Graduate School of Development Studies

Using the ISS *Indices of Social Development* to Understand Structural Economic and Social Development Processes

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Devoid of self I traveled to a place,
There, in the absence of I, joy filled my heart.

~ Rumi, *Divan-i Shams-i Tabriz* IV-128

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anchor year — In ISD, refers to the year in which a country's ISD statistic is reported. It is an average of the scores from the five years centred on the year referenced. As of 2011, there are five anchor years, viz., 1990, 1995, 2000, 2005 and 2010.

civic — short-form of Civic Activism Index of ISD

clubs — short-form of Clubs & Associations Index

cohesion — short-form of Inter-group Cohesion Index

CR — critical realism

DV — dependent variable; also known as, regressand

gender — short-form of Gender Equity Index

GDP — Gross Domestic Product based on purchasing power parity, consisting of all products and services generated by a country in one year, in constant 2005 US dollars

GDP Per Capita — GDP divided by average population at mid-year

gdppc — GDP Per Capita

Gini — Gini coefficient, a measure of inequality of a distribution, here referring to the distribution of household income (World Bank 2011), with 0 indicating perfect equality and 1 indicating perfect inequality

GNI — The Gross National Income, consisting of GDP plus net income received from other countries

GNI Per Capita — GNI divided by average population in mid-year

GNP — The Gross National Product, as GNI without deducting indirect business taxes

GNP Per Capita — GNP divided by average population in mid-year

Granger Test

HDI — Human Development Index (UNDP)

HDR — Human Development Reports (UNDP)

index — a composite measure that is combined algorithmically from several indicators; sometimes also refers to a composite of several indices

indicator — a unitary measure or data source; sometimes called a *variable*

ISD — the *ISS Indices of Social Development* project; also, one of the indices

ISDs — Indices of Social Development

IV — independent variable; also known as, regressor

IVs — independent variables, or, regressors

Log GNI Per Capita — The logarithm of GNI Per Capita, a measure that compresses the upper end of the scale, used in HDI

master variable	The primary variable to which additional indicators are successively added through ranking comparison, using the Matching Percentile Method
MENA	Middle-East and North Africa
safety	short-form of Interpersonal Safety & Trust Index of ISD
s.d.	standard deviation
SMS	Short Message Service for mobile phones, providing peer-to-peer text messages of up to 144 characters
tweet	a short message of up to 144 characters hosted by Internet social media service twitter.com, which lets an author broadcast messages to her "followers"
variable	a unitary measure or data source
WDR	World Development Reports (The World Bank)

Abstract

The recently launched Indices of Social Development provide measures of social institutions along five dimensions. The ISD data set covers five anchor years from 1990-2010 for some 200 countries. This paper seeks to examine the links between social institutions and common measures of society's macro-economic performance, well-being and inequality. The paper begins with a diagnostic inspection of the ISDs and raises issues in index construction and challenges in measurement. Descriptive statistics and visual presentations show the long-term trends of the indicated social institutions.

With five data points for each Index, it is not possible to use parametric estimation techniques common in time-series studies. Taking a critical realist epistemological stance where empirical data are seen as emergent from underlying structures, the paper argues that certain quantitative analysis can nevertheless be fruitfully employed. Using a logic first proposed by Granger (1969), followed by a second round of statistical analyses, the paper tentatively posits the inter-relations amongst social institutions and links these with GDP Per Capita, HDI and Gini.

A case study in the Inter-group Cohesion Index demonstrates how changes in social institutions could be understood in the context of global events. The paper provides new insights in the understanding of structural elements in development.

Relevance to Development Studies

This paper contributes to the current literature on social institutions and their link to common measures of a society's well-being.

Keywords

civic activism, composite index, gender equity, social cohesion, social development index, social indicators, social institutions

Acknowledgments

In my last thesis, written so many years ago, I quoted this line from Ecclesiastes, "Of making many books there is no end, and much study is a weariness of the flesh" (12:12). Thirty years later, I uprooted myself and crossed an ocean for more study. Again, I have found it a weariness of the flesh; but also a great joy. For this, I have many to thank.

The staff and student colleagues at ISS, as well as many in the outer reaches of the Netherlands, have been warm and welcoming. I am grateful to all of them. I thank my friend, Gary Falle, who has been steadfast in long distance support. Thanks are also due to my second reader, Arjan de Haan, for generously opening the door to the world of social development indices; to Irene van Staveren, for insightful comments on the initial findings; and to Roberto Foa, for explaining the innards of the ISD project. Sibora Dhima provided helpful suggestions on style and structure.

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Chapter 1
Introduction

Social development, to use a cliché, while not all things to all men, is many things to many people. Many countries have a department of social development, which is variously about promoting or maintaining education or welfare housing or rural transportation. To these governments, social development is the means towards better ends in society. The means could encompass many different instruments. Measurement in social development is usually oriented towards education enrolment, health services availability, poverty levels. In the academic literature, social development often refers to the study of quality of life in societies, or, the study of the changes in the structures of societies that influence such quality (sociology). It could also refer to a person's development of his view of self and others; and the skills of relating to others (psychology).

In international development, the word development suggests improvement and progress and therefore has an evaluative component (Gasper 2004). Yet, "there are thousands of cultures and sub-cultures, and progress means many things to many people and at different times. What is progress in one culture may be perceived as totally irrelevant or taboo in others. What is considered as great progress at one time in history may be perceived or ridiculed as insignificant in another timeframe" (Tjivikua 2011: 2). Development thus implies certain normative ideals. Its meaning may be different depending on the user, her community, both cultural and intellectual, and historical context. When international community and institutions speak of development, they mostly refer to economic development, which sidelines such important issues as fulfilment, capability and well-being in general[1]; though there have been notable shifts (see Clark and McGillivray 2007, Gasper 2004, UNDP 1997). These issues, though important, arguably may not lend themselves to universal answers. Studying social institutions and structures, however, could provide valuable understanding on the issues.

This study explores cross-country data and seeks to explore what social structures and forces would propel or impede economic development and vice versa. This is undertaken by focusing on the recently launched Indices of Social Development project at ISS (ISD 2011a), which has, as its deliberate

[1] World Bank (2011) publishes over 1,000 indicators, with access to an additional 7,000 from different data sets. The indicators are organised in broad clusters: agriculture and rural development, aid effectiveness, economic policy and external debt, education and mining, environment, financial sector, health, infrastructure, labour and social protection, poverty, private sector, public sector, science and technology, social development and urban development.

aim, the measurement of the strength of social institutions across countries in a number of different dimensions. Before delving into the core material, it would be helpful to take a look into social measurement, in particular, an area known as social indicators.

"What we measure affects what we do." (CMEPSP 2009: 7)

Dasgupta (1999) suggests several reasons for measuring well-being: aggregation for summarizing macro-economy; comparison between different places, groups of people, at points of time (cross-sectionally) or at different times (longitudinally); evaluation of change because of specific economic policies. The impetus for measurement often comes from the needs of policy makers. Evaluation helps inform policy priorities (de Haan et al. 2011), as in the case of policies that aim at social protection (European Communities 2010).

It is obvious that what is measured must suit the purpose. Post-1949[2], economic development has been the prime focus of the nations. Progress was measured in economic terms, typically GNI or GDP. Such an approach has been well critiqued (Costanza et al. 2009). Early social indicators are often disguised measurement of economic activity that is framed by economic theories important at the time. An early index of social development was concerned primarily with settlement size and urbanization (Naroll 1956), no doubt influenced by the dominant economic thought then (see Lewis 1949, Rostow 1956). Later, social indicators would include urban population, labour force in industry, school enrolment, adult literacy, life expectancy, health workers per 1000 population, calorie and protein intake, newsprint, radio receivers (Ray 1989) and the number of cars per 1000 population (Mazumdar 1996).

The influential Human Development Index, begun in 1990, includes three dimensions: income, education and life expectancy at birth, measured with just four indicators (UNDP 2011a). The HDI has its genesis in the Capability Approach of Sen (1999). This approach more recently also informs the Multi-dimensional Poverty Index by measuring poverty in terms of capability deprivation (Alkire and Santos 2010). A current survey of the different approaches to measurement has come from the Commission on the on the Measurement of Economic Performance and Social Progress (CMEPSP 2008). This Commission, called Stiglitz-Sen-Fitoussi Commission for its chief investigators, specifically aims at extra-economic measures of well-being and social progress. Emphasizing that "statistical indicators are important for designing and assessing policies aiming at advancing the progress of society" (CMEPSP 2009: 7), the Commission suggests it is high time to "shift emphasis

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[2] The "age of development" is said to begin with US President Harry S. Truman's inaugural speech on 20 January 1949 (Sachs 1992).

from measuring economic production to measuring people's well-being" (ibid.: 12). They recommend broadening income measures to non-market activities, inclusion of measures of distribution of income and wealth, as well as sustainability of economic development. This broad-based approach reflects the current urgent concerns over social inequality and environment degradation. The newly launched Canadian Index of Well-being, a composite of 64 indicators covering 8 domains, shows the same concerns (Michalos 2011).

Most indices concern outcome measures. The conditions that bring about the outcomes tend to fall outside of the purview of the indices. However it is not always easy to isolate variables as outcome measures. In the social sciences, outcomes could in turn be antecedents to future consequences. Although there are aspects of outcome measurement, importantly, the ISDs are about antecedent conditions. If so, then it is important to make the linkage between the ISDs and the more predominantly outcome-centric indices such as national income levels (GDP Per Capita), the Human Development Index, and the Gini, a common measure of inequality in a society. One could ask, generally, what are the causal relationships between the informal institutions and a society's material condition and its citizens' well-being. This is the concern of the present study, which will be articulated as research questions in section 1.2.

1.1 The ISS Indices of Social Development

The Social Development Group at the World Bank initiated the ISD project. The World Bank had recognised that there is more to development than economic progress. Especially, they recognise the contribution of the social sciences from the 1970s (Davis 2004). Some of the World Bank's policies have explicitly nurtured the social capital aspects of development, although there is debate whether the latter have visibility and emphasis in World Bank projects (Bebbington et al. 2004).

The ISD project was acquired by the International Institute of Social Studies in 2010 and is developed and maintained at ISS. The indices themselves have been derived through "an iterative process of consultation over an extended period of time" (de Haan et al. 2011: 10). The following are the five ISDs:

"Civic activism, referring to the strength of civil society, measured by levels of civic activism and access to information;

Interpersonal safety and trust, referring to norms of nonviolence between persons in society;

Inter-group cohesion, the relations of trust and cohesion between defined ethnic, religious, or linguistic identity groups …

Clubs and associations, referring to relations of trust and cohesion within local communities;

Gender equity and non-discrimination against women, drawing on an already rich theoretical literature and development of measurement." (de Haan et al. 2011: 10)

There is on-going discussion about adding new indices. The project thus makes no claim that the indices exhaustively cover the gamut of social institutions. Explicitly, the ISDs are intended to gauge both "the 'soft' dimensions of development … social capital, discrimination and exclusion", as well as "the institutions of societies through which development is enhanced" (de Haan et al. 2011: 10).

1.2 Research Questions

The key objective of this study is to further our understanding of the challenges in the use of social indicators in general, and the contributions of ISDs in monitoring social institutions as drivers of development and well-being. As measures of informal social institutions, ISDs could be indices of antecedent conditions of a society's well-being. Alternately, or additionally, they could be indices of outcomes or state of well-being of a society. This research is designed to answer the following:

1. *What do the ISDs suggest about global changes in social institutions between 1990 and 2010?*
2. *What do the ISDs suggest about global causes of differing GDP per capita, HDI ranking and income inequality between countries?*

In preparation, the study also attempts to answer the following sub-questions:

3. *How can diagnostic inspection of the ISDs identify technical challenges in their use?*
4. *Which epistemological principles can best underpin the use of the ISDs as interpretive tools?*

1.3 Organization of the Study

This chapter lays out the background to the measurement of individual and social well-being and poses the main research questions concerning the ISDs. It discusses the epistemological position and negotiates a position that justifies the use of quantitative methods in a study that emphasises structures and processes. It also reviews the broad challenges faced in index construction.

In Chapter 2, a non-technical description of the methodology of the ISD is followed by detailed explorations of the ISDs, covering each index's longitudinal characteristics. Country trends are also examined. Based on analyses of individual ISDs, certain diagnostics concerns are shared about some of the pitfalls inherent in social measurements.

Chapter 3 seeks to answer the question of global causes of differing GDP per capita, HDI ranking and income inequality. Using the Granger causality test, causal flows are identified between social institutions and the common outcome measures. A further statistical analysis is used to determine the polarity of any causal flow, whether positive or inverse.

In Chapter 4, one specific index is selected for closer examination. The analysis of the Inter-group Cohesion Index seeks to use this ISD to relate to some underlying causes of change in societies' inter-group cohesion. It also uses the ISD data to uncover some country/regional differences and relate these to global events.

Brief conclusions follow in Chapter 5.

In the next section, I discuss the ontological and epistemological aspects of this study by beginning to answer question (4).

1.4 Causal Pursuits & Epistemology[3]

Implicitly or explicitly, most, if not all, research is about finding causes. We research because we seek to understand why things are as they are, or how things become what they are. When we talk about how things come to be, we are speaking of mechanisms, and processes – these are causal in nature. Sometimes when the object of study is complex, we cannot begin to understand processes until we have a good description of what they are. Often, this entails measuring, describing, and monitoring change. Seldom, though, do we want to know just what something is. Rather, we want to know how it has come to be. That seems to be the nature of human being – an innate quest for understanding. Our quest, the knowledge-making, involves tracing steps, connecting dots. We are not satisfied with the static picture, nor the "given" ("it is what it is"). We question *why*.

By understanding the causes, we can conceivably effect change. If A causes B and we don't like B, then perhaps changing A or removing it, will change B. Such thinking has the elegance of simplicity and suffices in many straightforward situations. Since Hume, and before him, Bacon, this has informed the practice of science for the last three centuries. In a complex world, a long chain often links cause and effect; usually, a complex web of chains. Disturbing one node in that web means changing a multitude of nodes and links, with dynamic and far-reaching implications, often resulting in unintended and unforeseen consequences. In policy making, in essence an effort to enact intervention to alter effects by disrupting their prior causal chains, changes are especially difficult to predict based on prior historical data (Lucas 1976).

Difficult as it is to understand causal effects, by no means is the researcher's task impossible. For Lawson (1995), it entails that the disciplines, particularly Economics, orient themselves differently. "Although the traditional post-Humean conception of science is the seeking of constant conjunctions of events, in practice such event regularities that have been elaborated have been restricted in the main to situations of experimental control. … the traditional post-Humean conception rests upon an inadequate analysis, and illegitimate generalisation, of what emerges as a special case—wherein a single and stable

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[3] This section is based in part on an essay submitted for an Epistemology course, March 2011.

(set of) aspect(s) or mechanism(s) is physically isolated and thereby empirically identified." (Lawson 1995: 264). Such a conception presupposes a positivistic, "closed system" view where the empirically observables form the basis of explanation and understanding. To explain phenomena in a closed system, the method of induction would be a reasonable choice. It is however not appropriate in the present study as we shall see.

Following Bhaskar (1975), Lawson suggests that there is more to our world than the *empirical* data. To begin with, there are the unobserved and often unobservable *actual* events or state of affairs and experiences. These may or may not map directly to the empirical observations and hence not measurable. Another domain, Bhaskar's *transcendental realism,* or *critical realism* (CR), claims, is "the *non-actual* or, metaphorically, the *'deep'* (structures, mechanisms, powers and tendencies)" (Lawson 1995: 262). "The world is composed, in part, of objects that are structured and (to use Bhaskar's term) intransitive—*structured* in the sense of being irreducible to the events of experience, *intransitive* in the sense of existing and acting independently of their identification"(ibid.)[4]. In Bhaskar's own words, "the causal structures and generative mechanisms of nature must exist and act independently of the conditions that allow men access to them" and that "events must occur independently of the experiences in which they are apprehended. Mechanisms, events and experiences thus constitute three overlapping domains of reality, viz. the domains of the real, the actual and the empirical" (Bhaskar 1975, 2008: 46[5]). This is illustrated in following table:

Table 1
Domains in Critical Realism

	Domain of Empirical	*Domain of Actual*	*Domain of Real*
Experiences	✔	✔	✔
Events		✔	✔
Mechanisms			✔

Adapted from: Bhaskar (1975, 2008: 47).

While experiences would be observable, they are emergent properties of events and mechanisms that are more opaque and frequently only deducible (Sayer 2000). Social indicators are measured quantities in the empirical domain. These are collected, processed and constructed at a specific place and time. They are singularly presented or aggregated algorithmically. As such, indicators bear the burden of measurement and data processing errors. To serve long-

[4] For a detailed treatment of critical realism in the social sciences, see Dannermark, et al (2002), Lawson (1999, 2003), Sayer (1992, 2000).
[5] Originally published in 1975. Page numbers are from the 2008 edition.

range purposes, indicators are often collected repeatedly over time. There is an implicit assumption that the method of sampling and collection does not vary from one period to the next, or that, if it varies, the margins of errors are relatively small.

Indicators, as translations or transformations of empirical data, are therefore not expected to map into well demarcated, underlying realities, however the latter are conceived. What the indicators provide are measurements that are the empirical, observable results of multi-layered 'happenings', which may not always be observable. Sayer stratifies the realities from the concrete to the abstract since events are being enabled and constrained by mechanisms that are, in turn, undergirded by structures of social relations and material conditions. All this is not to deny human agency, for "people have powers … which could be activated" (Sayer 1992: 256). It is important to note that structures do not determine events; rather they constrain and enable events (Danermark et al 2002; Sayer 2000). Also, "causality concerns not a relationship between discrete events ('Cause and Effect'), but the 'causal powers' or 'liabilities' of objects or relations, or more generally their ways-of-acting or 'mechanisms'" (Sayer 1992: 104). In other words, the transitive objects are shaped and conditioned by the intransitive objects. "Whether a causal power or liability is actually activated or suffered on any occasion depends on conditions whose presence and configuration are contingent" (ibid.: 107). Archer posits the morphogenetic cycle of conditioning (by structure), interaction (between structure and agents) and elaboration (by agents), resulting in a change in structure, i.e., morphogenesis, or, continuity, i.e., morphostasis (Archer 1995: 195).

The CR ontology suggests that the understanding of the deep structures is as important as, if not more than, the accurate measurement of the empirical data. Empirical data are important as they anchor our theory in the real world. However, it is the deep structures and tendencies that drive events and experiences, which are manifested in the empirical observations. "The aim of science is not the production of constant event conjunctions at all, but the identification and illumination of the structures and mechanisms that underlie the phenomena of experience and govern and produce them" (Lawson 1995: 266). Herein lies Lawson's generalization of the Lucas critique: foremost, it is the recognition of the deep structures at play in economic phenomenon. Secondly, it is the recognition of human agency in shaping the society's deep structures.

The present study is based on the CR epistemology. The method of inference would be *retroduction*, that is, "events are explained by postulating (and identifying) mechanisms which are capable of producing them" (Sayer 1992: 107). This contrasts with *induction* which, relying on repeatable event sequences, makes causal postulates for falsification[6] (Popper 1963). The method of induction is problematic in situations concerning social relations that are contingent, and where unrealistic constraints and assumptions have to be made to permit modelling i.e. causal explanations (see Kay 2011).

Many quantitative techniques are used in this study, from descriptive statistics, visualization in graphs to analytical methods such as regression analysis. These are deployed in order to understand the deeper mechanisms that give rise to the observed data. By way of triangulation, using multiple techniques, and putting the data in the larger social science literature, the study seeks to make sense of the data by investigating and postulating the underlying structures and mechanisms. In this journey, I find myself traversing between Bhaskar's domains, asking *why* questions in the face of the *what*; and then exploring the *what* in order to make sense, validate, falsify what is crystallised from pondering the *whys*.

Most quantitative methods may be considered 'closed' and would seem to be antithetical to the realist position. Olsen and Morgan define methodological closure "as involving three elements. It would mean, firstly, that a set of variables are self-contained and of sufficient interest in themselves (for a given stage of research); that regularities may be found to exist between and among the variables; and that these regularities are to some extent separable, i.e. they highlight differentiable parts of reality whose separation has some continuity or duration in time" (Olsen and Morgan 2005: 274). However, "[w]e need not assume closure in reality when using the assumption of methodological closure. Closure in reality is rather different, and would involve ... three elements: a non-permeable boundary to the system being examined; separable causal mechanisms; and no emergent properties. If closure existed in reality, the system could be scrutinized part by part without loss of knowledge about its whole operation. Realists have argued convincingly that this type of closure does not exist in social systems and that if scientists assumed such closure they would be making an error of conflation. The conflation can be precisely described as confusing methodological closure with real closure of systems" (ibid.).

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[6] Tony Lawson provides the following illustration. "If deduction is illustrated by the move from the general claim that 'all ravens are black' to the particular inference that the next one seen will be black, and induction by the move from the particular observation of numerous black ravens to the general claim that 'all ravens are black', retroductive or abductive reasoning is indicated by a move from the observation of numerous black ravens to a theory of a mechanism intrinsic (and perhaps also extrinsic) to ravens which disposes them to be black. It is a movement, paradigmatically, from a 'surface phenomenon' to some 'deeper' causal thing" (Lawson 1997: 24)

The quantitative methods' methodological closure therefore does not need to imply closure in reality. Rather, the quantitative results provide a starting point in tentatively suggesting the structures and processes in an open system. The results are not *proofs* for a theory about social structures. Neither would a theory need to fully satisfy the *numbers*, so to speak. A critical realist does not seek closure this way. A credible theory, using retroduction, will nonetheless make good sense of the empirical results. Quantitative methods are important in that they give social theories an anchor in the empirics without which so much theory is little more than *gedanken* experiment. Throughout this study, I will note the limitations of the methods and the applicability of the processed data. Moving from diagnostics (Chapter 2) towards explorations (Chapter 3), it will be argued that CR epistemology best underpins this work.

1.5 Index: Concept, Construction & Critical Assessment

An index, sometimes called a composite index, is constructed from indicators, which are raw measures or variables of some quantity. What an index is intended to measure has to be realised in a algorithmic combination of the variables (indicators). Apart from measurement errors, which could arise through cross-sectional discrepancies or longitudinal variations over time, there are other concerns. One of the most important considerations is the selection of the variables that characterise the index. Take the case of HDI. The HDI has its theoretical underpinning in Sen's Capability Approach. It seeks to monitor the important aspects of human capabilities and functionings by concentrating on "a long and healthy life", "access to knowledge" and "a decent standard of living" (UNDP 2010: 216). These cannot be measured directly. Instead, proxies are used: quantifiable variables such as life expectancy, years of schooling and GNI per capita. Arguably, the years of schooling is but a pallid indication of "access to knowledge" and GNI per capita in no way captures the totality of "a decent standard of living" (see e.g. Kovacevic 2010). Nevertheless, a concept such as "access to knowledge" can only be assessed by using proxies that are measurable in some way. The proxies used then characterise an index and determine how well it captures a particular concept.

Reeskens et al. (2009) discuss the complexity involves in the selection of indicators for certain phenomenon – in their case, the study of social cohesion - which is essentially multi-dimensional. They contend that phenomena are often not reducible to one latent concept. That is to say, if a number of indicators were used to identify a concept, they would 'load' on one factor in a statistical procedure such as factor analysis. Social development, as a broad concept, is likewise multi-dimensional. The ISD has been developed with this understanding, one that is confirmed by factor analysis, as we shall see in Chapter 2. Some of the phenomena that the ISDs measure are themselves multi-dimensional. Gender equity is a case in point. Several allied indices are currently available, e.g., ISD's Gender Equity Index, UNDP's Gender Inequality Index, World Economic Forum's Global Gender Gap Index, OECD's Social Institutions and Gender Index and Economic Intelligence Unit's Women's Economic Opportunities Index (van Staveren 2011). These indices, using over-lapping indicators, do take on different characteristics, depending on the set of variables and methodology used. van Staveren (2011) suggests that, when selecting an index for policy evaluation purposes, researchers must take into account how an index is constructed since the indices are clearly not interchangeable.

All indices seek to 'sum up' some phenomenon. While it is true that an index as the 'sum' of the indicators is more than its constituent parts, different indices appear to sum up differently. With a critical eye on diagnostics, we will next look at the issues with indicator selection and the challenges faced in the construction of the ISDs in an attempt to answer question (3). The exploration of the trends will also provide a partial answer to main question (1).

Chapter 2
ISDs – Descriptive Statistics & Diagnostics

This chapter begins with a description of how the ISDs are constructed and how the method was originally validated. It then takes a fresh look at the individual indices and provides some diagnostic comments. By looking at long-term trends, global changes in social institutions become evident, although country differences exist.

2.1 Outline of ISDs' Construction, Validation & Prior Diagnostics

ISDs are based on secondary data from some 25 reputable secondary sources. The total number of indicators exceeds 200. Appendix 1 presents the list of basic indicators (similar indicators are not separately listed; see also, the Appendix in Foa and Tanner 2011). These indicators are combined algorithmically into the five indices, using a technique similar to that initially pioneered by Lambsdorff (1999, 2007; Lambsdorff drew theoretical insights from Kaufmann et al. 1999). The methodology and validation of ISDs are detailed in Foa and Tanner (2011; see also a concise account in de Haan et al. 2011 and ISD 2011b). An outline of the Matching Percentile Method is provided here.

The construction of an index begins with the observations of an indicator or variable. Since an ISD is only computed every five years, the observations are averaged from the five years centred at the anchor year. The index is constructed by iteratively adding variables. The order of entry of the variables appears to make little difference (Foa and Tanner 2011). A variable is added, first, by matching each observation's rank against that in the master variable and assigning it the cardinal score of the master variable with the same rank. This score is then averaged with that in the master variable to form a new master variable. The process continues recursively until the index reaches convergence. A key feature of the technique lies in the fact that a variable does not need to have data for all countries for all years. As long as there are overlapped observations, that is, as long as countries have common variables, the Matching Percentile Method will be able to merge the scores.

There are several characteristics of the Matching Percentile Method. First, even though cardinal values are assigned, ranking is used in combining variables. This non-parametric method means that no assumption of the underlying distribution of the variables needs to be made. At the same time, the scores, not rankings, could be used to examine a country's trend. Lambsdorff pointed out that "[y]ear-to-year comparisons of a country's score may not only result from a changing perception of a country's performance, but also from a changing sample and methodology (2007: 3). Even so, "to the extent that changes can be traced back to a change in the results from individual sources, trends can cautiously be identified" (Lambsdorff 2001a: 3).

Secondly, missing observations are not imputed so only actual observations enter into the computation. A country needs only to have data in a subset of the variables (a minimum of 3) to be included in an index.

Thirdly, combining data sources adds to the reliability of singular variables. "The idea of combining data is that the nonperformance of one source can be balanced out by the inclusion of at least two other sources. This way, the probability of misrepresenting a country is seriously lowered" (Lambsdorff 2001b: 2). Of course, this observation does not extend to measurement errors.

Lastly, the method performs the index estimations for all years simultaneously and independently. This enables both cross-sectional and longitudinal comparisons.

During the construction of the ISDs, Factor Analysis was carried out using scores from the underlying indicators, which form the basis of the five composite ISDs (Foa and Tanner 2011). Six main factors were identified. By examining the factor loading of individual indicators, it was possible to see how closely the clustering of ISD indicators corresponds to that result from the factor analysis. It was found that 4 of the 6 factors correlate well with the five *ex ente* clusters selected by ISD's investigators (factor 1 correlates with both Civic Activism and Gender Equity). Two of the factors do not yield correlations with any of the clusters perhaps suggesting additional clusters. In Factor Analysis, the observed variables are reformulated as linear combinations of a smaller number of 'latent' variables (factors). The ISDs' correlation with the factors gives some assurance that the classification of the indicators into the five clusters provides a division that has some meaning (Foa and Tanner 2011). The optimization performed in Factor Analysis means that the number of factors are minimised; also, the factors point to different aspects of what is being measured.

2.2 Data Sources & Some Basic Characteristics

The ISD database was obtained from the ISD project administrator in July 2011[7]. GDP Per Capita[8] and GINI data are taken from World Bank (2011). Human Development Index (HDI) data are taken from United Nations Development Programme (UNDP 2011b).

The ISD database contains some 100,000 data points that have been collected for the period 1998-2010. The yearly statistics are summarised in Figure 1 below. Coming from 25 sources, the data is an impressive compendium of country statistics. This section provides an overview of the ISDs in aggregation.

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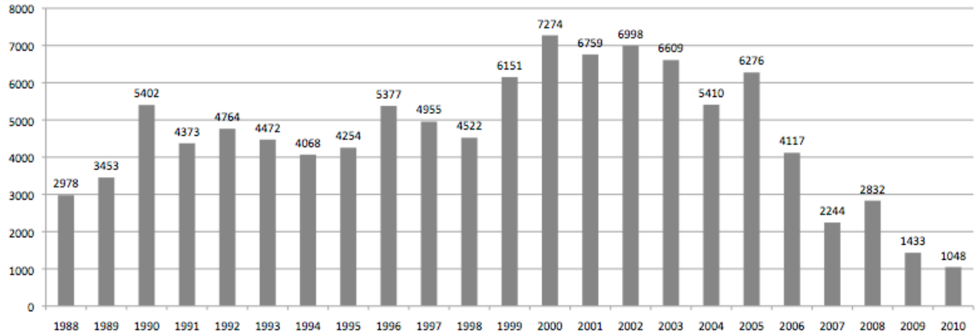
[7] Also downloadable from the web site <http://www.indsocdev.org>.

[8] 2010 Per Capita data are not yet available; the 2009 figures are used instead.

From Figure 1, there appears to be a peak in available data in the 1999-2005 period. However, we need to bear in mind that the time lag in publication means that there are fewer data points in more recent years. The indices are regularly updated.

Figure 1
Statistic of the Source Data

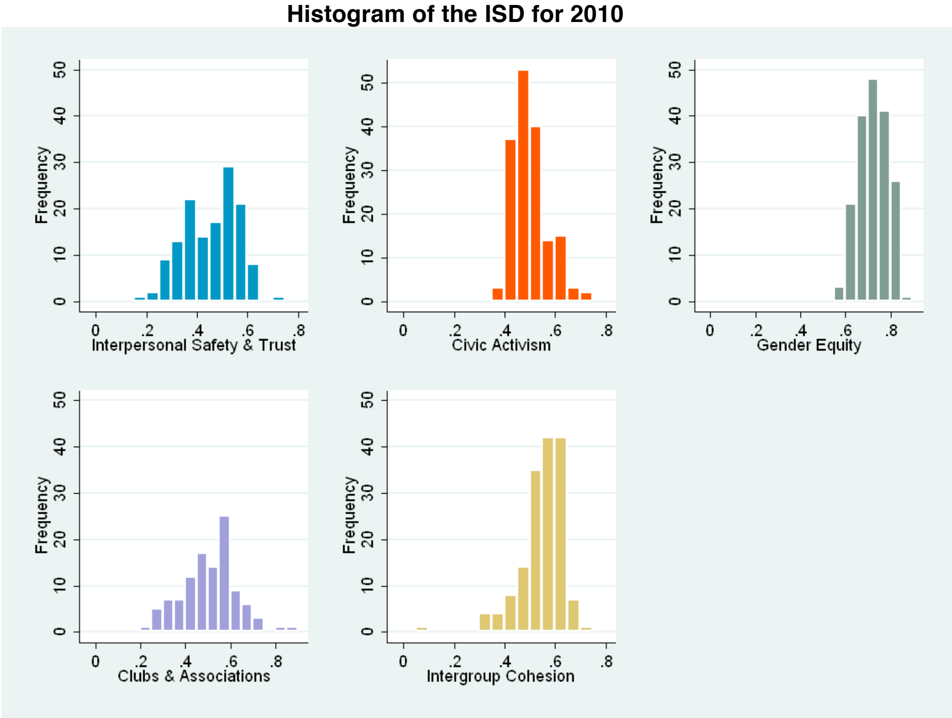


The 200 plus variables are not all collected every year. Some variables have been dropped; new ones have been adopted. Some have been in use almost through the entire 22 year period; others for a much shorter time. The numbers of observations from different variables also vary, although there is usually some intra-variable consistency from year to year. The pattern of sampling is indicated in Appendix 2 where the number of samples (country data) collected for each variable is shown for all the variables through the period 1998-2010.

Following the application of the Matching Percentile Method, the final ISD results are available as a country statistic (a positive number between 0.0 and 1.0) in each of the five dimensions for each of the anchor years. The ISD data set is summarised in Appendix 3, where the number of countries represented, the mean score, standard deviation, minimum and maximum are tabled. Understandably, fewer country data are available in the earlier years.

Figure 2 plots the frequency histogram for each of the indices for 2010.

Figure 2
Histogram of the ISD for 2010



The indices do not have the same distribution. In particular, Gender Equity has a narrower range than the others, indicating a narrower gap between countries.

Indices do change over time so the intra-index correlation from one anchor year to the next is not perfect[9]. The trend of a country's score provides an interesting view on a country's shifts in social institutions. For this study, there will be less focus on individual countries and more on how different countries' trends change. The individual ISD plots of each of the countries has been created by the author and is made available here: <http://indsocdev.wordpress.com/2011/09/08/isd-by-country/>.

We will initially look at the overall trend of each of the indices. Figure 3 shows at a glance the mean country scores and the two standard deviations bracket for each of the five anchor years, based on all available data (including incomplete country scores).

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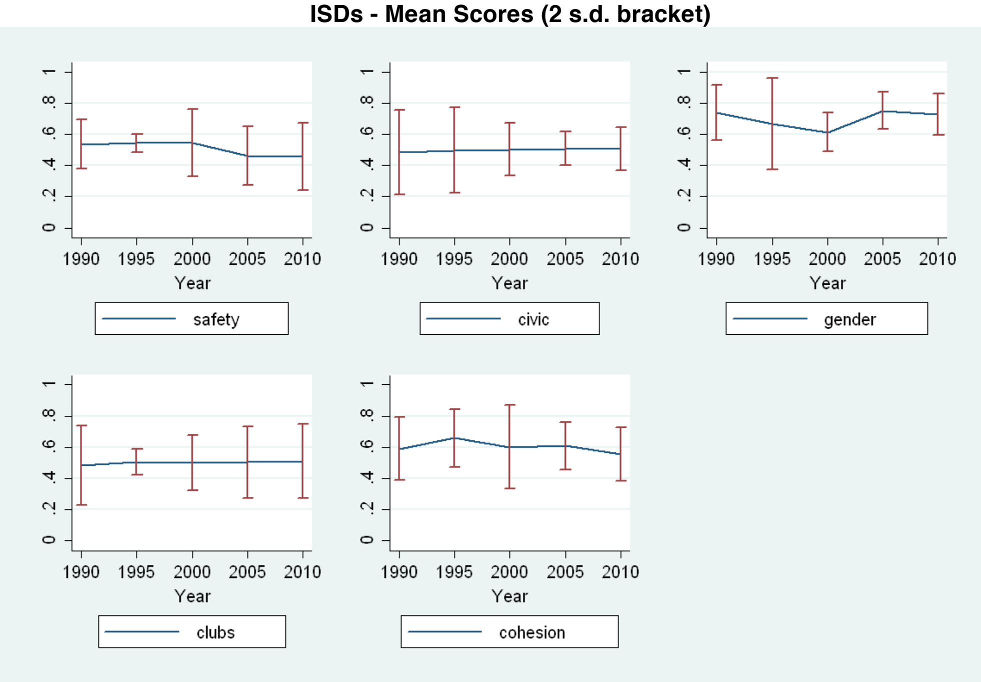
[9] A complete correlation table is presented in Appendix 4, where the correlation between different years from the same ISD is listed.

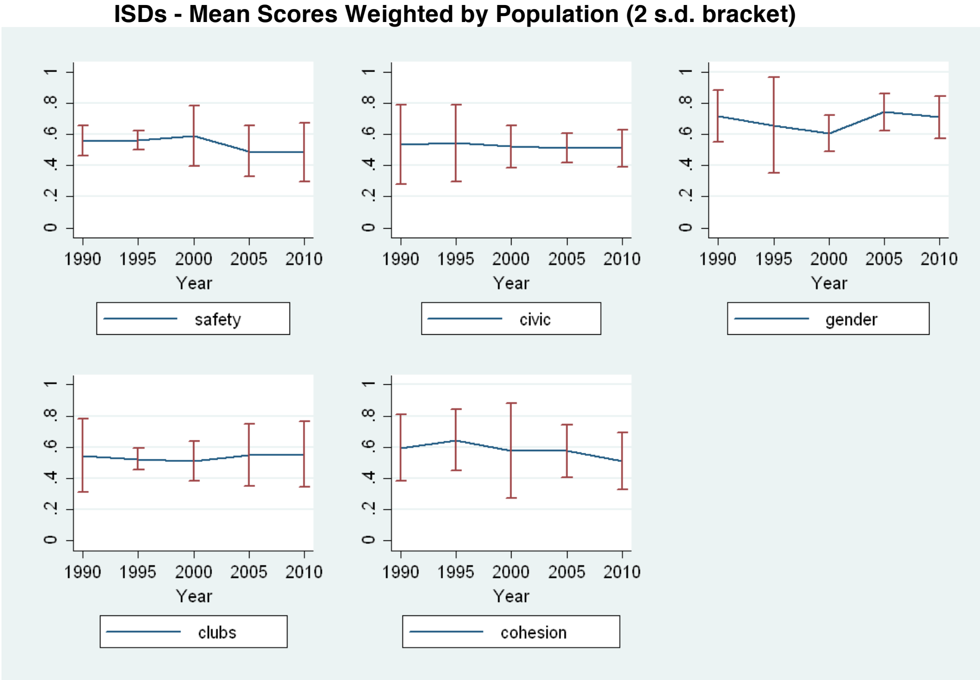
Figure 3
ISDs - Mean Scores (2 s.d. bracket)



The mean scores for Civic Activism and Clubs & Associations do not change much through the 20-year period although there may be a slight increase for Clubs & Associations. The Gender Equity Index shows a noticeable decline to year 2000 but seems to recover to earlier levels. Interpersonal Safety & Trust shows a decline since 2000. Inter-group Cohesion shows steady decline since a high in 1995. These macro changes in Interpersonal Safety & Trust and Inter-group Cohesion are not due to any technical hiccups, say, sudden changes in data sources; rather, they appear genuine changes in these dimensions. The trends are better understood when the indices are examined as country patterns in the next section.

