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When Measurement Becomes Ritual

The Biased Coin of Development Rankings

Mohamed Htitich, PhD

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Every year, the same rankings appear, the same countries top the list, the same headlines are written. Information theory has a name for a signal that never changes: noise. After nearly four decades of composite indices, global development measurement may have reduced itself to a coin flip where the outcome is known in advance.

Almost four decades after the first Human Development Index ranked countries by life expectancy, education, and income, the ritual has barely changed. Each year, the United Nations Development Programme releases its updated HDI. Each year, Norway or Switzerland sits at the top. Each year, Chad or the Central African Republic sits at the bottom. The latest edition is no different: Norway, Denmark, and Switzerland occupy the podium; South Sudan and the Central African Republic anchor the bottom.[1] Each year, newspapers write the same headline with a different date. The ceremony has acquired the solemnity of a liturgical calendar: predictable, repetitive, and, in the strict sense of the word, uninformative. Because information, as Claude Shannon demonstrated in 1948, is surprise.[2]

The Biased Coin Problem

This is not merely an aesthetic complaint about boring rankings. It is a mathematical one. Shannon's information theory provides the formal apparatus to understand why these annual exercises have exhausted their usefulness, and (more importantly) what they are hiding. Consider a coin. If it is fair, each flip carries one bit of information: you genuinely do not know whether the next result will be heads or tails. The entropy, Shannon's measure of uncertainty, is at its maximum.[3] Now bias the coin. Make it land on heads 99% of the time. Each flip becomes almost entirely predictable. The entropy collapses. You learn almost nothing from watching it land, because you already knew the outcome. The formula is elegant and unforgiving: $H = -\Sigma\, p\, log(p)$. As the probability distribution concentrates, as one outcome becomes near-certain, the information content of the signal approaches zero.

> **Shannon entropy.** — Introduced in « A Mathematical Theory of Communication » (1948), entropy quantifies the average information content of a signal. Maximum entropy occurs when all outcomes are equally likely (a fair coin: H = 1 bit). Minimum entropy occurs when the outcome is certain (H = 0).

Development indices, I want to argue, have become biased coins. The top-ten rankings of the HDI[4] have become so predictable that they carry roughly as much information as a coin biased at 95%. We keep flipping it, year after year, and we keep being told what we already know. Norway, Denmark, and

Switzerland are doing well. Sub-Saharan Africa is not. The exercise has become ritual: comforting, perhaps, for those at the top, and demoralizing for those at the bottom, but analytically barren.[5]

This is not hyperbole. The UNDP's own trend data, recalculated on a consistent methodology from 2010 to 2023, show that 90% of the top-ten countries carry over from one measurement period to the next.[6] Only fifteen nations have ever entered the top ten across the entire span. Five of them (Norway, Switzerland, Germany, Iceland, Australia) have never left it. The value spread between rank one and rank ten is roughly 0.02 points on a zero-to-one scale. The academic literature has been saying this for over thirty years. Ravallion, the former World Bank research director, called the whole enterprise a « mashup », a composite index « for which existing theory and practice provides little or no guidance to its design. » The rank-robustness literature confirms the intuition: top-ranked countries remain at the top regardless of how you weight the components.[7] The coin, in other words, is not merely biased. It may be fixed.

The question that follows is the one worth asking. If the signal has gone flat, what is it drowning out? If the coin always shows heads, what would we learn by flipping a different coin?

In a study published in *Global Policy*, I computed the Shannon entropy of social and governance indicators across 170 countries from 1990 to 2020.[8] The question was simple: for each dimension of development, at each point in time, how much surprise does it still carry?

The chart below shows what I found. The social dimensions (basic human needs, foundations of wellbeing) have been losing their capacity to surprise for three decades. This is a measurement crisis. Composite indices that continue to lean on these dimensions are listening to signals that have gone nearly silent.

Table 1. Shannon entropy by dimension of the Social Progress Index (selected years, 1990–2020). Higher values indicate greater cross-country variance (more information). Source: Htitich, Harmá■ek & Krylova (2025).

Dimension	1990	2000	2010	2020
Democratic Accountability	0.291	0.246	0.290	0.312
State Capacity	0.184	0.232	0.264	0.267
Basic Human Needs	0.269	0.256	0.193	0.185
Foundations of Wellbeing	0.256	0.266	0.253	0.236

The governance dimensions tell the opposite story. State capacity and democratic accountability have been diverging steadily: they are where the surprise still lives, where a country's trajectory remains genuinely hard to predict.[9] The complete crossover occurred in the 2010s: from that point onward, governance dimensions consistently carried more surprise than social ones. The predictable coin of basic needs was replaced by the much fairer coin of governance, but very few people were watching it flip.

