

The linkages between rule of law and development: an empirical intimation

Mark Orkin¹

The evidence base for the relationship between the rule of law and development is multi-faceted, complex and sometimes contested.²

Overview

1. This Note reports a particular empirical exploration of the manner and extent to which the rule of law (RoL) predicts development, focussing on using two well-established indexes. RoL is conceived by the World Justice Project (WJP) to have eight components, of which four may be taken as core to RoL (limited government powers, regulatory performance, civil justice, and criminal justice), and four may be taken as cognate, in that they are equally well regarded as aspects of good governance (absence of corruption, order and security, fundamental rights and open government). Development is measured by the UNDP's Human Development Index, which compounds measures of education, life expectancy and gross national income.
2. The overall finding of the statistical exploration is that the components of rule of law, differentiated as above but operating in conjunction, powerfully predict development. The particular findings are fourfold:
 - a) Of the core components of RoL, limited government powers and regulatory performance are the most proximate in relation to development (see Figure 2);
 - b) The respective relationships are subtle. Regulatory powers does not have a direct effect on HDI, but rather via the cognate component of absence of corruption. And limited government powers is unexpectedly found to have an *negative* direct correlation with HDI, but its overall impact on HDI is nevertheless positive because it has a larger indirect positive effect on HDI via the cognate RoL components of fundamental rights and transparency;
 - c) The other two core components of RoL appear to function more as corollaries: civil justice is supported by regulatory performance; and criminal justice is supported by absence of corruption, and in turn supports order and security. The latter may thus be viewed as an additional outcome of RoL.
 - d) The measurable indicators for each component are prioritised in the context of these linkages to development. Their overall number may be reduced without diminishing the force of the model.

The World Justice Project's index of Rule of Law

3. The Washington-based World Justice Project (WJP) undertakes a massive programme of monitoring progress on the rule of law (RoL) across ninety seven countries, accounting for more than 90% of the world's population. WJP identifies eight components³ of RoL, derived from international standards, national constitutions and scholarly literature through expert consultations.

Table 1: World Justice Project: Components of Rule of Law

"Core" components	Label	"Cognate" components	Label
Limited government powers	1. Limits	Absence of corruption	2. Integrity
Regulatory enforcement	6. Regul'ns	Order and security	3. Security
Civil justice	7. Civil J.	Fundamental rights	4. Rights
Criminal justice	8. Crim. J.	Open government	5. Transpar.

The components represent a balance between “thin” and “thick”, formal and substantive, conceptions. Four of them may be viewed as core to RoL; and four as cognate, in that the latter are often viewed as aspects of good governance.⁴

4. Each component is an aggregate of between three and eight measurable indicators. There are forty-eight indicators in all, as shown in Appendix A that is a re-arrangement of WJP’s table.⁵ For example, the six indicators for Limits⁶ are effective limitations by the legislature, judiciary, and independent audit; sanctions of officials’ misconduct; non-governmental checks; and lawful transitions of power. Table 1 above also shows the abbreviated labels that will be applied to the components during the analyses.
5. The indicators are scored by WJP in two ways: by sample surveys in each country of 1000 members of the public across the three largest urban areas, and by assessments from relevant local experts. These are weighted equally. The WJP has subjected the overall RoL index to statistical audit. This confirmed the balance among the eight components, and the approximately equal importance of the indicators of each component. The WJP itself prefers to display the eight component scores separately for each country.

The UNDP’s Human Development Index (HDI)

6. The UNDP’s influential Human Development Index (HDI) is a complex statistical compound “of the average achievements in a country in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living”⁷, respectively indexed by life expectancy, mean and expected years of schooling, and gross national income per head. It is calculated annually and covers 187 countries, including all of those included by the WJP.

The broad correlation between HDI and the RoL

7. The auditors of the WJP’s RoL index note that, although WJP prefers to diagram the separate component scores for each country, an “aggregated RoL index would also appear statistically justified given the data”.⁸ When one accordingly compares this aggregated index with the HDI, for the year 2012, a linear trend-line fits quite well, with R^2 is 0.58 and quite a steep slope (see Fig. 1, and Appendix B for the country codes). To each ten-point rise in HDI there corresponds a seven point rise in RoL.
8. In other words, without yet surmising a causal direction, there is an evident linkage between rule of law and development – the former subsuming not only its core legal aspects but its cognate good-governance aspects, and the latter subsuming not only economic but health and education aspects.
9. The country-level detail is also illuminating. To the left, one sees among low-HDI countries that a dozen relatively recently democratizing African countries fare considerably better on RoL than the linear regression line would predict (while Bangladesh, Pakistan and Cambodia fare worse, as well as Cameroon). To the right, among high-HDI countries, some long-industrialised European and especially Nordic countries fare even better on RoL than predicted (plus Japan, and Australia and New Zealand). At the centre, among medium-HDI countries, some European transition states and South American countries do less well than expected, notably Russia and Venezuela respectively; while Ghana and especially Botswana do conspicuously better. This examination suggests that a non-linear relationship may fit even better, with increasingly close fit for higher levels of HDI.⁹