The average scores in Figure 3 are unweighted by population thus giving equal weight to all countries. At one level, this could be viewed as equitable placing equal importance on all countries. In assessing the aggregate human condition, however, a population weighted average would more closely reflect the species as a whole. This is produced in Figure 4. The results are similar to the unweighted numbers. It is worth bearing in mind that unwieghted country scores will be used in Chapters 3 and 4.

Figure 4
ISDs - Mean Scores Weighted by Population (2 s.d. bracket)



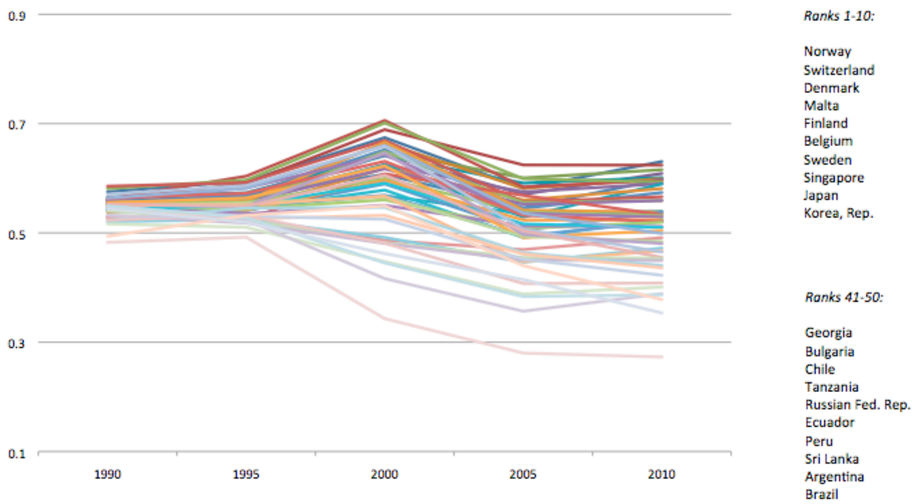
We will next take a look at the disaggregated country scores for each of the indices. Visual presentation will be used to show the trends over time.

2.3 Detailed Diagnostics

2.3.1 Interpersonal Safety & Trust

In this and the following sections, only countries with complete data are presented. Figure 5 plots the country scores on the Interpersonal Safety & Trust Index for the five anchor years.

Figure 5
Interpersonal Safety & Trust



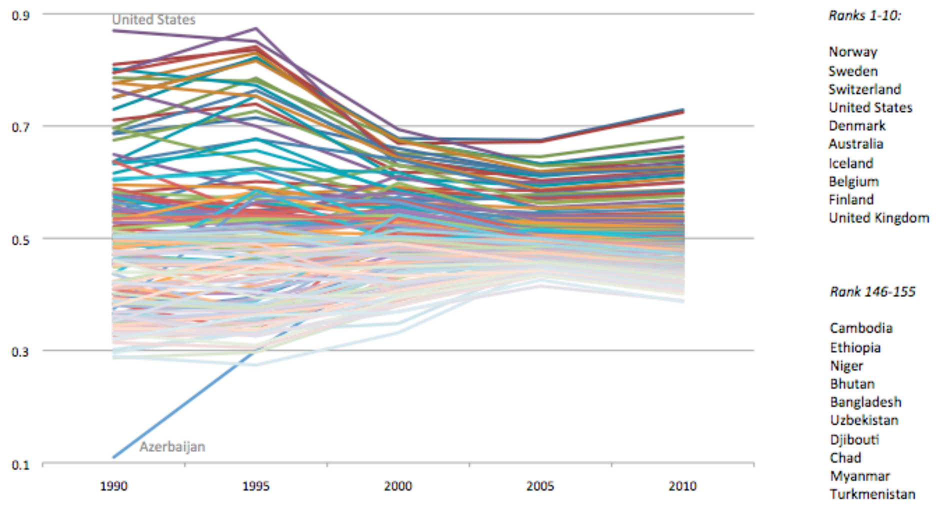
Let us note that the scores for only 50 countries are available. This Index has the smallest set of complete country data. The scores seem to have diverged from the beginning to the end of the period. The gains made in the early years have, since 2000, mostly dissipated and many countries have lost more ground by 2010. The indicators (Appendix 1) show that this index is composed of both crime statistics and perceptions. It would appear that people feel less secure and find others not as trustworthy. Crime rate indicators support their sentiments.

The overall trend shows a decline in real and perceived safety and trust; the divergence in more recent years indicates a greater deterioration for some countries.

2.3.2 Civic Activism

By contrast, the Civic Activism Index shows country convergence in the 20-year period (Figure 6). This index has complete data for 155 countries. The convergence manifests with countries high on the Index losing ground while countries lower on the Index gaining overall.

Figure 6
Civic Activism



At first glance the Index seems straightforward; the notable decline in Western Europe and North America could signal a growing malaise in countries with a tradition of civic activism while the gain by countries on the lower end of the Index could indicate greater participation in civic society.

Reviewing the list of variables in Appendix 1, however, raises a different possibility. Variables such as 'participation in demonstration', 'getting news from different sources' could reasonably be said to measure stable phenomena. Other variables such as 'number of radios per household/per capita', 'daily newspaper titles per capita' arguably may not capture the full spectrum of the more recent civic activities, e.g. those happening on the Internet. For the Internet-connected, the form of civic participation has changed significantly. There are now web-based civic advocacy groups such as avaaz.org, democracy action sites such as moveon.org, democracynow.org, as well as newer forms of participatory journalism. It is possible that this type of participation has substituted for the more conventional forms of civic activism. If so, it is not certain that there have indeed been a decline in civic activism in North America and Western Europe.

Evidently the Index needs to incorporate variables that take the newer forms of activity into account. This issue could be termed a *coverage* problem in that, as behaviours change, existing indicators may not cover the range of activities that indicate the particular institution.

The extent to which the new variables could substitute or complement the existing ones will determine the longitudinal stability of the Index. Indicators on participation tend to use "time spent" as a determinant of involvement. In many cases, it would be relatively straightforward to substitute variable for variable. On the other hand, it is possible that 'light' participation on the Internet at a higher frequency could be equivalent to 'heavy' involvement of a more conventional form. As an example, would an hour of watching news be comparable to seconds of following politicised tweets throughout the day?

The reflection here shows that for an index such as Civic Activism, much depends on human activities that could change shape resulting in a shortcoming in *coverage*. As new variables are introduced, substitution is not a straightforward affair. Maintaining continuity and equivalence becomes an important job for the index makers. If equivalence is in doubt then Lambsdorff's (2007) caution against year-on-year comparisons in light of changes in sample and methodology is all the more germane.

2.3.3 Gender Equity

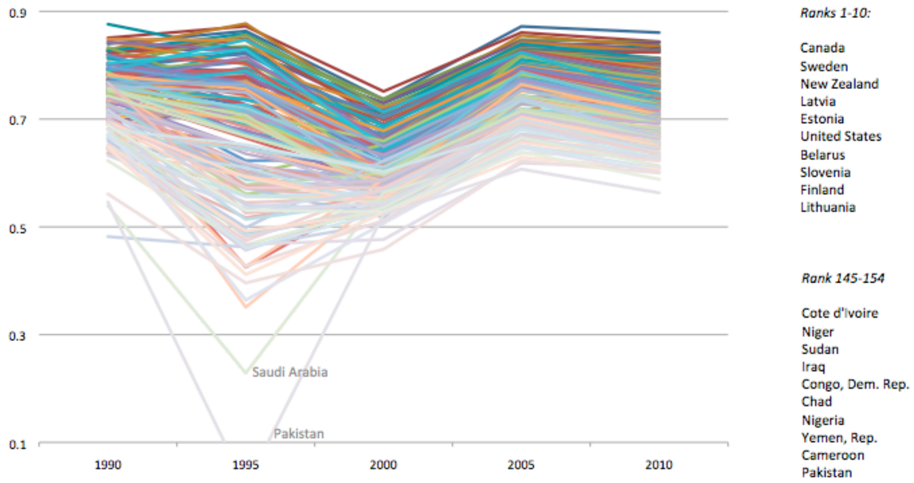
The Gender Equity Index (*n=154*) is puzzling for the high diversity around year 1995 and the drop around 2000 (Figure 7 below). Otherwise, countries, especially in recent years, seem to move in tandem, with no overall large gains from 1990 to 2010. This index has the highest scores and may have reached the limit of sensitivity for measuring further improvements using the current set of indicators.

The divergence of data in 1995 is somewhat puzzling. This index, together with Civic Activism, is the most complete with many countries participating from 1990 onwards. In a largely patriarchal world, this index would be expected to be persistent and slow to change. The largely parallel shifts from 2000 onwards suggest that progress has been made across the board but the divergence between countries remains. The list of indicators in Appendix 1 shows some attitudinal questions as well as 'hard' statistics such as the ratio of female-male school enrolment. Neither of these categories is susceptible to quick change. The outliers in 1995 (Saudi Arabia and Pakistan, with a massive drop followed by recovery) suggest a possible *measurement anomaly* due to errors in measurement or incomplete data[10]. This concern will be given attention when the index is used in Chapter 3[11].

[10] Roberto Foa. Personal communication, September 2011.

[11] If one should take the data at face value, it is possible that around the 1995 anchor year, coinciding with the controversial Fourth World Conference on Women in Beijing, there might have been greater country differences due to a diversity of responses from governments. Further analysis is warranted. I owe this insight to Irene van Staveren. Personal communication, October 2011.

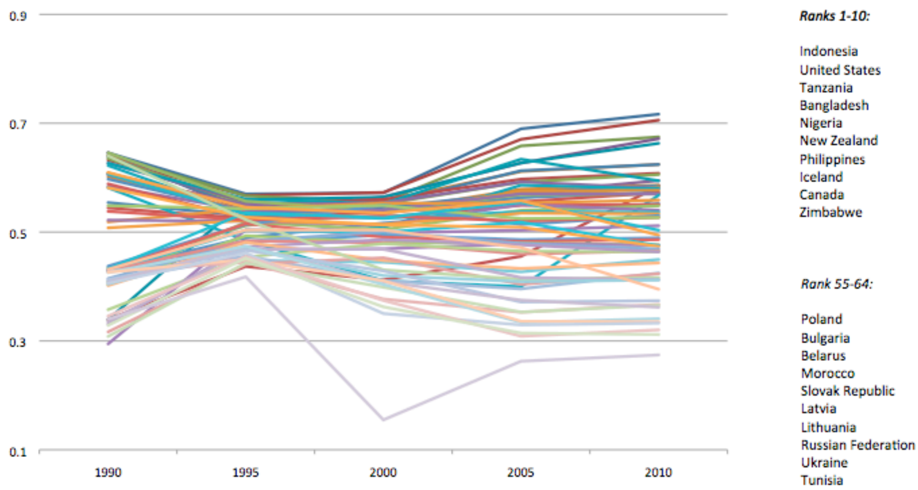
Figure 7
Gender Equity



2.3.4 Clubs & Associations

Fewer complete data sets are available (*n=64*) for Clubs & Associations. Even though the averages appear flat, the country trends show a divergence from 1995 to 2010. There appear to be sharp increases as well as declines. These patterns suggest changes that could prove interesting.

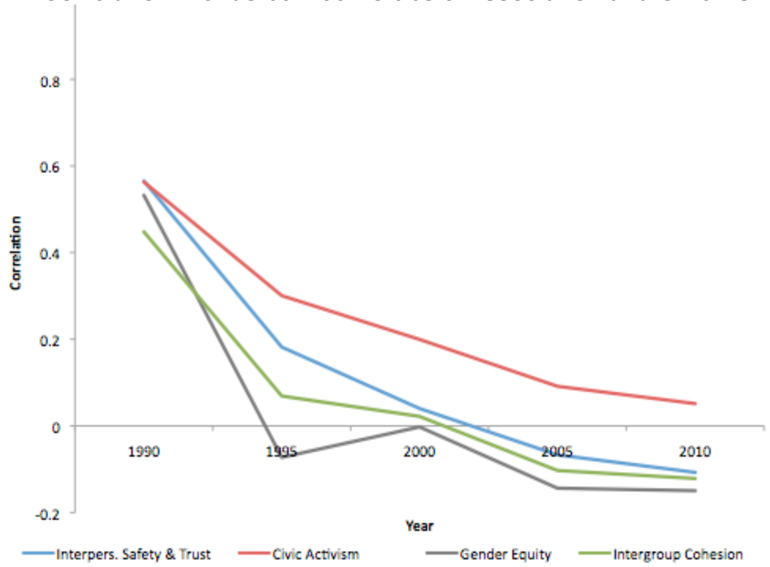
Figure 8
Clubs & Associations



One way to look at the changes in the index is to see how it correlates with itself. Appendix 4 tables the Pearson correlation between different anchor years for each of the ISDs. Amongst the five indices, Clubs & Associations has changed the most, in so far as the correlation between 1990 and 2010, the two end points, is the lowest, at 0.67.

This index is also the most dissimilar to the rest of the ISDs. Appendix 5 shows the correlation between the indices over time. These are reproduced graphically in Appendix 6. The correlation between Clubs and Associations with the rest of the ISDs is graphed in Figure 9 below (Figure 26 of Appendix 6). The earlier positive correlation with other ISDs, i.e. between 0.45 and 0.57 in 1990, has turned largely negative or zero by 2010, i.e., between -0.15 and 0.05. In contrast, the correlation between the other ISD, though (expectedly) having declined over the years, remains positive (0.42 ~ 0.64) (see Appendix 5).

Figure 9
Correlation Trends between Clubs & Association and Other ISDs

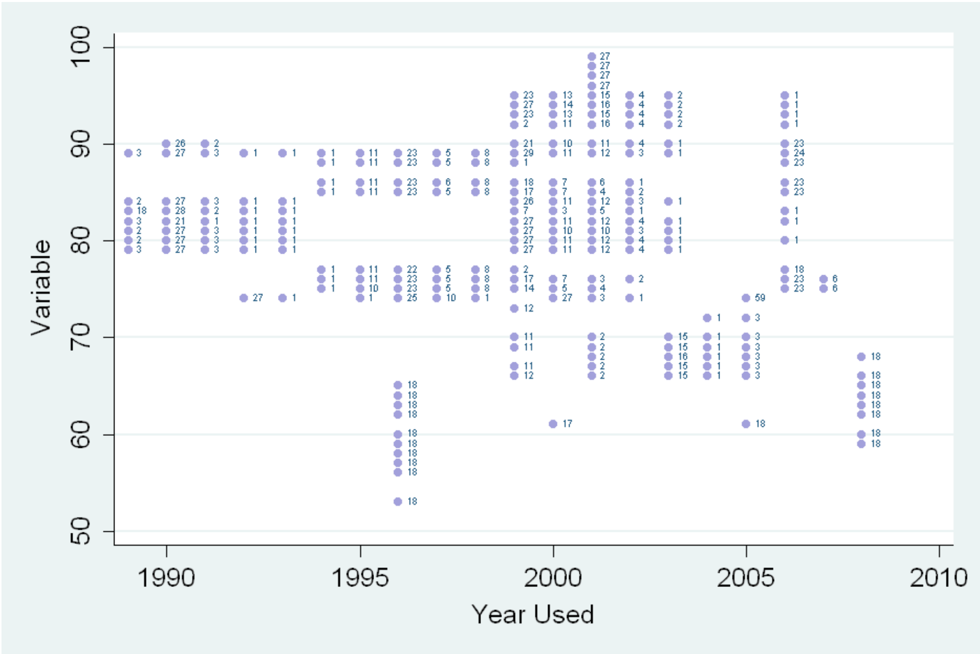


These findings are indeed puzzling. First of all, Clubs & Associations reasonably started out as a positive correlate to the other ISDs. As one of the measures of informal social institutions, this is to be expected. The change, from positive correlation to low or negative correlation while other ISDs maintain some correlation with each other, suggests one or two things about the Clubs & Associations Index.

First, the indicators used for this Index have changed over the years and that this could mean that Clubs & Associations measure different *empirical* phenomena. The variable use is plotted in Figure 10. The variable identification number (y-axis) is arbitrary. The number of observations is indicated next to the variable. Although some variables are used quite extensively, no single one is used through the entire period. The Matching Percentile Method is meant to be robust to some substitution. It is not clear whether, as variables change, the overall index takes on different characteristics. The change over time in what is measured could explain the change in this Index's relationship with the other indices. Should this be the case, this calls into question the longer-term veracity and reliability of Clubs & Associations as a measure of one particular social institution. We could call this a *shift in proxy*.

The broad list of questions in Appendix 1 suggests that they are indicators of common activities (e.g. religious meeting attendance, participation in sports club, etc). It would seem unlikely that the measured phenomena are different, even if the raw indicators used might have changed. This leads us to a second possibility.

Figure 10
Variables Used in Clubs & Associations



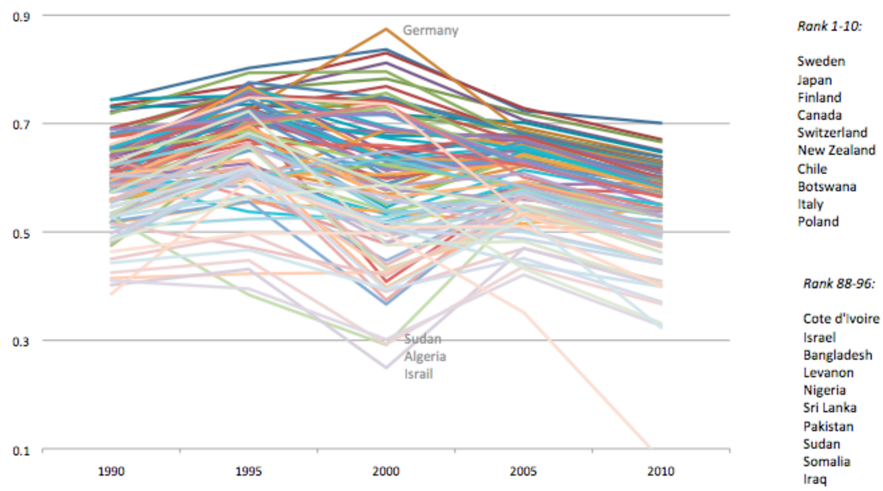
Supposing that the variable set, even though varying over the years, does measure stable phenomena, it is possible that the measurement of such phenomena does not continue to serve the original intent of the index. The Clubs & Associations Index uses variables such as attendance at youth clubs, religious meetings and participation in voluntary organizations serve to gauge “relations of trust and cohesion within local communities” (de Haan 2011: 10). With the increasing presence of communications technology in modern social life, the more traditional variables might need to make way for measures of on-line participation. Does active social networking, with the frequent and more plentiful “shallow” connections, count as more or less in “relations of trust and cohesion” over conventional social involvement? Such considerations are important in ensuring that the variables continue to be appropriate to the task. This is a variant of the *coverage* problem discussed in the section on Civic Activism.

There is a third possibility that might account for the peculiar trend in the Clubs & Associations Index. Even if the phenomena being measured have not changed, it is possible that what the phenomena *indicate* have changed. What we measure matters. What the measured indicates matters more. Along this line of thinking, one wonders if the phenomenon of community participation might have over the years come to indicate different things? Is it possible that Clubs & Associations as a positive correlate to other indices in the early part of the last 20 years has become, in recent years, the measure not of community for positive change and fellow-feeling, but of sectarianism and exclusion? Could Clubs & Associations have become a proxy of inward-looking tendencies, standing quite alone apart from the other indices and the institutions they measure? In other words, one questions whether there had been a *shift in meaning* for the indicators and whether the Index has now come to tap a different kind of institution. This remains to be researched.

2.3.5 Inter-group Cohesion

The Inter-group Cohesion Index (*n=96*) presents the most interesting picture (Figure 11). There appears to be an overall decline (see also the mean scores plot in Figure 2 on page 14). However there are country patterns that are notably quite different from one another. The highest mean score for the period occurs around 1995[12]. Many countries' scores decline from 1995 onwards although some decline following a later peak in 2000. This dual peak phenomenon will be explored as a case study in Chapter 4[13].

Figure 11
Inter-group Cohesion



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[12] Since social changes occur slowly, for the sake of brevity the ISD project presents data in five-year intervals. The scores at the anchor years are based on averages from the 5 years centred on the anchor year. It is therefore not possible, without re-computation and deviating from the project's practice, to pinpoint the year that has the highest mean score.

[13] There is no prima facie case to suggest that there was a *measurement anomaly*, according to Roberto Foa. Personal communications, August 2011.

2.4 Epistemology revisited

In this chapter, I have outlined the Matching Percentile Method in the construction of the ISDs as well as some of the original diagnostics. In reviewing country trends for individual indices, further diagnostics questions were raised in four different categories: *measurement*, *coverage*, *shift in proxy* and *shift in meaning*. All indices to a certain extent are subject to *measurement* anomalies. Where human activities change over time, some indices may be more vulnerable to *coverage* issues and shifts in *proxy* and *meaning*. It is worth emphasizing that these diagnostic comments came out of puzzling over the country patterns and the inter-relationships between the ISDs and are not definitive statements about the data. They will, it is hoped, help future work on the ISD.

In this context, let us now consider what reservations there might be in using the data in quantitative analyses. If our ontological position had been positivist and the epistemology were intended to provide proofs of the relationships between data, then any questions raised about the veracity of the data would necessarily cast doubt on subsequent quantitative exercises. The positivist method of induction relies on repeatable sequences of events. It also presupposes hypotheses that are open to falsification (Popper 1963). The aim in the present study, on the other hand, is to engage the ISD database, to look at the possible mutual influences between the institutions that the ISDs measure and national income levels, the HDI as well as a measure of inequality in society, the Gini for household income. The approach is one of exploration and uncovering. The epistemology is that of offering hypotheses that best explain the data. The critical realist views all empirical data as translations and representations of *actual* events. They are potentially noisy and faulty. Nevertheless, they are manifestations of events that are enabled and constrained by underlying mechanisms and structures, activated through people. Whatever causal connections one might find in the empirical variables are *emergent* phenomena of deeper processes. Any conclusions one seeks to draw about the connections would be tentative postulates about structures through a process of retroduction, and would be subject to debates at the level of mechanisms and structures. Debates about the veracity of the data will continue and any new developments there may indeed modify our postulates. CR allows us humbly to move forward despite some of the challenges in the data. With this in mind, let us turn next to explore possible causal connections.

Chapter 3
Seeking Causal Influences

In this chapter, I will attempt to answer one of the main research questions (Question 2).

3.1 ISD and GDP Per Capita

One of the aims in development research is to identify factors that would foster economic growth. On a prima facie basis, one would expect social norms and institutions to be correlated with GDP, as in the aphorism, "all good things go together". Table 2 tabulates the correlation between GDP Per Capita (*gdppc*) and the indices of ISD for each of the anchor years. Figure 12 plots these graphically. There is consistent correlation for between *gdppc* and Civic Activism, Inter-group Cohesion and Gender Equity (particularly high for Civic Activism) and a much lower correlation between *gdppc* and Clubs & Associations. This echoes Appendix 5 where Clubs & Associations correlates little or negatively with the other ISDs.

There is evidence of increase in correlation between *gdppc* and Interpersonal Safety & Trust. This trend is interesting and will be examined in greater detail in the next section. For now, it suffices to note that the correlation patterns are suggestive of a relationship, but they do not provide any information as to any causality between the variables.

Table 2
Correlations between GDP Per Capita and each of the ISDs

Per Capita GDP	Interpers. Safety & Trust	Civic Activism	Gender Equity	Clubs & Associations	Intergroup Cohesion	N=
1990	0.2431	0.8469	0.4598	0.1398	0.6861	44
1995	0.5647	0.9016	0.609	0.2023	0.5306	60
2000	0.5475	0.8768	0.6261	0.2688	0.5839	83
2005	0.6176	0.8633	0.5306	0.0924	0.594	101
2010	0.6687	0.8547	0.5588	0.0306	0.6062	101

Figure 12
Correlation between all ISD and GDP Per Capita

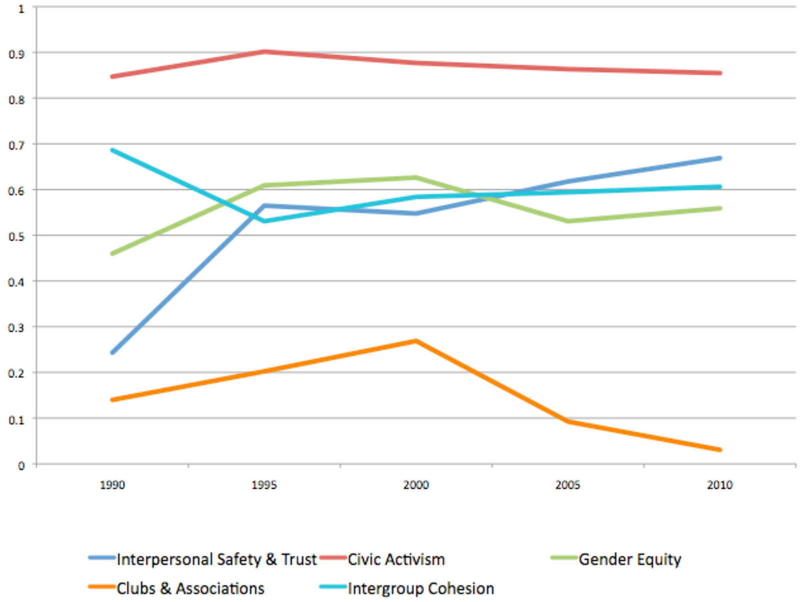
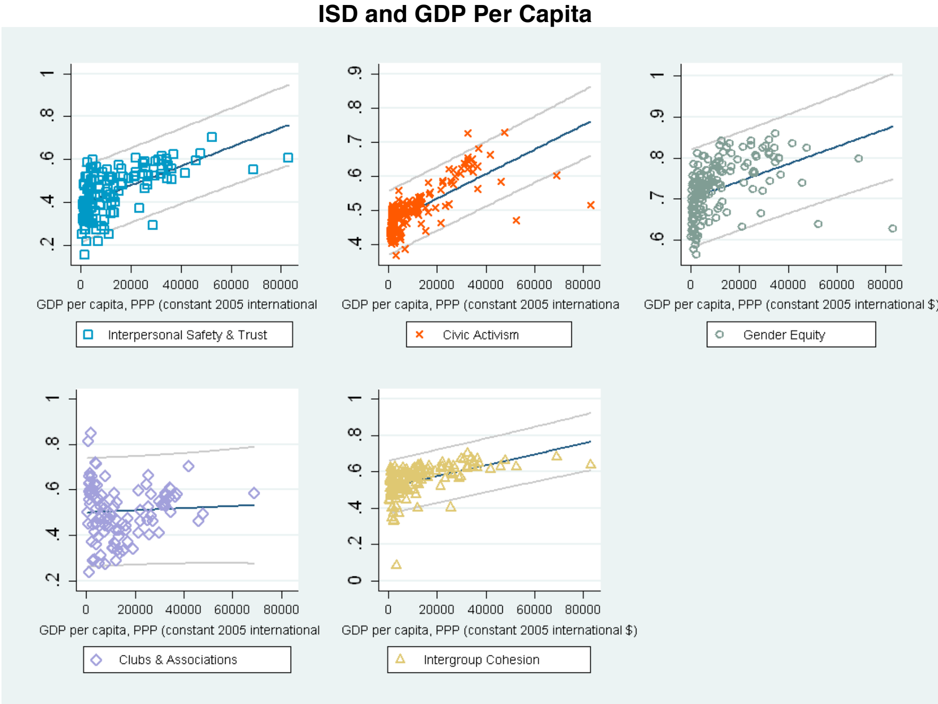


Figure 13 plots the country scores of the five ISDs (y-axis) against GDP Per Capita (x-axis) with available data in 2010. The linear fit is plotted (in solid blue lines) together with (grey) lines indicating the 95-percent interval. The patterns reflect the correlation results presented before. The lack of correlation between *gdppc* and Clubs & Associations is evident. This is significant, as we shall see.

Figure 13
ISD and GDP Per Capita



3.1.1 Test 1 – Core Group

3.1.1.1 The Granger Test: Method Outline & Justification

Where long run data are available, a typical panel study makes it possible to estimate the size of the effect of the regressors (IVs) on the regressand (DV) through regression. To employ such a technique, certain assumptions about the population have to be met (Verbeek 2004). For example, in a Fixed Effects model, one has to assume, *ceteris paribus*, that the effect of the regressors(s) on the regressand have identical magnitude on the individual units (in our case, countries). Such assumptions are usually not realistic. It is also not our purpose in this study to come up with an estimation of the effects. Parametric determination presupposes that the DV would be influenced by the IVs to a fixed extent, other things being equal (Verbeek 2004). Our purpose, however, is to discern any (mutual) influences between social institutions and national income levels and it is recognised that such influences may be quite varied. In using country data, this study particularly does not intend to make any *ceteris paribus* assumptions. I propose instead to adapt the Granger test to establish time precedence between co-variates.

In this study, the Granger causality test is used specifically to investigate if ISDs could be shown to 'cause' levels of income. I also investigate the inverse case: whether the income level 'causes' ISDs. I will use the term 'Granger cause' technically, which indicates statistical significance in particular Granger causality tests. Conceptually, the term could indicate temporal precedence, certain unexplained concomitance, or direct causality. Granger causality would not discern any third variable (in the traditional sense of omitted variables) that is the actual cause for the concomitant changes in both income levels and ISDs. The logic behind the Granger test is simple: time does not run backwards. It is recognised that if X causes Y (X->Y) then X temporally must occur before Y. In other words, changes in Y due to the presence of X must come after X. Now it is entirely possible that there exists Z, which influences both X and Y (Z->X, Z->Y). Furthermore, if the influence of Z on X occurs more quickly than its influence on Y, then *empirically*, it would appear that X->Y when in fact it is Z->X and Z->Y, with the Z->Y occurring at a time-lag to Z->X. Without examining all possible Zs, it is impossible to state unequivocally that X->Y. Assuming an open system in which the researcher is not omniscient (about all possible Zs), a weaker statement can nevertheless be made, namely, that X *precedes* Y (X~>Y). While uncovering the Zs is exciting, establishing X~>Y is equally relevant. I use Granger tests to identify, at a minimum, possible temporal precedence between variables to provide suggestive causal patterns for further analysis.

The ISD database has only five data points (lags) per index per country so it would not be feasible to perform a time series type of analysis for each country, as would be conventional in panel studies. We therefore aggregate all countries and examine the effects on them as a group. This obviously is of some concern as countries have different development paths. The period under study evidently represents a short segment of history in the scheme of things. There are some omissions in the data set such that not all countries are represented in all indices for all anchor years. These omissions would result in the exclusion of the countries in the particular analysis. Let us bear in mind therefore that any Granger causality result refers to a particular data set, even if the results for all the indices will sometimes be presented together.

In general, regression is taken of the dependent variable (DV), Y, of the latest epoch over a series of Y in prior epochs as well as a series of the "Granger cause" candidate X in the prior epochs. I then test the null hypothesis that, all of the prior X influences are zero. ISDs are available for five anchor years since 1990. The following is a generalised model:

$$Y_{2010} = \alpha_0 + \alpha_{2005}X_{2005} + \alpha_{2000}X_{2000} + \alpha_{1995}X_{1995} + \alpha_{1990}X_{1990} + \beta_{2005}Y_{2005} + \beta_{2000}Y_{2000} + \beta_{1995}Y_{1995} + \beta_{1990}Y_{1990} + \varepsilon_1$$

$$H_0: \quad \alpha_{2005} = 0; \alpha_{2000} = 0; \alpha_{1995}=0; \alpha_{1990} = 0$$

Y is set to GDP Per Capita (*gdppc*) and X is set to, in separate models, each of the individual ISD. Thus, we could test if ISD Granger causes *gdppc*. Conversely, we also test if *gdppc* Granger causes the ISD (Granger 1969, Monogan 2010). Mazumdar (1996, 2000) has employed this technique in prior works on trust and economic growth.

It is important to note in this bi-variate case, no other variables are introduced. Any statement that can be made about causality is this, that past variations in X provides information that contribute to explaining variations in (the current) Y more than past variations of Y alone. Granger causality thus makes no claim about direct causation or if any such 'causes' in X are necessary and/or sufficient for Y. For our purposes, the Granger logic is entirely appropriate. The intent of this study is not to link *empirical* observations as though there is certain invariability to their connection. Rather, it is to use the empirical findings to further discussions about the *actual* events and structures and mechanisms from which the empirical connections emerge.

The Matching Percentile method has the ability to aggregate indicators. This has resulted in a much larger number of data points for ISDs than conventional indices. Even so, only 37 countries have data for all the ISDs, for the entire period. They form the core group. This list is included in Appendix 7. As a fraction of the some 190 countries in the database, the list is admittedly small. However, there is good representation for Europe and Asia (especially G20 countries), as well as Latin America and Eastern Bloc; but less so for Africa and MENA. This set of countries represents a slice of the world for which the ISD data are complete. Our initial exploration will be restricted to them.

3.1.1.2 Results

Granger tests are logged in Appendix 8 and summarised in Table 3. For this group of 37 countries, the only statistically significant causal flow runs from Clubs & Associations to *gdppc*. That is to say, in statistical terms, the past variations in Clubs & Associations provide additional information to account for the present *gdppc* variations in these countries, in addition to past *gdppc* variations (i.e. the 4 prior epochs). The evidence points to the institutions that Clubs & Associations measures having at least time precedence to *gdppc*; in stronger terms, they could have a positive or inverse influence on *gdppc*. The term "Granger causality" is used to describe either possibility.

Table 3
Granger Tests for ISDs and GDP Per Capita – Core Group

Granger Causality (Robust estimates)		*F Statistics*	*Prob.*	*d.f.*
Safety & Trust ->	*gdppc*	1.57	0.210	(4,28)
gdppc ->	Safety & Trust	1.99	0.127	(4,28)
Civic Activism ->	*gdppc*	0.39	0.817	(4,28)
gdppc ->	Civic Activism	1.30	0.295	(4,28)
Gender Equity ->	*gdppc*	2.02	0.118	(4,28)
gdppc ->	Gender Equity	1.16	0.347	(4,28)
Clubs & Associations ->	*gdppc*	4.29 **	0.008	(4,28)
gdppc ->	Clubs & Associations	0.50	0.736	(4,28)
Intergroup Cohesion ->	*gdppc*	1.43	0.251	(4,28)
gdppc ->	Intergroup Cohesion	0.96	0.444	(4,28)

*** *Probability <0.001*
** *Probability <0.01*
* *Probability <0.05*

The Granger tests are further applied between the ISDs in pairwise fashion. The rationale for this series of tests is that social institutions could have mutual influences and it is reasonable to assume that some of the institutions may be antecedent to (and hence Granger cause) others. The Granger results are logged in Appendix 9 and summarised in Table 4. The only statistical significant causal flow runs from Civic Activism to Gender Equity. Marginally, there could be a causal flow from Gender Equity to Civic Activism, from Interpersonal Safety and Trust to Inter-group Cohesion and mutual flows between Clubs & Associations and Inter-group Cohesion.