A signal that never changes carries zero information. The real story is in the dimensions where countries are pulling apart — and those dimensions are about governance.

What emerges from this analysis is not a technical footnote about measurement methods. It is a fundamental reorientation of how we should understand global development in the twenty-first century. The HDI, and the many composite measures built on similar architectures, were designed in an era when the central question was whether countries could feed their people, educate their children, and keep them alive past the age of five. These were the dimensions of maximum uncertainty, and therefore maximum information. The indices did their job. But they continued doing the same job long after the question changed. And the question, as the entropy analysis shows, has changed completely. Contemporary development gaps are primarily governance gaps. What separates Uganda from Vietnam, or Argentina from Denmark, is no longer chiefly a matter of infant mortality or access to clean water (although these remain critical at the most granular, community-intervention level). What separates them is the quality of their institutions: the capacity of the state to mobilize resources and redistribute wealth, the accountability of democratic processes, the independence of courts, the freedom of the press.[10]

> **Regional patterns.** — The shift from social to governance dimensions is visible across nearly all world regions. It is sharpest in Central Asia, Latin America, the Middle East, and sub-Saharan Africa. In Europe and North America, governance indicators have dominated throughout. South Asia stands apart: all dimensions retain similar weights, reflecting persistent challenges across the board.

The regional analysis reinforces this picture.[11] In almost every region — Central Asia, Latin America, the Middle East, sub-Saharan Africa — governance dimensions now carry the most surprise, meaning they are where countries' paths diverge most sharply. The shift became visible from the mid-1990s onwards, and by 2020 it was complete.[12]

One might object that the gain of information in the governance dimensions is an artifact, that expert-coded governance indicators are contaminated by what some scholars call « recency bias, » a systematic pessimism that makes recent assessments harsher than older ones, which results in less predictable governance country performance (Little and Meng 2024).[13] I addressed this concern at length. The evidence does not support it. The V-Dem project, whose data underpin much of the governance analysis, has shown that less than 1.4% of its experts revised their historical ratings, and those revisions showed no systematic negative trend (Knutsen et al. 2024).[14] The patterns I observe (some countries improving, others deteriorating, with the net effect being greater cross-national variance) are consistent with genuine divergence, not measurement drift. The quality of democratic accountability is not converging globally. It is bifurcating.[15]

There is a deeper lesson here, one that goes beyond the technicalities of entropy. It concerns what we choose to measure and, by extension, what we choose to see. When we keep measuring the same things in the same way, decade after decade, we risk enshrining a particular model of development as permanent truth. The coin flip becomes not just biased but fixed: the question itself stops evolving.

Shannon's insight was that information is proportional to surprise. A development index that surprises no one measures nothing of consequence. What we need are not indices that rank countries on where they stand (we have known those rankings for decades, and they have not changed) but indices that track where countries are *moving*. Velocity, not position. The rate of change in governance quality, the acceleration or deceleration of democratic accountability, the trajectory of state capacity: these are the signals that still carry information. These are the dimensions where the coin remains unbiased.

The question that development measurement must now confront is not whether to rank countries (the world will go on ranking) but whether to keep ranking them on dimensions that have lost their informational value. The index did what it was built to do: it distinguished countries on basic needs, again and again, until the distinction became trivial. The moment has come to flip a different coin. Whether the development measurement community is willing to do so is, itself, a question whose answer is far from certain. Which is to say: it is a question that still carries information.

An old econometrics professor of mine in Casablanca had a saying: « To better measure poverty, look at the poorest among the poor. »[16] The development measurement community might consider the corollary: measure not merely what matters, but what matters *most*. The fix, in its most practical form, is almost embarrassingly simple: weight the dimensions by their informational content, and let those weights vary over time. When a dimension goes silent, turn the volume down. When another starts speaking, turn it up. It might help unbias the coin. But of course, that would mean admitting the coin was biased in the first place.

NOTES

1. UNDP, *Human Development Report 2024/2025*, Statistical Annex Table 1. The HDI has been published annually since 1990.

2. Shannon, C. E., « A Mathematical Theory of Communication », *The Bell System Technical Journal*, vol. 27, July 1948. For an accessible introduction to the idea that information is surprise, see Freiberger, M., « Information is surprise », *Plus Magazine*, Cambridge, 2016.

3. The formal apparatus is laid out in Cover, T. M. and Thomas, J. A., *Elements of Information Theory*, 2nd ed., Wiley-Interscience, 2006. ISBN 978-0-471-24195-9.

