Indices of Social Development

Working Paper
No. 2012-01

Granger inspired testing the ISDs for Possible Causal Relationships

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ISS the Hague

January 2012

[1] This paper is based in part on the first author's Masters Research Paper, supervised by the second author (Huang 2011).

ISSN 2213-6614

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1. Preliminary diagnostic and epistemological reflections

Arjan de Haan and his co-authors are keen to use the ISS Indicators of Social Development (hereafter the ISDs) to show how institutional structuration processes can cause improvements in human well-being, including economic growth (de Haan et al, 2011). Developing this aspiration, though not uncritically, this paper explores how the ISS ISDs might be used to stimulate thinking about causal relationships by linking the ISDs to each other and conventional measures of country-level development status.

But before undertaking the task of attributing causality, it is necessary to reflect on the nature of the data being used. The challenges in using the ISDs' data can be summarised into six problems which need diagnostic reflection before interpretation of causal relationships can be convincingly undertaken:

- Problems of country level gaps in the availability of individual indicators underpinning the five ISDs in all or particular years
- Problems of accuracy of measurement of the individual indicators within each ISD even where and when data is available
- Problems of whether the indicators are inputs to or outcomes of developmental processes
- Problems of weighting of indicators when aggregated into aggregate ISD 'scores'
- Problems of currently having only five chronological data points
- Problems of countries not being weighted by their human populations

The first problem appears intractable as the missing country-level indicators were never collected. The desire to maximise the number of indicators is laudable and the ISD creators have used an impressive formal Matching Percentile methodology to allow ISD scores to be created despite missing country-level indicators. But the problem still exists and should temper any interpretive claims.

The second problem has bedevilled ‘social’ indicators ever since they were first proposed as an alternative to economic indicators. Some of the indicators, such as changes in the physical environment, can be directly observed in quantitative terms and share the same issues of sampling and measurement error as conventional economic indicators. But for many social indicators, measurement requires the conversion of qualitative perceptions of well-being into quantitative measures, often using Lickert rankings. The ‘subjectivity’ of such measurements haunts the ISDs.

The third problem arguably does need attention, though we do not attempt that task here. The desire to maximise the number of indicators appears to have overwhelmed the need to categorise the indicators into those that might be conceptualised as inputs into developmental processes and those that appear to be primarily outcomes. Irene van Staveren understandably sees this inclusiveness as a virtue in her Working Paper (van Staveren, 2011: 32), but we feel future research into causalities using the ISDs would benefit from efforts at categorising indicators and isolating those with stronger claims to causal properties.

The fourth problem is related to the third in terms of ranking the indicators by their significance to human well-being. The division of the indicators into five ISDs does partially resolve this problem by allowing researchers to explore their independent effects on human well-being. In this spirit, Graph 1 in de Haan et al (2011: no page number) combines the five ISDs in a useful ‘cobweb’ diagram profile. We also use this five way division in this paper, but we are aware that the underlying weighting of the constituent indicators is not being critically assessed.

Provided the data set is maintained in the future, the fifth problem of a small number of chronological data points will gradually diminish – though we will not have the statistically ‘normalising’ thirty observations until 2135! Of course, the numerous country-level data points do offer possibilities of experimental designs seeking causal relationships using either cross-section analysis or combined longitudinal and cross-section analysis (e.g. Dulal and Foa, 2011). But our ambition in this paper is to explore how the human species global system is changing and we must be aware of this limitation.

It is this very ambition that gives the sixth problem significance. Our results are disproportionately influenced by the ISDs for low population countries. We ontologically assume that ISDs’ scores are not strongly correlated with size of human population. But we have not tested this assumption for the purposes of this paper.

Given these six empirical problems and our pessimistic diagnoses of their intractability, we might justly be accused of being over-ambitious in this paper. Our defence against this accusation has two interwoven threads:

- Epistemologically we locate our claims in critical realism
- Methodologically we only use indicative non-parametric tests that we think are sufficiently robust to withstand significant data 'errors'

This working paper is not the place for an extended discussion of critical realism as a theory of knowledge (for an extended exposition, see Huang, 2011). For our purposes here, we offer the following propositions:

- All empirical knowledge is subject to error in terms of various forms of data inaccuracy – the ISDs may lie at the more error strewn end of the spectrum, but at least we are explicit about those errors
- Empirical data alone cannot reveal causalities
- Knowledge of human well-being requires consideration of how human agency is expressed in responses to events through changing relationships
- The exercise of agency is constrained by real structuration processes – accessing knowledge of these processes requires creative speculation in thought and non-closure in conclusions
- This creative speculation is disciplined by the requirement that it be consistent with both the empirical data and presence of human agency, i.e. these phenomena can be accepted as 'emergent' from the conjectures on structuration.