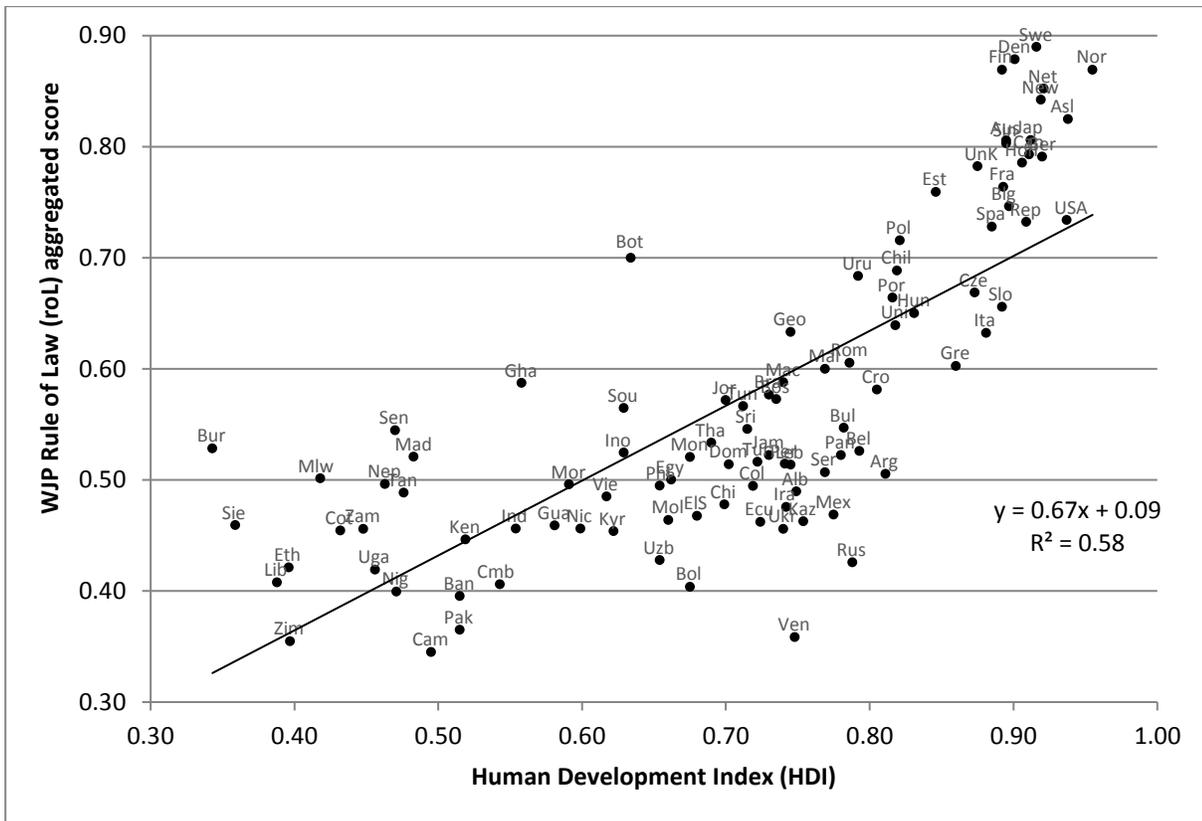


Figure 1: Correlation between Rule of Law aggregate score and Human Development Index

Assessing the linkages of RoL components to HDI: a puzzling discovery?

10. The obvious next question that arises is the manner in which the different components of RoL, core and cognate, contribute to this overall correlation. This is easier to ask than to answer. A typical first step might be to undertake a multiple regression of all eight components with HDI. The results are contained in an end-note.¹⁰ They tentatively suggest (subject to the reservation in the next paragraph) that Rights and Transparency are significantly positively correlated with HDI, and Integrity nearly significantly so. But, with these three components simultaneously at work, one then finds that Limits has a significant *negative* correlation with HDI! (The remaining four components do not feature significantly.) This is unexpected, but perhaps not unprecedented. There has been vigorous debate in the literature about whether democracy may, at least initially,¹¹ be inimical to development.¹² Have we identified three (cognate) components of RoL which tend to be favourable to development, by contrast with a fourth (core) component, Limited government power, which is not – when in the presence of the other three?

11. However, we warned of a reservation with making this typical first step. The analysis also signals that, for statistical regression purposes, there is excessive inter-relation *among* the eight components (called “multi-collinearity”) in the multiple regression.¹³ This is unsurprising, given their shared conceptual provenance. But it means that one should be wary of the reported strengths of the correlations, and the share of variance they explain.¹⁴ May this be the reason for the one unexpected negative linkage?