Table 4
Granger Tests between ISDs – Core Group

Granger Causality (Robust estimates)		*F Statistics*	*Prob.*	*d.f.*
Safety & Trust ->	Civic Activism	0.88	0.487	(4,28)
Civic Activism ->	Safety & Trust	1.07	0.391	(4,28)
Safety & Trust ->	Gender Equity	1.50	0.230	(4,28)
Gender Equity ->	Civic Activism	1.85	0.148	(4,28)
Safety & Trust ->	Clubs & Associations	1.69	0.181	(4,28)
Clubs & Associations ->	Safety & Trust	0.52	0.720	(4,28)
Safety & Trust ->	Intergroup Cohesion	2.23 +	0.092	(4,28)
Intergroup Cohesion ->	Safety & Trust	1.30	0.293	(4,28)
Civic Activism ->	Gender Equity	2.72 *	0.050	(4,28)
Gender Equity ->	Civic Activism	2.27 +	0.087	(4,28)
Civic Activism ->	Clubs & Associations	1.91	0.136	(4,28)
Clubs & Associations ->	Civic Activism	1.08	0.387	(4,28)
Civic Activism ->	Intergroup Cohesion	1.20	0.333	(4,28)
Intergroup Cohesion ->	Civic Activism	1.63	0.195	(4,28)
Gender Equity ->	Clubs & Associations	0.46	0.767	(4,28)
Clubs & Associations ->	Gender Equity	0.96	0.447	(4,28)
Gender Equity ->	Intergroup Cohesion	1.40	0.260	(4,28)
Intergroup Cohesion ->	Gender Equity	1.47	0.237	(4,28)
Clubs & Associations ->	Intergroup Cohesion	2.37 +	0.076	(4,28)
Intergroup Cohesion ->	Clubs & Associations	2.50 +	0.065	(4,28)

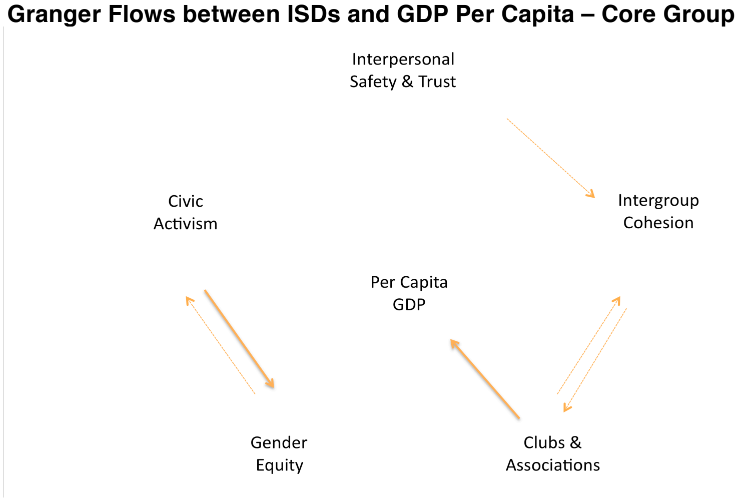
** *Probability <0.01*
* *Probability <0.05*
\+ *Probability <0.10*

Diagrammatically, these Granger causal flows are depicted in Figure 14, where solid arrows indicate statistically significant flows and light dotted arrows indicate marginal flows.

The flow from Clubs & Associations to *gdppc* stands in contrast to Knack and Keefer (1997) who did not find associational activities to be a significant factor but does support other studies in the literature (Granovetter 1973, 1983, Olson 1982, Putnam 1993). The implication is that associational activities do not appear to produce uniform and predictable results. There appears to be more nuance to this subject. We shall look into this flow in more detail later.

Discussions on the marginal flows will take place in the next section.

Figure 14
Granger Flows between ISDs and GDP Per Capita – Core Group



3.1.2 Test 2 – All Groups

Although only 37 countries have complete data on all five indices, many have complete data on some of the indices. Since the Granger test is applied pairwise between two variables, more countries could be included for each pairwise causality test. This would improve the power of the statistical test, i.e. more likely to reject the null hypothesis when it is false, or, less likely to commit a Type II error. On the other hand, using different groups of countries in separate tests raises the question of whether the various tests could be combined. Strictly speaking, a test speaks only to the cohort that makes up the data. Anything that is said about any one causal flow ultimately can only truly be said about a particular data set, i.e., the collection of countries for which the data is complete for that test. In any research paradigm, generalization is often put forth as possibly applicable to the larger species from which a specific sample is drawn. It is in this same spirit that we proceed with the next set of Granger tests, using all available data. I posit the idea that the causal flows that might emerge from these tests, though based on varying data sets, could paint a larger picture of causal flows *the same as if* we have all data for all countries. This seems a reasonable exercise since our aim is not to establish a "proof" for any causal flow but to uncover possible causal flows. Anything that is put forward evidently requires further validation. With the Granger results in hand for a small core group, it would be of especial interest to see if the "mixed group" exercise at least does not contradict the small group findings. If anything, one expects more causal flows to become evident, while the causal flows discussed earlier would be present as well.

The Granger causality results are logged in Appendix 10 and summarised in Table 5. There are 50 countries in the test for Interpersonal Safety & Trust, 140 for Civic Activism, 141 for Gender Equity, 63 for Clubs & Associations, and 92 for Inter-group Cohesion[14].

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[14] The number of observations could differ slightly between the two tests of flows of opposite directions.

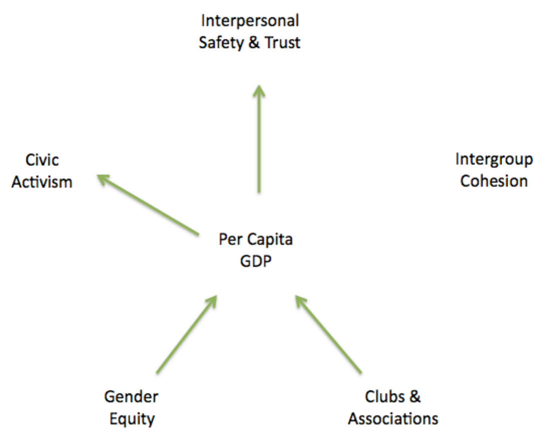
Table 5
Granger Tests for ISDs and GDP Per Capita

Granger Causality			*F statistics*		*Prob.*	*d.f.*
Safety & Trust	->	*gdppc*	0.96		0.439	(4,41)
gdppc	->	Safety & Trust	6.18	***	0.001	(4,41)
Civic Activism	->	*gdppc*	1.17		0.328	(4,131)
gdppc	->	Civic Activism	2.67	*	0.035	(4,134)
Gender Equity	->	*gdppc*	4.62	**	0.002	(4,132)
gdppc	->	Gender Equity	1.86		0.121	(4,135)
Clubs & Associations	->	*gdppc*	3.66	**	0.010	(4,54)
gdppc	->	Clubs & Associations	1.46		0.227	(4,54)
Intergroup Cohesion	->	*gdppc*	1.51		0.205	(4,83)
gdppc	->	Intergroup Cohesion	0.51		0.726	(4,84)

*** *Probability <0.001*
** *Probability <0.01*
* *Probability <0.05*

Out of the 8 models, 4 are statistically significant. The results show that *gdppc* Granger causes Interpersonal Safety and Trust as well Civic Activism. At the same time, Clubs & Associations and Gender Equity Granger cause *gdppc*. It is worth noting that the causal flow from Clubs & Associations to *gdppc* indicated in the last section (n=37) is present here also (n=50). These causal flows are diagrammed in Figure 15 below.

Figure 15
Granger Causality between ISD and GDP Per Capita



The present result provides evidence that income level Granger cause Interpersonal Safety & Trust index, but not vice versa. It has been said that trust provides the secure and safe environment necessary for economic transactions and therefore encourage growth while economic growth, in turn, may foster the kind of institutions, both formal and informal, that protect interpersonal safety and trust. The present result shows the causal flow only to be one way, namely, from GDP to Interpersonal Safety & Trust. Not finding causal flow from trust to income level does not necessarily contradict previous findings. More importantly, the evidence for causal flow from GDP to trust suggests that what Interpersonal Safety & Trust Index measures could in part be the result of income levels.

Civic activism has the highest correlation with *gdppc* (see Table 2 above). This correlation, according to the Granger test, seems to translate into a one-way causal flow from *gdppc* to Civic Activism. There appears not to be a reverse causal flow.

On the other hand, two of the ISDs, Clubs & Associations and Gender Equity, are indicated to Granger cause *gdppc*. Because of the possibly unusual divergence of data in 1995 for the Gender Equity Index, this last causal flow was also tested excluding the 1995 values, with no change in the result.

3.1.3 Level and Polarity of Causal Influence

It is worth noting that the IVs of the same indicator from different years are, naturally, correlated. Because of this multicollinearity, the coefficients for the variables from different years (whether for *gdppc* or one of the ISDs) could not be used to estimate the size of influence of the *individual* (yearly) variables since they could swing widely on small changes in the data set.

> "When two IVs are highly and positively correlated, their slope coefficient estimators will tend to be highly and negatively correlated. When, for example, b1 is greater than β1, b2 will tend to be less than β2. Further, a different sample will likely produce the opposite result. In other words, if you overestimate the effect of one parameter, you will tend to underestimate the effect of the other. Hence, coefficient estimates tend to be very shaky from one sample to the next." (Williams 2011: 2)

The aggregation of the coefficients from collinear IVs is permissible (Gujarati and Porter 2008: 355). According to Theil (1971), "specific linear combinations of estimated regression coefficients may well be determined even if the individual coefficients are not" (Belsley et al. 2004: 116). The literature thus suggests, while specific coefficients cannot be relied on, they maybe aggregated to be examined for their total influence. From an empirical viewpoint, it would be tempting to look at past years' influences in aggregate in order to comment on elasticity. Elasticity analysis presupposes a mechanistic or deterministic relationship between the independent and dependent variables. As we are aggregating country data, which have different path dependencies, we cannot make a meaningful judgment on the incremental effect of, say, Civic Activism, on the level of change in GDP Per Capita. Our earlier consideration, which cautioned against parametric estimation, remains salient. It is thus prudent to avoid elasticity analysis.

It is nevertheless important to know, in addition to the direction of the causal flow, whether that causal influence is positive or negative. In what follows, we will examine the four positive Granger results for the *polarity* of the causal flow by using the Stepwise regression method.

3.1.3.1 Stepwise Regression: Method Outline & Justification

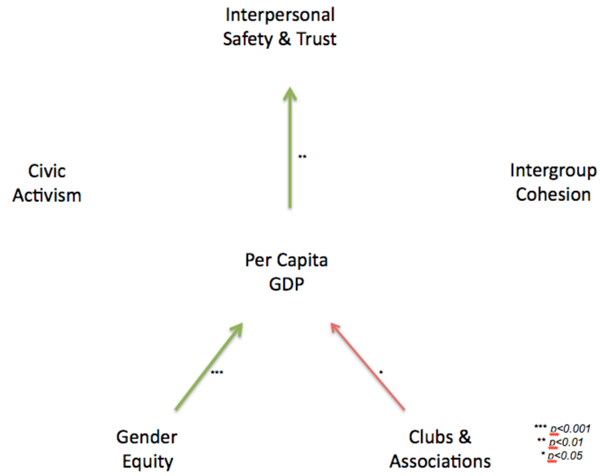
Stepwise regression is a technique whereby the specification model begins with an empty set and each of a set of candidate variables is examined in turn and added to the model if statistically significant at a pre-specified level. This is the so-called *forward* method. The *backward* model starts with the full set of candidate variables and each is examined in turn and removed if statistically insignificant. The Stepwise technique needs to be used with caution since it is exploratory and exhaustive with respective to a set of independent variables. In the present context, since we will examine only the causal flows already found significant in the Granger tests, there is a reasonable basis to use stepwise regression to find if any one past epoch might have a significant contribution to the future result; and, if so, what the *polarity* might be. The Stepwise method is used as an alternative to summing the coefficients. Some have argued against this method as a way to select a subset of explanatory IVs out of a large, e.g. greater than 50, set (Thompson 1995). The objections are: (1) a wrong degree of freedom is often used in the F-test, discounting the fact that the computer program 'uses up' more degrees of freedom in the selection process than reported; (2) the linear sequencing of the selection process may not in fact select the 'best' overall set of explanatory variables; (3) the stepwise methods capitalise on sampling errors and the results may not be replicable. I will address these concerns in turn. First, the results below will be re-computed with the correct degrees of freedom. Secondly, the aim of this section is to select one anchor year out of the four years, after it has first been established that there is Granger causality for the IVs as a group, and to find whether the effect is positive or negative (inverse). This aim is therefore not all exploratory. The usage is more conservative than the common uses of the Stepwise method. The third objection is pertinent and can only be addressed by the judicious interpretation of the results. Again, the aim of this section is to establish the polarity of the causal influence, and not to make a statement about the *level* of influence. This is a reasonable next step to the Granger tests.

For these tests, the probability for addition is set at 0.05. The polarity of the first significant term will be taken. The *forward* method will be used, with the order of variables set to: first, the prior years of the DV, and then the prior years of the 'causal' variable. This forces the statistical program to take into account prior years of the DV before including any 'causal' variable. We thus bias *against* the inclusion of the 'causal' variable.

3.1.3.2 Results

The results are tabled in Appendix 11. Figure 16 summarises the results, with the statistical significance indicated. Green arrows indicate positive causal flows while red an inverse or negative flow.

Figure 16
Granger Causality (with polarity) between ISD and GDP Per Capital



Stepwise regressions show the same causal flow for 3 of the 4 Granger tested models. In all cases, the anchor year selected is 2005. This suggests that the most recent epoch year has the highest influence. The one model that differs from the earlier Granger result is that of causal flow from *gdppc* to Civic Activism. While Granger test rejected a non-influence, the current Stepwise method did not find any single anchor year to be a significant factor. The two factors have very high correlation over the period (Table 2 above), which suggests that the Granger causality would be positive.

The new finding shows that Clubs & Associations' influence on *gdppc* is negative. The fact that Clubs & Associations has a low and declining correlation with *gdppc* (see Table 2; Figure 11) has been strongly suggestive that the causal flow (in whichever direction) would be negative. Granger test indicates that Clubs & Association influences *gdppc* (but not vice versa). This test indicates that this influence, particularly from 2005, is a negative one.

In Section 2.3.4, we discussed the various possibilities for the decline in the correlation of Clubs & Associations with the other indices. Our concern there centered on the choice of indicators (*coverage* and *shift in proxy*) and whether the measured phenomena might have undergone a *shift in meaning*. The tests in this section presuppose the stability of the index. The findings on Clubs & Association make an interesting contribution to the ongoing discussion about associational activities as social capital. With respect to whether such involvement means positively to economic performance or otherwise, the present result seems to favour Olson (1982), who suggested that a detrimental effect of associational activities on growth, rather than Putnam (1993) (See also the discussion in Appendix 18).

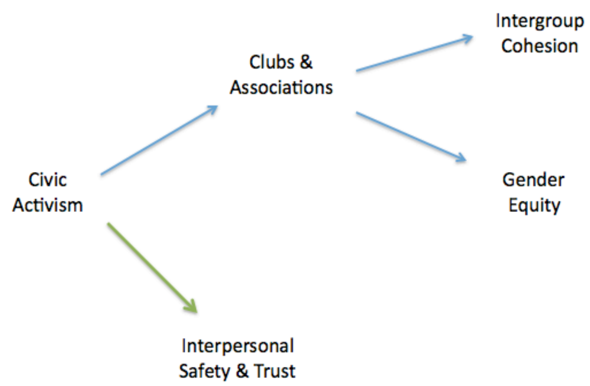
3.2 Inter-Index Granger Causality

This section queries whether some of the informal institutions have a prior position than others in the social processes. Could ISDs provide a clue to the workings of the institutions, e.g. how they influence each other? In most society, gender equity would be a relatively late development. If so, one would expect the Gender Equity Index to be influenced by others and for it not to have a causal influence over others.

Both Granger tests[15] and Stepwise tests are repeated as in earlier sections. The results are tabled in Appendix 12 and 13 and diagrammed in Figure 17. The indicated positive flow is in green; causal flows with indeterminate sign are in blue. The Stepwise method yielded one result, which is a positive flow from Civic Activism to Interpersonal Safety & Trust. It is silent on the other Granger-tested flows. This is unfortunate as we would not be able to comment on whether the influences are positive or negative.

We could postulate the following flows from left to right, that Civic Activism could occupy a starting position, Clubs & Associations in the middle segment and the remaining three in a final segment. Tellingly, Gender Equity comes later in the chain.

Figure 17
Inter-index Granger causality



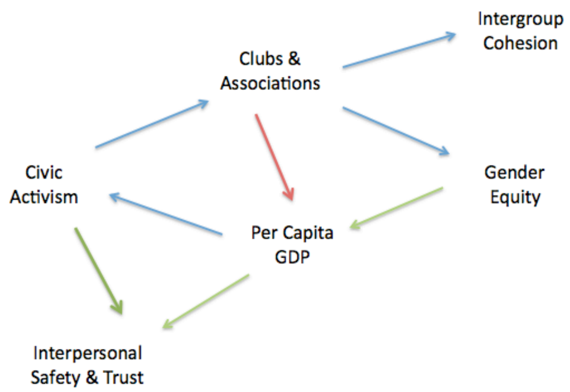
[15] As before, the Granger tests for Gender Equity were also repeated with the 1995 values removed, yielding identical results. This demonstrates a measure of robustness with this Index.

3.3 Making inferences

3.3.1 Putting it Together

Taking the *gdppc* Granger results and the inter-index Granger results together, we end up with the following overall causal flow diagram (Figure 18). Positive flows in green; negative in red; causal flows with indeterminate sign in blue.

Figure 18
Causal Flow – ISDs & *gdppc*



3.3.2 Critical Reflection

It is prudent to examine what has been done. We have used two conventional statistical techniques to: (1) discern certain causal flow/influence; (2) to determine the polarity (whether positive or inverse) of the influence. Both techniques require that the data set be complete, i.e., that there be no missing data. Where there are missing data for a country-index-year, that country's data will not enter into the regression tests. The ISD data set does have missing data. This means that the tests for different causal flows were based on different, albeit over-lapping, data sets. The indices with the largest numbers of complete data are Civic Activism (n=155) and Gender Equity (n=154), followed by Inter-group Cohesion (n=96), Clubs & Associations (n=64) and Interpersonal Safety & Trust (n=50). The tables in the appendices (Appendix 10-13) show the number of observations that went into each test. Anything that is said about any one causal flow ultimately can only truly be said about a particular data set, i.e., the collection of countries for which the data is complete for that test. In any research paradigm, generalization is often put forth as possibly applicable to the larger species from which a specific sample is drawn. Here, it is likewise suggested that, until shown otherwise, the patterns uncovered from the current explorations could be applicable for all countries.

We began with a core set of 37 countries that have the complete data sets. The explorations yielded limited results. Granger tests showed that two of these, those from Clubs & Associations to *gdppc* ($p<0.008$) and from Civic Activism to Gender Equity ($p<0.05$), are statistically significant (Figure 14). The former result holds for the larger group of 63 countries in subsequent tests. The latter result was not found in the larger group although it can be traced in the flows from Civic Activism to Clubs & Associations and from Clubs & Associations to Gender Equity (Figure 18). Of the marginal flows found in the core group (Figure 14), the flow from Clubs & Associations to Inter-group Cohesion is replicated in the mixed group pattern; the flow from Gender Equity to Civic Activism can also be mapped in the mixed group pattern, mediated by *gdppc*. The marginal flows in the core group that has no corresponding pattern in the larger group are: from Inter-group Cohesion to Clubs & Association and from Interpersonal Safety & Trust to Inter-group Cohesion.

The overall finding from the mixed group therefore has good correspondence in the core group, adding some comfort level to the meshing of the different data sets. Perhaps the causal flows do suggest a species-wide structures and mechanisms after all.

3.3.3 A Pattern of Influences

Figure 18 above suggests at least the following:

1. Civic Activism appears to be at the source of a chain of influences;
2. Clubs & Associations negatively Granger causes GDP Per Capita levels;
3. Inter-group Cohesion and Interpersonal Safety & Trust appear as 'outcome' measures which appear not to Granger cause other measures;
4. Gender Equity, as a causal end point from the other institutions, appears to influence *gdppc*;
5. *gdppc* as an outcome measure yet exerts influence on Interpersonal Safety & Trust, as well as the source institution, Civic Activism, suggesting a feedback loop.

Although no evidence is provided here on the direction of the causal flow from Clubs & Associations to Inter-group Cohesion and Gender Equity, correlation analysis earlier tends to suggest they would be negative. This remains to be further explored.

This diagram serves to suggest future research directions. It provides a rich set of propositions, not only of causal flows but also, in some cases, their polarity. These flows are suggestive and should be seen as emergent from underlying social structures and processes. I have been careful to use the term Granger causality to indicate time precedence and, possibly, influence also. It is nevertheless worth emphasizing that such flows would not be exclusive (i.e. necessary and sufficient), nor exhaustive. Other influences aplenty could well be part of the overall web of connections and influences. Moreover, as social processes go, one could not make deterministic statements regarding the connections and co-variations of *empirical* observations coming out of sets of variables. One could be tempted to draw the policy conclusion that we should (somehow) increase civic activism so that it would lead to greater interpersonal safety and trust. Or, perhaps, growth should be emphasised because higher income levels have been demonstrated to Granger cause interpersonal safety and trust.

What would be more fruitful, for the critical realist, is to uncover the reasons for the flows, that is, the structures and processes underlying them. Let us recall Lawson's generalization of the Lucas critique and his conclusion and plea,

> "[I]t is recognized that the social realm, just like the natural one, is structured and intransitive, it follows that the aim of economic science is precisely to reveal and illuminate the underlying structures, powers, mechanisms and tendencies, etc., that govern economic phenomena" (Lawson 1995: 274)

3.4 Testing Granger Causality – HDI

The Human Development Index has been produced since 1990 (UNDP 2011b). There are three equally weighted sub-indices in HDI, made up from four different indicators: log GNI per capita, mean years of schooling (for a 25 year old or older person), expected years of schooling (for a 5 year old child) and life expectancy at birth. The HDI is one of the most influential indices of human well-being, with the country ranking often used as a benchmark of progress. It provides a measure of outcome that could in turn have a long-term impact on economic development. The education sub-index would be indicative of the commonly discussed human capital in the literature. In the context of causal flows, though, one could hypothesise that, since the outcome aspects of HDI are pre-dominant, ISDs would more causally influence HDI than vice versa.

Granger tests were made between ISDs and HDI. These were followed by Stepwise regression where Granger had indicated initial flows. The results are logged in Appendix 14 and reported in Table 6. The causal flows are summarised in Figure 19:

- A mutual causal flow is indicated between Interpersonal Safety and Trust and HDI;
- A negative flow is indicated from Civic Activism to HDI;
- Gender Equity Granger causes HDI;

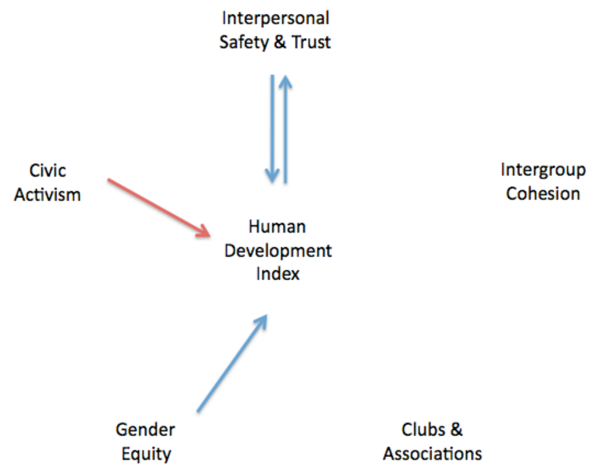
Except for the first case, the flows indicate that ISDs come before HDI. The pattern of flows thus generally lends support to the hypothesis that social institutions, which ISDs measure, precede the outcomes in human well-being, which HDI measures. The negative flow from Civic Activism to HDI runs counter to the thesis of social institutions as positive forces and needs further research.

Table 6
Granger Tests for ISD and HDI

Granger Causality (Robust estimates)		*F Statistics*	*Prob.*	*d.f.*
Safety & Trust ->	HDI	3.67 *	0.014	(4,32)
HDI ->	Safety & Trust	6.67 ***	0.001	(4,32)
Civic Activism ->	HDI	6.85 ***	0.000	(4,96)
HDI ->	Civic Activism	1.02	0.400	(4,96)
Gender Equity ->	HDI	5.51 ***	0.001	(4,102)
HDI ->	Gender Equity	0.84	0.504	(4,101)
Clubs & Associations ->	HDI	1.34	0.271	(4,43)
HDI ->	Clubs & Associations	1.38	0.257	(4,43)
Intergroup Cohesion ->	HDI	1.47	0.221	(4,65)
HDI ->	Intergroup Cohesion	1.15	0.339	(4,65)

*** *Probability <0.001*
** *Probability <0.01*
* *Probability <0.05*

Figure 19
Granger Causality between ISD and Human Development Index



3.5 Testing Granger Causality – Gini Coefficient

Gini measures the distribution of household income in a country (World Bank 2011). A Gini score of 0 means perfect equality while a score of 1 means perfect inequality. As a single statistic, it permits making cross-sectional comparisons of countries with different population size. A major critique of Gini is that it does not differentiate between inequalities at different parts of the income spectrum whereas an index such as Atkinson's provides a statistic based on an adjustable sensitivity to the lower end of the distribution (De Maio 2007). Gini is nevertheless a commonly quoted outcome measure. It thus merits an analysis vis-à-vis the ISDs. As in HDI, it is expected that ISDs would Granger cause Gini but not vice versa.

Granger tests were performed after the Gini scores had been inverted (0=perfect inequality, 1=perfect equality). The results are logged in Appendix 15 and tabled in Table 7 and the causal flows summarised in Figure 20. Caution is merited in examining the results as the number of observations is fewer than in previous tests and the conclusions might be more restricted. The number of observations did not permit stepwise regression tests. The sign of the causal flows are therefore indeterminate.

Four of the five ISDs show evidence of Granger causing Gini, two of which showing just marginal probabilities. Inter-group Cohesion alone does not seem to have a causal connection with Gini. Good social institutions, exemplified by Civic Activism and Gender Equity, lead to greater income equality in society. Let us note that equality does not happen automatically with economic growth. There has been evidence that in the initial stages of rapid growth, income inequality often increases. There is also no guarantee that inequality will eventually diminish. The causal flows suggest that equality is the end product of a well-organised society with good social institutions. Fittingly, it is Civic Activism and Gender Equity that provide the institutional influence for increase in equality.

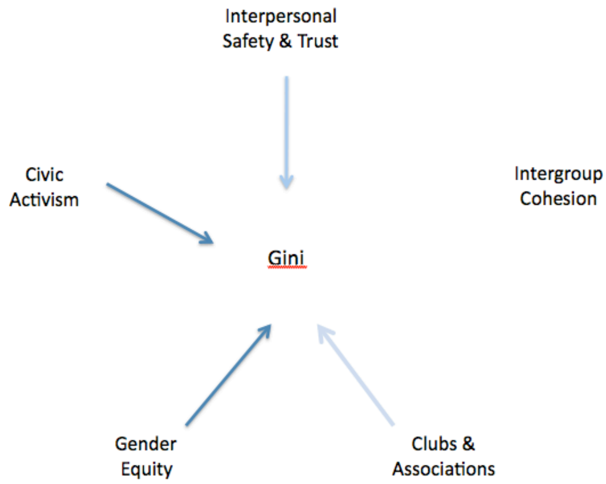
There is no evidence that greater income equality leads to better social institutions. In other words, income equality, or the lack thereof, seems not to be a prior condition for better informal institutions. Income equality is a creditable development end. The evidence here suggests that building strong social institutions could be a pathway towards it.

Table 7
Granger Tests for ISD and Gini

Granger Causality	(Robust estimates)	*F Statistics*		*Prob.*	*d.f.*
Safety & Trust ->	Gini	2.42	+	0.087	(4,18)
Gini ->	Safety & Trust	1.17		0.343	(4,34)
Civic Activism ->	Gini	8.84	***	0.000	(4,29)
Gini ->	Civic Activism	0.20		0.937	(4,63)
Gender Equity ->	Gini	6.75	***	0.001	(4,30)
Gini ->	Gender Equity	1.80		0.139	(4,64)
Clubs & Associations ->	Gini	2.28	+	0.093	(4,22)
Gini ->	Clubs & Associations	0.20		0.938	(4,40)
Intergroup Cohesion ->	Gini	1.72		0.199	(4,15)
Gini ->	Intergroup Cohesion	1.76		0.155	(4,43)

*** *Probability <0.001*
** *Probability <0.01*
* *Probability <0.05*
\+ *Marginal*

Figure 20
Granger Causality between ISD and Gini Coefficient



Chapter 4
A Study in Inter-group Cohesion

> "All happy families are alike; each unhappy family is unhappy in its own way."
> – Tolstoy, in *Anna Karenina* (2001: 12)

This chapter takes as a starting point the country trends of the Inter-group Cohesion and seeks to explore further how the data might be explained as a result of larger global events.

4.1 Social Cohesion and Inter-group Cohesion

Social cohesion has been receiving increased attention in recent years (Woolcock 2011). It is one area that especially interests governments and social policy makers in countries with significant immigration (Jenson 1998, Beauvais and Jenson 2002, Spoonley et al. 2005). The Canadian Government's Policy Research Sub-Committee on Social Cohesion defines social cohesion as "the ongoing process of developing a community of shared values, shared challenges and equal opportunity within Canada, based on a sense of trust, hope and reciprocity among all Canadians", whereas the French Commissariat général du Plan defines it as "a set of social processes that help instil in individuals the sense of belonging to the same community and the feeling that they are recognised as members of that community" (Jenson 1998: 4). In breaking down further, Jenson identifies five dimensions: (1) belonging / isolation; (2) inclusion / exclusion; (3) participation / non-involvement; (4) recognition / rejection; (5) legitimacy / illegitimacy. To these, Rajulton et al. (2007) added "equality" as a sixth dimension. The Jenson/Rajulton formulation is by no means the only one. Kearns and Forrest (2000) suggest a different set of dimensions (1) common values / civic culture; (2) social order / social control; (3) social solidarity / wealth disparities; (4) social networks / social capital; (5) place attachment / identity (also, Forrest and Kearns 2001). Furthermore, they suggest, different dimensions will need to be addressed differently depending on the spatial level, whether national, city or neighbourhood. With each interpretation and construction, the measurement takes a different form but all suggest the multi-dimensional character of this concept (Berger-Schmitt 2000, Jenson 2010, Reeskens et al. 2009). While there have been proposals for measuring social cohesion, there appears to be no long-term international index.

The Inter-group Cohesion Index measures "the extent to which there is social cohesion between defined religious, ethnic, and linguistic groups, without degeneration into civil unrest or inter-group violence" (ISD 2011c). This definition seems to cohere with the list of indicators in Appendix 1. As the name suggests, the index places emphasis on inter-group behaviour and norms and any conflict therein. Indicators thus include civil disorder, internal conflict, violent demonstration and terrorism risks. This index is distinguished from the others ISDs in that all its raw indicators measure negative aspects of the construct. A high score on the Inter-group Cohesion Index means the absence or low levels of conflict or trouble. There appears to be no positive indicator for inter-group cohesion.

Recall from the last chapter that Inter-group Cohesion Index stands out as the only index where no Granger causality was found with GDP Per Capita, Human Development Index and the Gini Index. This is peculiar for an index that is intended to reflect the conditions that lie behind social state and change; this also contrasts with the research literature. In this section, we will look beyond the results of Granger and explore directly the data of Inter-group Cohesion and country *gdppc*. We will relax the strong assumption of species homogeneity in the last chapter and look at this Index with respect to some of the differentiating characteristics in geography and income bracket.

Regarding economic growth, Easterly, Ritzen and Woolcock suggest a Two Stage hypothesis where "more social cohesion leads to better institutions, and that better institutions in turn lead to higher growth" (Easterly et al. 2006: 113). Their proxy for social cohesion are limited to just two variables: ethnolinguistic fractionalization and middle-share of income (share of total income held by the middle 60% of the population). While both could be seen as possible antecedents to cohesion, they are not necessarily indicators of cohesion. Friedkin warns that "if some of the dimensions of social cohesion are causal antecedents or consequences of others, then they should be distinguished as such in a causal model and not lumped together as indicators of social cohesion" (Friedkin 2004: 412). Easterly et al.'s result still poses the puzzling issue of why the Inter-group Cohesion Index appears not to have causal relationships with the main indicators of economic development and social equality. This warrants a more detailed exploration of the data.

First, it is noted that there has been a general increase and then decline of the Inter-group Cohesion scores over the last 20 years (Table 8).

Table 8
Inter-group Cohesion Index Summary

	Obs	Mean	Std. Dev.	Min	Max
1990	106	.5899623	.1009363	.0000000	.7447424
1995	103	.6572793	.0919776	.3840644	.8023122
2000	116	.5996492	.1341715	.2491713	.8744453
2005	158	.6093794	.0760247	.3515432	.7420220
2010	158	.5528531	.0854517	.0800696	.7008806

At first glance, it would seem that countries' Inter-group Cohesion Index peaked in 1995. Closer inspection suggested that it would be instructive to segregate countries depending on when their Index actually peaked (see also Figure 11 on page 23). As our current concern is over economic development, countries are also divided into four income groups according to the World Bank criteria. The result is in Table 9. Eight detailed plots, by income group and peak year, of the Inter-group Cohesion Index over time are collected in Appendix 16 (Figures 28-35).

Three observations can be made from Table 9:

1. More countries peaked in 1995 (*n=70*) than any other anchor year;

2. Of the countries that peaked in 2000 (*n=31*), high income countries dominate; in particular, those from Europe;
3. All Asian countries in the data set regardless of income group peaked in 1995, except China, Japan and Pakistan whose index scores peaked in 2000.

Table 9
Country Categorised by the Year its Inter-group Cohesion Index Peaked & by Income Group

	Low	Lower middle	Upper middle	High
1990	Congo, Rep.		Mexico	
1995	Myanmar	Bolivia	Albania	Croatia
	Sierra Leone	Cameroon	Argentina	Cyprus
	Bangladesh	Cote d'Ivoire	Azerbaijan	Czech Republic
	Congo, Dem. Rep.	Ecuador	Belarus	Estonia
	Ethiopia	Egypt, Arab Rep.	Brazil	Greece
	Guinea	Georgia	Bulgaria	Hungary
	Kenya	Ghana	Chile	Italy
	Liberia	Guyana	Colombia	Korea, Rep.
	Madagascar	India	Costa Rica	Norway
	Tanzania	Indonesia	Dominican Republic	Poland
	Uganda	Iraq	Iran, Islamic Rep.	Saudi Arabia
	Vietnam	Morocco	Jordan	Singapore
	Zambia	Nigeria	Lebanon	Slovak Republic
		Paraguay	Lithuania	Spain
		Philippines	Malaysia	Switzerland
		Sri Lanka	Namibia	United Kingdom
		Thailand	Panama	United States
		Ukraine	Peru	
			Romania	
			Russian Federation	
			South Africa	
			Venezuela, RB	
2000	Malawi	China	Bosnia & Herzegovina	Australia
	Mali	El Salvador	Botswana	Austria
	Nicaragua	Moldova	Uruguay	Canada
	Niger	Papua New Guinea		Denmark
	Pakistan	Syrian Arab Republic		Finland
				France
				Germany
				Iceland
				Ireland
				Japan
				Luxembourg
				Netherlands
				New Zealand
				Portugal
				Slovenia
				Sweden
2005	Afghanistan	Angola	Algeria	Bahrain
	Somalia	Guatemala	Kazakhstan	Belgium
	Togo	Honduras	Macedonia, FYR	Israel
	Zimbabwe	Senegal	Turkey	Latvia
		Sudan		Malta

As we look at what could affect the decline in Inter-group Cohesion affecting a large number of countries, let us turn our attention to global forces and events which might play a role, as well as localised events such as war or internal conflict. While most countries exhibit increases from 1990 levels to 1995 or 2000, no country seems exempt from the eventual decline up until 2010. Three different reasons could be advanced for the declines. These happen to be global/regional events that coincided with the onset of the respective declines.

First, for much of Europe, the concern over immigration from the late 1990s would diminish inter-group cohesion. Second, post-9/11, the threat of terrorism also undermines inter-group cohesion, more so in Western Europe than elsewhere. Third, with respect to the Asian countries' earlier peaking in 1995, the largest common event would be the financial crisis in 1997. These countries suffered from erosion of social fabric, increased conflict and racial strife as a consequence of the financial crisis (Atinc and Walton 1998). Whatever the possible cause, the decline is evident. In the next part, this decline is examined in relation to economic growth.

4.2 Changes in Inter-group Cohesion versus Changes in GDP Per Capita

Countries have unique development histories, differ in social make up and are therefore expected to respond differently to challenges. It has been highlighted in the last section that two of these groups, the Asian countries and the Western European countries, are affected by these challenges differently, as indicated by the different years at which their Inter-group Cohesion Index peaked. In this section, I will explore the changes in the index in the years since its peak. I ask two questions: (1) Is there a difference in the decline in the Inter-group Cohesion Index between the cohort which peaked in 1995 and that which peaked in 2000? (2) Is there a difference in the economic growth between the two cohorts?