We will attempt to apply these principles in our final conclusions, but now we will proceed to apply our methodological principle of only using tests of appropriate robustness to high risks of data error.

2. The Granger inspired tests as an appropriately robust method

Where long run data are available, a typical panel study makes it possible to estimate the size of the effect of the regressors on the regressand using multiple variable regression techniques appropriate to the forms of the data and a priori theorisation. To employ such a technique, certain assumptions have to be made about the characteristics of the variables and their distributions (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 magnitudes across all individual units (countries in the ISDs' case) and data 'errors' are quantitatively relatively small. In our case, we consider such assumptions are not justified by the ISD's data, though we accept that regression techniques may be defensible for other experimental designs using the ISD data set (e.g. Dulal and Foa, 2011).

It is not our purpose in this paper to derive estimates of quantitative effects. Our purpose here is much more limited. We wish to explore if there are patterns of chronological precedence and antecedence between social institutional patterns and conventional developmental indicators. The Granger inspired tests permit such exploration and no more than this exploration. We only claim to be only 'Granger inspired' as the small number of chronological data points means that we are departing from a more positivist/empiricist position that Granger testing can unambiguously demonstrate causality. Our critical realist position allows us to use more indicative empirical results as a take-off for creative speculation on human agency and underlying structural processes from which the empirical results could have emerged. Therefore our causal interpretations beyond claims that changes in X usually precedes changes in Y belong to us, the authors, and not to the data.

In this paper, the Granger inspired test is used specifically to investigate if ISDs' performance precedes performance in other widely used development indicators. We also investigate the inverse case: whether the developmental indicators performance precedes ISDs' perfomance. We will treat the Granger inspired test results as being necessary to explain structurally if and only if they are statistically significant. Statistical significance only indicates temporal precedence, but our claims to see causality must be consistent with this result, i.e. significant empirical results must be 'emergent' from any claims to understand human agency and structural processes.

It is important to note as an additional limitation that Granger inspired test results do not reveal the influences of other variables beyond the two being tested. Attributing causality must consider the possibility of other variables influencing both the tested variables (omitted/missing variables in conventional regression), e.g. the 'actual' cause for any statistically significant changes in both income levels and ISDs. The logic behind the Granger inspired test is simple: causality does not run chronologically backwards. It is assumed 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 provokes reflection on causality. We use Granger inspired tests to identify, as an appropriately robust minimum, possible temporal precedence between variables to provide stimulation for reflections on causality.

The ISD database has five chronological data points per ISD allowing for lagged observations. The data points correspond to five year intervals, which we consider appropriate in terms of perceiving long duration changes and limiting the 'noise' that could come from more frequent observations of shorter time intervals. For our purpose here, we aggregate all countries with data available and examine the effects on them as if they represent the shared experiences of humanity. But there are some gaps in the data set such that not all countries are represented in all indices for all chronological data points. These gaps result in the exclusion of some countries from some of the Granger inspired tests. Therefore we must bear in mind that any Granger causality result refers to a particular sub-set of countries, though we will generally treat the statistically significant results as having possible 'global' significance.

The Granger inspired test takes a dependent variable, Y, of the latest epoch (2010) over a series of Y in prior epochs (1990, 1995, 2000 and 2005) plus the series of the "Granger cause" candidate X in all the prior epochs. It then tests the null hypothesis that, all of the prior X influences are zero. If the null hypothesis fails a 5 percent or 10 percent, two-tailed significance test then X is treated as possibly having an influence on Y. We thus have the following generalised model:

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

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

In our first test, Y is set to GDP Per Capita (*gdppc*) and X is set to, in five separate experiments, each of the individual ISDs. Thus, we can test if any of the individual ISDs passes the Granger inspired test. We also test if *gdppc* passes the Granger inspired test with respect to changes 'causing' changes in each of the ISDs (Granger 1969; Monogan 2010). Mazumdar (1996, 2000) has employed this technique in prior work 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 the X appear to provide information that contributes to explaining variations in (the current) Y more than past variations of Y alone. Our Granger inspired tests thus make no claim about direct causation or if 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 establish precise *empirical* quantitative causalities, as if there is precise quantitative invariability linking the variables, or even a direction of causality in terms of the positive or negative sign of the correlation. Rather, it is to use the empirical findings to stimulate discussions about *actual* events and *structural* processes as products of the exercise of human agency and *real* structures and mechanisms from which the empirical connections emerge.