A comprehensive “map” of linkages: among RoL components (and indicators), and to HDI

12. Happily, a more apt technique is available, to check. It is stylishly called “partial least squares structural equation modelling”,¹⁵ and has five advantages for answering our particular question. In the variant we shall use it is relatively unfazed by multi-collinearity; it is relatively comfortable with the modest sample of 97 countries to which WJP is presently confined; as a bonus, it yields a “path diagram” showing not only the significant linkages predictive of development, but also among the components themselves; and as another bonus, it indicates the contribution of each component’s constituent indicators to the task. Moreover, it does hint at causal directions, in that, when one confronted with paths about which theory (or intuition) is uncertain, the relative strengths may improve appreciably when tries “swopping” the direction. However, the approach finesses the overall direction of causality, in that we take HDI as the dependent variable, i.e. we are exploring the predictive force of the RoL components on HDI.¹⁶
13. The resulting path diagram is simplified in Fig. 2. (The technical version is in Appendix C. It shows the correlation coefficients for the various significant¹⁷ paths in the context of overall prediction of HDI, the overall R^2 of the model at 0.666 – in the HDI hexagon – and also the relative strengths of the indicators of each component.) Ignoring for the moment the blue, paler part of the diagram, one sees immediately that the *direct* link from Limits to HDI is still present, and it is still negative as denoted by the dashed line.

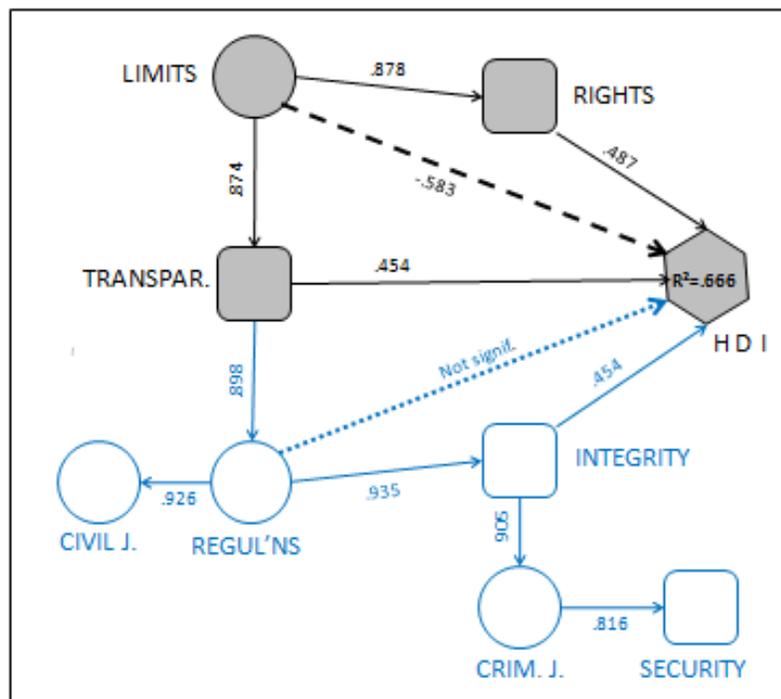


Figure 2: Significant linkages among components of Rule of Law, and to Human Development Index

But the puzzle is perhaps solved. Limits also has two *indirect*, positive linkages to HDI – via Rights and via Transparency – and their combined strengths outweigh (or “mediate”¹⁸) the direct, negative link.¹⁹ Given the causal direction assumed in the application of the predictive modelling, an interpretation might be this: although Limits of itself does not conduce to HDI, this effect is outweighed by its supports for Rights and Transparency, both of which do.

14. The paler lower part of Fig. 2 indicates another “mediation”. Regulation has its impact on HDI not at all directly, but via Integrity. And the other two core RoL components are more corollaries than enablers of the linkages described. To the left, Civil Justice is very strongly supported by Regulation which itself is backed by Transparency. At the bottom, the diagram plausibly suggests that Integrity (recall that this is the label for Absence of corruption) supports Criminal Justice, which in turn supports Security. The latter may thus be construed, alongside HDI, as an attribute predicted by the other RoL components.

Further insights from the map of linkages: the heightened effect of Transparency on HDI

15. In some instances, a mediating variable may not only provide an additional or alternative path to a direct path, but it may cause the size of the direct effect to vary significantly, depending on whether the mediator variable is taking low or high values. This is an “interaction”. The partial least squares technique indicates that Transparency (but not Integrity or Rights) does indeed “interact” with the direct path from Limits to HDI. It is easiest to see this with the variables dichotomised, to display simple contrasts.

