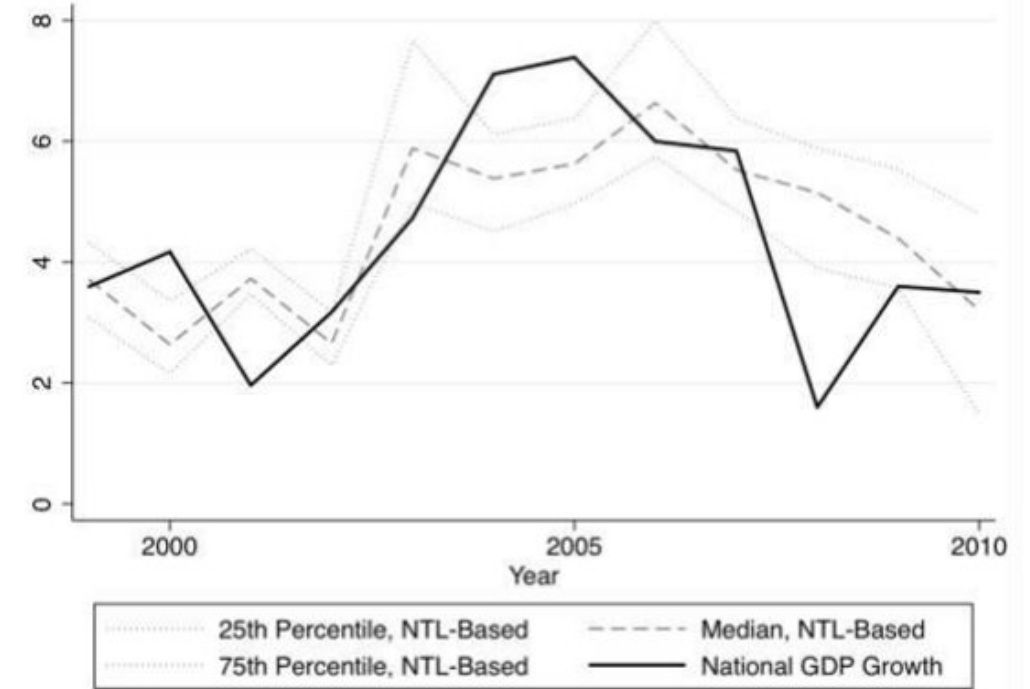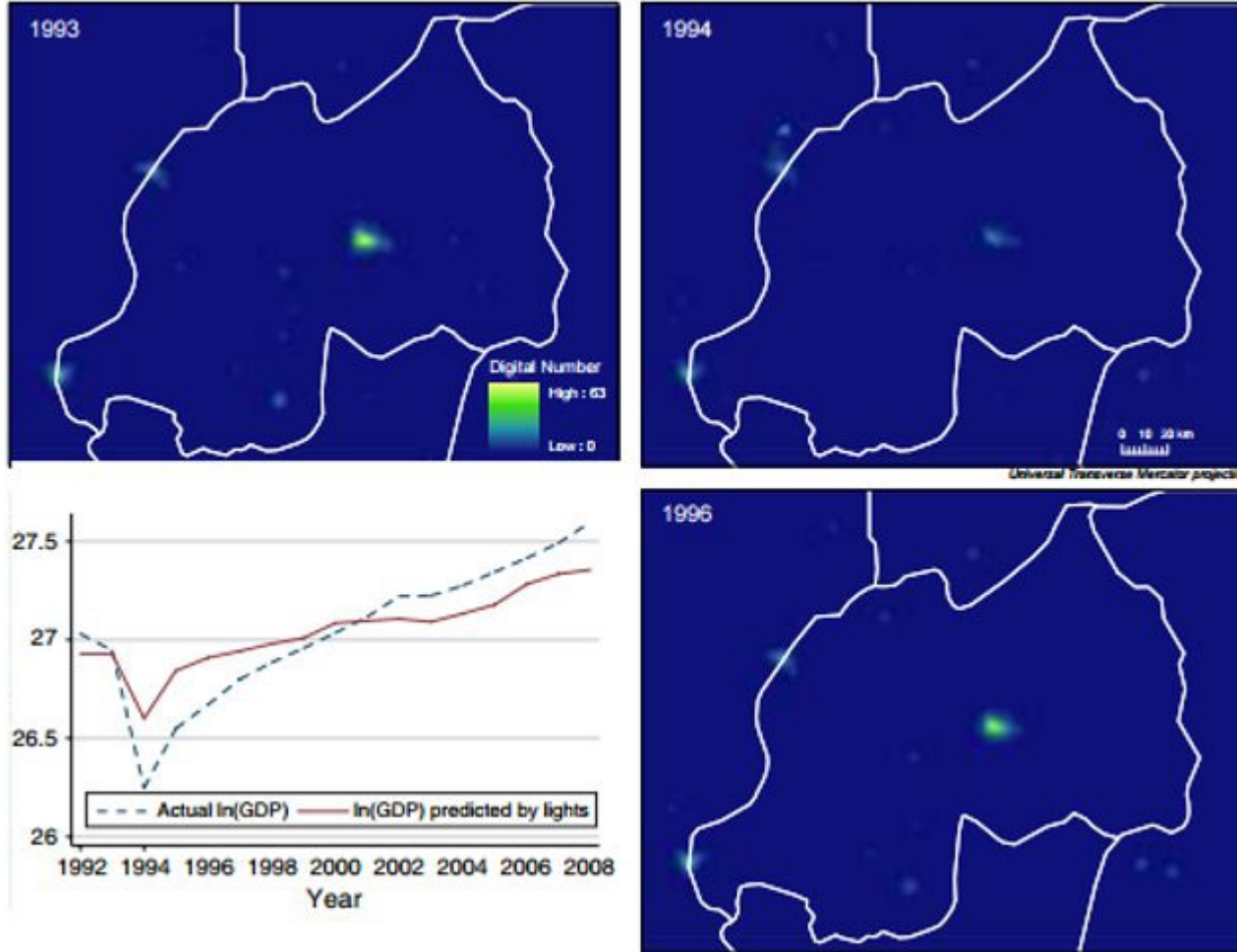# How Much Should We Trust the Dictator's GDP Growth Estimates?