3.1 The Granger inspired test results – the ISDs and GDP per capita

Thirty seven countries have data for all the ISDs, for the entire period. They form what we will term 'the core group'. This list is included in Appendix 1. As a fraction of about 190 countries in the database, this core group is admittedly small. The core group has good representation for Europe and Asia (especially G20 countries), as well as Latin America and Eastern Bloc; but less so for Africa and MENA. Thus there is a bias in this set of countries and it only represents a slice of the world for which the ISD data are complete. Our initial exploration will be restricted to them.

Granger inspired tests are logged in Appendix 2 and summarised in Table 3. For the core group of 37 countries, the only statistically significant causal flow runs from Clubs & Associations to GDP per capita (hereafter *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 the path dependent influence of past *gdppc* variations (the 4 prior epochs). The evidence provided points to the institutions that Clubs & Associations measures having at least time precedence to *gdppc*.

Table 1
Granger inspired 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 inspired tests can also be 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 represented in the five ISDs may have antecedent relationships with others. The Granger results are logged in Appendix 3 and summarised in Table 4. The only statistically significant causal flow at the 5 percent level runs from Civic Activism to Gender Equity. At the 10 percent level, 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.

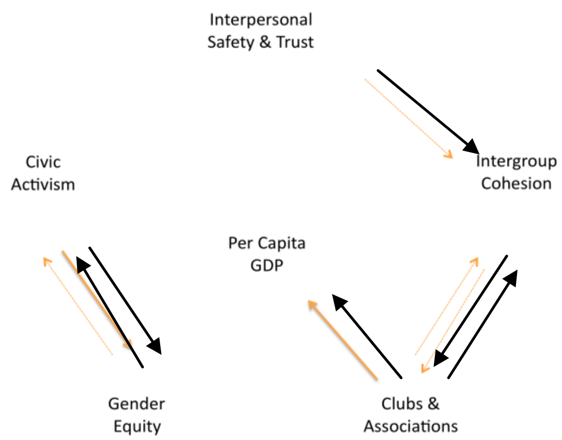
Table 2
Granger inspired tests between ISDs – Core Group

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, all these Granger inspired test results are summarised in Figure 1, 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).

Figure 1
Granger Flows between ISDs and GDP Per Capita



Although only 37 countries have complete data on all five ISDs, many have complete data on some of the ISDs. Since the Granger inspired test is applied pairwise between two variables, more countries could be included for each pairwise causality test. This would improve representativeness of the results for the whole human species and 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 we have complete data 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 inspired tests, using all available data. We posit the idea that the causal flows that might emerge from these tests, though based on varying data sets, might paint a larger picture of causal flows *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. 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 inspired test results are logged in Appendix 4 and summarised in Table 3. 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[2].

Table 3
Granger inspired tests for ISDs and GDP Per Capita

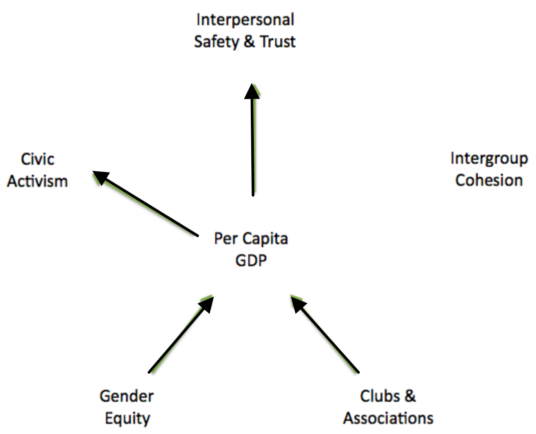
Granger Causality - Influences		*Coefficient aggregate*	*Prob.*	*d.f.*
Safety & Trust ->	Per Capita GDP	0.96	0.439	(4,41)
Per Capita GDP ->	Safety & Trust	6.18 ***	0.001	(4,41)
Civic Activism ->	Per Capita GDP	1.17	0.328	(4,131)
Per Capita GDP ->	Civic Activism	2.67 *	0.035	(4,131)
Gender Equity ->	Per Capita GDP	4.62 **	0.002	(4,137)
Per Capita GDP ->	Gender Equity	1.86	0.121	(4,136)
Clubs & Associations ->	Per Capita GDP	3.66 **	0.010	(4,54)
Per Capita GDP ->	Clubs & Associations	1.46	0.227	(4,54)
Intergroup Cohesion ->	Per Capita GDP	1.51	0.205	(4,84)
Per Capita GDP ->	Intergroup Cohesion	0.51	0.726	(4,84)