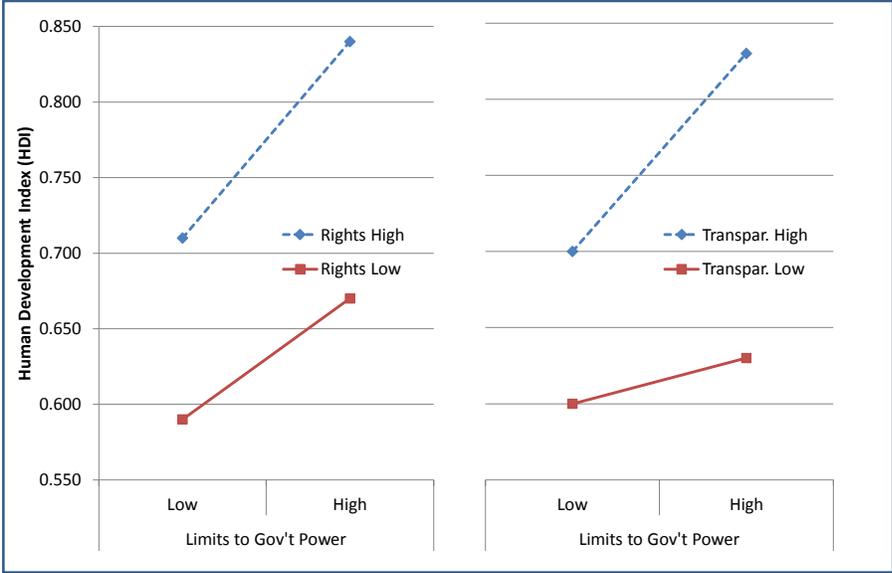


Figure 3: Interaction of Transparency with HDI (by contrast with Rights)

16. One sees from the left panel of Figure 3 that, obviously, the dashed line is always higher than the solid one i.e. whatever the state of Limits on the x-axis, it is better to be in a high Rights context than a low one. Then one sees, as one moves on the x-axis from a state of low to high Limits, the *improvement* in HDI is roughly the same whether one is in a low or a high Rights situation, i.e. the lower and upper lines are nearly parallel. But in the right panel, regarding Transparency, as one moves from a state of low to high Limits there is a significantly more marked difference in HDI, i.e. the lower and upper lines are conspicuously not parallel. This is the “interaction” effect.

The measurement foundations of the components of RoL

17. The technical diagram in Appendix C shows, for each core and cognate component of RoL, in the context of predicting HDI, the strength of correlation between the component and its measurable indicators (scored, it will be recalled by both sample citizen surveys and expert assessments in each of the ninety-seven countries). For instance, one sees that for Rights, indicators 4.2 and 4.6 are the strongest, with standardized coefficients of .916 and .894 respectively. Appendix A shows these to be “The right to life and security of the person” and “Freedom from arbitrary interference with privacy”.

Appendix A has the indicators for each component arranged in descending order of strength. The correlations are generally high, and the relevant test statistic confirms the contributions of the respective measures to be largely uniform, as the WJP’s auditors noted.²⁰ Indeed, if with Occam’s Razor one allows each RoL component only its top two indicators, reducing to sixteen in all rather than forty-eight, the overall model fit actually improves slightly from .666 to .679! The relative size of the linkages is preserved, though their magnitudes alter somewhat.

Conclusion: a critical enabling role

18. The Concept Document for this Expert Workshop sees the RoL as “grounded on international human rights norms and standards”, and adds that “establishing legal frameworks, ensuring enforcement of rules and procedures, and reducing corruption have enabled effective delivery of health, education and other social services.”²¹ These contentions are more easily asserted than demonstrated. Towards the latter, this Note has drawn a distinction between core and cognate components of RoL, the latter being equally understood as aspects of good governance. Then it has sought empirically to explore the relationships among them, and the manner in which they may predict development, by applying statistical techniques to two well-established indicators, the eight-component World Justice Project’s RoL Index and the UNDP’s Human Development Index (HDI), and.
19. There is an encouragingly strong correlation between an *aggregated* RoL index and the HDI. But when one disaggregates RoL, noteworthy effects emerge. The important core RoL components of Limits and Regulations (see Table 1 for the meaning of these abbreviated labels) exert their effects on HDI *indirectly*, via the mediators of Rights and Integrity respectively. Indeed, Limits of itself would exert a *negative* direct effect on HDI, which is however outweighed by the strong, combined, *positive* but indirect effect it exerts on HDI via the two cognate components – Rights and Transparency. This insight may contribute towards resolving an endemic controversy: it may well be true that Limits is somewhat inimical to advancing HDI, but it is *also* true that this lesser effect is outweighed by the composite and greater positive effect that Limits has on HDI via good governance components of RoL. The seeming contradiction perhaps arose in the literature because of inadequate disaggregation of RoL, and inadequate attention to mediated effects. Additionally, Transparency “interacts” with the link between Limits and HDI, in that an improvement in HDI for an increment in Transparency is amplified compared to Rights.
20. The remaining core components of RoL – Civil and Criminal Justice – appear to participate as corollaries in relation to HDI, being supported by Regulations and Transparency. However Criminal Justice in turn supports Security, yielding another positive separate developmental outcome alongside HDI. The analysis

also ranks the relative importance of the various *indicators* of each RoL component, in the context of predicting HDI, although many of these are roughly equally powerful.