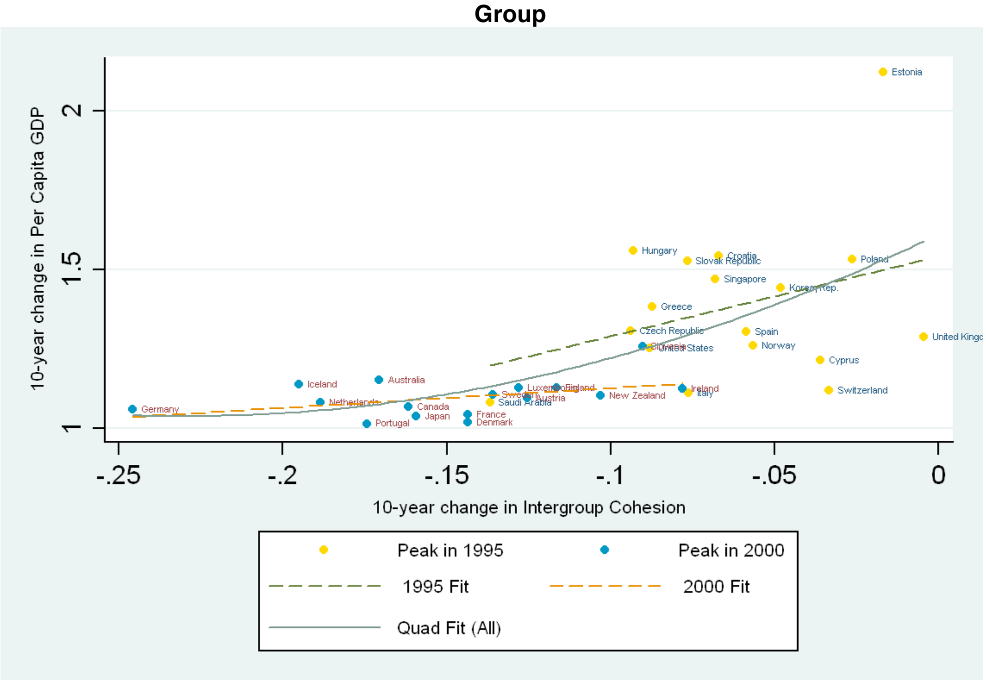
To answer the first question, the following statistical test was conducted to test for the difference between the two cohorts. Since it could not be assumed that the Index has a ratio scale, the 10-year change was converted into ranks. Mann-Whitney's test was then conducted between the 1995-peaked versus 2000-peaked groups. The two groups differ significantly ($p<0.000$). Ten years following the peak, the 1995 cohort fares about twice as well as the 2000 cohort, with a drop of 0.079 (s.d.=0.0478) versus 0.14 (s.d.=0.476). Most countries in the 2000 cohort suffer greater than 0.10 drop.

The same test is conducted between the two groups on the change in *gdppc*. This change is defined as the ratio of the country's *gdppc* 10 years following the peak and that at the peak year. This change is also statistically significant ($p<0.000$). The *gdppc* of the 1995 cohort increased on average by 34.6% between 1995 and 2005, while *gdppc* of the 2000 cohort increased by just 19.4% by between 2000 and 2010.

The two cohorts are shown to differ both in the extent of the decline in Inter-group Cohesion Index and change in economic growth, with the 1995 cohort suffering less in Inter-group Cohesion and performing better economically.

In Appendix 17 (Figures 36 to 39), the 10-year change in Inter-group Cohesion Index is plotted against the 10-year change in GDP Per Capita, for each income group. The high-income group is selected for a closer examination since this group has about equal numbers of countries that peaked in 1995 (n=17) as in 2000 (n=16) and demonstrates the separation clearly. Figure 21 shows the two cohorts in separate linear fits and, together in a quadratic fit. The plot demonstrates that a lower drop in Inter-group cohesion to be associated with higher growth (correlation=0.62).

Figure 21
10-year Post-peak Change: *gdppc* vs Inter-group Cohesion in the High Income Group



Since mature Western economies constitute the majority of the 2000 cohort, their growth rate is expected to be lower overall than some of the lower income countries, which predominate in the 1995 cohort, even within the same High Income group. It is possible that the discrepancy in *gdppc* change could be due to initial income level alone. Controlling for the baseline *gdppc*, the change in *gdppc* is regressed over the change in Inter-group Cohesion and starting year *gdppc*. The results in Table 10 shows that, while baseline income accounts for some of the variance in the change in *gdppc*, the 10-year change in Inter-group Cohesion still has a significant effect on the 10-year change in *gdppc*.

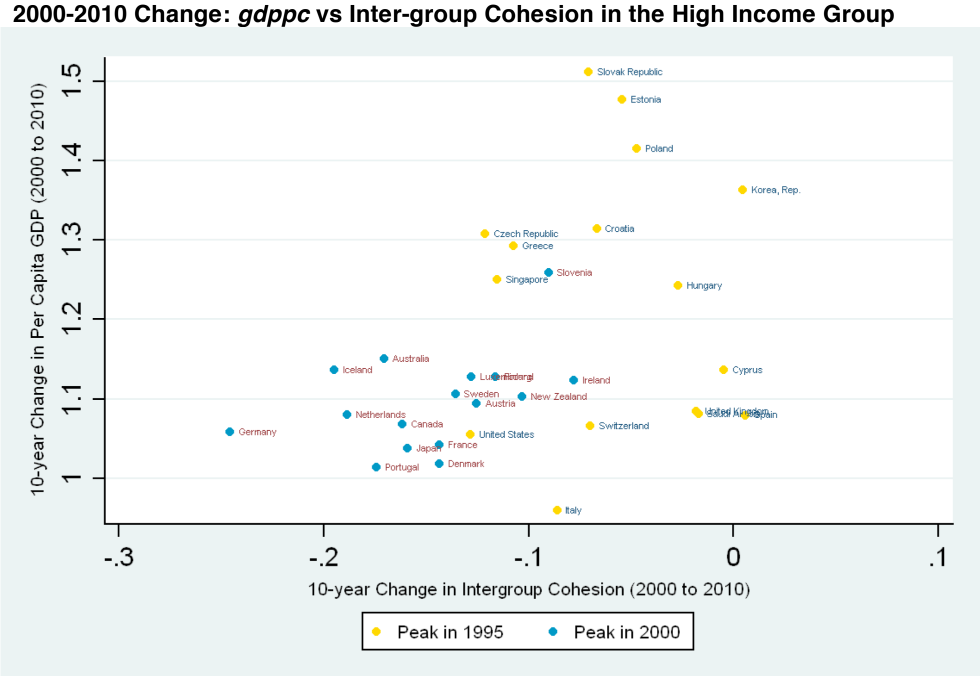
Table 10
Regression: 10-year Change in Inter-group Cohesion vs *gdppc*

Dependent Variable:	10-year change *gdppc*	
10-year change Inter-group Cohesion	1.812508**	2.514794***
	(0.538209)	(0.570374)
Baseline *gdppc*	-0.0000097**	
	(0.0000029)	
Constant	1.678145	1.505834
	(0.780500)	(0.067353)
N	33	33
Adj. r^2	0.52	0.37

*** Probability <0.001
** Probability < 0.01
* Probability <0.05

In comparing 10-year data over different periods, it is possible that some factors that came into play in one but not the other may have been overlooked. For instance, the 10-year period for the 1995 cohort ends in 2005. This period does not cover the 2008 financial crisis that occurred within the 10-year period for the 2000 cohort. Figure 22 plots the 10-year change for *gdppc* and Inter-group Cohesion between 2000 and 2010. This moves the period in question forward by 5 years for the 1995 cohort but the two cohorts are now compared for the same period. The plot shows a correlation of 0.38. There remains a link between the level of change in Inter-group Cohesion and economic performance, with a smaller decline associated with better performance.

Figure 22
2000-2010 Change: *gdppc* vs Inter-group Cohesion in the High Income Group



The foregoing looked specifically at the high-income countries. Let us now consider in general the possible reasons for the difference in Inter-group Cohesion between the two cohorts, if the categorisation is not entirely spurious. Let's examine two. First, the two cohorts could have been affected by (and reacted to) world events differently. Indeed, the Asian financial crisis did not have as large an impact outside of Asia. Similarly, 9/11, though signalling the beginning of a massive change globally, had a larger impact on Western countries than others. One could argue that the 1995 cohort simply did not face as big a challenge as the 2000 cohort; hence, the better *gdppc* performance and the lower drop in Inter-group Cohesion. A second possibility would suggest that the 1995 cohort, as societies with different values and ethnic and group diversity challenges, has a greater resiliency than the 2000 cohort. Might it be this resiliency that helped prevent the countries from the sharp Inter-group Cohesion declines witnessed in the 2000 cohort, and enabled the 1995 cohort to perform better economically?

This has been an initial study using one of the ISDs. The Inter-group Cohesion Index has uncovered interesting patterns about countries from different regions/stages of economic development. Future analyses might yet yield rich results on the inter-dependency between inter-group cohesion and economic growth.

Chapter 5
Conclusions

5.1 Answering Research Questions

In conclusion, I will review and answer the research questions in the order in which the answers were sought. In the process, I will also reflect on some of the implications of the findings.

How can diagnostic inspection of the ISDs identify technical challenges in their use?

I asked two main questions. Preparatory to answering them, I began with a diagnostic exploration of the ISDs. This yielded findings of potential challenges in using the data. Four areas have been identified: possible measurement anomalies noticed in some unaccountable data patterns, e.g. Gender Equity in the 1995 anchor year; coverage issues that could have presented in the declines in Civic Activism on the higher end of the scale and, shift in proxy and shift in meaning possibly in some Clubs & Associations indicators. Also, the Inter-group Cohesion Index, derived, as it were, from negative variables, could be more a measure of outcomes than a positive indication of institutions for cohesion.

These appraisals led us to the suggestion that additional indicators could better reflect changes in human behaviours due to new forms of communication and relational maintenance enabled by the mobile phone and the Internet. Moreover, the communications pattern could change quite rapidly. The Arab Spring protests, for instance, arguably would have taken a different pace had mobile SMS and Internet not been available in many of the countries. ITU (2011) estimated that there are 6 billion mobile subscriptions and 1.2 billion broadband subscriptions (some 87% and 17% penetration rate respectively). Would technical enablement lead to a faster change in some of the social institutions? It is here suggested that some researchers may find uses for yearly data so as to study the effects of rapid changes.

The possible shifts in meaning in some of the variables also prompt suggestions of adjustment in the indicators in order to maintain the ISD's stated objectives. Foa and Tanner (2011) usefully categorised the indicators to be actionable and perception-based. The former are readily quantifiable direct measurements, such as "proxy variables" and survey-type "behavioural" variables, whereas the latter are based on public opinions and expert assessments. Foa and Tanner favour actionable indicators as they are more "responsive to change in the underlying social conditions, and cannot be influenced by perception independent of substantive social change"(2011: 21). They see perception variables as supplementary. This study suggests that there are pros and cons of using either kind of variable. The actionable indicators might be more direct but are susceptible to shifts in the meaning – possibilities that have not been previously considered. The perception-based indicators may seem 'subjective', yet could be more stable in meaning when they are sampled consistently.

This brings us to the topic of input and output indicators. One could ask whether it might be useful to distinguish between indicators that are primarily outcome in nature and others that may more properly be suggestive of antecedent conditions. CR recognises that structures that shape events could also change because of agents acting in the context of events in a morphogenetic cycle, to use Archer's term (Archer 1995). What come across as outcomes may yet be conditions that are antecedent to structural change. It may not be straightforward to delineate between the two types of indicators. To the extent that it is possible, it could help us better understand social processes.

The pattern of flows (Figure 17) suggests that some indices, e.g. Civic Activism, may come before others, say Gender Equity and Inter-group Cohesion. These 'later' indices may indicate outcome rather than input.

Which epistemological principles can best underpin the use of the ISDs as interpretive tools?

I did not view the data challenges as an impassable hurdle to using the data. From a CR epistemological standpoint, it has been argued, imperfect empirical data can be usefully employed to understand underlying mechanisms. If proofs were the objective and data were to be used in an inductive manner, then a positivist would truly be lost here, whereas, in CR, data are analysed so as to be suggestive of structures that could best explain them. CR permits making bold claims though with modesty. The ISDs are intended as measures of social institutions, which are intransitive objects in the Bhaskarian sense. These social institutions constrain and enable events that in the end become measurable in the form of gdppc, HDI and Gini. The CR epistemological principles accept that data, being emergent, could be noisy. CR also stresses the uncovering of mechanisms, and the production of "abstract knowledge of the structures of social relations and material conditions by virtue of which the mechanisms exist" (Sayer 1992: 256). These principles best underpin the use of ISDs as interpretive tools. It is in the spirit of the CR framework that the logic of Granger is used in Chapter 3 to link the ISDs to gdppc, HDI and Gini in order to answer the main questions.

What do the ISDs suggest about global changes in social institutions between 1990 and 2010?

Significant changes in the social institutions are evident between 1990 and 2010. The Interpersonal Safety & Trust Index has declined almost universally since around 2000. Gender Equity has improved during the same period but the gap between countries on the upper and lower end has not narrowed. Civic Activism advanced during the same period for countries on the lower end of the Index but declined for countries in the upper end although it is possible that this latter trend may owe more to the changing patterns of civic participation.

The Clubs & Associations Index shows some divergence between countries in recent years. This study suggests that, as a negative influencer of *gdppc*, the nature of this informal institution could have changed.

Inter-group Cohesion has mostly declined in the last decade or so. In the case study, it is demonstrated that size of the decline is inversely correlated with the change in income levels.

It has been suggested that some of the trends exhibited in the ISDs are explicable in terms of global events: decline in Interpersonal Safety & Trust following 9/11; decline in Inter-group Cohesion in Western Europe in the last decade with increased immigration concerns; the same decline in Asia following the 1997 Financial Crisis. The timing of the onset of the declines tends to indicate that changes in these social institutions could be linked to global events.

What do the ISDs suggest about global causes of differing GDP per capita, HDI ranking and income inequality between countries?

If global events shape social institutions, the Granger results suggest that the social institutions mostly precede the predominantly outcome measures such as *gdppc*, HDI and Gini.

Looking at the causal pattern of the ISDs, Civic Activism appears to be the source in advance of the other institutions, particularly Interpersonal Safety & Trust and Clubs & Associations. It is found to be Granger caused by *gdppc*, perhaps as part of a feedback process. The nature of Clubs & Associations is somewhat ambiguous, seeming to indicate a less constructive institution than the others. Inter-group Cohesion has changed with global events. As an index, it appears to come after Civic Activism and Clubs & Associations. Gender Equity is found to Granger cause GDP per capita, HDI as well as Gini. Civic Activism Granger causes HDI and Gini. Therefore, advances in gender equity should cheer us. Declines in social cohesion and safety and trust should raise concern. It is perhaps fitting that civic activism seems to serve as a fountainhead which energises the rest of the institutions.

Social institutions matter. The results in this study present a profile of how institutions matter to some of the mainstream measures of progress, well-being and equality. Building social institutions could be an instrument towards better outcomes. Mapping the pathways would be a complex undertaking.

I offer a concluding thought on modes of analysis. First, the outlined causal pattern offers a new lens to look at how social institutions might interact and shape development processes. It could be fruitful to examine the ISD profile of well-organized societies; for instance, how they score along the five dimensions. Would there be one or two dimensions that are more important than others? Could strength in one compensate for a weakness in another? This kind of analysis takes on the study of social institutions holistically. At the same time, the critical realist recognises that "generalizations which concern properties allegedly common to different societies at different times may mislead by 'dehistoricizing' their objects—that is by giving a transhistorical, pancultural character to phenomena which are actually historically specific or culture-bound" (Sayer 1992: 100). This mode of analysis will need to be on guard against over-generalisation.

Second, the institutional profile can be seen as a country personality profile, and the scores on the five ISD dimensions a depiction of the state of a country. This state, though, is ever in transition. The current profile of a country provides an important, but static, view. Perhaps more could be learned about the strength of a country's institutions by examining the 'historical' trend of the country's profile. How the profile has changed over time could tell us something of where a country has been and how it has responded to exogenous events (c.f. the 'resiliency' conjecture in the last chapter). The case study is a demonstration that a longitudinal approach to the study of social institutions could lead to new insights.

Several research directions come out of this paper. It is suggested that the two modes of analysis could be fruitfully employed in some of the topics.

Future Research

First, concerning new indicators, some consideration needs to be paid to newer behavioural phenomena because of changes in the way people use technology to communicate and maintain relationships.

Whether the new indicators substitute or complement existing indicators is also a legitimate and important concern in index construction. While some societies may have moved away from the activities measured by certain indicators, e.g. the use of traditional news media, it is important nevertheless to retain these indicators.

Second, the interaction between institutions has remained largely unexplored, beyond the initial sketch proposed in Chapter 3 (Figure 17). For instance, the Granger suggested sequence from Civic Activism to Clubs & Associations, and thence to Inter-group Cohesion could be a complex and intriguing topic to explore and to add to the literature on social capital.

Third, the case study on cohesion suggests that a further exploration of economic growth, cohesion and region-specific response to global shocks could yield interesting insights. Social institutions change (or not) through interacting with actors (Archer 1995). Actors differ in their regional characteristics e.g. along the dimensions of survival/self-expression values and traditional/secular-relational values, as identified in World Values Survey (2011). The variations along these dimensions could be usefully explored with the ISD's dimensions.

Fourth, World Development Report 2013 has begun its consultation on "jobs" as a theme. It has been suggested by the WDR team that jobs would lead to social cohesion. Further work on the Inter-group Cohesion Index's interaction with waged and unwaged employment could make a valuable contribution to this subject.

Postscript

I began this project naively, expecting a straightforward application of statistical techniques. However, during the six months of research, I had to look extensively into the Granger techniques, consulting not just books but also, directly, some of their authors (through Internet sleuthing). I also had to investigate more fully the applicability of other statistical techniques, in addition to the intricacies in Stata programming. Where Stata proved inadequate, I resorted to using my programming skills, acquired in a previous career. To explore data relationships, I looked at numerous ways to process data and to present them visually. At times, it was a challenge to navigate between a residual positivistic leaning and a more balanced epistemological stance in CR – an approach to social sciences that I have come to appreciate at ISS.

As data turned into working hypotheses, beginning as hints and clues but emerging with regularity and some consistency, I was surprised and pleased by the richness of the ISD database. The meandering in the research process proved arduous but ultimately exhilarating. I have found it useful not to bring pre-conceptions into research and to allow data to speak.

Appendices

Appendix 1. List of Indicators

Interpersonal Safety & Trust

1. Africa, % "Most People Can be Trusted"
2. Africa, % "Felt Unsafe in Home"
3. Africa, % Never had items stolen from home
4. Africa, % Never been attacked
5. Asia, % "Most People Can be Trusted"
6. Asia, % "Most People Try to be Fair"
7. Rating of Social Distrust
8. % Feel Safe in their Area at Night
9. % Feel Safe at Home after Dark
10. % Avoid Places When Go Out
11. % Take Company When Go Out
12. % Owners Had Car Stolen in Last 5 Yrs
13. % Experienced Theft Last 5 Yrs
14. Owners Had Car Vandalism Last 5 Yrs
15. % Owners Had Moped Theft Last 5 Yrs
16. % Suffered Break-in Last 5 Yrs
17. % Seen Attempted Break-in Last 5 Yrs
18. % Garage Thefts in Last 5 Yrs
19. % Been Mugged in Last 5 Yrs
20. % Had Pickpocketing in Last 5 Yrs
21. % Women Sexual Harassment in Last 5 Yrs
22. % Attacked in Last 5 Yrs
23. WHO, Violent Death Rate
24. Lat. America, % Attacked in Last Yr
25. Lat. America, % Feel Secure in Neighbourhood
26. Lat. America, % Victim Street Robbery
27. Lat. America, % Victim Burglary
28. Lat. America, % Attempted Murder
29. Lat. America, % Attempted Kidnapping
30. Lat. America, % "Most People can be Trusted"
31. OSAC Crime and Safety Ratings
32. UNCJIN, Homicide Rate
33. % Managers "Crime is Major Constraint"
34. % "Most People can be Trusted"
35. % "Most People try to be Fair"
36. "Most People try to be Fair" (1-10)
37. % Don't Trust their Neighbourhood
38. % Don't Trust People Know Personally
39. % Don't Trust People Meet First Time

Civic Activism

1. Africa, % Joined Demonstration
2. Africa, % Follow Radio News
3. Africa, % Follow TV News
4. Africa, % Reads Newspaper
5. Civicus Civil Society Rating
6. Radios per Capita
7. Lat. America, % Demonstrated
8. Lat. America, % Signed Petition
9. Lat. America, % Follow Radio News
10. Lat. America, % Reads Newspaper

11. Lat. America, % Follow TV News
12. Lat. America, % TV News Important
13. Lat. America, % Newspaper Important
14. Lat. America, % Radio News Important
15. Lat. America, Days/Week TV News
16. Lat. America, Days/Week Newspaper
17. Lat. America, Days/Week Radio News
18. % workforce, Nonprofit workers
19. Newspapers per capita
20. % Have Signed Petition
21. Global, % Joined Boycott
22. Global, % Joined Protest
23. % Read Newspaper Last Wk
24. % Saw TV/Radio News Last Wk
25. % Read Magazine Last Wk
26. % Saw TV Reports Last Wk
27. % Read NF Books Last Wk
28. % Read Online News Last Wk
29. International NGO membership relative to pop.
30. International NGOs relative to pop

Gender Equity

1. Africa, % "Women Should Follow Tradition"
2. Africa, % support female politicians
3. Africa, % Man has "Right to Beat Wife"
4. Women's economic rights, rating
5. Women's social rights, rating
6. Ratio of Female to Male Wages
7. % Women, "Can Get Same Job as Men"
8. % Women, "Can Get Same Pay as Men"
9. % Women, "Can Get Same Education as Men"
10. % Employers, "Men More Right to Job than Women"
11. % Voting Age, "Men Make Better Leaders"
12. % Parents, "University More Important for a Boy"
13. % Managers, "Men better Executives than Women"
14. % "Wife Must Always Obey Husband"
15. Ratio Female-Male Labour Force Participation
16. Adult Female Literacy Rate
17. Female-Male Primary Enrollment Ratio
18. Female-Male Secondary Enrollment Ratio
19. Female-Male Tertiary Enrollment Ratio
20. Female-Male Mortality Rate Ratio
21. Ratio of Female Adminstrators
22. Ratio of Females in Professional Jobs

Clubs & Associations

1. Lat. America, % Volunteering
2. Lat. America, % Often Work Community
3. Lat. America, % Member Youth Group
4. Lat. America, % Member Womens Group
5. Lat. America, % Member Sports Club
6. Lat. America, % Member Church
7. Lat. America, % Work Community
8. Lat. America, % Member Trade Union
9. Lat. America, % Member Vol. Assoc.
10. Lat. America, % Member Pol. Party
11. Lat. America, % Member Cultural Centre
12. Africa, % Member Religious Group
13. Africa, % Member Dev. Assoc.
14. Africa, % Attended Comm. Meeting

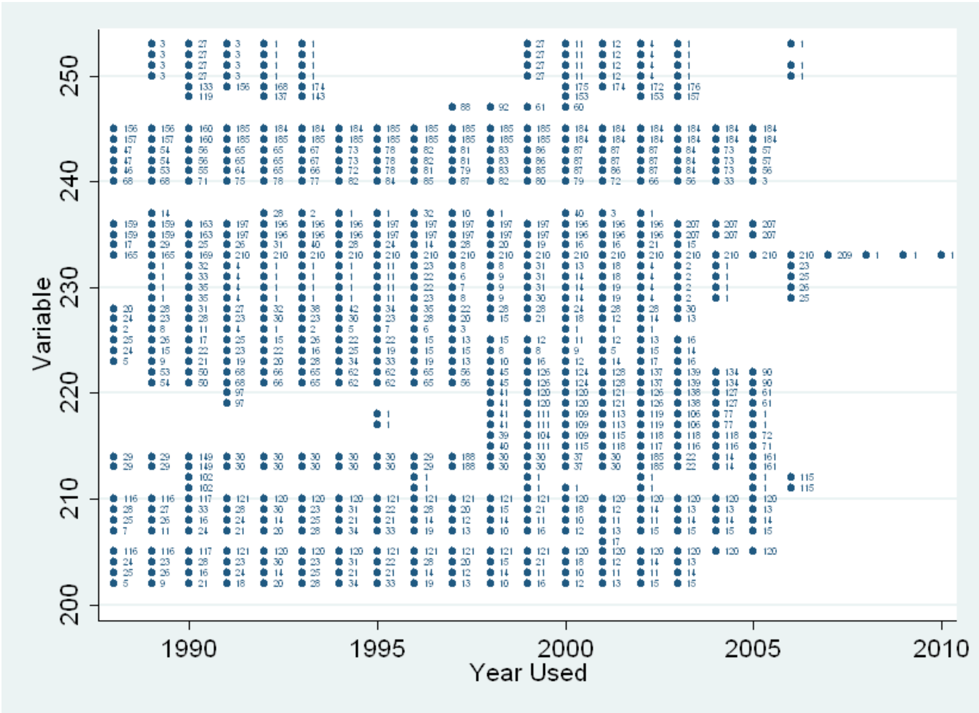
15. Africa, % Member Trade Union
16. Africa, % Member Business Group
17. Africa, % Don't Trust Neighbours
18. Africa, % Attended Comm. Meeting (1999)
19. % Saying People Help in Neighbourhood
20. % Member Relig. Organisation
21. % Member Sports Club
22. % Member Other Voluntary
23. % Belong Youth Club
24. % Belong Sports Club
25. % Unpaid Health Work
26. % Belong Environmental NGO
27. % Belong Women's Group
28. % Belong Peace Movemeng
29. % Active Member, Arts Associations
30. % Active Member, Trade Union
31. % Active Member, Environmental Group
32. % Active Member, Professional Assoc.
33. % Active Member, Human Rights
34. % Spend Time with Relatives Once/Week+
35. % Socialise at Church/Temple/Mosque Once/Week+
36. % Socialise with Friends Once/Week+
37. % Socialise in Cultural Assoc. Once/Week+
38. % Visit their Siblings Once/Year+
39. % Member of Religious Assoc.
40. % Member Neighbourhood Group
41. % Helped Someone Find Job Last Yr

Inter-group Cohesion

1. Violent Demonstration, Rating
2. Deaths in Conflict, Rating
3. Rating, Inter-group Grievances
4. Civil Disorder, Rating
5. Internal Conflict, Rating
6. Terrorism Risk, Rating
7. Minority Rebellion Score
8. Log assassinations per log capita
9. Log guerrilla acts per log capita
10. Log riots per log capita
11. Terrorism, Rating
12. Log terrorist acts per log capita

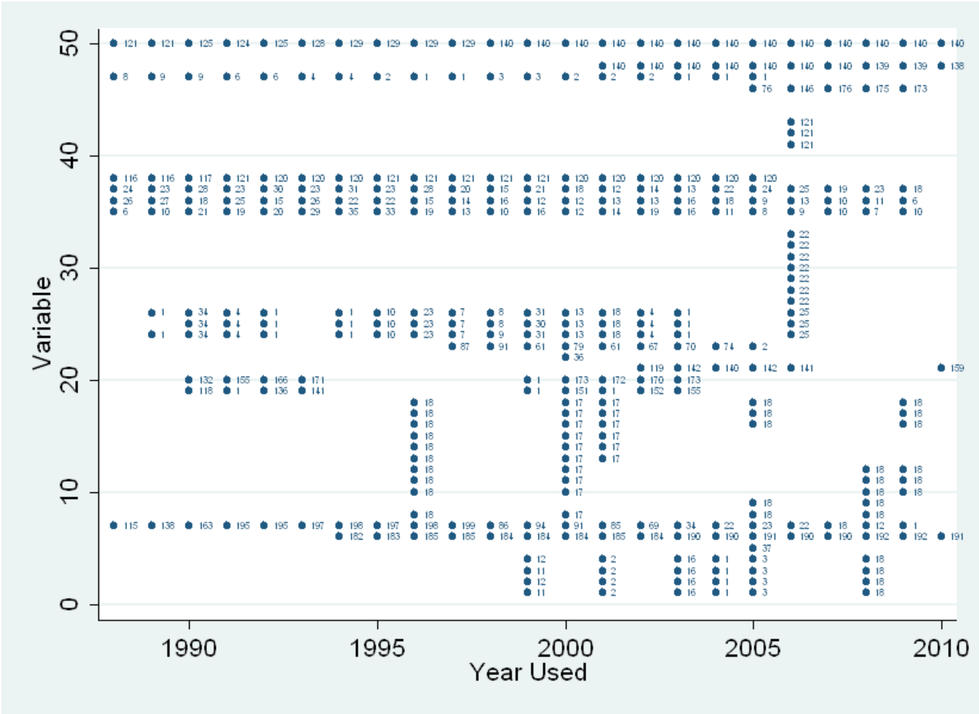
Appendix 2. Indicator (variable) samples 1998-2010

Each dot indicates that samples were taken that year; the number next to the dot indicates the number of samples (country data). These plots are drawn from a raw database. Some variables have few data points. Not all variables are used in the final index compilation. Variable numbering is arbitrary.




Variable
100
110
120
130
140
150
1990
1995
2000
2005
2010
Year Used


Variable
50
60
70
80
90
100
1990
1995
2000
2005
2010
Year Used


Variable
0
10
20
30
40
50
1990
1995
2000
2005
2010
Year Used

Appendix 3. Summary of Data Set

Variable	Obs	Mean	Std. Dev.	Min	Max
safety1990	52	.5364935	.0780894	0	.5855325
safety1995	80	.5427248	.0279966	.4921354	.6086037
safety2000	113	.5455458	.1086707	.2988404	.7792252
safety2005	149	.4636627	.0939904	.2606477	.6862881
safety2010	137	.4555902	.1086234	.1544496	.7044421
civic1990	171	.4838301	.1341507	0	.8699378
civic1995	172	.4957384	.1370079	.2654606	.873732
civic2000	173	.5027557	.0838731	.3315561	.6959993
civic2005	166	.5077811	.0540262	.4128395	.6748254
civic2010	167	.5041332	.0686579	.3684732	.7288002
gender1990	164	.738167	.0874597	0	.8762609
gender1995	165	.6652788	.1464265	.0188215	.8773401
gender2000	183	.6137397	.0609982	.4583387	.7514613
gender2005	179	.7518656	.0595794	.5947921	.872105
gender2010	180	.7261475	.0656172	.5631332	.8606601
clubs1990	65	.4810724	.1269924	0	.64574
clubs1995	82	.5050763	.0410801	.4178157	.5720722
clubs2000	98	.4970481	.088521	.1549042	.8496307
clubs2005	106	.5038241	.1140912	.2452736	.8759919
clubs2010	108	.5085454	.1184537	.2390662	.8527768
cohesion1990	106	.5899623	.1009363	0	.7447424
cohesion1995	103	.6572793	.0919776	.3840644	.8023122
cohesion2000	116	.5996492	.1341715	.2491713	.8744453
cohesion2005	158	.6093794	.0760247	.3515432	.742022
cohesion2010	158	.5528531	.0854517	.0800696	.7008806
pcgdp1990	163	8494.644	9753.266	400	50900
pcgdp1995	169	8683.308	10441.96	151	50300
pcgdp2000	173	10083.87	12232.9	254	62100
pcgdp2005	176	11345.33	13309.27	266	68300
pcgdp2010	170	11490.37	13511.78	290	83000
hdi1990	117	.5662222	.1795289	.178	.857
hdi1995	127	.5876063	.1834453	.186	.887
hdi2000	135	.5951333	.1910112	.201	.914
hdi2005	165	.6129152	.1907336	.159	.932
hdi2010	165	.6335394	.1861866	.14	.938
sgini1990	94	.3700372	.1111348	.166	.637
sgini1995	117	.4150515	.1098294	.22	.739
sgini2000	116	.4086571	.100171	.218	.6413333
sgini2005	111	.3956096	.0899021	.245	.5936667
sgini2010	42	.3412976	.0855731	.23	.553

Appendix 4. Self-correlation of ISDs between different anchor years.

Interpers. Safety & Trust (N=50)	*2010*	*2005*	*2000*	*1995*	*1990*
2010	1				
2005	0.9428	1			
2000	0.8432	0.9215	1		
1995	0.7373	0.7782	0.8880	1	
1990	0.6861	0.7158	0.7569	0.8256	1

Civic Activism (N=155)	*2010*	*2005*	*2000*	*1995*	*1990*
2010	1				
2005	0.9873	1			
2000	0.9204	0.9279	1		
1995	0.8845	0.9014	0.8979	1	
1990	0.8518	0.8688	0.8643	0.9451	1

Gender Equity (N=154)	*2010*	*2005*	*2000*	*1995*	*1990*
2010	1				
2005	0.9539	1			
2000	0.8930	0.9047	1		
1995	0.8467	0.8693	0.8134	1	
1990	0.8256	0.8329	0.7854	0.8502	1

Clubs & Associations (N=64)	*2010*	*2005*	*2000*	*1995*	*1990*
2010	1				
2005	0.9453	1			
2000	0.8335	0.9136	1		
1995	0.8189	0.9010	0.8471	1	
1990	0.6730	0.6957	0.6034	0.8071	1

Intergroup Cohesion (N=96)	*2010*	*2005*	*2000*	*1995*	*1990*
2010	1				
2005	0.9378	1			
2000	0.6540	0.7499	1		
1995	0.6872	0.7256	0.7903	1	
1990	0.7157	0.7421	0.7278	0.8083	1

Appendix 5. Correlations between ISDs for each anchor year.