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

Out of the 8 tests, 4 are statistically significant at the 5 percent level. The results show that *gdppc* passes the Granger inspired tests with respect to Interpersonal Safety and Trust and Civic Activism. At the same time, Clubs & Associations and Gender Equity Granger pass Granger inspired tests with respect to *gdppc*. It is worth noting that the test result from Clubs & Associations to *gdppc* indicated in the last section (*n*=37) is preserved here (though the number of countries only increases from 37 to 50). These causal flows are diagrammed in Figure 2.

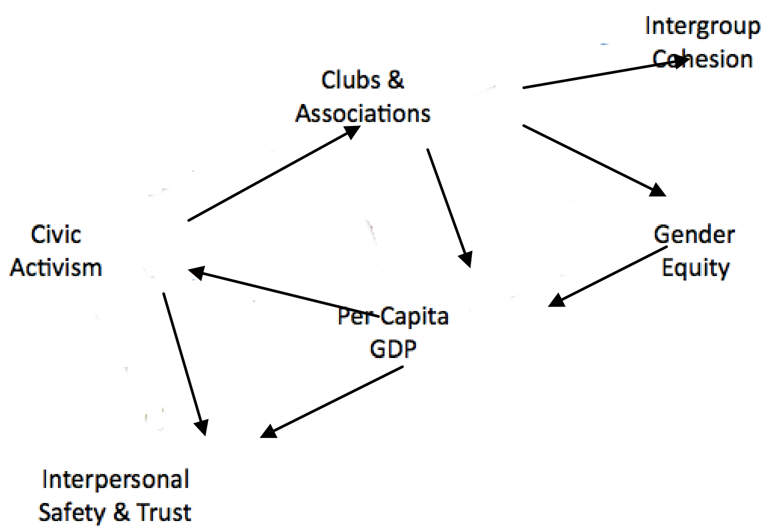
[2] The number of observations could differ slightly between the two tests of flows of opposite directions.

Figure 2
Granger Flows between ISD and GDP Per Capita



Two of the ISDs, Clubs & Associations and Gender Equity, are indicated to Granger flow towards *gdppc*. Because of the dramatic unexplained fall in 1995 for the Gender Equity Index, this last causal flow was also tested excluding the 1995 values, but with no change in the result. Taking the *gdppc* Granger results and the inter-index Granger results together, we end up with the flow diagram shown in Figure 3.

Figure 3
Causal Flow – ISDs & *gdppc*



3.2 The Granger inspired test results – the ISDs and HDI

The Human Development Index has been produced since 1990 (UNDP 2011). There are three equally weighted sub-indices in HDI, made up from four different indicators: log PPP 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, because the outcome aspects of HDI are pre-dominant, ISDs would more causally influence HDI than vice versa (Dulal and Foa, 2011).

We performed Granger inspired tests between ISDs and HDI for all countries with a complete set of scores for each ISD. The results are reported in Table 4. The causal flows are summarised in Figure 4:

- A mutual causal flow is indicated between Interpersonal Safety and Trust and HDI;
- A flow from Civic Activism to HDI (this flow is possibly negative. See Huang 2011);
- Gender Equity Granger causes HDI

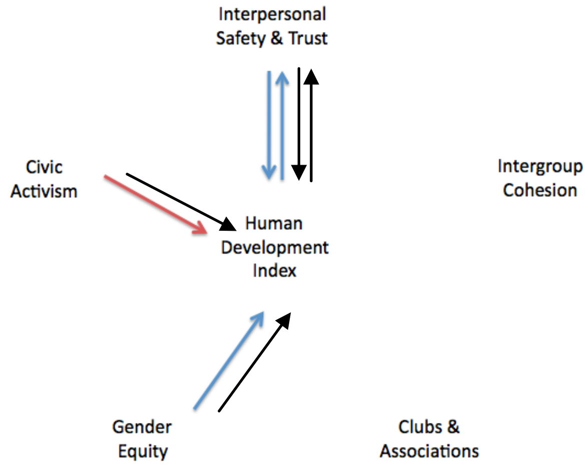
Except for the first case, the flows indicate that ISDs come before HDI. The pattern of flows thus generally lends support to the hypothesis that social institutions, which ISDs measure, precede the outcomes in human well-being, which HDI measures.