4. The HDI is used here as the most visible example, but practically no composite index with the same vocation is immune to this problem. The « beyond GDP » movement, for all its intellectual merits, has largely become an exercise in appending whichever non-GDP indicators happen to be available, without asking whether the resulting composite still carries informational value. The proliferation of indices has not solved the underlying measurement problem. If anything, it has compounded it: more indices measuring overlapping dimensions of convergence, each producing the same predictable rankings, each generating the same headlines. The issue that emerges is far more concerning than redundancy among components. It is redundancy of the entire enterprise.

5. Over the past five years of working on composite indices, one joke kept resurfacing whenever rankings were presented: « How Scandinavian are you? », in reference to the fact that the top positions were occupied, year after year, by the same Nordic and Northern European countries. As if the index had reduced itself to a kind of barometer that, in binary terms, simply sorted the world into two categories: *Scandinavian* and *Not Scandinavian*.

6. UNDP, *Human Development Report 2025*, Statistical Annex, Table 2: « Human Development Index Trends, 1990–2023 ». Values recalculated using consistent methodology across all years.

7. McGillivray, M., « The Human Development Index: Yet Another Redundant Composite Development Indicator? », *World Development*, vol. 19, no. 10, pp. 1461–1468, 1991; Ravallion, M., « Mashup Indices of Development », *World Bank Research Observer*, vol. 27, no. 1, pp. 1–32, 2012. On rank robustness, see Cherchye, L., Ooghe, E., and Van Puyenbroeck, T., « Robust Human Development Rankings », *Journal of Economic Inequality*, vol. 6, pp. 287–321, 2008.

8. Htitich, M., Harmá■ek, J., and Krylova, P., « The Evolving "Importance" of Social and Governance Measures Over Time », *Global Policy*, vol. 16, pp. 1021–1038, 2025.

9. *State capacity*, as defined by the Berggruen Governance Index (BGI), combines three sub-dimensions: fiscal capacity, coordination capacity, and delivery capacity. *Democratic accountability* integrates institutional accountability, electoral accountability, and societal accountability. See Anheier, H. K., Lang, M., and Knudsen, E. L., « Introducing the Berggruen Governance Index I », *Global Policy*, vol. 14, Suppl. 4, pp. 5–15, 2023.

10. These governance dimensions are measured through the Varieties of Democracy (V-Dem) project and the Worldwide Governance Indicators. See Coppedge, M. et al., *Varieties of Democracy: Measuring Two Centuries of Political Change*, Cambridge University Press, 2020; Freedom House, *Freedom in the World 2021: Democracy Under Siege*, 2021.

11. For the full regional analysis, see Htitich, Harmá■ek, and Krylova (2025), Section 4.3 and Figure 5.

12. The one exception is South Asia, where all dimensions retain a similar degree of unpredictability — but this reflects not balanced progress, rather balanced stagnation, where countries struggle to converge on any dimension. See Section 4.3 and Figure 5 in Htitich, Harmá■ek & Krylova (2025).

13. Little, A. T. and Meng, A., « Measuring Democratic Backsliding », *PS: Political Science and Politics*, vol. 57, no. 2, pp. 149–161, 2024. See also Weidmann, N. B., « Recent Events and the Coding of Cross-National Indicators », *Comparative Political Studies*, vol. 57, no. 6, pp. 921–937, 2024.

14. Knutsen, C. H. et al., « Conceptual and Measurement Issues in Assessing Democratic Backsliding », *PS: Political Science & Politics*, vol. 57, no. 2, pp. 162–177, 2024.

15. Freedom House reports a 19th consecutive year of decline in global freedom (*Freedom in the World 2025*); International IDEA records a 9th consecutive year in which more countries deteriorated than improved — the longest such streak since records began in 1975 (*Global State of Democracy 2025*). Of 173 countries assessed, 94 experienced democratic declines while only 55 recorded improvements. Yet the picture is not uniform decline — it is bifurcation: while democratic erosion deepens in countries such as Hungary, El Salvador, Nicaragua, and Georgia, others including Poland, Brazil, Zambia, and Senegal have begun paths of democratic recovery.

16. The context was a course on survey methodology. In stratified sampling, best practice dictates allocating more observations to the strata with the highest variance — this is the Neyman optimal allocation principle. If you want to measure poverty precisely, you oversample the poorest households, because that is where outcomes differ most and where equal-sized samples would waste precision. The analogy to composite indices is direct: allocate analytical attention — weight — where the signal is strongest, not where it has already gone quiet.

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