	Interpers. Safety & Trust	**Civic Activism**	**Geder Equity**	**Clubs & Associations**	**Intergroup Cohesion**
1990 (N=45)					
Interpers. Safety & Trust	1				
Civic Activism	0.6468	1			
Geder Equity	0.8772	0.7174	1		
Clubs & Associations	0.5654	0.5632	0.5323	1	
Intergroup Cohesion	0.7833	0.7731	0.8428	0.4481	1
1995 (N=60)					
Interpers. Safety & Trust	1				
Civic Activism	0.4786	1			
Geder Equity	0.1502	0.6102	1		
Clubs & Associations	0.1820	0.3007	-0.0727	1	
Intergroup Cohesion	0.2685	0.4553	0.5339	0.0691	1
2000 (N=84)					
Interpers. Safety & Trust	1				
Civic Activism	0.5016	1			
Geder Equity	0.2302	0.7101	1		
Clubs & Associations	0.0402	0.1996	-0.0024	1	
Intergroup Cohesion	0.3957	0.5603	0.6202	0.0219	1
2005 (N=102)					
Interpers. Safety & Trust	1				
Civic Activism	0.5836	1			
Geder Equity	0.2397	0.5755	1		
Clubs & Associations	-0.0668	0.0915	-0.1438	1	
Intergroup Cohesion	0.4154	0.59	0.5638	-0.1029	1
2010 (N=102)					
Interpers. Safety & Trust	1				
Civic Activism	0.6430	1			
Geder Equity	0.3648	0.5493	1		
Clubs & Associations	-0.1074	0.0514	-0.1496	1	
Intergroup Cohesion	0.4186	0.5868	0.6321	-0.1215	1

Appendix 6. Graphs of the Correlation between ISDs over Time

Figure 23
Correlation with Other ISDs - Interpersonal Safety & Trust

Figure 24
Correlation with Other ISDs - Civic Activism

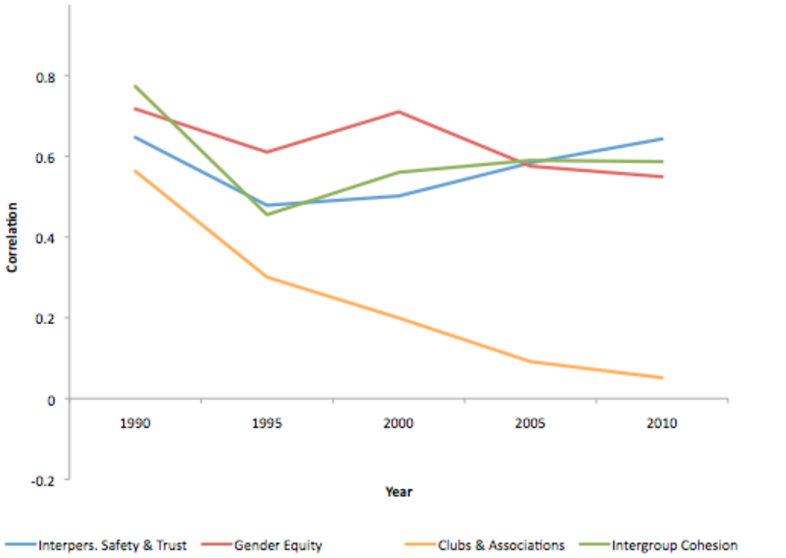


Figure 25
Correlation with Other ISDs - Gender Equity

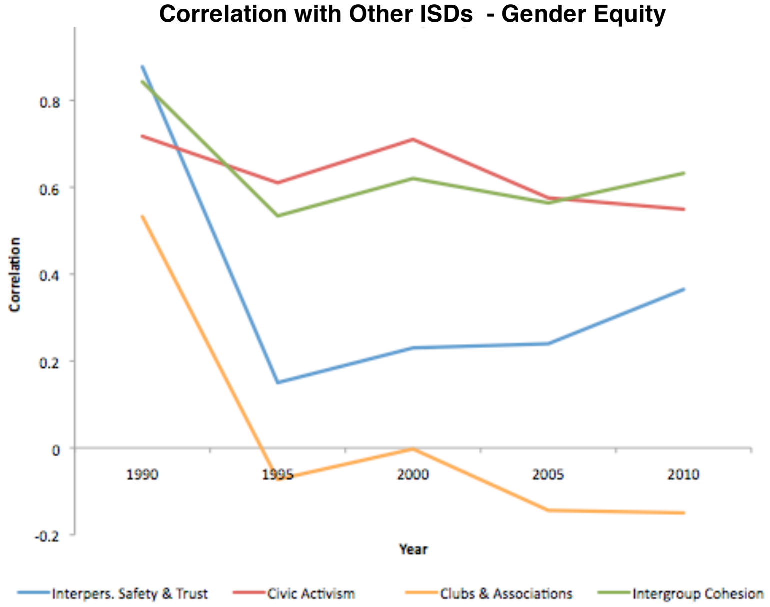


Figure 26
Correlation with Other ISDs - Clubs & Association

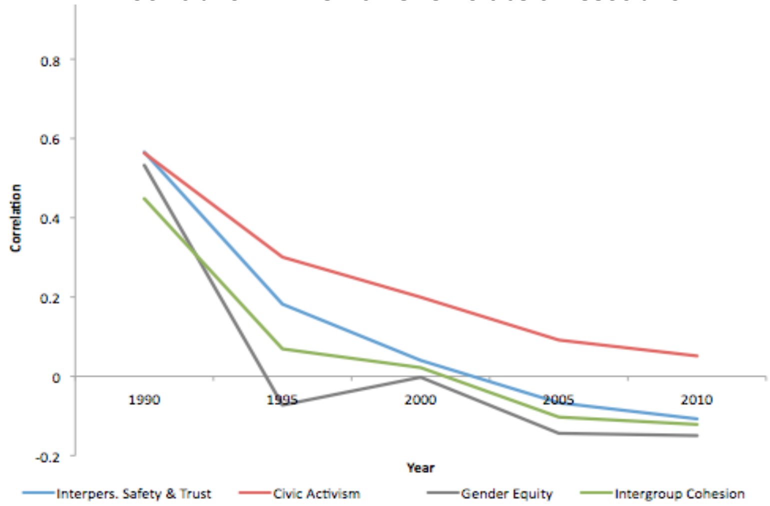
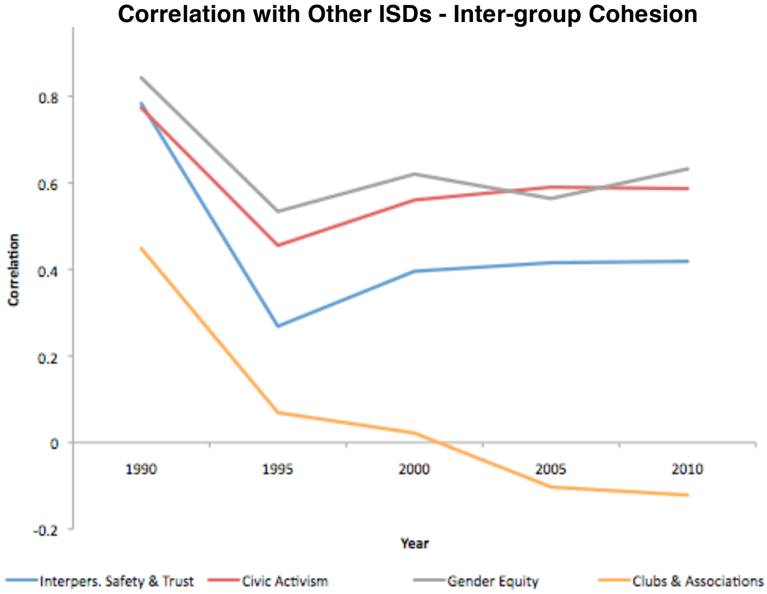


Figure 27
Correlation with Other ISDs - Inter-group Cohesion



Appendix 7. List of 37 Countries with All Data Points for ISDs & gdppc

Argentina
Australia
Brazil
Bulgaria
Canada
Chile
China
Costa Rica
Czech Republic
Egypt, Arab Rep.
Estonia
Finland
France
Germany
Greece
Hungary
India
Indonesia
Italy
Japan
Korea, Rep.
Latvia
Lithuania
New Zealand
Peru
Philippines
Poland
Russian Federation
Singapore
Slovak Republic
Spain
Sweden
Switzerland
Tanzania
Turkey
United Kingdom
United States

Appendix 8. Granger Tests: ISDs & GDP Per Capita – Core Group of 37

Linear regression

Number of obs = 37
F(8, 28) = 1189.34
Prob > F = 0.0000
R-squared = 0.9938
Root MSE = 1065.5

gdppc2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdppc2005	1.104106	.1383024	7.98	0.000	.8208069	1.387406
gdppc2000	-.3010767	.3478254	-0.87	0.394	-1.013565	.4114114
gdppc1995	.2874229	.2624092	1.10	0.283	-.2500979	.8249437
gdppc1990	-.1172049	.0891324	-1.31	0.199	-.2997843	.0653745
safety2005	10888.64	8235.494	1.32	0.197	-5981.007	27758.28
safety2000	-16007.53	7672.945	-2.09	0.046	-31724.85	-290.2173
safety1995	12586.34	17569.82	0.72	0.480	-23403.81	48576.5
safety1990	16853.66	17283.94	0.98	0.338	-18550.89	52258.21
_cons	-11137.95	7791.818	-1.43	0.164	-27098.77	4822.862

(1) safety2005 = 0
(2) safety2000 = 0
(3) safety1995 = 0
(4) safety1990 = 0

F(4, 28) = 1.57
Prob > F = 0.2097

Linear regression

Number of obs = 37
F(8, 28) = 99.33
Prob > F = 0.0000
R-squared = 0.9323
Root MSE = .02254

safety2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
safety2005	1.141819	.1583418	7.21	0.000	.8174711	1.466168
safety2000	-.2305477	.1749055	-1.32	0.198	-.5888254	.12773
safety1995	.6018755	.291756	2.06	0.049	.0042403	1.199511
safety1990	-.4164077	.410389	-1.01	0.319	-1.257051	.424236
gdppc2005	-1.19e-06	2.49e-06	-0.48	0.637	-6.28e-06	3.91e-06
gdppc2000	.00001	6.18e-06	1.62	0.115	-2.62e-06	.0000227
gdppc1995	-.0000112	4.99e-06	-2.25	0.032	-.0000215	-1.03e-06
gdppc1990	2.24e-06	1.76e-06	1.27	0.214	-1.37e-06	5.84e-06
_cons	-.0559098	.1864776	-0.30	0.767	-.4378918	.3260723

(1) gdppc2005 = 0
(2) gdppc2000 = 0
(3) gdppc1995 = 0
(4) gdppc1990 = 0

F(4, 28) = 1.99
Prob > F = 0.1236

Linear regression

Number of obs = 37
F(8, 28) = 1025.60
Prob > F = 0.0000
R-squared = 0.9935
Root MSE = 1097.2

gdppc2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdppc2005	1.173513	.1558369	7.53	0.000	.8542957	1.49273
gdppc2000	-.365253	.351024	-1.04	0.307	-1.084293	.3537872
gdppc1995	.2669471	.2697446	0.99	0.331	-.2855996	.8194938
gdppc1990	-.1040589	.1190305	-0.87	0.389	-.3478818	.139764
civic2005	-6000.674	11625.35	-0.52	0.610	-29814.12	17812.77
civic2000	2009.046	11822.24	0.17	0.866	-22207.72	26225.81
civic1995	-4387.359	5502.945	-0.80	0.432	-15659.63	6884.913
civic1990	6090.451	5563.01	1.09	0.283	-5304.858	17485.76
_cons	2261.968	4581.857	0.49	0.625	-7123.541	11647.48

(1) civic2005 = 0
(2) civic2000 = 0
(3) civic1995 = 0
(4) civic1990 = 0

F(4, 28) = 0.39
Prob > F = 0.8170

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  463.89
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9809
                                                       Root MSE      =  .00958

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   civic2005 |   1.175771   .1416744     8.30   0.000     .8855639    1.465978
   civic2000 |  -.0822492   .0827254    -0.99   0.329    -.2517046    .0872061
   civic1995 |   .0530327   .0460894     1.15   0.260    -.0413772    .1474427
   civic1990 |  -.0370332   .0330464    -1.12   0.272    -.1047257    .0306594
   gdppc2005 |  -3.32e-07   1.34e-06    -0.25   0.806    -3.08e-06    2.41e-06
   gdppc2000 |   1.84e-06   3.47e-06     0.53   0.599    -5.26e-06    8.94e-06
   gdppc1995 |  -2.20e-06   2.62e-06    -0.84   0.407    -7.56e-06    3.16e-06
   gdppc1990 |   9.91e-07   6.02e-07     1.65   0.111    -2.42e-07    2.22e-06
       _cons |  -.0570219   .0887936    -0.64   0.526    -.2389074    .1248635
------------------------------------------------------------------------------

 ( 1)  gdppc2005 = 0
 ( 2)  gdppc2000 = 0
 ( 3)  gdppc1995 = 0
 ( 4)  gdppc1990 = 0

       F(  4,    28) =    1.30
            Prob > F =    0.2953
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) = 1030.40
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9942
                                                       Root MSE      =  1037.5

------------------------------------------------------------------------------
             |               Robust
   gdppc2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   gdppc2005 |   1.137318   .1230607     9.24   0.000     .8852398    1.389397
   gdppc2000 |  -.2531754   .3098117    -0.82   0.421    -.8877958     .381445
   gdppc1995 |   .1383772   .2902655     0.48   0.637    -.4562047    .7329591
   gdppc1990 |  -.0779839   .1223299    -0.64   0.529    -.3285653    .1725976
  gender2005 |    13529.2   11012.44     1.23   0.229    -9028.756    36087.15
  gender2000 |  -8666.983   9373.377    -0.92   0.363    -27867.48    10533.51
  gender1995 |    8475.09   4694.671     1.81   0.082    -1141.508    18091.69
  gender1990 |  -15802.81   8068.146    -1.96   0.060    -32329.65     724.041
       _cons |   2219.208   4317.411     0.51   0.611    -6624.608    11063.02
------------------------------------------------------------------------------

 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,    28) =    2.02
            Prob > F =    0.1184

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  148.63
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9577
                                                       Root MSE      =  .01305

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |    .873648   .1592041     5.49   0.000     .5475331    1.199763
  gender2000 |   .2422365   .1347869     1.80   0.083     -.033862     .518335
  gender1995 |  -.0969064   .0938579    -1.03   0.311    -.2891657    .0953529
  gender1990 |   .1552103   .1017846     1.52   0.139    -.0532859    .3637065
   gdppc2005 |  -2.19e-06   1.34e-06    -1.64   0.112    -4.93e-06    5.47e-07
   gdppc2000 |   5.35e-06   3.00e-06     1.79   0.085    -7.89e-07    .0000115
   gdppc1995 |  -4.06e-06   3.11e-06    -1.30   0.203    -.0000104    2.32e-06
   gdppc1990 |   6.85e-07   1.06e-06     0.64   0.524    -1.49e-06    2.86e-06
       _cons |  -.1240794   .0458154    -2.71   0.011    -.2179279   -.0302308
------------------------------------------------------------------------------

 ( 1)  gdppc2005 = 0
 ( 2)  gdppc2000 = 0
 ( 3)  gdppc1995 = 0
 ( 4)  gdppc1990 = 0

       F(  4,    28) =    1.16
            Prob > F =    0.3474
```

Linear regression

Number of obs = 37
F(8, 28) = 2399.30
Prob > F = 0.0000
R-squared = 0.9950
Root MSE = 961.2

gdppc2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdppc2005	1.044649	.178469	5.85	0.000	.6790718	1.410226
gdppc2000	-.1609794	.3642642	-0.44	0.662	-.9071409	.585182
gdppc1995	.2901323	.2463899	1.18	0.249	-.2145746	.7948392
gdppc1990	-.209737	.1194835	-1.76	0.090	-.4544878	.0350138
clubs2005	-14019.42	4155.792	-3.37	0.002	-22532.18	-5506.669
clubs2000	647.8233	10760.35	0.06	0.952	-21393.76	22689.4
clubs1995	28284.75	15104.89	1.87	0.072	-2656.215	59225.71
clubs1990	-766.7808	4063.23	-0.19	0.852	-9089.929	7556.368
_cons	-5862.59	4099.65	-1.43	0.164	-14260.34	2535.161

(1) clubs2005 = 0
(2) clubs2000 = 0
(3) clubs1995 = 0
(4) clubs1990 = 0

F(4, 28) = 4.29
Prob > F = 0.0078

Linear regression

Number of obs = 37
F(8, 28) = 216.91
Prob > F = 0.0000
R-squared = 0.9504
Root MSE = .02651

clubs2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
clubs2005	1.503025	.2489573	6.04	0.000	.9930594	2.012991
clubs2000	-.5833479	.3746595	-1.56	0.131	-1.350803	.1841073
clubs1995	-.5402973	.4025272	-1.34	0.190	-1.364837	.2842423
clubs1990	.0300191	.0953035	0.31	0.755	-.1652012	.2252395
gdppc2005	-1.06e-07	3.22e-06	-0.03	0.974	-6.71e-06	6.50e-06
gdppc2000	-8.98e-08	5.64e-06	-0.02	0.987	-.0000116	.0000115
gdppc1995	-2.57e-07	3.99e-06	-0.06	0.949	-8.42e-06	7.91e-06
gdppc1990	1.11e-06	2.65e-06	0.42	0.678	-4.32e-06	6.54e-06
_cons	.2900666	.1720818	1.69	0.103	-.062427	.6425601

(1) gdppc2005 = 0
(2) gdppc2000 = 0
(3) gdppc1995 = 0
(4) gdppc1990 = 0

F(4, 28) = 0.50
Prob > F = 0.7360

Linear regression

Number of obs = 37
F(8, 28) = 1340.62
Prob > F = 0.0000
R-squared = 0.9938
Root MSE = 1070

gdppc2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdppc2005	1.115474	.129566	8.61	0.000	.8500703	1.380878
gdppc2000	-.2827933	.3033152	-0.93	0.359	-.9041064	.3385197
gdppc1995	.1928437	.24312	0.79	0.434	-.3051651	.6908525
gdppc1990	-.0807878	.0853309	-0.95	0.352	-.2555801	.0940046
cohesion2005	-1301.413	5710.064	-0.23	0.821	-12997.95	10395.12
cohesion2000	965.8256	2254.305	0.43	0.672	-3651.908	5583.559
cohesion1995	7289.109	4564.58	1.60	0.122	-2061.009	16639.23
cohesion1990	-2510.641	4431.171	-0.57	0.576	-11587.48	6566.201
_cons	-1712.69	1958.542	-0.87	0.389	-5724.581	2299.202

(1) cohesion2005 = 0
(2) cohesion2000 = 0
(3) cohesion1995 = 0
(4) cohesion1990 = 0

F(4, 28) = 1.43
Prob > F = 0.2506

Linear regression

Number of obs =	37
F(8, 28) =	125.31
Prob > F =	0.0000
R-squared =	0.9560
Root MSE =	.0149

cohesion2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion2005	.8487324	.0793644	10.69	0.000	.6861618	1.011303
cohesion2000	-.0437056	.0491528	-0.89	0.381	-.1443905	.0569793
cohesion1995	.1353674	.0770525	1.76	0.090	-.0224675	.2932023
cohesion1990	.0368158	.0759064	0.49	0.631	-.1186714	.192303
gdppc2005	-1.07e-06	1.68e-06	-0.64	0.529	-4.52e-06	2.38e-06
gdppc2000	3.12e-06	3.30e-06	0.94	0.353	-3.65e-06	9.88e-06
gdppc1995	-2.90e-06	2.38e-06	-1.22	0.233	-7.77e-06	1.97e-06
gdppc1990	1.16e-06	1.21e-06	0.95	0.349	-1.33e-06	3.64e-06
_cons	-.0521067	.0276476	-1.88	0.070	-.1087404	.0045269

(1) gdppc2005 = 0
(2) gdppc2000 = 0
(3) gdppc1995 = 0
(4) gdppc1990 = 0

F(4, 28) = 0.96
Prob > F = 0.4442

Appendix 9. Granger Tests: Between ISDs – Core Group of 37

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =   52.77
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9275
                                                       Root MSE      =  .02333

------------------------------------------------------------------------------
             |               Robust
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |   1.282201   .1389513     9.23   0.000     .9975719    1.566829
  safety2000 |  -.4234426   .1521001    -2.78   0.010    -.7350054   -.1118797
  safety1995 |    1.19665   .4377983     2.73   0.011     .2998613     2.09344
  safety1990 |  -.7837146   .5197992    -1.51   0.143    -1.848475    .2810459
   civic2005 |  -.0875865   .2354092    -0.37   0.713    -.5698004    .3946274
   civic2000 |   .0939058   .2314586     0.41   0.688    -.3802156    .5680272
   civic1995 |  -.0980566    .089365    -1.10   0.282    -.2811125    .0849993
   civic1990 |   .1690172   .1119913     1.51   0.142    -.0603866    .3984209
       _cons |   -.176695   .2275522    -0.78   0.444    -.6428145    .2894245
------------------------------------------------------------------------------

 ( 1)  civic2005 = 0
 ( 2)  civic2000 = 0
 ( 3)  civic1995 = 0
 ( 4)  civic1990 = 0

       F(  4,    28) =    1.07
            Prob > F =    0.3914
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  472.76
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9821
                                                       Root MSE      =  .00928

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   civic2005 |   1.191303   .1305539     9.12   0.000     .9238755     1.45873
   civic2000 |  -.0290422   .0646126    -0.45   0.657    -.1613951    .1033107
   civic1995 |   .0393068   .0402531     0.98   0.337    -.0431479    .1217614
   civic1990 |  -.0199701   .0215956    -0.92   0.363    -.0642066    .0242664
  safety2005 |   .0323714    .048763     0.66   0.512    -.0675152    .1322579
  safety2000 |  -.0255769   .0563496    -0.45   0.653    -.1410039    .0898501
  safety1995 |   .1460726   .2084718     0.70   0.489    -.2809626    .5731077
  safety1990 |  -.3013347   .2523856    -1.19   0.243    -.8183231    .2156538
       _cons |  -.0086787   .1092759    -0.08   0.937    -.2325202    .2151627
------------------------------------------------------------------------------

 ( 1)  safety2005 = 0
 ( 2)  safety2000 = 0
 ( 3)  safety1995 = 0
 ( 4)  safety1990 = 0

       F(  4,    28) =    0.88
            Prob > F =    0.4874
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  108.35
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9235
                                                       Root MSE      =  .02397

------------------------------------------------------------------------------
             |               Robust
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |   1.146548   .1586767     7.23   0.000     .8215139    1.471583
  safety2000 |  -.2154872   .1726072    -1.25   0.222    -.5690571    .1380827
  safety1995 |   .8270735   .4196729     1.97   0.059    -.0325875    1.686734
  safety1990 |  -.8434877   .4074836    -2.07   0.048     -1.67818   -.0087954
  gender2005 |  -.1046412   .2459332    -0.43   0.674    -.6084125    .3991301
  gender2000 |   .0164643   .1809934     0.09   0.928    -.3542839    .3872124
  gender1995 |   .1984695   .1072933     1.85   0.075    -.0213109    .4182499
  gender1990 |  -.1193504    .121596    -0.98   0.335    -.3684284    .1297276
       _cons |   .0707137   .2858173     0.25   0.806    -.5147564    .6561839
------------------------------------------------------------------------------

 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,    28) =    1.85
            Prob > F =    0.1475
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  115.13
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9661
                                                       Root MSE      =  .01168

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |   .7439362   .1519406     4.90   0.000        .4327    1.055172
  gender2000 |   .3356653   .1187045     2.83   0.009     .0925102    .5788205
  gender1995 |  -.0917952   .0778919    -1.18   0.249    -.2513494     .067759
  gender1990 |   .1738793   .1000098     1.74   0.093    -.0309816    .3787401
  safety2005 |  -.0762507   .0870803    -0.88   0.389    -.2546265    .1021251
  safety2000 |   .2182666   .1010638     2.16   0.040     .0112468    .4252863
  safety1995 |  -.5948764   .2514593    -2.37   0.025    -1.109967   -.0797854
  safety1990 |   .0163243   .2164462     0.08   0.940    -.4270458    .4596943
       _cons |   .1280025   .1606942     0.80   0.432    -.2011647    .4571697
------------------------------------------------------------------------------

 ( 1)  safety2005 = 0
 ( 2)  safety2000 = 0
 ( 3)  safety1995 = 0
 ( 4)  safety1990 = 0

       F(  4,    28) =    1.50
            Prob > F =    0.2299

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  104.65
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9170
                                                       Root MSE      =  .02496

------------------------------------------------------------------------------
             |               Robust
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |    1.31201   .1809795     7.25   0.000     .9412898    1.682729
  safety2000 |   -.297965   .2083533    -1.43   0.164    -.7247573    .1288274
  safety1995 |   .8644057   .4304823     2.01   0.054    -.0173974    1.746209
  safety1990 |   -.872272   .4528013    -1.93   0.064    -1.799793    .0552494
   clubs2005 |   .0112407    .153806     0.07   0.942    -.3038166    .3262981
   clubs2000 |  -.1608164   .2487439    -0.65   0.523    -.6703452    .3487123
   clubs1995 |   .0838764   .4193821     0.20   0.843    -.7751888    .9429416
   clubs1990 |   .0402175   .0990011     0.41   0.688    -.1625771    .2430121
       _cons |   .0280978   .2348997     0.12   0.906    -.4530724    .5092679
------------------------------------------------------------------------------

 ( 1)  clubs2005 = 0
 ( 2)  clubs2000 = 0
 ( 3)  clubs1995 = 0
 ( 4)  clubs1990 = 0

       F(  4,    28) =    0.52
            Prob > F =    0.7202

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  149.80
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9559
                                                       Root MSE      =    .025

------------------------------------------------------------------------------
             |               Robust
   clubs2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   clubs2005 |   1.584957   .2469877     6.42   0.000     1.079026    2.090889
   clubs2000 |  -.6812093   .3071599    -2.22   0.035    -1.310398   -.0520208
   clubs1995 |  -.4138999   .3879473    -1.07   0.295    -1.208574    .3807741
   clubs1990 |  -.0413643   .0835173    -0.50   0.624    -.2124418    .1297131
  safety2005 |   .3068333   .1637304     1.87   0.071    -.0285533    .6422199
  safety2000 |   -.095932   .1738208    -0.55   0.585    -.4519877    .2601238
  safety1995 |  -.3607058   .3874028    -0.93   0.360    -1.154264    .4328529
  safety1990 |   .0687021   .4924521     0.14   0.890    -.9400402    1.077444
       _cons |    .338759   .1980698     1.71   0.098    -.0669686    .7444866
------------------------------------------------------------------------------

 ( 1)  safety2005 = 0
 ( 2)  safety2000 = 0
 ( 3)  safety1995 = 0
 ( 4)  safety1990 = 0

       F(  4,    28) =    1.69
            Prob > F =    0.1811
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  146.05
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9257
                                                       Root MSE      =  .02362
```

safety2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
safety2005	1.126648	.193585	5.82	0.000	.7301066	1.523189
safety2000	-.2661391	.175553	-1.52	0.141	-.6257431	.0934648
safety1995	1.007439	.4207161	2.39	0.024	.1456412	1.869237
safety1990	-.8940313	.4589143	-1.95	0.061	-1.834075	.0460121
cohesion2005	.0411934	.1394483	0.30	0.770	-.2444534	.3268403
cohesion2000	.1426103	.0703663	2.03	0.052	-.0015285	.2867491
cohesion1995	-.17568	.1161027	-1.51	0.141	-.4135057	.0621457
cohesion1990	-.0360085	.1161034	-0.31	0.759	-.2738355	.2018185
_cons	.0505138	.2380209	0.21	0.833	-.43705	.5380776

```
 ( 1)  cohesion2005 = 0
 ( 2)  cohesion2000 = 0
 ( 3)  cohesion1995 = 0
 ( 4)  cohesion1990 = 0

       F(  4,    28) =    1.30
            Prob > F =    0.2925
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  134.99
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9627
                                                       Root MSE      =  .01372
```

cohesion2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion2005	.86642	.0675981	12.82	0.000	.7279516	1.004888
cohesion2000	.0069536	.0264407	0.26	0.794	-.0472077	.0611149
cohesion1995	.0906787	.053783	1.69	0.103	-.0194908	.2008481
cohesion1990	.038755	.0605837	0.64	0.528	-.085345	.1628551
safety2005	.0235737	.1014232	0.23	0.818	-.1841823	.2313297
safety2000	-.0643192	.093881	-0.69	0.499	-.2566257	.1279873
safety1995	.2410133	.1982804	1.22	0.234	-.1651456	.6471723
safety1990	-.4657984	.2449577	-1.90	0.068	-.9675716	.0359748
_cons	.0874504	.1091121	0.80	0.430	-.1360555	.3109563

```
 ( 1)  safety2005 = 0
 ( 2)  safety2000 = 0
 ( 3)  safety1995 = 0
 ( 4)  safety1990 = 0

       F(  4,    28) =    2.23
            Prob > F =    0.0915
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  182.89
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9832
                                                       Root MSE      =  .00899
```

civic2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
civic2005	1.176771	.1263391	9.31	0.000	.917977	1.435565
civic2000	-.09851	.0880266	-1.12	0.273	-.2788244	.0818044
civic1995	.0440967	.0456691	0.97	0.343	-.0494522	.1376455
civic1990	.0016745	.0454627	0.04	0.971	-.0914516	.0948005
gender2005	-.2165584	.2214892	-0.98	0.337	-.6702584	.2371416
gender2000	.1150962	.1007041	1.14	0.263	-.0911868	.3213792
gender1995	.0266305	.0332214	0.80	0.430	-.0414204	.0946814
gender1990	.087921	.1216138	0.72	0.476	-.1611936	.3370355
_cons	-.0523771	.0905168	-0.58	0.567	-.2377923	.133038

```
 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,    28) =    2.27
            Prob > F =    0.0872
```

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  148.20
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9663
                                                       Root MSE      =  .01165

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |   .6273139   .1677845     3.74   0.001      .283623    .9710048
  gender2000 |   .3645482   .1034844     3.52   0.001     .1525699    .5765265
  gender1995 |  -.1439894   .0871639    -1.65   0.110    -.3225365    .0345578
  gender1990 |   .3244002   .1042864     3.11   0.004     .1107792    .5380211
   civic2005 |   .0098719   .1298238     0.08   0.940    -.2560602    .2758039
   civic2000 |  -.0967443   .0847645    -1.14   0.263    -.2703765    .0768879
   civic1995 |  -.1117848   .0516701    -2.16   0.039    -.2176262   -.0059433
   civic1990 |    .176786   .0603162     2.93   0.007      .053234    .3003381
       _cons |  -.0955126   .0509484    -1.87   0.071    -.1998756    .0088505
------------------------------------------------------------------------------

 ( 1)  civic2005 = 0
 ( 2)  civic2000 = 0
 ( 3)  civic1995 = 0
 ( 4)  civic1990 = 0

       F(  4,    28) =    2.72
            Prob > F =    0.0497

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  297.07
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9828
                                                       Root MSE      =  .00908

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   civic2005 |   1.226859   .1043437    11.76   0.000     1.013121    1.440597
   civic2000 |  -.0309773   .0755232    -0.41   0.685    -.1856795     .123725
   civic1995 |   .0263026   .0405972     0.65   0.522     -.056857    .1094621
   civic1990 |  -.0146426   .0251453    -0.58   0.565    -.0661504    .0368653
   clubs2005 |   .0706074   .0532946     1.32   0.196    -.0385615    .1797764
   clubs2000 |  -.1175344   .0807619    -1.46   0.157    -.2829677     .047899
   clubs1995 |   .0438844   .1200741     0.37   0.718    -.2020762    .2898451
   clubs1990 |   .0046413   .0324965     0.14   0.887    -.0619248    .0712073
       _cons |  -.1076152   .0401509    -2.68   0.012    -.1898607   -.0253698
------------------------------------------------------------------------------

 ( 1)  clubs2005 = 0
 ( 2)  clubs2000 = 0
 ( 3)  clubs1995 = 0
 ( 4)  clubs1990 = 0

       F(  4,    28) =    1.08
            Prob > F =    0.3865

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  212.45
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9530
                                                       Root MSE      =   .0258

------------------------------------------------------------------------------
             |               Robust
   clubs2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   clubs2005 |   1.504426   .2367782     6.35   0.000     1.019408    1.989444
   clubs2000 |  -.5867153   .3361227    -1.75   0.092    -1.275231    .1018007
   clubs1995 |   -.519868    .368046    -1.41   0.169    -1.273776      .23404
   clubs1990 |     .02666   .0974644     0.27   0.786    -.1729867    .2263068
   civic2005 |  -.0167454   .2496788    -0.07   0.947    -.5281892    .4946984
   civic2000 |   .2505835   .1478399     1.69   0.101    -.0522529    .5534199
   civic1995 |  -.0867867   .1114025    -0.78   0.442    -.3149844    .1414109
   civic1990 |   .0328582    .063496     0.52   0.609    -.0972074    .1629238
       _cons |   .1892139   .1408163     1.34   0.190    -.0992352    .4776629
------------------------------------------------------------------------------

 ( 1)  civic2005 = 0
 ( 2)  civic2000 = 0
 ( 3)  civic1995 = 0
 ( 4)  civic1990 = 0

       F(  4,    28) =    1.91
            Prob > F =    0.1357
```

Linear regression

Number of obs = 37
F(8, 28) = 256.73
Prob > F = 0.0000
R-squared = 0.9822
Root MSE = .00926

civic2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
civic2005	1.239978	.1118203	11.09	0.000	1.010924	1.469031
civic2000	-.0432174	.0664918	-0.65	0.521	-.1794197	.0929849
civic1995	.0400808	.052987	0.76	0.456	-.0684582	.1486197
civic1990	-.0490554	.0384532	-1.28	0.213	-.1278233	.0297125
cohesion2005	-.0711901	.0352684	-2.02	0.053	-.143434	.0010538
cohesion2000	.0271876	.0168968	1.61	0.119	-.007424	.0617991
cohesion1995	.054741	.0401706	1.36	0.184	-.0275447	.1370267
cohesion1990	-.0026639	.024059	-0.11	0.913	-.0519466	.0466187
_cons	-.1017632	.0400606	-2.54	0.017	-.1838237	-.0197028

(1) cohesion2005 = 0
(2) cohesion2000 = 0
(3) cohesion1995 = 0
(4) cohesion1990 = 0

F(4, 28) = 1.63
Prob > F = 0.1946

Linear regression

Number of obs = 37
F(8, 28) = 108.50
Prob > F = 0.0000
R-squared = 0.9621
Root MSE = .01382

cohesion2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion2005	.8610897	.0872039	9.87	0.000	.6824607	1.039719
cohesion2000	-.0355939	.053141	-0.67	0.508	-.1444484	.0732605
cohesion1995	.0840715	.0846368	0.99	0.329	-.0892991	.2574421
cohesion1990	.0664781	.0791865	0.84	0.408	-.0957281	.2286843
civic2005	.1893179	.1544987	1.23	0.231	-.1271584	.5057942
civic2000	-.2051366	.1378446	-1.49	0.148	-.4874984	.0772251
civic1995	-.0049338	.0531874	-0.09	0.927	-.1138833	.1040158
civic1990	.0688028	.0573771	1.20	0.241	-.0487288	.1863344
_cons	-.0689224	.0454354	-1.52	0.140	-.1619926	.0241479

(1) civic2005 = 0
(2) civic2000 = 0
(3) civic1995 = 0
(4) civic1990 = 0

F(4, 28) = 1.20
Prob > F = 0.3325

Linear regression

Number of obs = 37
F(8, 28) = 168.15
Prob > F = 0.0000
R-squared = 0.9588
Root MSE = .01288

gender2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gender2005	.8279154	.1689417	4.90	0.000	.4818541	1.173977
gender2000	.3277397	.1074286	3.05	0.005	.1076822	.5477973
gender1995	-.1622065	.0862153	-1.88	0.070	-.3388104	.0143975
gender1990	.198406	.099274	2.00	0.055	-.0049475	.4017595
clubs2005	-.1350981	.0757839	-1.78	0.085	-.2903345	.0201382
clubs2000	.1707711	.0991932	1.72	0.096	-.032417	.3739591
clubs1995	-.0674832	.2002167	-0.34	0.739	-.4776084	.3426421
clubs1990	.0602172	.0511265	1.18	0.249	-.0445107	.1649452
_cons	-.1415141	.0662781	-2.14	0.042	-.2772787	-.0057495

(1) clubs2005 = 0
(2) clubs2000 = 0
(3) clubs1995 = 0
(4) clubs1990 = 0

F(4, 28) = 0.96
Prob > F = 0.4466

```
Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  205.54
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9524
                                                       Root MSE      =  .02597

------------------------------------------------------------------------------
             |               Robust
   clubs2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   clubs2005 |   1.543747   .2581728     5.98   0.000     1.014904     2.07259
   clubs2000 |  -.6158578   .3293416    -1.87   0.072    -1.290483    .0587678
   clubs1995 |  -.4673624   .3743117    -1.25   0.222    -1.234105    .2993804
   clubs1990 |  -.0257136   .0778488    -0.33   0.744    -.1851797    .1337525
  gender2005 |  -.1487309   .2810417    -0.53   0.601    -.7244188     .426957
  gender2000 |   .0432747   .1827591     0.24   0.815    -.3310904    .4176398
  gender1995 |    .170942   .1558777     1.10   0.282     -.148359     .490243
  gender1990 |  -.1321947   .1908193    -0.69   0.494    -.5230703    .2586809
       _cons |   .3471197   .2253996     1.54   0.135    -.1145904    .8088298
------------------------------------------------------------------------------

 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,    28) =    0.46
            Prob > F =    0.7674

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  191.93
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9602
                                                       Root MSE      =  .01265

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |   .9496887   .1352564     7.02   0.000     .6726284    1.226749
  gender2000 |   .2564766   .0995908     2.58   0.016     .0524742     .460479
  gender1995 |  -.1757448   .0800688    -2.19   0.037    -.3397582   -.0117314
  gender1990 |   .1888419   .0949041     1.99   0.056    -.0055603    .3832441
cohesion2005 |    .019977   .0705633     0.28   0.779    -.1245654    .1645194
cohesion2000 |   .0574425   .0329595     1.74   0.092     -.010072     .124957
cohesion1995 |  -.0192909   .0538917    -0.36   0.723     -.129683    .0911013
cohesion1990 |  -.0805098   .0422966    -1.90   0.067    -.1671504    .0061308
       _cons |  -.1478652   .0394363    -3.75   0.001    -.2286468   -.0670835
------------------------------------------------------------------------------

 ( 1)  cohesion2005 = 0
 ( 2)  cohesion2000 = 0
 ( 3)  cohesion1995 = 0
 ( 4)  cohesion1990 = 0

       F(  4,    28) =    1.47
            Prob > F =    0.2368

Linear regression                                      Number of obs =      37
                                                       F(  8,    28) =  127.47
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9623
                                                       Root MSE      =  .01378

------------------------------------------------------------------------------
             |               Robust
cohesion2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
cohesion2005 |   .8793301   .0791296    11.11   0.000     .7172405     1.04142
cohesion2000 |  -.0311784   .0352847    -0.88   0.384    -.1034559     .041099
cohesion1995 |   .0816643   .0657844     1.24   0.225    -.0530889    .2164175
cohesion1990 |   .0453031    .054221     0.84   0.410    -.0657637    .1563698
  gender2005 |   .2834239    .161206     1.76   0.090    -.0467916    .6136393
  gender2000 |  -.1038825   .1421849    -0.73   0.471     -.395135      .18737
  gender1995 |  -.0060804   .0873029    -0.07   0.945    -.1849123    .1727515
  gender1990 |   -.027582   .0927452    -0.30   0.768    -.2175619    .1623979
       _cons |  -.1728957   .0581923    -2.97   0.006    -.2920971   -.0536942
------------------------------------------------------------------------------

 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,    28) =    1.40
            Prob > F =    0.2595
```

Linear regression

Number of obs = 37
F(8, 28) = 141.43
Prob > F = 0.0000
R-squared = 0.9622
Root MSE = .02314

clubs2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
clubs2005	1.543706	.1766159	8.74	0.000	1.181924	1.905487
clubs2000	-.691516	.2741458	-2.52	0.018	-1.253078	-.1299538
clubs1995	-.0498319	.3195688	-0.16	0.877	-.704439	.6047752
clubs1990	-.1185315	.0905826	-1.31	0.201	-.3040817	.0670186
cohesion2005	.0600026	.1532267	0.39	0.698	-.253868	.3738733
cohesion2000	.1591715	.0625588	2.54	0.017	.0310255	.2873174
cohesion1995	-.2998537	.1313451	-2.28	0.030	-.5689019	-.0308056
cohesion1990	-.0154538	.119252	-0.13	0.898	-.2597305	.228823
_cons	.2339372	.1181647	1.98	0.058	-.0081122	.4759866

(1) cohesion2005 = 0
(2) cohesion2000 = 0
(3) cohesion1995 = 0
(4) cohesion1990 = 0

F(4, 28) = 2.50
Prob > F = 0.0654

Linear regression

Number of obs = 37
F(8, 28) = 175.28
Prob > F = 0.0000
R-squared = 0.9653
Root MSE = .01323

cohesion2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion2005	.8381826	.0659315	12.71	0.000	.703128	.9732373
cohesion2000	-.0688706	.0407278	-1.69	0.102	-.1522978	.0145566
cohesion1995	.0841904	.0505275	1.67	0.107	-.0193105	.1876912
cohesion1990	.1556113	.0732332	2.12	0.043	.0055998	.3056228
clubs2005	-.275527	.0899293	-3.06	0.005	-.4597388	-.0913153
clubs2000	.3874214	.1450701	2.67	0.012	.0902589	.684584
clubs1995	-.1853948	.2001384	-0.93	0.362	-.5953596	.22457
clubs1990	.0994609	.063028	1.58	0.126	-.029646	.2285678
_cons	-.0700693	.0504518	-1.39	0.176	-.1734151	.0332765

(1) clubs2005 = 0
(2) clubs2000 = 0
(3) clubs1995 = 0
(4) clubs1990 = 0

F(4, 28) = 2.37
Prob > F = 0.0762

Appendix 10. Granger Tests: ISDs & gdppc - All Available Data Sets

