	0.54	0.46	0.47	0.50	0.51	0.50	0.51	0.52
Russian Federation	0.51	0.51	0.46	0.38	0.41	0.60	0.53	0.53	0.51	0.51
Rwanda				0.41	0.49	0.37	0.33	0.40	0.44	0.46
Saudi Arabia			0.67	0.58	0.52	0.51	0.50	0.49	0.47	0.47
Senegal				0.47	0.49	0.51	0.49	0.48	0.50	0.51
Serbia and Montenegro		0.53	0.54	0.42	0.42	0.53	0.50	0.53	0.49	0.49

Country	Interpersonal safety and trust					Civic activism				
	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
Seychelles			0.57	0.45			0.77	0.67		0.75
Singapore	0.56	0.61	0.70	0.57	0.61	0.62	0.68	0.57	0.56	0.57
Slovak Republic	0.54	0.54	0.56	0.50	0.50	0.64	0.54	0.56	0.50	0.51
Slovenia	0.53	0.55	0.62	0.55	0.61	0.46	0.57	0.58	0.52	0.52
South Africa		0.50	0.35	0.32	0.33	0.53	0.53	0.53	0.52	0.52
Spain	0.56	0.59	0.65	0.53	0.56	0.59	0.60	0.58	0.58	0.57
Sri Lanka	0.49	0.53	0.56	0.43	0.39	0.48	0.45	0.47	0.50	0.50
St. Vincent and the Grenadines		0.52	0.43			0.50	0.48		0.52	0.54
Sudan				0.33	0.30	0.48	0.48	0.46	0.45	0.45
Swaziland			0.34	0.29	0.32	0.37	0.39	0.44	0.48	0.48
Sweden	0.55	0.57	0.61	0.54	0.62	0.82	0.84	0.67	0.67	0.68
Switzerland	0.56	0.60	0.69	0.61	0.65	0.70	0.79	0.65	0.64	0.65
Syrian Arab Republic			0.76	0.57	0.53	0.48	0.47	0.41	0.45	0.45
Tajikistan				0.48	0.52	0.33	0.28	0.38		
Tanzania	0.52	0.53	0.49	0.39	0.41	0.46	0.46	0.47	0.47	0.50
Thailand				0.47	0.51	0.57	0.51	0.54	0.51	0.51
Tonga			0.71	0.59					0.49	0.49
Trinidad and Tobago	0.53	0.53		0.36	0.38	0.54	0.54	0.57	0.51	0.52
Tunisia				0.45	0.44	0.50	0.52	0.48	0.49	0.50
Turkey	0.55	0.55	0.58	0.48	0.50	0.47	0.50	0.55	0.53	0.54
Uganda		0.53	0.45	0.38	0.39	0.41	0.40	0.46	0.49	0.49
Ukraine		0.52	0.49	0.43	0.45	0.49	0.53	0.52	0.51	0.51
United Arab Emirates				0.63	0.68	0.47	0.46	0.51	0.50	0.48
United Kingdom	0.55	0.56	0.60	0.53	0.54	0.81	0.88	0.63	0.61	0.62
United States	0.53	0.54	0.59	0.49	0.54	0.88	0.86	0.70	0.63	0.64
Uruguay		0.53	0.56	0.45	0.44	0.58	0.54	0.56	0.54	0.54
Uzbekistan				0.46	0.47	0.43	0.40	0.36	0.44	0.42
Venezuela, RB		0.51	0.37	0.28	0.27	0.58	0.52	0.54	0.51	0.52
Vietnam			0.65	0.58	0.60	0.36	0.33	0.44	0.48	0.49
Yemen, Rep.				0.50	0.52	0.31	0.33	0.39	0.45	0.43
Zambia			0.49	0.38	0.34	0.43	0.41	0.44	0.48	0.48
Zimbabwe		0.52	0.45	0.33	0.32	0.43	0.47	0.46	0.47	0.47
N	52	82	115	146	139	141	142	142	141	143

Source: Index of Social Development (<http://www.indsocdev.org/home.html>)