Table 4
Granger inspired 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 4
Granger Causality between ISD and Human Development Index



3.3 The Granger inspired test results – the ISDs and Gini Coefficients

The Gini Coefficients used here claim to measure the distribution of household income in a country (World Bank 2011). A Gini score of 0 means absolute equality while a score of 1 means 'perfect' inequality. A major critique of Gini is that it does not differentiate between inequalities produced by different distributions across the income spectrum whereas an index such as Atkinson's can provide a statistic based on a subjectively adjustable sensitivity to the lower end of the distribution (De Maio 2007). Gini is nevertheless a commonly quoted developmental outcome measure. It thus merits an analysis vis-à-vis the ISDs. As in HDI, as an outcome indicator, it is expected that ISDs would Granger precede Gini but not vice versa.

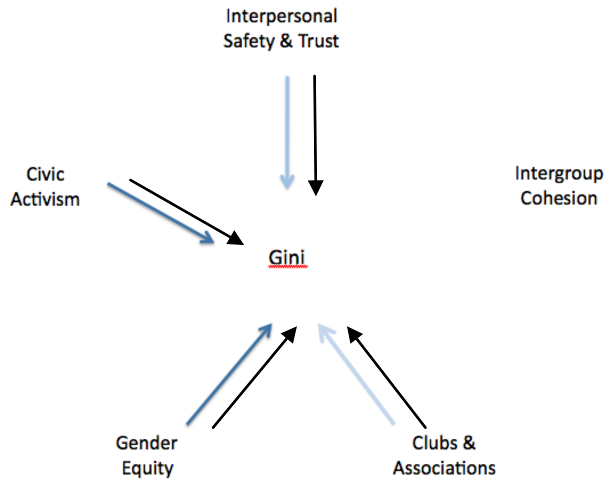
Granger inspired tests were performed for all countries with a complete set of scores for each ISD after the Gini scores had been inverted (0=perfect inequality, 1=perfect equality) to give a 'common sense' meaning in which the higher the score the more 'developed' the society. The results are logged in Appendix 5 and tabled in Table 5 and the causal flows summarised in Figure 5. 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. Four of the five ISD show evidence of Granger influencing the value of the Gini, though two are only significant at the 10 percent level. Of the ISDs, Inter-group Cohesion alone does not seem to have an influence on Gini.

Table 5
Granger inspired 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 5
Granger Causality between ISD and Gini Coefficient



4. Structural reflections

In the spirit of critical realist epistemology, we will now reflect on the human relational and structural processes from which our empirical findings could have emerged. In doing so we ask the reader to accept that a high *gdppc*, a high HDI score and a high inverse Gini coefficient score (hereafter 'developmental indicators) are indicators of a well developed state of humanity. These reflections will combine the images created by Granger inspired testing all the countries that have complete sets of scores for each ISD (Figures 3, 4 and 5). These empirical images suggest:

- None of the ISDs pass the Granger inspired test as possible causes of all three developmental indicators.

- The Gender Equity ISD passes the Granger inspired tests for *gdppc* and the HDI and we assume these relationships are positive;

- The Clubs and Associations ISD pass the Granger inspired tests for *gdppc* and Gini coefficient, but we suspect the direction of these causalities to be negative;

- The Civic Activism ISD passes the Granger inspired tests for the HDI and Gini coefficient with what we presume are positive effects;

- The Interpersonal Safety and Trust ISD passes the Granger inspired test for the Gini coefficient and has a two way relationship with the HDI;

- The Intergroup Cohesion ISD passes none of the Granger inspired tests for the developmental indicators. We discuss this somewhat surprising result in another Working Paper (Huang and Cameron 2011);

- The Intergroup Cohesion ISD also appears to have no indirect causality running through the other ISDs. The only connection is with the Clubs and Associations ISD among the ISDs in which we suspect the relationship is negative (see the discussion in Huang and Cameron 2011);

- The only candidates for an indirect effects on the developmental indicators working through other ISDs is the Civic Activism ISD working through the Clubs and Associations ISD, and the Clubs and Associations ISD working through the Gender Equity ISD.