```
Linear regression                                      Number of obs =      50
                                                       F(  8,    41) = 1780.83
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9942
                                                       Root MSE      =  1021.8

------------------------------------------------------------------------------
             |               Robust
       gdppc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      safety |
         L1. |   3981.569   8551.466     0.47   0.644    -13288.47    21251.61
         L2. |  -7006.233   8605.782    -0.81   0.420    -24385.96     10373.5
         L3. |   5287.555    17560.6     0.30   0.765    -30176.79     40751.9
         L4. |   11064.17   11034.07     1.00   0.322    -11219.58    33347.92
             |
       gdppc |
         L1. |    1.02997   .1071099     9.62   0.000     .8136569    1.246283
         L2. |  -.0319265   .2392678    -0.13   0.895    -.5151377    .4512847
         L3. |   .0606785   .1984241     0.31   0.761    -.3400471    .4614041
         L4. |  -.1019942   .0787771    -1.29   0.203    -.2610877    .0570993
             |
       _cons |  -5597.317   5285.191    -1.06   0.296    -16270.98    5076.344
------------------------------------------------------------------------------

 ( 1)  L.safety = 0
 ( 2)  L2.safety = 0
 ( 3)  L3.safety = 0
 ( 4)  L4.safety = 0

       F(  4,    41) =    0.96
            Prob > F =    0.4386

Linear regression                                      Number of obs =      50
                                                       F(  8,    41) =  101.29
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9305
                                                       Root MSE      =   .0228
------------------------------------------------------------------------------
             |               Robust
      safety |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdppc |
         L1. |  -2.54e-06   2.12e-06    -1.20   0.237    -6.81e-06    1.73e-06
         L2. |   .0000139   4.92e-06     2.82   0.007     3.96e-06    .0000238
         L3. |  -.0000126   4.22e-06    -2.99   0.005    -.0000211   -4.09e-06
         L4. |   1.25e-06   1.75e-06     0.71   0.480    -2.29e-06    4.79e-06
             |
      safety |
         L1. |   1.103729   .1274727     8.66   0.000     .8462924    1.361165
         L2. |  -.3113347   .1581967    -1.97   0.056    -.6308194    .0081499
         L3. |   .4279559   .2934953     1.46   0.152    -.1647699    1.020682
         L4. |   .2630791   .3557193     0.74   0.464    -.4553106    .9814689
             |
       _cons |  -.2690796   .1348599    -2.00   0.053    -.5414347    .0032755
------------------------------------------------------------------------------

 ( 1)  L.gdppc = 0
 ( 2)  L2.gdppc = 0
 ( 3)  L3.gdppc = 0
 ( 4)  L4.gdppc = 0

       F(  4,    41) =    6.18
            Prob > F =    0.0005
```

Linear regression

Number of obs = 140
F(8, 131) = 4057.93
Prob > F = 0.0000
R-squared = 0.9956
Root MSE = 885.29

gdppc	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
civic						
L1.	-2354.264	4980.112	-0.47	0.637	-12206.11	7497.585
L2.	5448.915	3027.625	1.80	0.074	-540.4499	11438.28
L3.	-1444.911	1998.497	-0.72	0.471	-5398.414	2508.592
L4.	-1388.143	2844.771	-0.49	0.626	-7015.778	4239.493
gdppc						
L1.	1.291179	.1028172	12.56	0.000	1.087782	1.494576
L2.	-.5790836	.1706705	-3.39	0.001	-.9167106	-.2414567
L3.	.350595	.1437303	2.44	0.016	.0662621	.6349279
L4.	-.0466927	.0661019	-0.71	0.481	-.1774581	.0840727
_cons	299.6594	1533.577	0.20	0.845	-2734.121	3333.44

(1) L.civic = 0
(2) L2.civic = 0
(3) L3.civic = 0
(4) L4.civic = 0

F(4, 131) = 1.17
Prob > F = 0.3280

Linear regression

Number of obs = 143
F(8, 134) = 732.41
Prob > F = 0.0000
R-squared = 0.9757
Root MSE = .01106

civic	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdppc						
L1.	1.77e-07	5.69e-07	0.31	0.756	-9.48e-07	1.30e-06
L2.	4.37e-07	1.02e-06	0.43	0.670	-1.58e-06	2.46e-06
L3.	-5.13e-07	8.99e-07	-0.57	0.570	-2.29e-06	1.27e-06
L4.	-4.64e-07	4.41e-07	-1.05	0.295	-1.34e-06	4.09e-07
civic						
L1.	1.267842	.0524648	24.17	0.000	1.164076	1.371609
L2.	.0531594	.0329789	1.61	0.109	-.0120671	.118386
L3.	-.0165632	.0241498	-0.69	0.494	-.0643273	.031201
L4.	-.0097525	.0312448	-0.31	0.755	-.0715493	.0520443
_cons	-.1506418	.0162331	-9.28	0.000	-.1827481	-.1185355

(1) L.gdppc = 0
(2) L2.gdppc = 0
(3) L3.gdppc = 0
(4) L4.gdppc = 0

F(4, 134) = 2.67
Prob > F = 0.0349

```
Linear regression                                      Number of obs =     141
                                                       F(  8,   132) = 3427.32
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9959
                                                       Root MSE      =  862.82

------------------------------------------------------------------------------
             |               Robust
       gdppc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      gender |
         L1. |   8765.479   3121.265     2.81   0.006     2591.307    14939.65
         L2. |  -3840.811   3392.789    -1.13   0.260    -10552.08    2870.461
         L3. |   1664.775   811.5455     2.05   0.042     59.45785    3270.092
         L4. |  -5768.488   2014.186    -2.86   0.005    -9752.748   -1784.228
             |
       gdppc |
         L1. |   1.268267   .0921358    13.77   0.000     1.086014    1.450521
         L2. |  -.5202923   .1608362    -3.23   0.002    -.8384422   -.2021424
         L3. |   .2624513   .1497859     1.75   0.082    -.0338399    .5587426
         L4. |  -.0055721   .0659321    -0.08   0.933    -.1359922    .1248481
             |
       _cons |  -583.4837   1319.498    -0.44   0.659    -3193.581    2026.614
------------------------------------------------------------------------------

 ( 1)  L.gender = 0
 ( 2)  L2.gender = 0
 ( 3)  L3.gender = 0
 ( 4)  L4.gender = 0

       F(  4,   132) =    4.62
            Prob > F =    0.0016

Linear regression                                      Number of obs =     144
                                                       F(  8,   135) =  271.61
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9253
                                                       Root MSE      =  .01877

------------------------------------------------------------------------------
             |               Robust
      gender |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdppc |
         L1. |  -4.65e-07   1.30e-06    -0.36   0.720    -3.03e-06    2.10e-06
         L2. |   3.02e-06   2.16e-06     1.40   0.164    -1.25e-06    7.29e-06
         L3. |  -3.54e-06   1.82e-06    -1.94   0.054    -7.14e-06    6.62e-08
         L4. |   8.96e-07   9.72e-07     0.92   0.358    -1.03e-06    2.82e-06
             |
      gender |
         L1. |    .853989   .0722909    11.81   0.000     .7110198    .9969582
         L2. |    .140965   .0701518     2.01   0.046     .0022265    .2797036
         L3. |    .000105    .029793     0.00   0.997    -.0588165    .0590265
         L4. |   .0572889   .0484812     1.18   0.239     -.038592    .1531698
             |
       _cons |  -.0471169   .0356621    -1.32   0.189    -.1176455    .0234117
------------------------------------------------------------------------------

 ( 1)  L.gdppc = 0
 ( 2)  L2.gdppc = 0
 ( 3)  L3.gdppc = 0
 ( 4)  L4.gdppc = 0

       F(  4,   135) =    1.86
            Prob > F =    0.1209
```

```
Linear regression                                      Number of obs =      63
                                                       F(  8,    54) = 1872.88
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9960
                                                       Root MSE      =   960.3

------------------------------------------------------------------------------
             |               Robust
       gdppc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       clubs |
         L1. |  -11739.24   3330.805    -3.52   0.001     -18417.1   -5061.376
         L2. |   3964.999   2974.238     1.33   0.188    -1997.988    9927.987
         L3. |   16810.71   7021.786     2.39   0.020     2732.882    30888.55
         L4. |  -687.6442   1445.512    -0.48   0.636    -3585.722    2210.434
             |
       gdppc |
         L1. |   1.090651   .1008634    10.81   0.000     .8884322     1.29287
         L2. |  -.2692656    .230369    -1.17   0.248    -.7311275    .1925964
         L3. |   .3099344   .1902809     1.63   0.109    -.0715559    .6914247
         L4. |  -.1440224   .0605738    -2.38   0.021    -.2654657   -.0225792
             |
       _cons |  -3250.593   2254.657    -1.44   0.155    -7770.907    1269.722
------------------------------------------------------------------------------

 ( 1)  L.clubs = 0
 ( 2)  L2.clubs = 0
 ( 3)  L3.clubs = 0
 ( 4)  L4.clubs = 0

       F(  4,    54) =    3.66
            Prob > F =    0.0103

Linear regression                                      Number of obs =      63
                                                       F(  8,    54) =  205.69
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9164
                                                       Root MSE      =  .03185

------------------------------------------------------------------------------
             |               Robust
       clubs |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdppc |
         L1. |  -1.43e-06   2.67e-06    -0.53   0.595    -6.78e-06    3.92e-06
         L2. |   4.70e-06   4.75e-06     0.99   0.326    -4.81e-06    .0000142
         L3. |  -8.34e-06   4.40e-06    -1.90   0.063    -.0000172    4.76e-07
         L4. |   4.67e-06   2.34e-06     2.00   0.051    -1.62e-08    9.35e-06
             |
       clubs |
         L1. |   1.315359   .1661982     7.91   0.000     .9821518    1.648567
         L2. |  -.1128502   .1243184    -0.91   0.368    -.3620936    .1363932
         L3. |  -.8066334   .4014004    -2.01   0.049    -1.611393   -.0018741
         L4. |   .0891508   .1015935     0.88   0.384    -.1145319    .2928336
             |
       _cons |   .2715347   .1377086     1.97   0.054    -.0045544    .5476238
------------------------------------------------------------------------------

 ( 1)  L.gdppc = 0
 ( 2)  L2.gdppc = 0
 ( 3)  L3.gdppc = 0
 ( 4)  L4.gdppc = 0

       F(  4,    54) =    1.46
            Prob > F =    0.2267
```

```
Linear regression                                      Number of obs =      92
                                                       F(  8,    83) = 1679.92
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9945
                                                       Root MSE      =  874.76

------------------------------------------------------------------------------
             |               Robust
       gdppc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    cohesion |
         L1. |     1722.6   1575.359     1.09   0.277    -1410.727    4855.926
         L2. |  -1949.003   1022.311    -1.91   0.060    -3982.338    84.33193
         L3. |   3839.081   1846.992     2.08   0.041     165.4886    7512.674
         L4. |  -3360.798   2566.428    -1.31   0.194    -8465.321    1743.725
             |
       gdppc |
         L1. |   1.204432   .1173415    10.26   0.000     .9710448     1.43782
         L2. |  -.3359095   .2105455    -1.60   0.114     -.754676     .082857
         L3. |   .1805475    .175439     1.03   0.306    -.1683936    .5294887
         L4. |  -.0539114   .0893699    -0.60   0.548    -.2316646    .1238417
             |
       _cons |   108.1955   940.2923     0.12   0.909    -1762.008    1978.399
------------------------------------------------------------------------------

 ( 1)  L.cohesion = 0
 ( 2)  L2.cohesion = 0
 ( 3)  L3.cohesion = 0
 ( 4)  L4.cohesion = 0

       F(  4,    83) =    1.51
            Prob > F =    0.2054

Linear regression                                      Number of obs =      93
                                                       F(  8,    84) =  129.98
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9303
                                                       Root MSE      =  .02171

------------------------------------------------------------------------------
             |               Robust
    cohesion |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       gdppc |
         L1. |  -1.73e-06   1.90e-06    -0.91   0.364    -5.50e-06    2.04e-06
         L2. |   1.93e-06   4.05e-06     0.48   0.635    -6.12e-06    9.98e-06
         L3. |  -1.71e-06   3.24e-06    -0.53   0.598    -8.15e-06    4.73e-06
         L4. |   1.81e-06   1.46e-06     1.24   0.219    -1.10e-06    4.71e-06
             |
    cohesion |
         L1. |    1.04685   .0596494    17.55   0.000     .9282303    1.165469
         L2. |  -.0579892   .0350886    -1.65   0.102    -.1277666    .0117883
         L3. |   .0047807   .0445241     0.11   0.915    -.0837605    .0933218
         L4. |   .0710333   .0583278     1.22   0.227     -.044958    .1870246
             |
       _cons |  -.0927483    .029203    -3.18   0.002    -.1508216    -.034675
------------------------------------------------------------------------------

 ( 1)  L.gdppc = 0
 ( 2)  L2.gdppc = 0
 ( 3)  L3.gdppc = 0
 ( 4)  L4.gdppc = 0

       F(  4,    84) =    0.51
            Prob > F =    0.7256
```

Appendix 11. Testing for polarity for Granger flow between ISD & gdppc

The original output is presented here. The test statistics has been re-computed, with the same result in all cases.

1. Stepwise: Regress safety2010 over past gdppc and safety

```
begin with empty model
p = 0.0000 <  0.0500  adding  safety2005
p = 0.0022 <  0.0500  adding  gdppc2005

      Source |       SS       df       MS              Number of obs =      50
-------------+------------------------------           F(  2,    47) =  235.23
       Model |  .278845562     2  .139422781           Prob > F      =  0.0000
    Residual |  .027857682    47  .000592717           R-squared     =  0.9092
-------------+------------------------------           Adj R-squared =  0.9053
       Total |  .306703244    49   .00625925           Root MSE      =  .02435

------------------------------------------------------------------------------
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |   .9466458   .0641648    14.75   0.000     .8175629    1.075729
   gdppc2005 |   1.15e-06   3.53e-07     3.24   0.002     4.35e-07    1.85e-06
       _cons |   .0066279   .0287815     0.23   0.819    -.051273    .0645288
```

2. Stepwise: Regress civic2010 over past gdppc and civic

```
begin with empty model
p = 0.0000 <  0.0500  adding  civic2005

      Source |       SS       df       MS              Number of obs =     143
-------------+------------------------------           F(  1,   141) = 5325.50
       Model |   .65590635     1   .65590635           Prob > F      =  0.0000
    Residual |  .017366046   141  .000123163           R-squared     =  0.9742
-------------+------------------------------           Adj R-squared =  0.9740
       Total |  .673272396   142  .004741355           Root MSE      =   .0111

------------------------------------------------------------------------------
   civic2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   civic2005 |   1.251537     .01715    72.98   0.000     1.217633    1.285442
       _cons |  -.1306406   .0088035   -14.84   0.000    -.1480444   -.1132368
------------------------------------------------------------------------------
```

3. Stepwise: Regress gdppc2010 over past gdppc and gender

```
begin with empty model
p = 0.0000 <  0.0500  adding  gdppc2005
p = 0.0037 <  0.0500  adding  gdppc2000
p = 0.0002 <  0.0500  adding  gdppc1995
p = 0.0232 <  0.0500  adding  gender2005
p = 0.0181 <  0.0500  adding  gender1990

      Source |       SS       df       MS              Number of obs =     141
-------------+------------------------------           F(  5,   135) = 6341.68
       Model |  2.3685e+10     5  4.7369e+09           Prob > F      =  0.0000
    Residual |   100838057   135  746948.571           R-squared     =  0.9958
-------------+------------------------------           Adj R-squared =  0.9956
       Total |  2.3785e+10   140   169895538           Root MSE      =  864.26

------------------------------------------------------------------------------
   gdppc2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   gdppc2005 |   1.260646   .0657951    19.16   0.000     1.130523    1.390768
   gdppc2000 |  -.5268827    .108426    -4.86   0.000     -.741316   -.3124493
   gdppc1995 |    .270159   .0683736     3.95   0.000     .1349371     .405381
  gender2005 |   8144.039   2454.715     3.32   0.001     3289.368    12998.71
  gender1990 |  -4940.442   2064.061    -2.39   0.018    -9022.521   -858.3638
       _cons |  -1938.661   1083.157    -1.79   0.076    -4080.812    203.4899
```

4. Stepwise: Regress gdppc2010 over past gdppc and clubs

```
begin with empty model
p = 0.0000 <  0.0500  adding  gdppc2005
p = 0.0252 <  0.0500  adding  clubs2005

      Source |       SS       df       MS              Number of obs =      63
-------------+------------------------------           F(  2,    60) = 6222.30
       Model |  1.2364e+10     2  6.1820e+09           Prob > F      =  0.0000
    Residual |  59611187.4    60  993519.791           R-squared     =  0.9952
-------------+------------------------------           Adj R-squared =  0.9950
       Total |  1.2424e+10    62   200380014           Root MSE      =  996.75

------------------------------------------------------------------------------
   gdppc2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   gdppc2005 |   .9842965   .0090761   108.45   0.000      .9661416    1.002451
   clubs2005 |  -3015.263   1313.841    -2.29   0.025     -5643.336   -387.1902
       _cons |    2433.07   646.0135     3.77   0.000       1140.85    3725.289
------------------------------------------------------------------------------
```

Appendix 12. Granger Tests: Pairwise Between ISDs

Linear regression

Number of obs =	49
F(8, 40) =	359.83
Prob > F =	0.0000
R-squared =	0.9838
Root MSE =	.00924

civic	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
safety						
L1.	.0162956	.0472995	0.34	0.732	-.0793002	.1118914
L2.	-.0673889	.0494131	-1.36	0.180	-.1672566	.0324788
L3.	.1632689	.1531857	1.07	0.293	-.146331	.4728688
L4.	-.0637797	.1147211	-0.56	0.581	-.2956398	.1680804
civic						
L1.	1.322002	.0822464	16.07	0.000	1.155776	1.488229
L2.	-.0942928	.0728501	-1.29	0.203	-.2415283	.0529427
L3.	.0106229	.0368321	0.29	0.775	-.0638176	.0850634
L4.	.0071352	.0279729	0.26	0.800	-.0494001	.0636706
_cons	-.1506481	.0666623	-2.26	0.029	-.2853776	-.0159186

(1) L.safety = 0
(2) L2.safety = 0
(3) L3.safety = 0
(4) L4.safety = 0

F(4, 40) = 0.74
Prob > F = 0.5725

Linear regression

Number of obs =	49
F(8, 40) =	66.51
Prob > F =	0.0000
R-squared =	0.9154
Root MSE =	.0254

safety	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
civic						
L1.	.1576024	.2165102	0.73	0.471	-.279981	.5951858
L2.	.2204183	.2727024	0.81	0.424	-.3307338	.7715704
L3.	-.0549398	.1056142	-0.52	0.606	-.2683939	.1585144
L4.	-.0214508	.083841	-0.26	0.799	-.1908999	.1479982
safety						
L1.	1.136144	.1437681	7.90	0.000	.8455777	1.42671
L2.	-.285079	.137894	-2.07	0.045	-.5637731	-.0063848
L3.	.5161308	.4669776	1.11	0.276	-.4276661	1.459928
L4.	-.0027785	.4762221	-0.01	0.995	-.9652593	.9597023
_cons	-.3515737	.1903222	-1.85	0.072	-.7362292	.0330819

(1) L.civic = 0
(2) L2.civic = 0
(3) L3.civic = 0
(4) L4.civic = 0

F(4, 40) = 2.85
Prob > F = 0.0358

Linear regression

Number of obs = 49
F(8, 40) = 144.61
Prob > F = 0.0000
R-squared = 0.9164
Root MSE = .01685

gender	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
safety						
L1.	-.0603307	.0997236	-0.60	0.549	-.2618797	.1412183
L2.	.1414854	.1087375	1.30	0.201	-.0782814	.3612522
L3.	-.5051057	.2374526	-2.13	0.040	-.9850153	-.025196
L4.	.2628144	.2018625	1.30	0.200	-.1451649	.6707937
gender						
L1.	.7249193	.1195237	6.07	0.000	.483353	.9664856
L2.	.2048758	.1104109	1.86	0.071	-.0182729	.4280245
L3.	-.0419267	.072656	-0.58	0.567	-.1887699	.1049166
L4.	.2673444	.1022821	2.61	0.013	.0606245	.4740643
_cons	-.0315826	.1331437	-0.24	0.814	-.300676	.2375109

(1) L.safety = 0
(2) L2.safety = 0
(3) L3.safety = 0
(4) L4.safety = 0

F(4, 40) = 1.20
Prob > F = 0.3264

Linear regression

Number of obs = 50
F(8, 41) = 80.12
Prob > F = 0.0000
R-squared = 0.9117
Root MSE = .0257

safety	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gender						
L1.	.0417413	.2582654	0.16	0.872	-.4798364	.5633189
L2.	.2263862	.1718549	1.32	0.195	-.1206819	.5734542
L3.	.0352176	.1095614	0.32	0.750	-.1860461	.2564813
L4.	-.1806554	.1381871	-1.31	0.198	-.45973	.0984192
safety						
L1.	1.130959	.1413897	8.00	0.000	.8454168	1.416501
L2.	-.2580819	.1511838	-1.71	0.095	-.5634037	.0472399
L3.	.5542811	.3705032	1.50	0.142	-.1939653	1.302528
L4.	.047609	.4147495	0.11	0.909	-.7899945	.8852126
_cons	-.3142869	.2629965	-1.20	0.239	-.845419	.2168453

(1) L.gender = 0
(2) L2.gender = 0
(3) L3.gender = 0
(4) L4.gender = 0

F(4, 41) = 1.78
Prob > F = 0.1518

```
Linear regression                                      Number of obs =      46
                                                       F(  8,    37) =  106.49
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9003
                                                       Root MSE      =  .03368

------------------------------------------------------------------------------
             |               Robust
       clubs |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      safety |
         L1. |   .1796609    .188116     0.96   0.346    -.2014984    .5608201
         L2. |   .0073474   .2213934     0.03   0.974    -.4412383     .455933
         L3. |   .0911734   .5987243     0.15   0.880    -1.121957    1.304304
         L4. |  -.7538709   .8857241    -0.85   0.400    -2.548518    1.040777
             |
       clubs |
         L1. |   1.493377   .2613642     5.71   0.000     .9638024    2.022951
         L2. |  -.6905032   .3514555    -1.96   0.057     -1.40262    .0216133
         L3. |  -.7927004   .4324705    -1.83   0.075    -1.668969    .0835679
         L4. |   .1578375    .123546     1.28   0.209    -.0924904    .4081653
             |
       _cons |   .6894939   .3065798     2.25   0.031     .0683042    1.310684
------------------------------------------------------------------------------

 ( 1)  L.safety = 0
 ( 2)  L2.safety = 0
 ( 3)  L3.safety = 0
 ( 4)  L4.safety = 0

       F(  4,    37) =    1.33
            Prob > F =    0.2753
```

```
Linear regression                                      Number of obs =      46
                                                       F(  8,    37) =  127.43
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9154
                                                       Root MSE      =  .02492

------------------------------------------------------------------------------
             |               Robust
      safety |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       clubs |
         L1. |   .0571705   .1382472     0.41   0.682     -.222945     .337286
         L2. |  -.3050996   .2087614    -1.46   0.152    -.7280904    .1178911
         L3. |   .5346443   .2909148     1.84   0.074     -.054805    1.124094
         L4. |  -.1027171   .0638535    -1.61   0.116    -.2320966    .0266624
             |
      safety |
         L1. |   1.349094   .1660108     8.13   0.000     1.012724    1.685463
         L2. |  -.2460577   .1756431    -1.40   0.170    -.6019443     .109829
         L3. |   .5996006   .3888198     1.54   0.132    -.1882232    1.387424
         L4. |  -.6588196   .4240312    -1.55   0.129    -1.517988    .2003493
             |
       _cons |  -.0989242   .2170393    -0.46   0.651    -.5386875    .3408391
------------------------------------------------------------------------------

 ( 1)  L.clubs = 0
 ( 2)  L2.clubs = 0
 ( 3)  L3.clubs = 0
 ( 4)  L4.clubs = 0

       F(  4,    37) =    1.03
            Prob > F =    0.4052
```

```
Linear regression                                      Number of obs =      40
                                                       F(  8,    31) =  226.59
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9740
                                                       Root MSE      =   .0138

------------------------------------------------------------------------------
             |               Robust
    cohesion |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      safety |
         L1. |   .0400909   .0954937     0.42   0.678    -.1546698    .2348517
         L2. |  -.1162003   .0860739    -1.35   0.187    -.2917491    .0593486
         L3. |   .1903203   .2159422     0.88   0.385    -.2500967    .6307374
         L4. |   -.194564   .2175129    -0.89   0.378    -.6381845    .2490566
             |
    cohesion |
         L1. |   .8646375   .0702793    12.30   0.000      .721302    1.007973
         L2. |  -.0071201   .0310268    -0.23   0.820    -.0703996    .0561595
         L3. |   .1087804   .0557126     1.95   0.060    -.0048463    .2224071
         L4. |   .0592904   .0604843     0.98   0.335    -.0640682     .182649
             |
       _cons |  -.0269367   .0959436    -0.28   0.781     -.222615    .1687417
------------------------------------------------------------------------------

 ( 1)  L.safety = 0
 ( 2)  L2.safety = 0
 ( 3)  L3.safety = 0
 ( 4)  L4.safety = 0

       F(  4,    31) =    1.42
            Prob > F =    0.2516

Linear regression                                      Number of obs =      40
                                                       F(  8,    31) =   79.62
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9075
                                                       Root MSE      =  .02663

------------------------------------------------------------------------------
             |               Robust
      safety |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    cohesion |
         L1. |   .0664261   .1358663     0.49   0.628    -.2106751    .3435274
         L2. |   .0976987    .069635     1.40   0.171    -.0443228    .2397203
         L3. |  -.1622017   .1190731    -1.36   0.183    -.4050529    .0806496
         L4. |   .0142132   .1277838     0.11   0.912    -.2464037    .2748301
             |
      safety |
         L1. |   1.129167   .1905604     5.93   0.000     .7405162    1.517817
         L2. |  -.3805581   .1789036    -2.13   0.041    -.7454344   -.0156817
         L3. |   .8506879    .437033     1.95   0.061    -.0406468    1.742023
         L4. |  -.0869285   .5236949    -0.17   0.869    -1.155011    .9811542
             |
       _cons |   -.268147   .2065381    -1.30   0.204    -.6893843    .1530903
------------------------------------------------------------------------------

 ( 1)  L.cohesion = 0
 ( 2)  L2.cohesion = 0
 ( 3)  L3.cohesion = 0
 ( 4)  L4.cohesion = 0

       F(  4,    31) =    0.74
            Prob > F =    0.5713
```

Linear regression

Number of obs	= 64
F(8, 55)	= 497.84
Prob > F	= 0.0000
R-squared	= 0.9858
Root MSE	= .009

civic	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
clubs						
L1.	.0629069	.0355506	1.77	0.082	-.0083381	.1341518
L2.	-.0941477	.0398397	-2.36	0.022	-.1739883	-.0143072
L3.	.0807726	.0763538	1.06	0.295	-.0722439	.2337891
L4.	-.0144166	.020871	-0.69	0.493	-.0562431	.0274099
civic						
L1.	1.27934	.0646226	19.80	0.000	1.149833	1.408847
L2.	-.0105458	.0423983	-0.25	0.804	-.095514	.0744223
L3.	-.0237998	.020026	-1.19	0.240	-.0639327	.0163331
L4.	.0174262	.0179628	0.97	0.336	-.018572	.0534244
_cons	-.1548955	.0274097	-5.65	0.000	-.2098258	-.0999652

(1) L.clubs = 0
(2) L2.clubs = 0
(3) L3.clubs = 0
(4) L4.clubs = 0

F(4, 55) = 1.41
Prob > F = 0.2412

Linear regression

Number of obs	= 92
F(8, 83)	= 148.38
Prob > F	= 0.0000
R-squared	= 0.9318
Root MSE	= .0214

cohesion	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
civic						
L1.	-.1353562	.1501515	-0.90	0.370	-.4340014	.163289
L2.	-.0993338	.0845921	-1.17	0.244	-.2675841	.0689164
L3.	.097183	.0554456	1.75	0.083	-.013096	.207462
L4.	.0035275	.0395832	0.09	0.929	-.0752019	.0822569
cohesion						
L1.	1.08169	.0580335	18.64	0.000	.9662641	1.197117
L2.	-.0692357	.0331151	-2.09	0.040	-.1351004	-.003371
L3.	.0017479	.0488515	0.04	0.972	-.0954159	.0989116
L4.	.0823574	.0675688	1.22	0.226	-.0520343	.216749
_cons	-.0438854	.0466993	-0.94	0.350	-.1367684	.0489977

(1) L.civic = 0
(2) L2.civic = 0
(3) L3.civic = 0
(4) L4.civic = 0

F(4, 83) = 1.34
Prob > F = 0.2612

```
Linear regression                                      Number of obs =      92
                                                       F(  8,    83) =  605.71
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9754
                                                       Root MSE      =  .01073

------------------------------------------------------------------------------
             |               Robust
       civic |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    cohesion |
         L1. |  -.0308863   .0227921    -1.36   0.179    -.0762189    .0144463
         L2. |  -.0027525   .0148406    -0.19   0.853    -.0322699    .0267649
         L3. |   .0414671   .0256952     1.61   0.110    -.0096396    .0925738
         L4. |   .0031769   .0231719     0.14   0.891    -.0429112    .0492649
             |
       civic |
         L1. |   1.237558   .0734476    16.85   0.000     1.091474    1.383643
         L2. |   .0487123   .0372027     1.31   0.194    -.0252824    .1227069
         L3. |  -.0202399   .0373242    -0.54   0.589    -.0944763    .0539965
         L4. |  -.0090099   .0381018    -0.24   0.814    -.0847928    .0667729
             |
       _cons |  -.1423119   .0161306    -8.82   0.000    -.1743949   -.1102288
------------------------------------------------------------------------------

 ( 1)  L.cohesion = 0
 ( 2)  L2.cohesion = 0
 ( 3)  L3.cohesion = 0
 ( 4)  L4.cohesion = 0

       F(  4,    83) =    1.47
            Prob > F =    0.2176
Linear regression                                      Number of obs =     142
                                                       F(  8,   133) =  786.39
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9753
                                                       Root MSE      =  .01119

------------------------------------------------------------------------------
             |               Robust
       civic |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      gender |
         L1. |  -.0399199   .0481654    -0.83   0.409    -.1351892    .0553494
         L2. |   -.020077   .0315451    -0.64   0.526     -.082472     .042318
         L3. |   .0014009   .0196935     0.07   0.943     -.037552    .0403539
         L4. |   .0441028   .0277998     1.59   0.115    -.0108841    .0990896
             |
       civic |
         L1. |   1.252626   .0499028    25.10   0.000      1.15392    1.351332
         L2. |    .049998   .0311107     1.61   0.110    -.0115377    .1115338
         L3. |  -.0159414   .0234165    -0.68   0.497    -.0622584    .0303756
         L4. |  -.0129679   .0300428    -0.43   0.667    -.0723915    .0464556
             |
       _cons |  -.1328762   .0277713    -4.78   0.000    -.1878067   -.0779458
------------------------------------------------------------------------------

 ( 1)  L.gender = 0
 ( 2)  L2.gender = 0
 ( 3)  L3.gender = 0
 ( 4)  L4.gender = 0

       F(  4,   133) =    1.34
            Prob > F =    0.2598
```

```
Linear regression                                      Number of obs =      64
                                                       F(  8,    55) =  166.80
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9112
                                                       Root MSE      =  .03272

------------------------------------------------------------------------------
             |               Robust
       clubs |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      gender |
         L1. |  -.3199638   .2028078    -1.58   0.120    -.7263998    .0864722
         L2. |   .0818095    .175387     0.47   0.643    -.2696739    .4332928
         L3. |   .0172072    .105639     0.16   0.871    -.1944981    .2289125
         L4. |   .1021765   .1794005     0.57   0.571    -.2573502    .4617032
             |
       clubs |
         L1. |    1.19391    .160598     7.43   0.000     .8720642    1.515755
         L2. |  -.1203146   .1541564    -0.78   0.438     -.429251    .1886217
         L3. |  -.6720578   .3663307    -1.83   0.072    -1.406201    .0620853
         L4. |   .1147774   .1096175     1.05   0.300     -.104901    .3344557
             |
       _cons |   .3606165   .1796128     2.01   0.050     .0006644    .7205685
------------------------------------------------------------------------------

 ( 1)  L.gender = 0
 ( 2)  L2.gender = 0
 ( 3)  L3.gender = 0
 ( 4)  L4.gender = 0

       F(  4,    55) =    0.64
            Prob > F =    0.6386

Linear regression                                      Number of obs =      63
                                                       F(  8,    54) =  180.43
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9321
                                                       Root MSE      =  .01686

------------------------------------------------------------------------------
             |               Robust
      gender |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       clubs |
         L1. |  -.1206322   .0546727    -2.21   0.032    -.2302443   -.0110201
         L2. |   .1802815   .0495169     3.64   0.001      .081006     .279557
         L3. |  -.0784244   .1300148    -0.60   0.549    -.3390883    .1822395
         L4. |   .0258595   .0372728     0.69   0.491     -.048868     .100587
             |
      gender |
         L1. |   .6962824   .1053339     6.61   0.000     .4851007    .9074642
         L2. |   .1941538   .0832719     2.33   0.023     .0272036    .3611039
         L3. |  -.0220218   .0381988    -0.58   0.567    -.0986058    .0545623
         L4. |   .2295492   .0751669     3.05   0.004     .0788487    .3802496
             |
       _cons |  -.0695291   .0512723    -1.36   0.181    -.1723238    .0332656
------------------------------------------------------------------------------

 ( 1)  L.clubs = 0
 ( 2)  L2.clubs = 0
 ( 3)  L3.clubs = 0
 ( 4)  L4.clubs = 0

       F(  4,    54) =    3.83
            Prob > F =    0.0082
```

Linear regression

Number of obs =	94
F(8, 85) =	142.41
Prob > F =	0.0000
R-squared =	0.9113
Root MSE =	.02843

cohesion	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
gender						
L1.	.282406	.1586847	1.78	0.079	-.0331017	.5979138
L2.	-.0799898	.1159527	-0.69	0.492	-.3105347	.1505552
L3.	-.0207477	.0574682	-0.36	0.719	-.1350099	.0935146
L4.	-.0909909	.0866217	-1.05	0.296	-.263218	.0812362
cohesion						
L1.	1.192188	.1626089	7.33	0.000	.8688777	1.515498
L2.	-.1245678	.0782186	-1.59	0.115	-.2800874	.0309517
L3.	.041864	.0545083	0.77	0.445	-.066513	.1502411
L4.	.0205612	.0558004	0.37	0.713	-.0903851	.1315074
_cons	-.2194686	.1114517	-1.97	0.052	-.4410644	.0021271

(1) L.gender = 0
(2) L2.gender = 0
(3) L3.gender = 0
(4) L4.gender = 0

F(4, 85) = 1.35
Prob > F = 0.2592

Linear regression

Number of obs =	94
F(8, 85) =	306.24
Prob > F =	0.0000
R-squared =	0.9554
Root MSE =	.01557

gender	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion						
L1.	-.0073257	.047874	-0.15	0.879	-.1025119	.0878606
L2.	.0100647	.0266894	0.38	0.707	-.043001	.0631305
L3.	.0042235	.0332967	0.13	0.899	-.0619793	.0704263
L4.	.0425333	.0395789	1.07	0.286	-.0361601	.1212267
gender						
L1.	.8775285	.0821837	10.68	0.000	.7141253	1.040932
L2.	.1873046	.0775663	2.41	0.018	.0330821	.3415271
L3.	.002338	.0282018	0.08	0.934	-.0537347	.0584107
L4.	-.0031472	.0537639	-0.06	0.953	-.1100443	.10375
_cons	-.0781607	.038112	-2.05	0.043	-.1539375	-.0023838

(1) L.cohesion = 0
(2) L2.cohesion = 0
(3) L3.cohesion = 0
(4) L4.cohesion = 0

F(4, 85) = 1.48
Prob > F = 0.2165