Discussion

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# Using high spatial resolution data for economic analysis and policy design



Rwandan Genocide; Source: Henderson et al., American
Economic Review 2012, 102(2): 994-1028



Pakistan: Comparison of Night Lights Growth
with National GDP Growth

# Some measurement challenges

- **Overglow** - blooming, dispersion of light due to atmospheric conditions like presence of water vapor, which result in **overestimation of total lit area**.
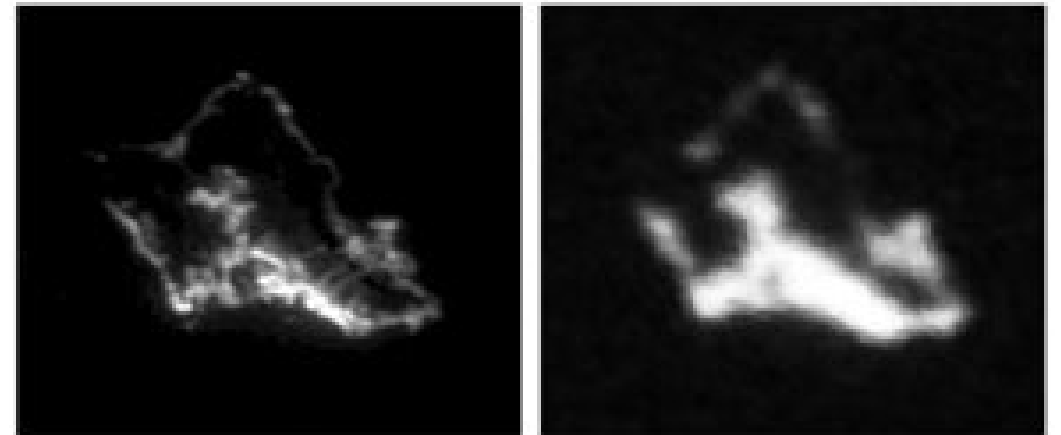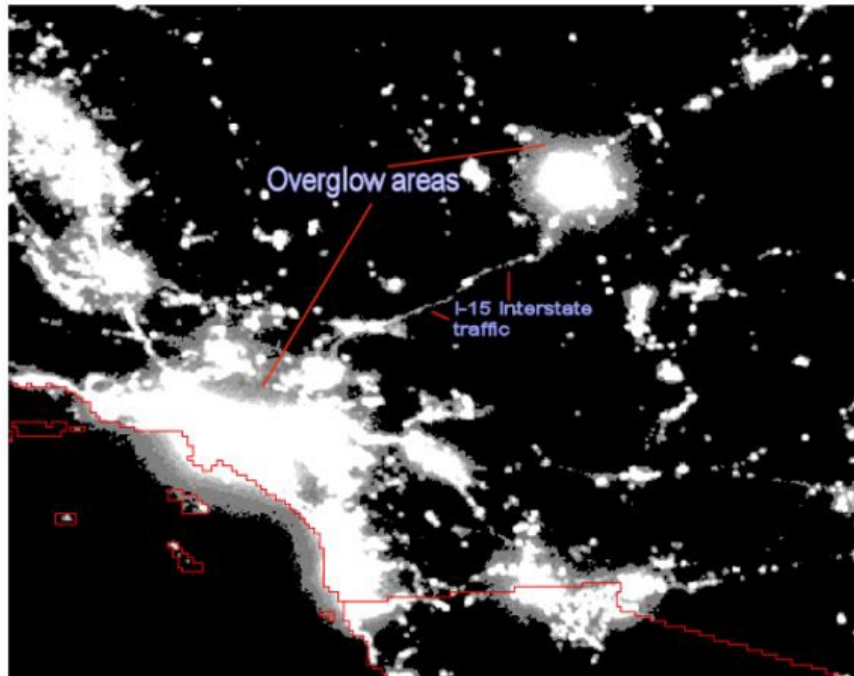
# What do we learn from the paper?