21. The overall “map” conveys that two core, legal components of RoL –Limits and Regulations – play an enabling role in advancing development, via their enabling of the cognate, good-governance components of RoL. (The other two core components are sensible concomitants.) But it is an essential role, in that the powerful overall correlation with development is achieved by the entire linked configuration of components, each based in turn upon diverse but relevant measurable indicators at country level. As the WJP tellingly insists, “The rule of law is not the rule of lawyers and judges. All elements of society are stakeholders in the rule of law.”²²

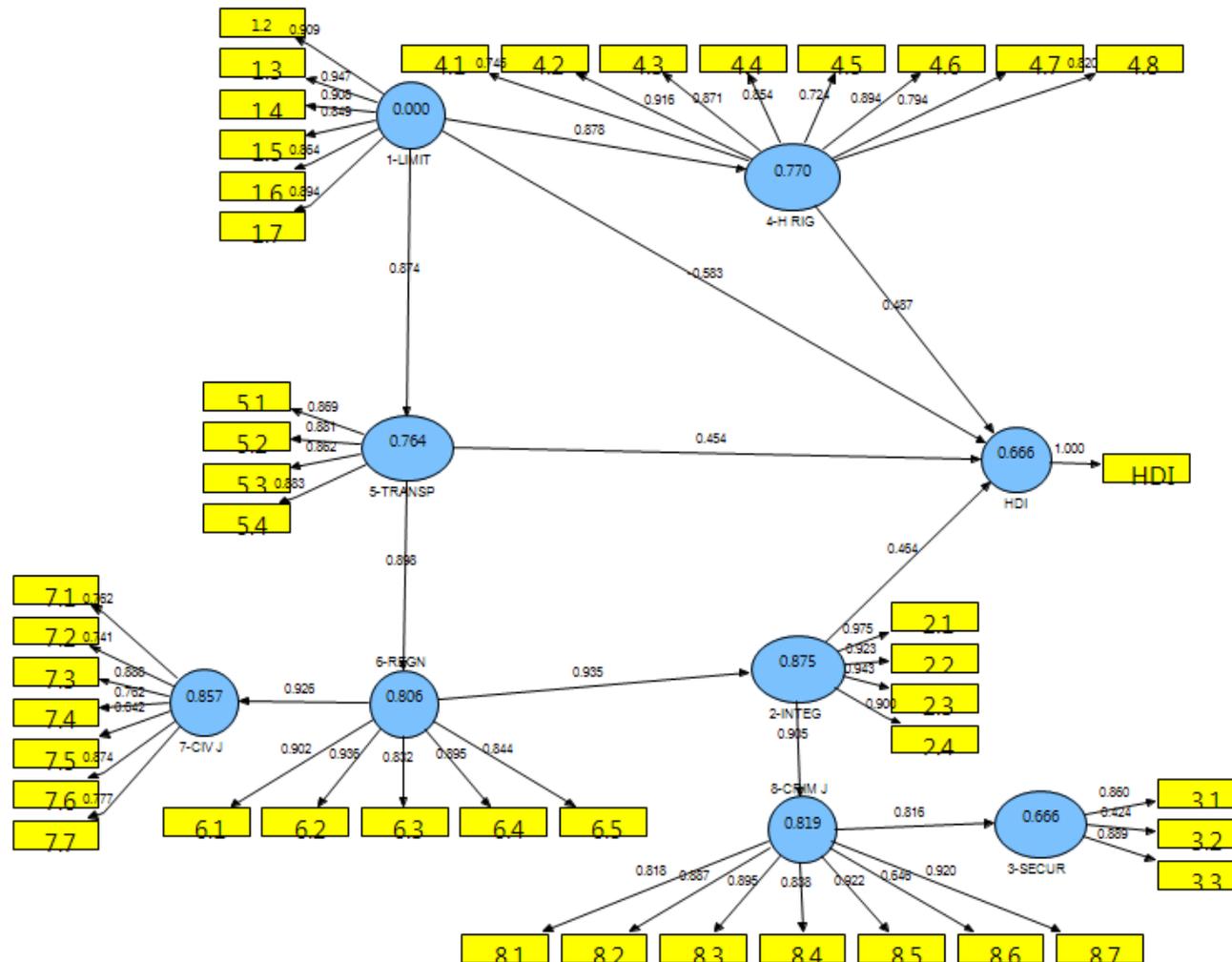
APPENDIX A: WJP Rule of Law Index - Components, with respective Indicators sorted by strength