```
Linear regression                                      Number of obs =      64
                                                       F(  8,    55) =  497.84
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9858
                                                       Root MSE      =    .009

------------------------------------------------------------------------------
             |               Robust
       civic |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       clubs |
         L1. |   .0629069   .0355506     1.77   0.082    -.0083381    .1341518
         L2. |  -.0941477   .0398397    -2.36   0.022    -.1739883   -.0143072
         L3. |   .0807726   .0763538     1.06   0.295    -.0722439    .2337891
         L4. |  -.0144166    .020871    -0.69   0.493    -.0562431    .0274099
             |
       civic |
         L1. |    1.27934   .0646226    19.80   0.000     1.149833    1.408847
         L2. |  -.0105458   .0423983    -0.25   0.804     -.095514    .0744223
         L3. |  -.0237998    .020026    -1.19   0.240    -.0639327    .0163331
         L4. |   .0174262   .0179628     0.97   0.336     -.018572    .0534244
             |
       _cons |  -.1548955   .0274097    -5.65   0.000    -.2098258   -.0999652
------------------------------------------------------------------------------

 ( 1)  L.clubs = 0
 ( 2)  L2.clubs = 0
 ( 3)  L3.clubs = 0
 ( 4)  L4.clubs = 0

       F(  4,    55) =    1.41
            Prob > F =    0.2412
Linear regression                                      Number of obs =      64
                                                       F(  8,    55) =  197.51
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9155
                                                       Root MSE      =  .03192

------------------------------------------------------------------------------
             |               Robust
       clubs |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       civic |
         L1. |  -.4074402   .1828842    -2.23   0.030    -.7739484   -.0409321
         L2. |   .2660719   .1128572     2.36   0.022      .039901    .4922427
         L3. |  -.0421494   .0765215    -0.55   0.584    -.1955018    .1112031
         L4. |   .0397658   .0537552     0.74   0.463     -.067962    .1474935
             |
       clubs |
         L1. |   1.277558   .1757797     7.27   0.000     .9252878    1.629829
         L2. |  -.1456796   .1450694    -1.00   0.320     -.436405    .1450459
         L3. |  -.6857653   .3604822    -1.90   0.062    -1.408188    .0366571
         L4. |   .0974097   .1017612     0.96   0.343    -.1065243    .3013436
             |
       _cons |   .3133877   .1194575     2.62   0.011     .0739896    .5527859
------------------------------------------------------------------------------

 ( 1)  L.civic = 0
 ( 2)  L2.civic = 0
 ( 3)  L3.civic = 0
 ( 4)  L4.civic = 0

       F(  4,    55) =    2.47
            Prob > F =    0.0555
```

Linear regression

Number of obs = 47
F(8, 38) = 181.21
Prob > F = 0.0000
R-squared = 0.9561
Root MSE = .02429

clubs	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion						
L1.	-.0516842	.112424	-0.46	0.648	-.2792747	.1759062
L2.	.1525729	.0652392	2.34	0.025	.0205031	.2846426
L3.	-.1713988	.0886243	-1.93	0.061	-.3508093	.0080116
L4.	-.0553175	.0904846	-0.61	0.545	-.2384939	.1278589
clubs						
L1.	1.475194	.2007555	7.35	0.000	1.068786	1.881603
L2.	-.5684827	.2761629	-2.06	0.046	-1.127545	-.0094202
L3.	-.1921095	.2720621	-0.71	0.484	-.7428705	.3586514
L4.	-.0801521	.0636975	-1.26	0.216	-.2091009	.0487968
_cons	.2727312	.1294408	2.11	0.042	.0106921	.5347704

(1) L.cohesion = 0
(2) L2.cohesion = 0
(3) L3.cohesion = 0
(4) L4.cohesion = 0

F(4, 38) = 1.51
Prob > F = 0.2176

Linear regression

Number of obs = 40
F(8, 31) = 79.62
Prob > F = 0.0000
R-squared = 0.9075
Root MSE = .02663

safety	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion						
L1.	.0664261	.1358663	0.49	0.628	-.2106751	.3435274
L2.	.0976987	.069635	1.40	0.171	-.0443228	.2397203
L3.	-.1622017	.1190731	-1.36	0.183	-.4050529	.0806496
L4.	.0142132	.1277838	0.11	0.912	-.2464037	.2748301
safety						
L1.	1.129167	.1905604	5.93	0.000	.7405162	1.517817
L2.	-.3805581	.1789036	-2.13	0.041	-.7454344	-.0156817
L3.	.8506879	.437033	1.95	0.061	-.0406468	1.742023
L4.	-.0869285	.5236949	-0.17	0.869	-1.155011	.9811542
_cons	-.268147	.2065381	-1.30	0.204	-.6893843	.1530903

(1) L.cohesion = 0
(2) L2.cohesion = 0
(3) L3.cohesion = 0
(4) L4.cohesion = 0

F(4, 31) = 0.74
Prob > F = 0.5713

Appendix 13. Testing for Polarity of Granger flows between ISDs

1. Stepwise: Regress safety2010 over past civic and safety

```
begin with empty model
p = 0.0000 <  0.0500  adding  safety2005
p = 0.0084 <  0.0500  adding  civic2000

      Source |       SS       df       MS              Number of obs =      49
-------------+------------------------------           F(  2,    46) =  220.08
       Model |  .276096015     2  .138048008           Prob > F      =  0.0000
    Residual |  .028854488    46  .000627271           R-squared     =  0.9054
-------------+------------------------------           Adj R-squared =  0.9013
       Total |  .304950503    48  .006353135           Root MSE      =  .02505

------------------------------------------------------------------------------
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |   .9793348   .0639641    15.31   0.000     .8505818    1.108088
   civic2000 |   .2048933   .0743536     2.76   0.008     .0552272    .3545594
       _cons |  -.1060269   .0360325    -2.94   0.005    -.1785565   -.0334974
```

2. Stepwise: Regress gender2010 over past clubs and gender

```
begin with empty model
p = 0.0000 <  0.0500  adding  gender2005
p = 0.0015 <  0.0500  adding  gender1990

      Source |       SS       df       MS              Number of obs =      63
-------------+------------------------------           F(  2,    60) =  352.34
       Model |  .208439767     2  .104219884           Prob > F      =  0.0000
    Residual |  .017747768    60  .000295796           R-squared     =  0.9215
-------------+------------------------------           Adj R-squared =  0.9189
       Total |  .226187535    62  .003648186           Root MSE      =   .0172

------------------------------------------------------------------------------
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |   .8543416   .0918105     9.31   0.000     .6706933     1.03799
  gender1990 |   .2732985   .0822407     3.32   0.002     .1087925    .4378044
       _cons |  -.1158277   .0337591    -3.43   0.001     -.183356   -.0482995
------------------------------------------------------------------------------
```

3. Stepwise: Regress clubs2010 over past civic and clubs

```
begin with empty model
p = 0.0000 <  0.0500  adding  clubs2005

      Source |       SS       df       MS              Number of obs =      64
-------------+------------------------------           F(  1,    62) =  520.17
       Model |  .592322166     1  .592322166           Prob > F      =  0.0000
    Residual |  .070600214    62  .001138713           R-squared     =  0.8935
-------------+------------------------------           Adj R-squared =  0.8918
       Total |   .66292238    63  .010522577           Root MSE      =  .03374

------------------------------------------------------------------------------
   clubs2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   clubs2005 |   .9770293   .0428386    22.81   0.000      .891396    1.062662
       _cons |   .0182926   .0218231     0.84   0.405    -.0253313    .0619164
------------------------------------------------------------------------------
```

4. Stepwise: Regress cohesion2010 over past clubs and cohesion

```
begin with empty model
p = 0.0000 <  0.0500  adding  cohesion2005

      Source |       SS       df       MS              Number of obs =      47
-------------+------------------------------           F(  1,    45) =  890.14
       Model |  .235143012     1  .235143012           Prob > F      =  0.0000
    Residual |  .011887428    45  .000264165           R-squared     =  0.9519
-------------+------------------------------           Adj R-squared =  0.9508
       Total |  .247030441    46  .005370227           Root MSE      =  .01625

------------------------------------------------------------------------------
cohesion2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
cohesion2005 |   1.004799   .0336784    29.84   0.000     .9369675    1.072631
       _cons |  -.0576654   .0212872    -2.71   0.010    -.1005401   -.0147906
------------------------------------------------------------------------------
```

5. Stepwise: Regress safety2010 over past gender and safety

```
begin with empty model
p = 0.0000 <  0.0500  adding  safety2005
p = 0.0151 <  0.0500  adding  gender2000

      Source |       SS       df       MS              Number of obs =      50
-------------+------------------------------           F(  2,    47) =  216.51
       Model |  .276673133     2  .138336566           Prob > F      =  0.0000
    Residual |  .030030111    47  .000638939           R-squared     =  0.9021
-------------+------------------------------           Adj R-squared =  0.8979
       Total |  .306703244    49   .00625925           Root MSE      =  .02528

------------------------------------------------------------------------------
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |   1.041254    .053935    19.31   0.000     .9327512    1.149758
  gender2000 |    .171381   .0679227     2.52   0.015     .0347382    .3080239
       _cons |  -.1318951   .0464358    -2.84   0.007    -.2253119   -.0384783
-------------+----------------------------------------------------------------
```

Appendix 14. Granger Tests: Between ISDs & HDI

```
Linear regression                                      Number of obs =      41
                                                       F(  8,    32) = 3657.29
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9981
                                                       Root MSE      =  .00577

------------------------------------------------------------------------------
             |               Robust
     hdi2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |  -.0753075   .0333356    -2.26   0.031    -.1432099   -.0074052
  safety2000 |   .0733904   .0323362     2.27   0.030     .0075238    .1392571
  safety1995 |  -.2080157   .0830996    -2.50   0.018     -.377284   -.0387473
  safety1990 |   .2647262   .1293336     2.05   0.049     .0012823      .52817
     hdi2005 |   1.082733   .0670862    16.14   0.000     .9460832    1.219384
     hdi2000 |  -.0893011   .0782736    -1.14   0.262    -.2487392     .070137
     hdi1995 |   .0776854   .0892353     0.87   0.390    -.1040809    .2594517
     hdi1990 |  -.1247117   .0671152    -1.86   0.072    -.2614209    .0119976
       _cons |   .0143273   .0433385     0.33   0.743    -.0739503    .1026049
------------------------------------------------------------------------------

 ( 1)  safety2005 = 0
 ( 2)  safety2000 = 0
 ( 3)  safety1995 = 0
 ( 4)  safety1990 = 0

       F(  4,    32) =    3.67
            Prob > F =    0.0143

Linear regression                                      Number of obs =      41
                                                       F(  8,    32) =   56.72
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9080
                                                       Root MSE      =  .02466

------------------------------------------------------------------------------
             |               Robust
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hdi2005 |  -.6397571   .3316607    -1.93   0.063    -1.315328    .0358136
     hdi2000 |   1.072189   .3444499     3.11   0.004     .3705673     1.77381
     hdi1995 |  -.5616008   .2302747    -2.44   0.020    -1.030655   -.0925465
     hdi1990 |   .1505015   .2139225     0.70   0.487    -.2852444    .5862473
  safety2005 |   1.109461   .1431412     7.75   0.000     .8178919     1.40103
  safety2000 |  -.2705935   .1562683    -1.73   0.093    -.5889017    .0477147
  safety1995 |   1.325953    .591339     2.24   0.032     .1214351    2.530471
  safety1990 |  -1.055274   .7075179    -1.49   0.146    -2.496441    .3858928
       _cons |  -.0510869   .1955739    -0.26   0.796    -.4494579    .3472842
------------------------------------------------------------------------------

 ( 1)  hdi2005 = 0
 ( 2)  hdi2000 = 0
 ( 3)  hdi1995 = 0
 ( 4)  hdi1990 = 0

       F(  4,    32) =    6.67
            Prob > F =    0.0005
```

```
Linear regression                                      Number of obs =     105
                                                       F(  8,    96) = 5023.38
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9980
                                                       Root MSE      =   .0086

------------------------------------------------------------------------------
             |               Robust
     hdi2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   civic2005 |  -.0054906   .0419494    -0.13   0.896    -.0887594    .0777783
   civic2000 |   -.081844   .0363046    -2.25   0.026     -.153908     -.00978
   civic1995 |  -.0491453   .0219483    -2.24   0.027    -.0927122   -.0055783
   civic1990 |   .0409856    .020786     1.97   0.052    -.0002742    .0822454
     hdi2005 |   1.230549   .0764063    16.11   0.000     1.078884    1.382214
     hdi2000 |  -.2867138   .1117768    -2.57   0.012    -.5085889   -.0648387
     hdi1995 |    .181924   .0908715     2.00   0.048     .0015455    .3623025
     hdi1990 |  -.1237612    .041074    -3.01   0.003    -.2052924    -.04223
       _cons |   .0634597   .0133902     4.74   0.000     .0368803    .0900391
------------------------------------------------------------------------------

 ( 1)  civic2005 = 0
 ( 2)  civic2000 = 0
 ( 3)  civic1995 = 0
 ( 4)  civic1990 = 0

       F(  4,    96) =    6.85
            Prob > F =    0.0001

Linear regression                                      Number of obs =     105
                                                       F(  8,    96) =  529.76
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9764
                                                       Root MSE      =   .0111

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hdi2005 |  -.0681648   .1001016    -0.68   0.498    -.2668649    .1305352
     hdi2000 |  -.0120779   .1496554    -0.08   0.936    -.3091416    .2849857
     hdi1995 |   .0874666   .1181107     0.74   0.461    -.1469813    .3219146
     hdi1990 |  -.0229386   .0387619    -0.59   0.555    -.0998803    .0540032
   civic2005 |   1.253604   .0571547    21.93   0.000     1.140153    1.367055
   civic2000 |   .0710128    .041169     1.72   0.088    -.0107071    .1527327
   civic1995 |  -.0314126   .0295033    -1.06   0.290    -.0899761    .0271509
   civic1990 |   .0029174   .0296216     0.10   0.922    -.0558811    .0617158
       _cons |  -.1412264   .0195346    -7.23   0.000    -.1800022   -.1024506
------------------------------------------------------------------------------

 ( 1)  hdi2005 = 0
 ( 2)  hdi2000 = 0
 ( 3)  hdi1995 = 0
 ( 4)  hdi1990 = 0

       F(  4,    96) =    1.02
            Prob > F =    0.3999
```

```
Linear regression                                      Number of obs =     111
                                                       F(  8,   102) = 5626.26
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9980
                                                       Root MSE      =  .00863

------------------------------------------------------------------------------
             |               Robust
     hdi2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |   .1228448   .0486836     2.52   0.013      .026281    .2194085
  gender2000 |   -.112943   .0309697    -3.65   0.000    -.1743713   -.0515147
  gender1995 |   .0249436   .0131373     1.90   0.060    -.0011142    .0510015
  gender1990 |   -.051479   .0288956    -1.78   0.078    -.1087933    .0058354
     hdi2005 |   1.233454   .0836346    14.75   0.000     1.067566    1.399343
     hdi2000 |  -.2929544   .1061318    -2.76   0.007    -.5034663   -.0824425
     hdi1995 |   .1329379   .0821495     1.62   0.109    -.0300053    .2958811
     hdi1990 |  -.1099528   .0430462    -2.55   0.012    -.1953348   -.0245709
       _cons |   .0339887   .0178038     1.91   0.059    -.0013251    .0693025
------------------------------------------------------------------------------

 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,   102) =    5.51
            Prob > F =    0.0005
```

```
Linear regression                                      Number of obs =     110
                                                       F(  8,   101) =  228.92
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9267
                                                       Root MSE      =  .01896

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     hdi2005 |  -.1962687   .1166867    -1.68   0.096    -.4277436    .0352063
     hdi2000 |   .0650406   .1571727     0.41   0.680    -.2467477    .3768289
     hdi1995 |   .1342227   .1525026     0.88   0.381    -.1683014    .4367468
     hdi1990 |  -.0065969   .0643245    -0.10   0.919    -.1341994    .1210057
  gender2005 |   .9752105   .0881416    11.06   0.000     .8003612     1.15006
  gender2000 |   .1211964    .070615     1.72   0.089    -.0188847    .2612776
  gender1995 |  -.0176904    .032851    -0.54   0.591    -.0828581    .0474772
  gender1990 |    .038592   .0722712     0.53   0.595    -.1047747    .1819586
       _cons |  -.0886284   .0428329    -2.07   0.041    -.1735973   -.0036595
------------------------------------------------------------------------------

 ( 1)  hdi2005 = 0
 ( 2)  hdi2000 = 0
 ( 3)  hdi1995 = 0
 ( 4)  hdi1990 = 0

       F(  4,   101) =    0.84
            Prob > F =    0.5040
```

Linear regression

Number of obs = 52
F(8, 43) = 4607.38
Prob > F = 0.0000
R-squared = 0.9979
Root MSE = .00795

hdi2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
clubs2005	-.0236567	.0330686	-0.72	0.478	-.0903459	.0430325
clubs2000	.0097643	.029788	0.33	0.745	-.050309	.0698376
clubs1995	-.0453984	.0605738	-0.75	0.458	-.1675571	.0767603
clubs1990	.0088402	.0145334	0.61	0.546	-.0204693	.0381496
hdi2005	1.317194	.0841182	15.66	0.000	1.147554	1.486835
hdi2000	-.3780512	.1161929	-3.25	0.002	-.6123766	-.1437258
hdi1995	.2550969	.1264762	2.02	0.050	.0000333	.5101604
hdi1990	-.2402255	.0563829	-4.26	0.000	-.3539325	-.1265186
_cons	.062593	.0197161	3.17	0.003	.0228316	.1023544

(1) clubs2005 = 0
(2) clubs2000 = 0
(3) clubs1995 = 0
(4) clubs1990 = 0

F(4, 43) = 1.34
Prob > F = 0.2708

Linear regression

Number of obs = 52
F(8, 43) = 285.34
Prob > F = 0.0000
R-squared = 0.9548
Root MSE = .02438

clubs2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
hdi2005	-.1619115	.1360433	-1.19	0.241	-.4362691	.112446
hdi2000	.1442009	.3127924	0.46	0.647	-.4866051	.7750069
hdi1995	-.2421869	.2916313	-0.83	0.411	-.8303174	.3459436
hdi1990	.2630693	.1464259	1.80	0.079	-.0322266	.5583653
clubs2005	1.457342	.1760428	8.28	0.000	1.102318	1.812366
clubs2000	-.1877077	.1178277	-1.59	0.118	-.4253298	.0499145
clubs1995	-1.023016	.4076457	-2.51	0.016	-1.845112	-.2009205
clubs1990	.0829134	.0618885	1.34	0.187	-.0418968	.2077235
_cons	.3520944	.1417806	2.48	0.017	.0661665	.6380222

(1) hdi2005 = 0
(2) hdi2000 = 0
(3) hdi1995 = 0
(4) hdi1990 = 0

F(4, 43) = 1.38
Prob > F = 0.2566

Linear regression

Number of obs = 74
F(8, 65) = 5715.40
Prob > F = 0.0000
R-squared = 0.9982
Root MSE = .00791

hdi2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion2005	.0002149	.0218887	0.01	0.992	-.0434998	.0439297
cohesion2000	-.0236939	.0145376	-1.63	0.108	-.0527275	.0053398
cohesion1995	.0470577	.0198662	2.37	0.021	.0073821	.0867333
cohesion1990	-.0162882	.0230457	-0.71	0.482	-.0623136	.0297372
hdi2005	1.181692	.0814717	14.50	0.000	1.018982	1.344403
hdi2000	-.2227586	.1182596	-1.88	0.064	-.4589394	.0134222
hdi1995	.1138857	.1063552	1.07	0.288	-.0985203	.3262916
hdi1990	-.1016898	.0533041	-1.91	0.061	-.2081454	.0047658
_cons	.0252973	.0102436	2.47	0.016	.0048394	.0457553

(1) cohesion2005 = 0
(2) cohesion2000 = 0
(3) cohesion1995 = 0
(4) cohesion1990 = 0

F(4, 65) = 1.47
Prob > F = 0.2211

Linear regression

Number of obs = 74
F(8, 65) = 136.06
Prob > F = 0.0000
R-squared = 0.9504
Root MSE = .01834

cohesion2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
hdi2005	-.3171937	.217515	-1.46	0.150	-.7516011	.1172137
hdi2000	.3896044	.2855606	1.36	0.177	-.1806996	.9599084
hdi1995	-.1392347	.1759346	-0.79	0.432	-.4906004	.212131
hdi1990	.0763814	.089308	0.86	0.396	-.1019789	.2547417
cohesion2005	1.039545	.0651933	15.95	0.000	.9093454	1.169745
cohesion2000	-.0595484	.0339143	-1.76	0.084	-.1272799	.0081831
cohesion1995	.0114119	.0453055	0.25	0.802	-.0790694	.1018931
cohesion1990	.0543598	.0549565	0.99	0.326	-.0553959	.1641154
_cons	-.0802203	.0258092	-3.11	0.003	-.1317648	-.0286757

(1) hdi2005 = 0
(2) hdi2000 = 0
(3) hdi1995 = 0
(4) hdi1990 = 0

F(4, 65) = 1.15
Prob > F = 0.3390

Appendix 15. Granger Tests: Between ISDs & GINI

```
Linear regression                                      Number of obs =      27
                                                       F(  8,    18) =   33.66
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9571
                                                       Root MSE      =  .02041

------------------------------------------------------------------------------
             |               Robust
   sgini2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  safety2005 |  -.3325303   .2187465    -1.52   0.146    -.7920997    .1270391
  safety2000 |    .086118    .188592     0.46   0.653     -.310099     .482335
  safety1995 |   .6760156     .51357     1.32   0.205    -.4029549    1.754986
  safety1990 |  -1.843098   .7709698    -2.39   0.028    -3.462846   -.2233508
   sgini2005 |   .9229249   .4060247     2.27   0.036     .0698986    1.775951
   sgini2000 |  -.1870453    .548445    -0.34   0.737    -1.339285    .9651949
   sgini1995 |  -.2444688   .2083852    -1.17   0.256    -.6822699    .1933323
   sgini1990 |    .278823   .1816717     1.53   0.142    -.1028551     .660501
       _cons |   .8333379   .3283621     2.54   0.021     .1434748    1.523201
------------------------------------------------------------------------------

 ( 1)  safety2005 = 0
 ( 2)  safety2000 = 0
 ( 3)  safety1995 = 0
 ( 4)  safety1990 = 0

       F(  4,    18) =    2.42
            Prob > F =    0.0865
Linear regression                                      Number of obs =      43
                                                       F(  8,    34) =   74.20
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9100
                                                       Root MSE      =  .02559

------------------------------------------------------------------------------
             |               Robust
  safety2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   sgini2005 |  -.1509641   .2037401    -0.74   0.464    -.5650138    .2630855
   sgini2000 |  -.1599173   .1755307    -0.91   0.369    -.5166386     .196804
   sgini1995 |   .2482477   .2104969     1.18   0.246    -.1795334    .6760289
   sgini1990 |   -.011165   .0882486    -0.13   0.900    -.1905076    .1681777
  safety2005 |   1.254729   .1546935     8.11   0.000     .9403535    1.569104
  safety2000 |  -.4896621   .1808023    -2.71   0.011    -.8570966   -.1222276
  safety1995 |   .8944788   .5163563     1.73   0.092    -.1548834    1.943841
  safety1990 |   .0180267   .4631149     0.04   0.969    -.9231361    .9591895
       _cons |  -.3162199   .2025282    -1.56   0.128    -.7278067    .0953669
------------------------------------------------------------------------------

 ( 1)  sgini2005 = 0
 ( 2)  sgini2000 = 0
 ( 3)  sgini1995 = 0
 ( 4)  sgini1990 = 0

       F(  4,    34) =    1.17
            Prob > F =    0.3434
```

Linear regression

Number of obs = 38
F(8, 29) = 141.03
Prob > F = 0.0000
R-squared = 0.9503
Root MSE = .02197

sgini2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
civic2005	.1375868	.1435926	0.96	0.346	-.1560931	.4312668
civic2000	-.0819031	.1084975	-0.75	0.456	-.3038053	.1399991
civic1995	-.1286619	.0606582	-2.12	0.043	-.2527219	-.0046019
civic1990	-.0048388	.0631544	-0.08	0.939	-.134004	.1243264
sgini2005	1.047995	.1900767	5.51	0.000	.659245	1.436746
sgini2000	-.3616752	.1730319	-2.09	0.045	-.7155651	-.0077852
sgini1995	.0279296	.131801	0.21	0.834	-.2416337	.2974929
sgini1990	.1480713	.0986912	1.50	0.144	-.053775	.3499175
_cons	.1001605	.0684123	1.46	0.154	-.0397583	.2400792

(1) civic2005 = 0
(2) civic2000 = 0
(3) civic1995 = 0
(4) civic1990 = 0

F(4, 29) = 8.84
Prob > F = 0.0001

Linear regression

Number of obs = 72
F(8, 63) = 553.76
Prob > F = 0.0000
R-squared = 0.9865
Root MSE = .00848

civic2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
sgini2005	.0022141	.0251442	0.09	0.930	-.0480325	.0524607
sgini2000	-.0126836	.0258574	-0.49	0.625	-.0643556	.0389883
sgini1995	.0055657	.0389009	0.14	0.887	-.0721714	.0833029
sgini1990	-.0035392	.0209625	-0.17	0.866	-.0454294	.038351
civic2005	1.327309	.0686258	19.34	0.000	1.190171	1.464446
civic2000	.0255781	.0343123	0.75	0.459	-.0429896	.0941457
civic1995	-.0166715	.0230453	-0.72	0.472	-.0627239	.0293809
civic1990	-.0236459	.0358519	-0.66	0.512	-.0952903	.0479984
_cons	-.160261	.0233812	-6.85	0.000	-.2069846	-.1135374

(1) sgini2005 = 0
(2) sgini2000 = 0
(3) sgini1995 = 0
(4) sgini1990 = 0

F(4, 63) = 0.20
Prob > F = 0.9367

```
Linear regression                                      Number of obs =      39
                                                       F(  8,    30) =   82.90
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9321
                                                       Root MSE      =  .02545

------------------------------------------------------------------------------
             |               Robust
   sgini2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  gender2005 |  -.1422704   .2641616    -0.54   0.594    -.6817603    .3972195
  gender2000 |  -.3790337    .179518    -2.11   0.043    -.7456584   -.0124091
  gender1995 |   .0483665    .105574     0.46   0.650    -.1672444    .2639775
  gender1990 |   .2499224   .1627188     1.54   0.135    -.0823937    .5822384
   sgini2005 |   .6986984   .2646626     2.64   0.013     .1581852    1.239212
   sgini2000 |   .1316773   .2356743     0.56   0.580    -.3496337    .6129884
   sgini1995 |   .0361309   .1635379     0.22   0.827     -.297858    .3701199
   sgini1990 |   .0077299   .0712787     0.11   0.914    -.1378407    .1533005
       _cons |   .1764206    .165747     1.06   0.296    -.1620799    .5149211
------------------------------------------------------------------------------

 ( 1)  gender2005 = 0
 ( 2)  gender2000 = 0
 ( 3)  gender1995 = 0
 ( 4)  gender1990 = 0

       F(  4,    30) =    6.75
            Prob > F =    0.0005
Linear regression                                      Number of obs =      73
                                                       F(  8,    64) =  200.66
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9161
                                                       Root MSE      =  .01719

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   sgini2005 |  -.0909138   .0519308    -1.75   0.085    -.1946576      .01283
   sgini2000 |   .0657146   .0527906     1.24   0.218    -.0397468     .171176
   sgini1995 |  -.0437518   .0756512    -0.58   0.565    -.1948825    .1073789
   sgini1990 |   .0304742   .0389713     0.78   0.437    -.0473799    .1083282
  gender2005 |   .9973377   .1119087     8.91   0.000     .7737743    1.220901
  gender2000 |   .1262589   .0856584     1.47   0.145    -.0448634    .2973813
  gender1995 |  -.0270818   .0290546    -0.93   0.355    -.0851251    .0309615
  gender1990 |   .0714426   .0788642     0.91   0.368    -.0861068     .228992
       _cons |  -.1231778   .0377935    -3.26   0.002     -.198679   -.0476766
------------------------------------------------------------------------------

 ( 1)  sgini2005 = 0
 ( 2)  sgini2000 = 0
 ( 3)  sgini1995 = 0
 ( 4)  sgini1990 = 0

       F(  4,    64) =    1.80
            Prob > F =    0.1393
```

```
Linear regression                                      Number of obs =      31
                                                       F(  8,    22) =  120.35
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9203
                                                       Root MSE      =  .02261

------------------------------------------------------------------------------
             |               Robust
   sgini2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   clubs2005 |  -.3484004   .3289123    -1.06   0.301    -1.030523     .333722
   clubs2000 |   .1848981   .3933571     0.47   0.643    -.6308746    1.000671
   clubs1995 |   .6498621   .3259181     1.99   0.059    -.0260507    1.325775
   clubs1990 |  -.1635276   .1222425    -1.34   0.195     -.417043    .0899878
   sgini2005 |   .6293638    .437378     1.44   0.164    -.2777027     1.53643
   sgini2000 |   .2644526   .5096579     0.52   0.609    -.7925131    1.321418
   sgini1995 |  -.0042701    .212001    -0.02   0.984    -.4439333    .4353931
   sgini1990 |   .0427091    .136393     0.31   0.757    -.2401528    .3255709
       _cons |   -.153825   .1149151    -1.34   0.194    -.3921443    .0844944
------------------------------------------------------------------------------

 ( 1)  clubs2005 = 0
 ( 2)  clubs2000 = 0
 ( 3)  clubs1995 = 0
 ( 4)  clubs1990 = 0

       F(  4,    22) =    2.28
            Prob > F =    0.0927

Linear regression                                      Number of obs =      49
                                                       F(  8,    40) =  157.09
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.9062
                                                       Root MSE      =  .03349

------------------------------------------------------------------------------
             |               Robust
   clubs2010 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   sgini2005 |  -.1750477   .2569623    -0.68   0.500    -.6943878    .3442925
   sgini2000 |   .1653612   .4669719     0.35   0.725    -.7784242    1.109147
   sgini1995 |  -.0302215   .2910244    -0.10   0.918    -.6184037    .5579608
   sgini1990 |   .0267042   .1308677     0.20   0.839    -.2377892    .2911976
   clubs2005 |   1.478571   .2536749     5.83   0.000     .9658748    1.991267
   clubs2000 |  -.4996884   .3960221    -1.26   0.214    -1.300079    .3007021
   clubs1995 |  -1.271695   .4071177    -3.12   0.003    -2.094511   -.4488797
   clubs1990 |   .2465701    .114738     2.15   0.038      .014676    .4784641
       _cons |   .5404364   .1845359     2.93   0.006     .1674754    .9133974
------------------------------------------------------------------------------

 ( 1)  sgini2005 = 0
 ( 2)  sgini2000 = 0
 ( 3)  sgini1995 = 0
 ( 4)  sgini1990 = 0