- Dictators manipulate and exaggerate how well their economies are doing.
  - Is it the case ? Yes, autocracies overstate yearly GDP growth by 35%.
  - How? By manipulating investment and public expenditure figures
- Martinez provides a battery of tests to support/test the key finding
  - Gaps between GDP and NTL due to governance and limited independence of statistical authorities.
- Insightful paper feeding our priors..
  - Erdogan fires statistics chief after inflation data shows 19-year high
  - In India, changes in data sources and methodology in 2011 -- > overestimation of annual growth by 2.5 growth between 2011 and 2012 and 2016 and 2017 (Subramanian 2019)
  - Some LICs underreport economic growth to maintain foreign assistance (Kerner, Jerven, and Beatty 2017)
- But do authoritarian regimes systematically mismeasured GDP growth – or are we being swayed by a few highly publicized but nonrepresentative cases?

# Freedom House data tells us about Dictators – measured by political regimes

## Political regime, 2012

Based on the classification and assessment by Freedom House (2022). Free countries are understood here as political systems in which citizens have many political rights (free and fair elections, political pluralism and participation, functioning government) and civil liberties (freedoms of expression and association, rule of law, personal autonomy).

Our World in Data
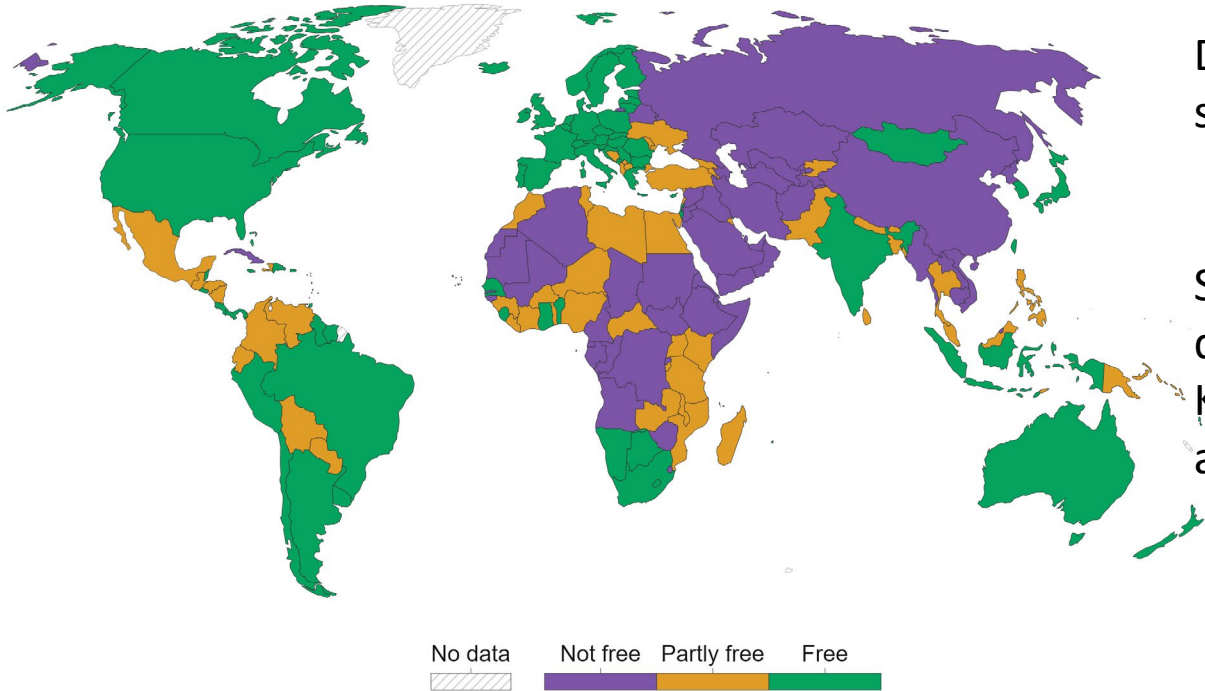
Detailed data – where country scores change over time