<p>Std B COMPONENT 1: Limited Government Powers</p> <p>n/a 1.1 Government powers are defined in the fundamental law</p> <p>0.947 1.3 Government powers are effectively limited by the judiciary</p> <p>0.909 1.2 Government powers are effectively limited by the legislature</p> <p>0.908 1.4 Government powers are effectively limited by independent auditing and review</p> <p>0.894 1.7 Transition of power is subject to the law</p> <p>0.864 1.6 Government powers are subject to non-governmental checks</p> <p>0.849 1.5 Government officials are sanctioned for misconduct</p> <p>COMPONENT 2: Absence of Corruption</p> <p>0.975 2.1 Government officials in the executive branch do not use public office for private gain</p> <p>0.943 2.3 Government officials in the police, military do not use public office for private gain</p> <p>0.923 2.2 Government officials in the judicial branch do not use public</p> <p>0.900 2.4 Government officials in the legislative branch do not use public</p> <p>COMPONENT 3: Order and Security</p> <p>0.889 3.3 People do not resort to violence to redress personal grievances</p> <p>0.860 3.1 Crime is effectively controlled</p> <p>0.424 3.2 Civil conflict is effectively limited</p> <p>COMPONENT 4: Fundamental Rights</p> <p>0.916 4.2 The right to life, security of the person is effectively guaranteed</p> <p>0.894 4.6 Freedom from arbitrary interference with privacy is effectively guaranteed</p> <p>0.871 4.3 Due process of law and rights of the accused</p> <p>0.854 4.4 Freedom of opinion and expression is effectively guaranteed</p> <p>0.820 4.8 Fundamental labor rights are effectively guaranteed</p> <p>0.795 4.7 Freedom of assembly and association is effectively guaranteed</p> <p>0.745 4.1 Equal treatment and absence of discrimination</p> <p>0.724 4.5 Freedom of belief and religion is effectively guaranteed</p>	<p>COMPONENT 5: Open Government</p> <p>0.883 5.4 Official information is available on request</p> <p>0.881 5.2 The laws are stable</p> <p>0.869 5.1 The laws are publicized and accessible</p> <p>0.862 5.3 Right to petition the government and public participation</p> <p>COMPONENT 6: Regulatory Enforcement</p> <p>0.936 6.2 Government regulations applied, enforced without improper influence</p> <p>0.902 6.1 Government regulations are effectively enforced</p> <p>0.895 6.4 Due process is respected in administrative proceedings</p> <p>0.844 6.5 The Government does not expropriate without adequate compensation</p> <p>0.832 6.3 Administrative proceedings are conducted without unreasonable delay</p> <p>COMPONENT 7: Civil Justice</p> <p>0.888 7.3 Civil justice is free of corruption</p> <p>0.874 7.6 Civil justice is effectively enforced</p> <p>0.777 7.7 ADRs are accessible, impartial, and effective</p> <p>0.762 7.1 People can access and afford civil justice</p> <p>0.762 7.4 Civil justice is free of improper government influence</p> <p>0.741 7.2 Civil justice is free of discrimination</p> <p>0.642 7.5 Civil justice is not subject to unreasonable delays</p> <p>COMPONENT 9: Criminal Justice</p> <p>0.922 8.5 Criminal system is free of corruption</p> <p>0.920 8.7 Due process of law and rights of the accused</p> <p>0.896 8.3 Correctional system is effective in reducing criminal behavior</p> <p>0.887 8.2 Criminal adjudication system is timely and effective</p> <p>0.838 8.4 Criminal system is impartial</p> <p>0.818 8.1 Criminal investigation system is effective</p> <p>0.646 8.6 Criminal system is free of improper government influence</p> <p>COMPONENT 9: Traditional Justice (Not presently measured)</p>
---	---