       F(  4,    40) =    0.20
            Prob > F =    0.9382
```

Linear regression

Number of obs = 24
F(8, 15) = 59.91
Prob > F = 0.0000
R-squared = 0.9553
Root MSE = .02555

sgini2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cohesion2005	-.0704801	.2332979	-0.30	0.767	-.5677428	.4267827
cohesion2000	.0035147	.0983491	0.04	0.972	-.2061114	.2131407
cohesion1995	-.135281	.2062567	-0.66	0.522	-.5749067	.3043447
cohesion1990	-.0647077	.1390298	-0.47	0.648	-.3610428	.2316274
sgini2005	.5529563	.5698523	0.97	0.347	-.6616551	1.767568
sgini2000	.4916763	.8185746	0.60	0.557	-1.253074	2.236427
sgini1995	-.1793585	.3212577	-0.56	0.585	-.8641032	.5053861
sgini1990	.05259	.1692147	0.31	0.760	-.3080825	.4132626
_cons	.2073198	.1362343	1.52	0.149	-.0830568	.4976964

(1) cohesion2005 = 0
(2) cohesion2000 = 0
(3) cohesion1995 = 0
(4) cohesion1990 = 0

F(4, 15) = 1.72
Prob > F = 0.1987

Linear regression

Number of obs = 52
F(8, 43) = 173.55
Prob > F = 0.0000
R-squared = 0.9517
Root MSE = .01985

cohesion2010	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
sgini2005	-.0779601	.1463756	-0.53	0.597	-.3731546	.2172344
sgini2000	.2090719	.2284431	0.92	0.365	-.2516275	.6697713
sgini1995	-.0039459	.1215819	-0.03	0.974	-.2491391	.2412473
sgini1990	-.0822659	.0664313	-1.24	0.222	-.2162373	.0517055
cohesion2005	1.07486	.0652511	16.47	0.000	.943269	1.206452
cohesion2000	-.0729697	.0346131	-2.11	0.041	-.1427737	-.0031657
cohesion1995	.007746	.0794417	0.10	0.923	-.1524635	.1679555
cohesion1990	.0833286	.0705148	1.18	0.244	-.0588781	.2255352
_cons	-.1308265	.0271435	-4.82	0.000	-.1855667	-.0760863

(1) sgini2005 = 0
(2) sgini2000 = 0
(3) sgini1995 = 0
(4) sgini1990 = 0

F(4, 43) = 1.76
Prob > F = 0.1550

Appendix 16. Country Plots of Inter-group Cohesion by Income Group and Peak Year

Figure 28
Inter-group Cohesion: Low Income, Peaked in 1995

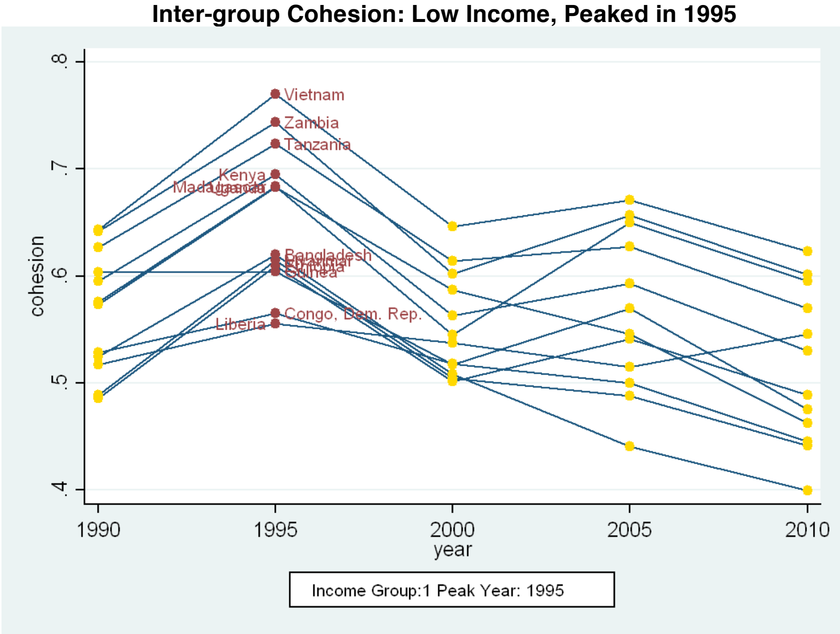


Figure 29
Inter-group Cohesion: Low Income, Peaked in 2000

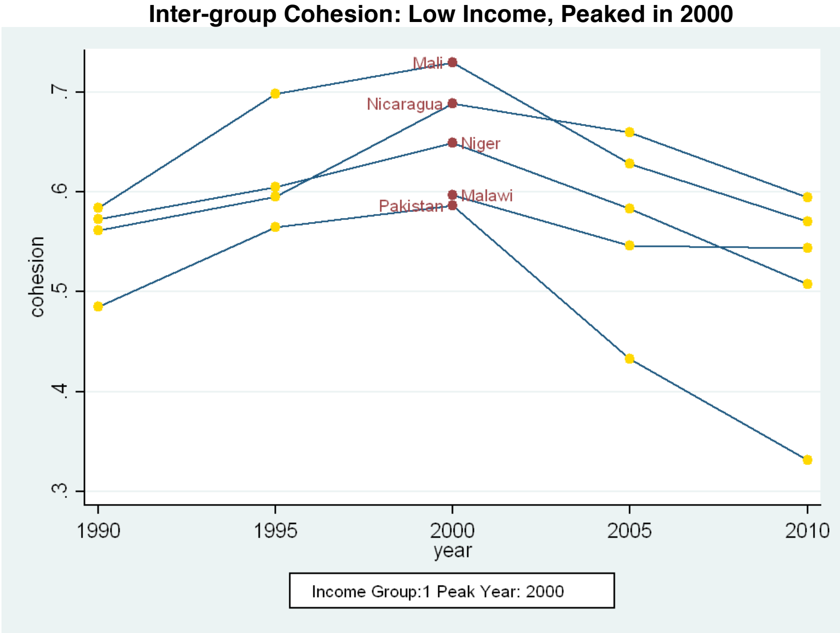


Figure 30
Inter-group Cohesion: Lower Middle Income, Peaked in 1995

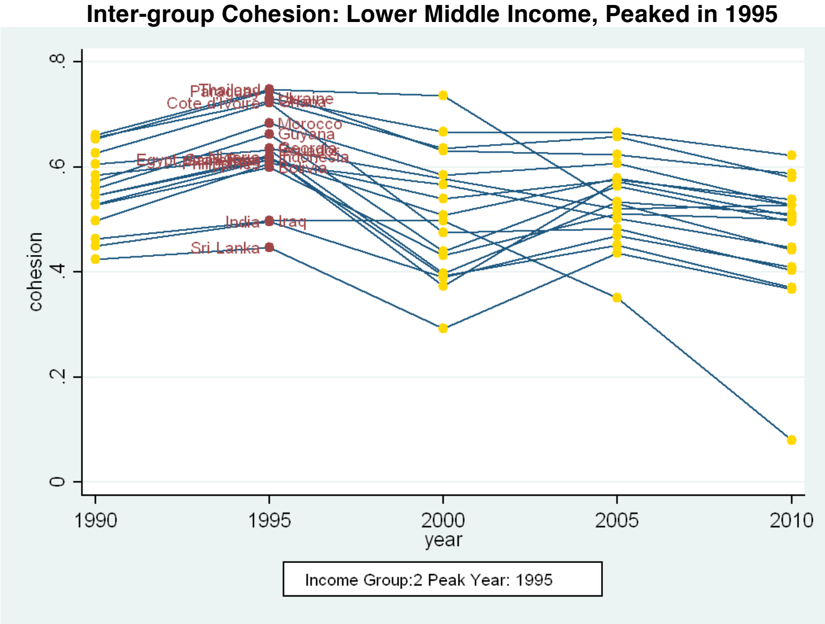


Figure 31
Inter-group Cohesion: Lower Middle Income, Peaked in 2000

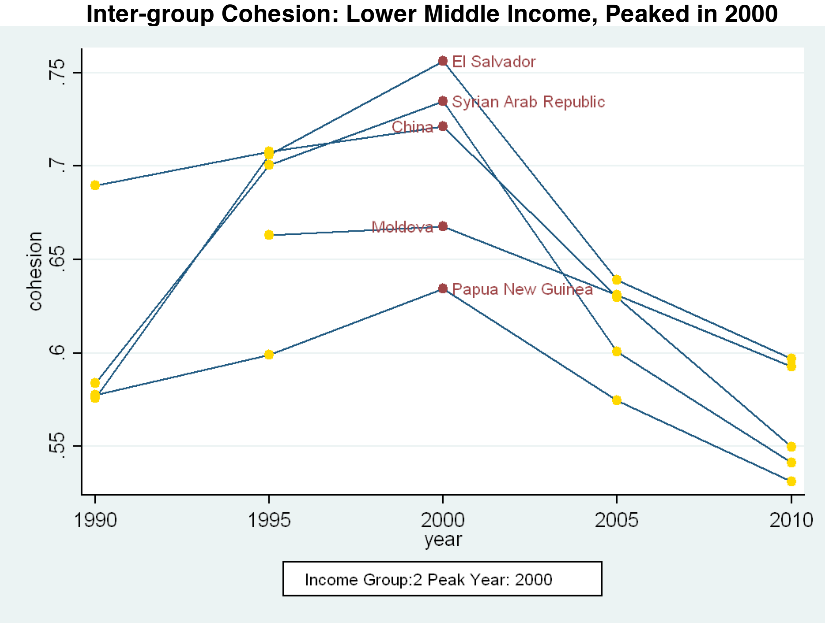


Figure 32
Inter-group Cohesion: Upper Middle Income, Peaked in 1995

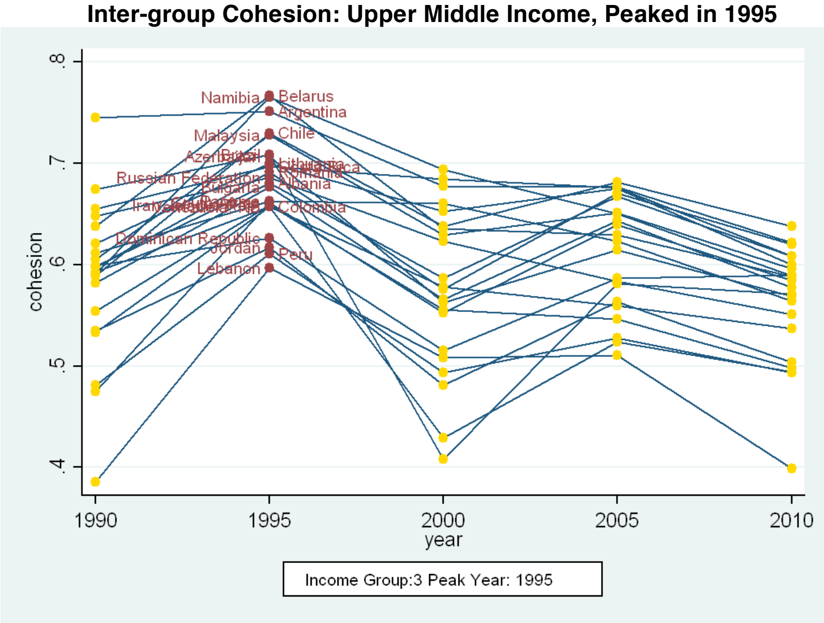


Figure 33
Inter-group Cohesion: Upper Middle Income, Peaked in 2000

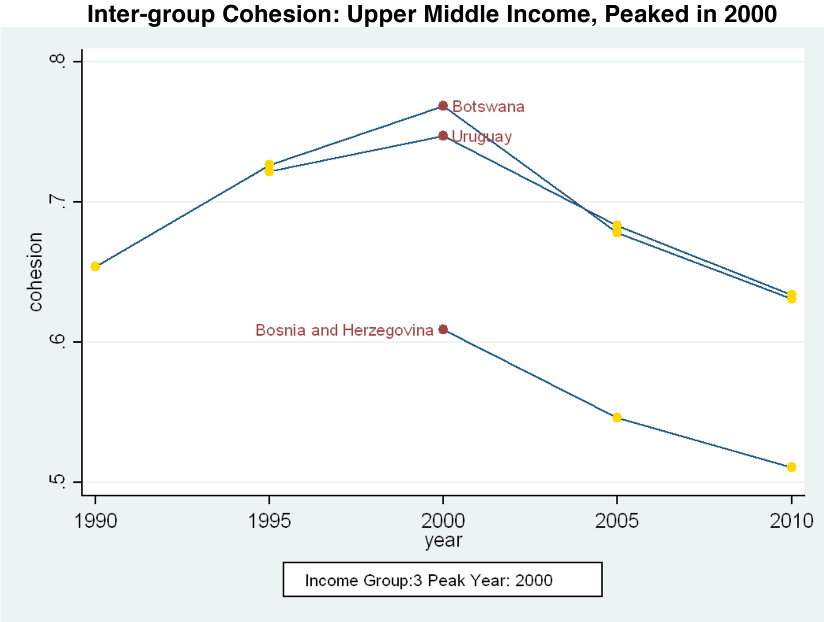


Figure 34
Inter-group Cohesion: High Income, Peaked in 1995

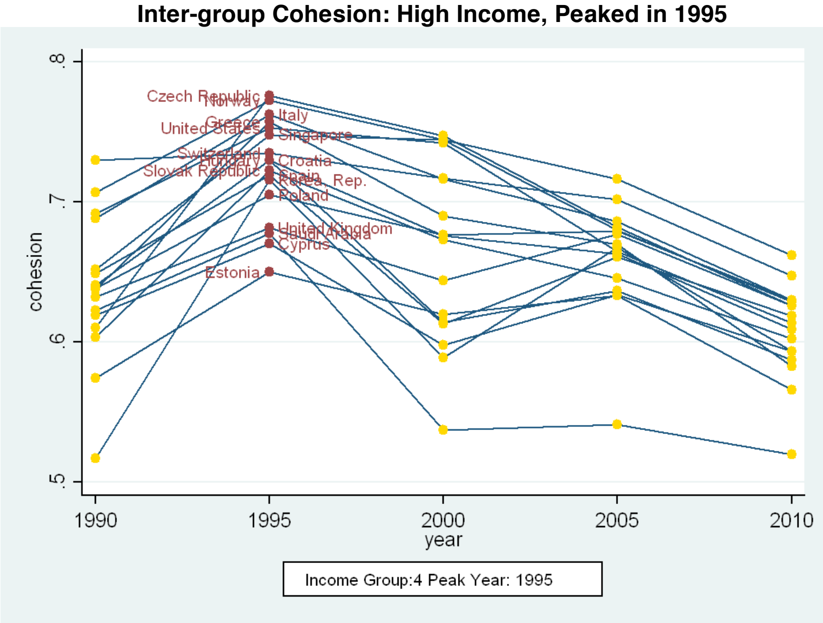
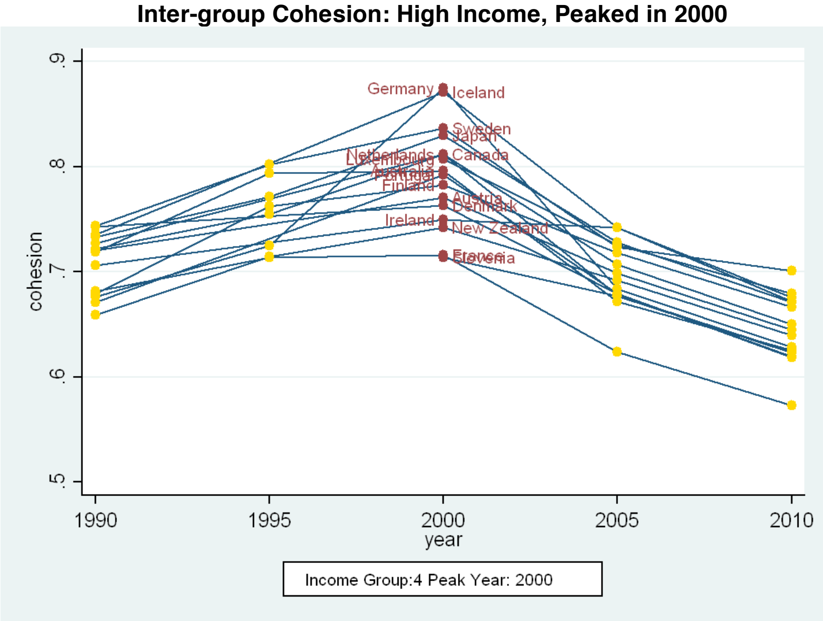


Figure 35
Inter-group Cohesion: High Income, Peaked in 2000



Appendix 17. Change in Inter-group Cohesion versus Change in gdppc

Figure 36

10-year change Post-peak GDP Per Capita vs Inter-group Cohesion Index – Low Income Group

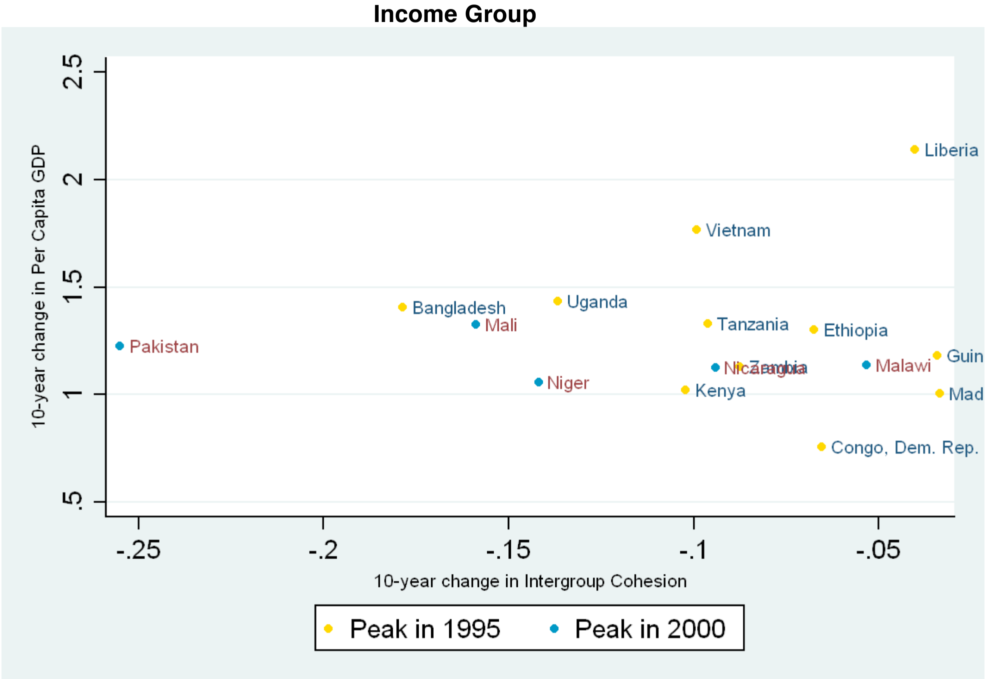


Figure 37

10-year change Post-peak GDP Per Capita vs Inter-group Cohesion – Lower Middle Income Group

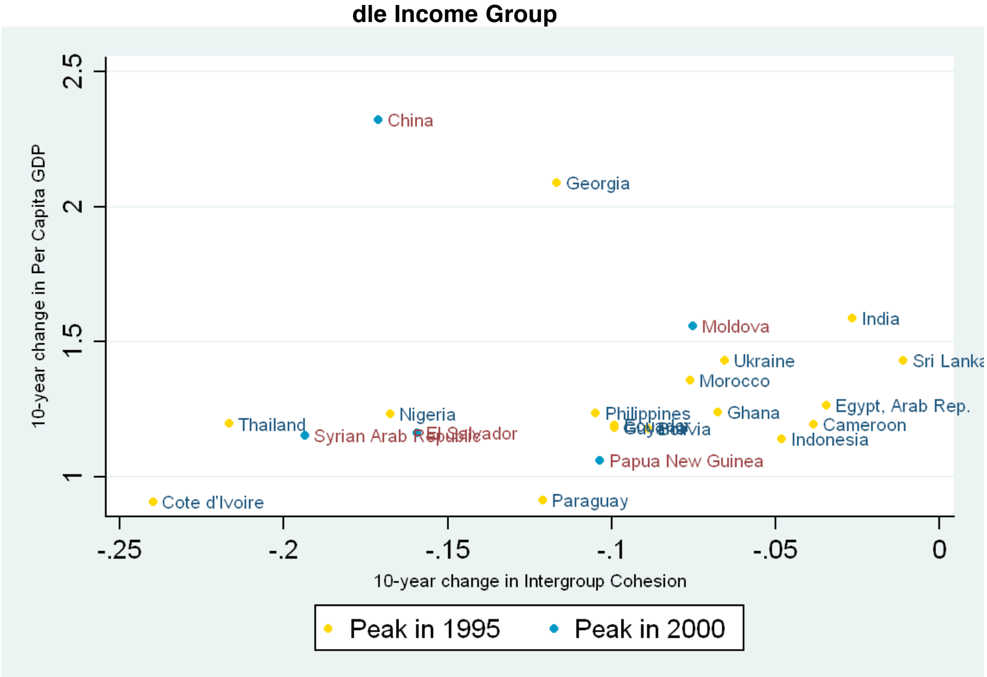


Figure 38
10-year change Post-peak GDP Per Capita vs Inter-group Cohesion – Upper Middle Income Group

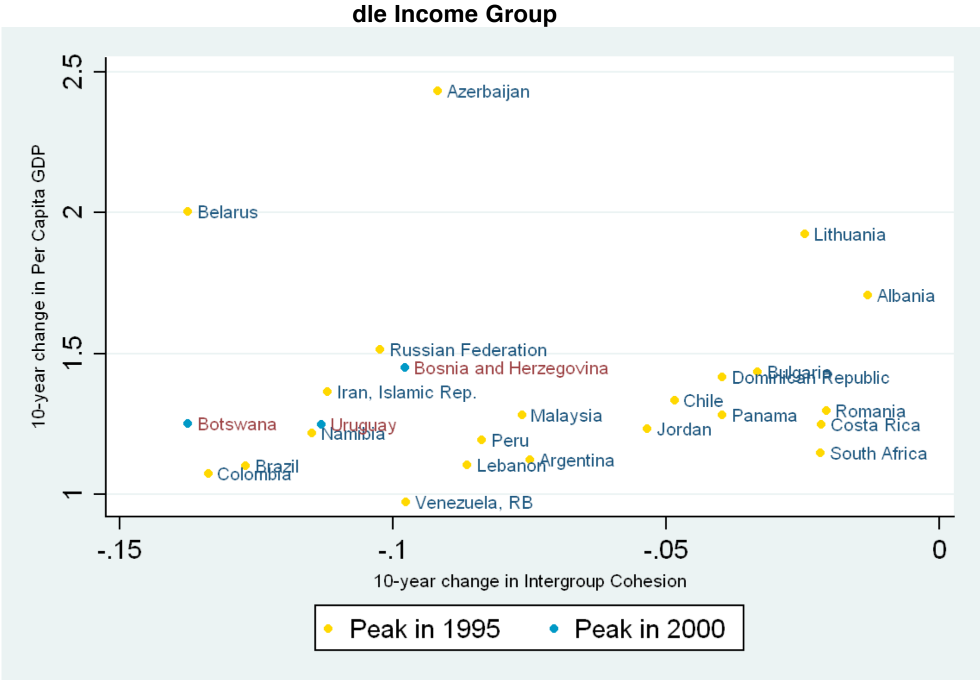
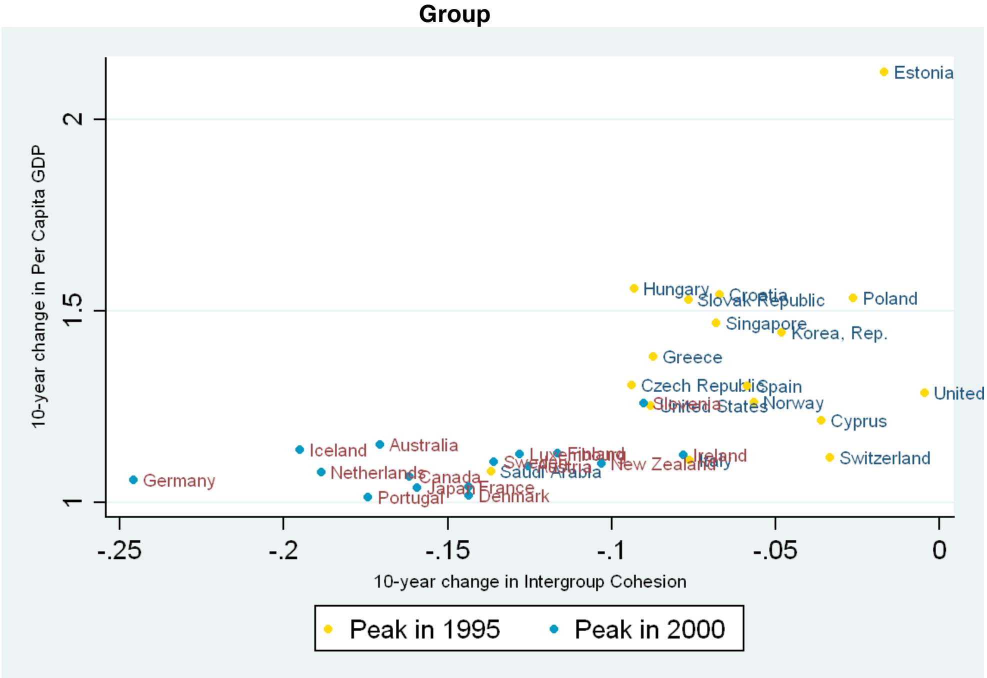


Figure 39
10-year change Post-peak GDP Per Capita vs Inter-group Cohesion – High Income Group



Appendix 18. Replication of Earlier Work

Earlier work (e.g. Knack and Keefer 1997) has demonstrated the trust factor in economic growth using data from the 1980s. The conventional econometric method usually regresses an economic indicator (whether income level or growth) over current or past explanatory (independent) variables. By convention, a baseline measure for the dependent variable and other likely influencers are included as independent variables (IVs) for control. Knack and Keefer's (1997) study used the data from World Values Survey. Their trust factor is based on the percentage of people responding to the question "most people can be trusted". The civic cooperation factor is based on five questions broadly within the theme of "honesty in public spaces". They found both factors (measured in 1980) to be significantly related to the growth (between 1980 and 1992), broadly affirming Putnam's thesis that civic cooperation and trust in the community fosters economic growth (1993). At the same time they did not find "associational activities" to be significantly correlated with growth. Literature in this area shows contrasting pictures. Granovetter (1973) made the observation that the cohesive power of weak ties in a community could serve to bridge different groups, reducing the cost of information transmission. However, there are also weak ties that do not bridge at all (Granovetter 1983). According to Putnam, in line with the positive effects of civic cooperation and trust, greater associational activities tend to be positive for growth since they "instill in their members habits of cooperation, solidarity, and public-spiritedness" (Putnam 1993: 89). On the other hand, Olson (1982) has suggested that certain horizontal associations have detrimental effects on growth because they function as special interest groups imposing a greater cost on society. Cross-country comparisons would be problematic if associational activities could express differently as positive or negative forces in the society.

Using ISDs as independent variables specifically, Foa (2011) found evidence for proximate determinant of growth using the Interpersonal Safety and Trust Index from data in the 1990s, thus corroborating Knack and Keefer (1997). None of the other indices had a significant influence over growth. Foa (2011) included Former Eastern Bloc as a dummy variable and found a negative effect on growth. The last finding is not surprising as the Eastern Bloc began liberalising their economies only in the 1990s.

In this study, a similar specification model is used as in Knack and Keefer (1997) and Foa (2011) but using data from 2000s rather than 1980s and 1990s. The IVs, following convention, include baseline measure of GDP Per Capita (*gdppc*), school enrolments and the ISDs in 2000. The DV is *gdppc* growth from 2000 to 2009. The result is presented in Table 11. Echoing earlier results, Interpersonal Safety and Trust is shown to be positive for economic growth. The Eastern Bloc dummy variable is now positive, reflecting the growth post economic liberalization. Civic Activism is the only other significant factor on economic growth but it is a negative one. This finding is new, in contrast to Foa (2011) whose data from 1990-1999 did not show a significant result.

With some variation then, the result here replicates, for the 2000-2009 period, Foa's (2011) study of the 1999-2000 period using similar proxy variable for Interpersonal Safety & Trust, as well as Knack and Keefer's (1997) study of the 1980-1992 period using a different proxy variable. The numbers of cases are, respectively, 74 for this study, 50 to 70 cases for Foa and 29 cases for Knack and Keefer.

Replication notwithstanding, we note that this result is in some contrast to the results in Chapter 3 where, for the group of 50 countries, we did not find Interpersonal Safety & Trust Granger causing GDP levels. Rather, GDP levels were found to influence Interpersonal Safety & Trust. Further work will be needed to disentangle and clarify this aspect of causal flow.

Civic Activism is shown to have a negative effect on growth. This result contrasts with Foa (2011) who did not find Civic Activism to have a significant effect.

Table 11
ISDs & Economic Performance, 2000-2009

Dependent Variable:	Growth 2000-2009	
GDP Per Capita	-0.000003	
	(0.000006)	
Primary School Enrolment	0.000673	
	(0.003605)	
Secondary School Enrolment	-0.000073	
	(0.002093)	
Former eastern Bloc	0.3480981	**
	(0.108937)	
Interpersonal Safety & Trust	1.018712	*
	(0.405644)	
Civic Activism	-2.624352	*
	(1.149420)	
Gender Equity	0.493757	
	(0.972956)	
Clubs & Associations	0.042924	
	(0.672928)	
Intergroup Cohesion	-0.113865	
	(0.305201)	
Constant	0.8396762	
	(0.872335)	
N	74	
Adj. r^2	0.42	

*** Probability <0.001
** Probability < 0.01
* Probability <0.05

References

Alkire, S. and M.E. Santos (2010) 'Acute Multidimensional Poverty: A New Index for Developing Countries', Oxford Poverty and Human Development Initiative, Working Paper 38. Oxford: University of Oxford.

Atinc, T.M. and M. Walton (1998) 'Social Consequences of the East Asian Financial Crisis', Washington, D.C.: The World Bank Group.

Archer, M.S. (1995) *Realist Social Theory: the Morphogenetic Approach*. Cambridge: Cambridge University Press.

Beauvais, C. and J. Jenson (1998) 'Social Cohesion: Updating the State of the Research', CPRN Study 24. Ottawa: Canadian Policy Research Networks.

Bebbington, A., S. Guggenheim, E. Olson and M. Woolcock (2004) 'Exploring Social Capital Debates at the World Bank', *Journal of Development Studies*, 40(5): 33-64.

Belsley, D.A., E. Kuh and R.E. Welsch (2004) *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. New Jersey: Wiley.

Berger-Schmitt, R. (2000) 'Social Cohesion as an Aspect of the Quality of Societies: Concept and Measurement', EuReporting Working Paper 14. Mannheim: Centre for Survey Research and Methodology (ZUMA).

Bhaskar, R. (1975, 2008) *A Realist Theory of Science*. Second Edition. London: Routledge.

Clark, D. and M. McGillivray (2007) *Measuring Human Well-being: Key Findings and Policy Lessons*, Policy Brief 3. Finland: UN-WIDER.

CMEPSP (2008) 'Survey of Existing Approaches to Measuring Socio-economic Progress', The Commission on the Measurement of Economic Performance and Social Progress. Accessed 11 September 2011 <http://www.stiglitz-sen-fitoussi.fr/documents/Survey_of_Existing_Approaches_to_Measuring_Socio-Economic_Progress.pdf>.

CMEPSP (2009) 'Report by the Commission on the Measurement of Economic Performance and Social Progress', The Commission on the Measurement of Economic Performance and Social Progress. Accessed 16 May 2011 <http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf>.

Costanza, R., M. Hart, S. Posner and J. Talberth (2009) 'Beyond GDP: The Need for New Measures of Progress', The Pardee Papers 4. Boston: Boston University.

Dannermark, B., Ekström, Liselotte Jakobsen, Jan Ch. Karlsson (2002) *Explaining Society: Critical Realism in the Social Sciences*. London: Routledge.

Dasgupta, P. (1999) *Valuation and Evaluation: Measuring the Quality of Life and Evaluating Policy*. DEDPS No. 22. London: London School of Economics.

Davis, G. (2004) 'A History of the Social Development Network in the World Bank', Social Development Paper No.56. Washington D.C.: The World Bank,

de Haan, A. I. van Staveren, E. Webbink and R. Foa (2011) 'The Last Mile in Analysing Well-being and Poverty: Indices of Social Development', ISD Working Paper #2011-03, The Hague: International Institute of Social Studies.

De Maio, F. G. (2007) 'GLOSSARY: Income inequality', *Journal of Epidemiology and Community Health*, 61(10): 849-852.

Easterly, W., Ritzen, J. and M. Woolcock (2006) 'Social Cohesion, Institutions, and Growth', *Economics & Politics*, 18(2): 103-120.

European Communities (2010) 'Social Protection for Inclusive Development', The 2010 European Report on Development. Belgium: Eupean Communities.

Foa, R. (2011) 'Indices of Social Development – Research Applications', Indices of Social Development. Accessed 3 April 2011 <http://www.indsocdev.org/resources/Applications%20of%`20the%20Social%20Development%20Indices.pdf>.

Foa, R. and J.C. Tanner (2011) 'Methodology of the Indices of Social Development', Indices of Social Development. Accessed 6 August, 2011 <http://www.indsocdev.org/resources/Methodology%20of%20the%20Social%20Development%20Indices_%20jan11.pdf>.

Forrest, R. and A. Kearns (2001) 'Social Cohesion, Social Capital and the Neighbourhood', *Urban Studies*, 38: 2125-2143.

Friedkin, N.E. (2004) 'Social Cohesion', *Annual Review of Sociology*, 30, 409-425.

Gasper, D. (2004) 'The Meaning of Development', in Gasper, D. (ed) *The Ethics of Development*, Edinburgh: Edinburgh University Press, 25-41.

Granger, C.W.J. (1969) 'Investigating Causal Relations by Econometric Models and Cross-Spectral Methods', *Econometrica*, 37(3), 424-438.

Granovetter, M. (1973) 'The Strength of Weak Ties', *American Journal of Sociology*, 78(6): 1360-1380.

Granovetter, M. (1983) 'The Strength of Weak Ties: a Network Theory Revisited', *Sociological Theory,* 1: 201-233.

Gujarati, D. and D. Porter (2008) *Basic Econometrics*. Fifth Edition. New York: McGraw-Hill Irwin.

ISD (2011a) 'Indices of Social Development: Project Overview', Indices of Social Development.. The Hague: International Institute of Social Studies.

ISD (2011b) 'Methodology', Indices of Social Development. Accessed 3 April 2011 <http://www.indsocdev.org/methodology.html>.

ISD (2011c) 'What is meant by social development?', Indices of Social Development. Accessed 28 March 2011 <http://www.indsocdev.org/faq.html>.

ITU (2011) 'Key Global Telecom Indicators for the World Telecommunications Service Sector', International Telecommunication Union. Accessed 9 November 2011 <http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html>.

Jenson, J. (1998) 'Mapping Social Cohesion: the State of Canadian Research', CPRN Study 13. Ottawa: Canadian Policy Research Networks.

Jenson, J. (2010) *Defining and Measuring Social Cohesion*. London: Commonwealth Secretariat and UNRISD.

Kaufmann, D., A. Kraay and P. Zoido- Lobaton (1999), 'Aggregating Governance Indicators', World Bank Policy Research Working Paper No. 2195. Washington D.C.: The World Bank.

Kay, J. (2011) 'The Map is not the Territory: An Essay on the State of Economics', Institute for New Economic Thinking. Accessed 17 October 2011 <http://ineteconomics.org/blog/inet/john-kay-map-not-territory-essay-state-economics>.

Kearns, A. and R. Forrest (2000) 'Social Cohesion and Multilevel Urban Governance', *Urban Studies*, 37, 995-1017.

Knack, S. and P. Keefer (1997) 'Does Social Capital have an Economic Payoff? A Cross-Country Investigation', *The Quarterly journal of economics* 112(4): 1251-1288.

Kovacevic, M. (2010) 'Review of HDI Critiques and Potential Improvements', Human Development Research Paper 2010/33, United Nations Development Programme.

Lambsdorff, J.G. (1999) 'Framework Document: The Transparency International Corruption Perceptions Index 1999', Transparency International. Accessed 6 August 2011 <http://www.icgg.org/downloads/1999_CPI_FD.pdf Transparency International>.

Lambsdorff, J.G. (2001a) 'Framework Document: Background Paper to the 2001 Corruption Perceptions Index', Transparency International and Göttingen University. Accessed 6 August 2011 <http://www.icgg.org/downloads/2001_CPI_FD.pdf>.

Lambsdorff, J.G. (2001b) 'How Precise are Perceived Levels of Corruption: Background Paper to the 2001 Corruption Perceptions Index', Transparency International and Göttingen University. Accessed 6 August 2011 <http://www.icgg.org/downloads/2001_CPI_Precision.pdf>.

Lambsdorff, J.G. (2007) 'The Methodology of the Corruption Perceptions Index 2007', Transparency International and University of Passau. Accessed 6 August 2011 <http://www.icgg.org/downloads/CPI_2007_Methodology.pdf>.

Lawson, T. (1995) 'The Lucas critique: a generalisation', *Cambridge Journal of Economics*, 19, 257-276.

Lawson, T. (1997) *Economics and Reality: Economics as Social Theory*. London: Routledge.

Lawson, T. (1999) 'Critical Issues in "Economics as Realist Social Theory' in S. Fleetwood (ed) *Critical Realism in Economics: Discussion and Debate*, 209– 258. London and NY: Routledge.

Lawson, T. (2003) *Reorienting Economics*. London: Routledge.

Lewis, W.A. (1949) *The Principles of Economic Planning*. London: Routledge.

Lucas, R E. (1976) 'Econometric policy evaluation: a critique', *Carnegie-Rochester Conference Series on Public Policy*, 1(1): 19-46.

Mazumdar, K.K. (1996) 'An Analysis of Causal Flow between Social Development and Economic Growth: The Social Development Index', *American Journal of Economics and Sociology*, 55(3): 361-383.

Mazumdar, K.K. (2000) 'Causal flow between human well-being and per capita real gross domestic product', *Social Indicators Research*, 50(3): 297-313.

Michalos, A.C., B. Smale, R. Labonte, N. Muharjarine, K. Scott, K. Moore, L. Swystun, B. Holden, H. Bernardin, B. Dunning, P. Graham, M. Guhn, A.M. Gadermann, B.D. Zumbo, A. Morgan, A.-S. Brooker and I. Hyman (2011) *The Canadian Index of Wellbeing*. Technical Report 1.0. Waterloo, ON: Canadian Index of Wellbeing and University of Waterloo.

Monogan, J. (2010) 'Granger Causality Test', Lecture Notes. Accessed 26 May 2011 <http://monogan.myweb.uga.edu/teaching/ts/13granger.pdf>.

Naroll, R. (1956) 'A Preliminary Index of Social Development', *American Anthropologist,* 58(4), 687-715.

Olsen, W.K. and J. Morgan (2005) 'A Critical Epistemology of Analytical Statistics: Addressing the Sceptical Realist', *Journal for the Theory of Social Behaviour*, 35(3): 25-284.

Olson, M. (1982) *The Rise and Decline of Nations*. New Haven, CT: Yale University Press.

Popper, K.R. (1963) *Conjectures and Refutations*. London: Routledge and Kegan Paul.

Putnam, R. (1993), *Making Democracy Work*. Princeton, NJ: Princeton University Press.

Rajulton, F., Z. Ravanera, and R. Beaujot (2007) 'Measuring Social Cohesion: An Experiment Using the Canadian National Survey of Giving, Volunteering, and Participating', *Social Indicators Research*, 80(3): 461–492.

Ray, A.K. (1989) 'On the Measurement of Certain Aspects of Social Development,' *Social Indicators Research*, 21(1): 35-92.

Rostow, W.W. (1956) 'The Take-Off into Self-Sustained Growth,' *The Economic Journal*, 66(261), 25-48.

Reeskens, T., S. Botterman, and M. Hooghe (2009) 'Is Social Cohesion One Latent Concept? Investigating the Dimensionality of Social Cohesion on the Basis of the Kearns and Forrest (2000) Typology' in *Proceedings of the Conference on New Techniques and Technologies for Statistics*, 255-264. Brussels (18-20 February 2009).

Sachs, W. (1992, 2010) *The Development Dictionary: A Guide to Knowledge as Power*. Second Edition. London & New York: Zed Books.

Sayer, A. (1992) *Method in Social Science.* London: Routledge.

Sayer, A. (2000) *Realism and Social Science.* London: SAGE Publications Ltd.

Sen, A. (1999) *Development as Freedom*. Oxford: Oxford University Press.

Spoonley, P., R. Peace, A. Butcher and D. O'Neill (2005) 'Social Cohesion: a Policy and Indicator Framework for Assessing Immigrant and Host Outcomes', *Social Policy Journal of New Zealand*, 24: 85-110.

Theil, H. (1971) *Principles of Econometrics*. New York: John Wiley and Sons.

Thompson, B. (1995) 'Stepwise Regression and Stepwise Discriminant Analysis Need Not Apply here: A Guidelines Editorial', *Educational and Psychological Measurement,* 55: 525-534.

Tjivikua, T. (2011) 'The Concept of Progress in Different Cultures – Culture and Progress in Namibia: Contradiction or Concurrence?', Polytechnic of Namibia. Accessed 19 July 2011 <http://www.polytechnic.edu.na/administration/docs/concept_progress_Tjivikua.pdf>.

Tolstoy, L. (2001) *Anna Karenina*. U.K: Penguin Books.

UNDP (1997) 'Human Development Reports – Human Development to Eradicate Poverty', United Nations Development Programme. Accessed 11 September 2011 <http://hdr.undp.org/en/>.

UNDP (2010) 'Human Development Report 2010 – The Real Wealth of the Nations: Pathways to Human Development', United Nations Development Programme. Accessed 11 September 2011 <http://hdr.undp.org/en/>.

UNDP (2011a) 'International Human Development Indicators', United Nations Development Programme. Accessed 11 September 2011. <http://hdr.undp.org/en/statistics/>.

UNDP (2011b) 'Human Development Reports – Getting and Using the Data', Accessed 29 July 2011 <http://hdr.undp.org/en/statistics/data/>.

van Staveren, I. (2011) 'To Measure is to Know? A Comparative Analysis of Gender Indices', ISD Working Paper #2011-02. The Hague: International Institute of Social Studies.

Verbeek, M. (2004) *A Guide to Modern Econometrics*. Second Edition. U.K.: Wiley.

Williams, R. (2011) 'Multicollinearity'. Course Notes, University of Notre Dame. Accessed 8 August 2011 <http://www.nd.edu/~rwilliam/xsoc63993/l11.pdf>.

World Values Survey (2011) 'WVS Cultural Map of the World', World Values Survey. Accessed 24 October 2011 <http://www.worldvaluessurvey.org/wvs/articles/folder_published/article_base_54>.

Woolcock, M. (2011) 'What Distinctive Contribution Can Social Cohesion Make to Development Theory, Research and Policy?', OCED Conference of the World Bank, Paris (20 January 2011).

World Bank (2011) 'Indicators', World Bank. Accessed 3 April 2011 <http://data.worldbank.org/indicator>.