Combining these complex empirical relationships suggests there is no simple causality running from the institutions human beings have created to the indicators we use to measure our developmental performance. Feminist advocates can take comfort from the performance of the Gender Equity ISD, though might be puzzled at the lack of relationship with the Gini coefficient. Better governance advocates might also be pleased at the performance of the Civic Activism ISD which they can claim is having a positive direct effect on the HDI and Gini coefficient and an indirect effect on the *gdppc*.

Overall, we think we can perceive agency/structure paradoxes in the current global order. The mainstream developmental emphasis on improving gender equity and creating more meaningful participative deliberative processes can work together to improve developmental performance. But this assumes such advocacy can positively affect decision-making by those agents with the power to modify resource allocation. But working against this are possible human responses to global insecurities in economic and personal safety in terms of forming protective, excluding ‘clubs and associations’ institutions.

An understandable urge to protect ‘people like us’ in a hostile environment by forming ‘othering’ institutions may be damaging our capability to develop as a species. If effective human agency and power over resources is vested in these institutions then the outlook for economic development is relatively poor. The HDI may move independently of any institutional shift, possibly because we can look after ourselves in terms of health and education ‘locally’. More provocatively, if a sustainable human future lies in lower *gdpp*c growth, then encouraging our autarkic tendencies may be desirable, even if it means we become more economically unequal! But it is important to remember that these speculations are intended to encourage further debate not close arguments.

Finally, in terms of wider working with the ISS ISDs, we suggest our results indicate that a more dialectical approach to the ISDs is appropriate. Future research needs to bear in mind that the five ISDs may work in conflicting directions.

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. Granger inspired 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

------------------------------------------------------------------------------
             |               Robust
   gdppc2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
  safety2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
   gdppc2010 |      Coef.   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

civic2010	Coef.	Robust 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

gdppc2010	Coef.	Robust 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

------------------------------------------------------------------------------
             |               Robust
   gdppc2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
   clubs2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
   gdppc2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
cohesion2010 |      Coef.   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 3. Granger inspired 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

------------------------------------------------------------------------------
```

civic2010	Coef.	Robust 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

safety2010	Coef.	Robust 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

gender2010	Coef.	Robust 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

safety2010	Coef.	Robust 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

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   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

gender2010	Coef.	Robust 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

civic2010	Coef.	Robust 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

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
cohesion2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
  gender2010 |      Coef.   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

clubs2010	Coef.	Robust 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

gender2010	Coef.	Robust 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

------------------------------------------------------------------------------
             |               Robust
   clubs2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
cohesion2010 |      Coef.   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 4. Granger inspired 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

------------------------------------------------------------------------------
             |               Robust
       gdppc |      Coef.   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

------------------------------------------------------------------------------
```

```
             |               Robust
       civic |      Coef.   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

------------------------------------------------------------------------------
```

gender	Coef.	Robust 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

------------------------------------------------------------------------------
```

cohesion	Coef.	Robust 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 5. Granger inspired 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

sgini2010	Coef.	Robust 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

safety2010	Coef.	Robust 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

------------------------------------------------------------------------------
             |               Robust
   sgini2010 |      Coef.   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

------------------------------------------------------------------------------
             |               Robust
   civic2010 |      Coef.   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

sgini2010	Coef.	Robust 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

gender2010	Coef.	Robust 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

References

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

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

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).

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.

Dulal, H.B. and R. Foa (2011) 'Social Institutions as a Form of Intagible Capital', ISD Working Paper #2011-01. The Hague: International Institute of Social Studies.

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

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.

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.

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

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.

Huang, Y.L. (2011) 'Using the ISS *Indices of Social Development* to Understand Structural Economic and Social Development Processes', M.A. Research Paper, International Institute of Social Studies, The Hague.

Huang, Y.L. and J. Cameron (2011) 'Tracking Structural Development Processes through the Inter-group Cohesion ISS ISD'.

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.

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

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.

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

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

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

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).

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.

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

UNDP (2011) '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.

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>.