Appendix B: Country codes used in Figure 1, with 2012 HDI and RoL scores

		HDI	RoL Tot			HDI	RoL Tot
Alb	Albania	0.75	0.49	Lib	Liberia	0.39	0.41
Arg	Argentina	0.81	0.51	Mac	Macedonia	0.74	0.59
Asl	Australia	0.94	0.83	Mad	Madagascar	0.48	0.52
Aus	Austria	0.90	0.81	Mlw	Malawi	0.42	0.50
Ban	Bangladesh	0.52	0.40	Mal	Malaysia	0.77	0.60
Bel	Belarus	0.79	0.53	Mex	Mexico	0.78	0.47
Blg	Belgium	0.90	0.75	Mol	Moldova	0.66	0.46
Bol	Bolivia	0.68	0.40	Mon	Mongolia	0.68	0.52
Bos	Bosnia and Herzegov.	0.74	0.57	Mor	Morocco	0.59	0.50
Bot	Botswana	0.63	0.70	Nep	Nepal	0.46	0.50
Bra	Brazil	0.73	0.58	Net	Netherlands	0.92	0.85
Bul	Bulgaria	0.78	0.55	New	New Zealand	0.92	0.84
Bur	Burkina Faso	0.34	0.53	Nic	Nicaragua	0.60	0.46
Cmb	Cambodia	0.54	0.41	Nig	Nigeria	0.47	0.40
Cam	Cameroon	0.50	0.35	Nor	Norway	0.96	0.87
Can	Canada	0.91	0.79	Pak	Pakistan	0.52	0.37
Chil	Chile	0.82	0.69	Pan	Panama	0.78	0.52
Chi	China	0.70	0.48	Per	Peru	0.74	0.51
Col	Colombia	0.72	0.49	Phi	Philippines	0.65	0.49
Cot	Cote d'Ivoire	0.43	0.45	Pol	Poland	0.82	0.72
Cro	Croatia	0.81	0.58	Por	Portugal	0.82	0.66
Cze	Czech Republic	0.87	0.67	Rep	Republic of Korea	0.91	0.73
Den	Denmark	0.90	0.88	Rom	Romania	0.79	0.61
Dom	Dominican Republic	0.70	0.51	Rus	Russia	0.79	0.43
Ecu	Ecuador	0.72	0.46	Sen	Senegal	0.47	0.54
Egy	Egypt	0.66	0.50	Ser	Serbia	0.77	0.51
EIS	El Salvador	0.68	0.47	Sie	Sierra Leone	0.36	0.46
Est	Estonia	0.85	0.76	Sin	Singapore	0.90	0.80
Eth	Ethiopia	0.40	0.42	Slo	Slovenia	0.89	0.66
Fin	Finland	0.89	0.87	Sou	South Africa	0.63	0.56
Fra	France	0.89	0.76	Spa	Spain	0.89	0.73
Geo	Georgia	0.75	0.63	Sri	Sri Lanka	0.72	0.55
Ger	Germany	0.92	0.79	Swe	Sweden	0.92	0.89
Gha	Ghana	0.56	0.59	Tan	Tanzania	0.48	0.49
Gre	Greece	0.86	0.60	Tha	Thailand	0.69	0.53
Gua	Guatemala	0.58	0.46	Tun	Tunisia	0.71	0.57
Hon	Hong Kong SAR, China	0.91	0.79	Tur	Turkey	0.72	0.52
Hun	Hungary	0.83	0.65	Uni	United Arab Emirates	0.82	0.64
Ind	India	0.55	0.46	Uga	Uganda	0.46	0.42
Ino	Indonesia	0.63	0.52	Ukr	Ukraine	0.74	0.46
Ira	Iran	0.74	0.48	UnK	United Kingdom	0.88	0.78
Ita	Italy	0.88	0.63	USA	United States	0.94	0.73
Jam	Jamaica	0.73	0.52	Uru	Uruguay	0.79	0.68
Jap	Japan	0.91	0.81	Uzb	Uzbekistan	0.65	0.43
Jor	Jordan	0.70	0.57	Ven	Venezuela	0.75	0.36
Kaz	Kazakhstan	0.75	0.46	Vie	Vietnam	0.62	0.49
Ken	Kenya	0.52	0.45	Zam	Zambia	0.45	0.46
Kyr	Kyrgyzstan	0.62	0.45	Zim	Zimbabwe	0.40	0.35
Leb	Lebanon	0.75	0.51				

Appendix C: Partial least squares structural equation model of linkages among components of RoL, and to HDI; and to their indicators



Endnotes

- ¹ Dr Mark Orkin (morkin@mweb.co.za) is a Visiting Professor in the School of Public and Development Management at the University of the Witwatersrand, and Associate Fellow of the Department of Social Policy and Intervention at Oxford University. He was previously Head of Statistics South Africa, and CEO of the statutory Human Sciences Research Council.
- ² UNDP, “The rule of law and development: Issue brief” (New York: UNDP, January 2013).
- ³ There is a ninth WJP component, informal justice. It does not yet publish data on this component, because of the difficulties still experienced in systematic and comparable measurement. See Agrast, M.*et al.*, *WJP Rule of Law Index 2012* (Washington, D.C.: The World Justice Project, 2102), p. 17, n. 9.
- ⁴ See, for example, Mark Orkin, “Democratic governance and accountable institutions”, forthcoming in Wonhyuk Lim (ed.) *One World Goals: Post-2015 Development Agenda* (Seoul: Korea Development Institute, 2013).
- ⁵ *Loc. cit.*, p. 11. The forty eight indicators span some four hundred variables, which are normalised to run from 0 to 1 before arithmetic aggregation.
- ⁶ The WJP does not apply indicator 1.1.
- ⁷ United Nations Development Programme, “Technical notes”, in *UNDP Human Development Report 2013: The Rise of the South* (New York: UNDP, 2013), p. 2. The data for the HDI are supplied by UNDESA, UNESCO Institute for Statistics, World Bank, IMF, and UN Statistics Division.
- ⁸ Michaela Saisana and Andrea Saltelli, European Commission Joint Research Centre, “Statistical audit”, in *WJP Rule of Law Index, op. cit.*, p. 198. As items in a scale, the eight components yield Cronbach’s alpha=.965; and on a principal components analysis the first factor explains 81% of the variance.
- ⁹ As the eye suggests from the discussion of Fig. 1, a non-linear relationship might fit even better. Indeed, an R2 of 0.78 is obtained if one allows permits a cubic polynomial, for which RoL barely rises until HDI ~ .65, and then increases steeply, with increasingly close fit to the curve. This pattern is confirmed by separate linear regressions: up to HDI=.65, significance is only p=.09, and there is a modest slope and lots of scatter (std B=.36, adj. R2=.07), whereas and above HDI=.65 there is a steep slope and good fit (std. B=.89. R2=.75, p=.000).
- ¹⁰ The table below summarises the result of the multiple regression of HDI on the components of RoL. The components Limits, Rights and Transparency are significant for p<.02, and Integrity is nearly significant. But the correlation of Limits with HDI is negative. (So, more weakly, might be those for Civil and Criminal Justice, but the effects are not statistically significant.)

Component	Std B	p	Tolerance
1. Limits	-0.51	0.003	0.13
2. Integrity	0.40	0.069	0.08
3. Security	0.12	0.212	0.40
4. Rights	0.44	0.001	0.21
5. Transpar.	0.38	0.023	0.14
6. Regul’ns	0.24	0.308	0.07
7. Civil J.	-0.20	0.224	0.14
8. Crim. J.	-0.02	0.896	0.15
Overall adjusted Rsq=.666, p=.000			

- ¹¹ “The first phase of market reform turns on large-scale policy decisions by a small band of policy officials. The second phase involves building institutions...and the general amelioration of governance.” T. Carothers, “The rule of law revival”, *Foreign Affairs*, 77: 2 (1998), p. 98.
- ¹² See for example S. Haggard, A. MacIntyre and L. Tiede, “The rule of law and economic development”, *Annual Review of Political Science* 11 (2008), pp. 205-34, especially pp. 213-215; and more broadly, J. N. Bhagwati, “Democracy and development: cruel dilemma or symbiotic relationship”, *Review of Development Economics*, 6:2 (2002), 151-162.
- ¹³ In the “Tolerance” column of the table above, there are two cells <.1 and a further four <.2. This signals excessive multi-collinearity.

-
- ¹⁴ For the criterion in n. 13 above, see Andy Field, *Discovering Statistics Using SPSS*, 3rd Edition (Los Angeles: Sage, 2009), p. 224.
- ¹⁵ J.F. Hair *et al.*, *A Primer on Partial Least Squares Structural Equation Modelling* (Los Angeles: Sage, 2013).
- ¹⁶ For opposing examples on the causal-direction issue, see for example R. Rigobon and D. Rodrik, "Rule of law, democracy, openness, and income", *Economics of Transition*, 13:3 (2008), 533-564; and James A. Robinson, "Economic development and democracy", *Annual Review of Political Science*, 9 (2006): 503-527.
- ¹⁷ All correlations are highly significant at $p < .001$ except for Limit->HDI which is $p < .01$.
- ¹⁸ This part of the diagram resembles what social scientists call the "multiple mediation" of the link from Limits to HDI, by Rights and Transparency. A suitable statistical technique, an add-on macro to SPSS called INDIRECT, further confirms the partial least squares finding of a negative direct link from Limits to HDI, and of stronger, combined positive indirect links via the "mediators". To bring the remaining components into reckoning, a model was tried with all of them as mediators as well. Interestingly, the results were very similar to the partial least squares model: a negative direct effect from Limits to HDI of $-.49$, and a positive total effect of $.61$, in a model of $R^2 = .67$ and $p = .00$. See K. J. Preacher and A.F. Hayes (2008). "Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models", *Behavior Research Methods*, 40, 879-891.
- ¹⁹ Indeed, there is a third, even more indirect path via Regulations and Integrity. The *direct* effect from Limits to HDI has a negative standardized coefficient of $-.583$. The software reports that the *total* effect, summing this negative path and all the positive indirect paths from Limits to HDI, is $+.581$. (For each path, its effect is the product of the coefficients for its various "limbs".)
- ²⁰ Cronbach's alpha is $> .89$ for all eight components of RoL except Security, where it is $.61$.
- ²¹ "Global Dialogue on Rule of Law and the Post-2015 Development Agenda, 26-27 September 2013, New York".
- ²² *WJP Rule of Law Index, op. cit.*, p.1.