Some choices made in aggregating data: How do we reconcile Indian Kashmir and Pakistan Kashmir in the aggregated data?

| No data | Not free | Partly free | Free |

# Autocratic regimes tend to be more rural and agriculture based – economic activity not well measured by GDP?

Using Economic Freedom Index

Could be that (smallholder) agriculture is mismeasured in GDP ??

**Regression Results** (1995-2021 period; 182 countries)

|  | (1) |
| --- | --- |
| VARIABLES | efi |
| rural_pop | -0.0465*** |
|  | (0.00846) |
| forest | -0.000982 |
|  | (0.00519) |
| electricity | 0.0365*** |
|  | (0.00534) |
| gdp_pc | 0.000263*** |
|  | (8.57e-06) |
| Constant | 54.70*** |
|  | (0.758) |
|  |  |
| Observations | 3,887 |
| R-squared | 0.441 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

# Adding better measures of agriculture and price information...



Comparing GDP and Lights with and without Vegetation Index Controls

Panel A. No controls
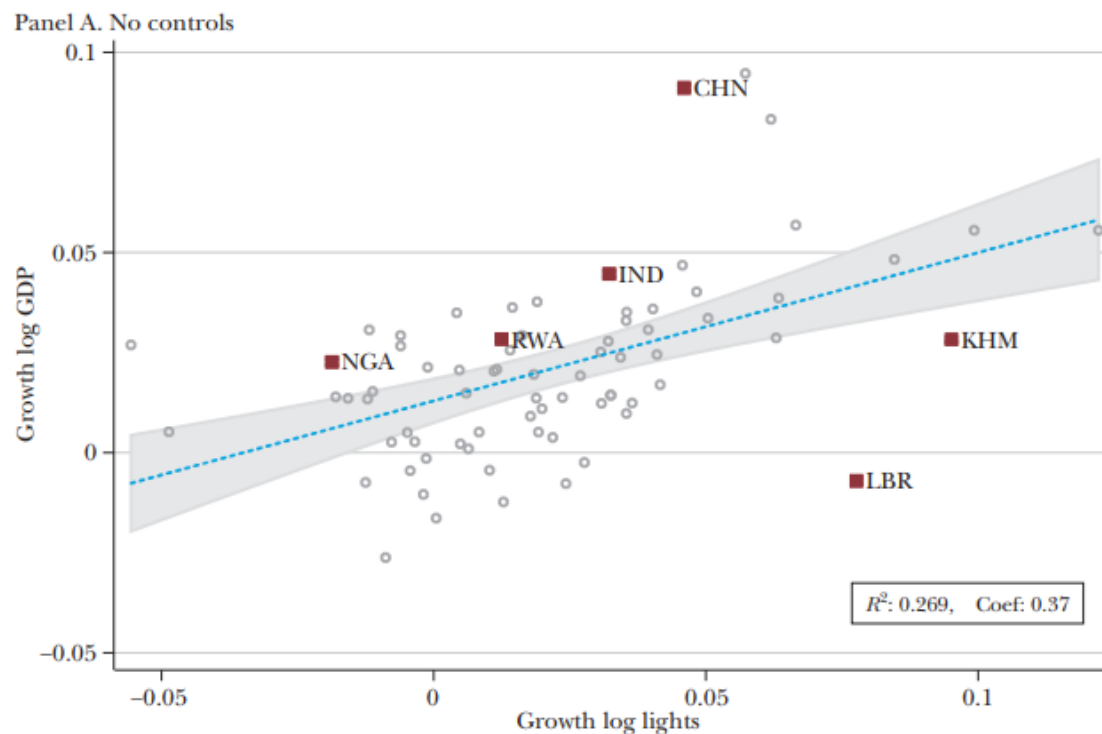
Panel B. Control for agricultural output and national accounts quality, capacity, and price information

Usual suspects don't look so bad after all

$R^2$: 0.269,  Coef: 0.37

$R^2$: 0.577,  Coef: 0.392

*Angrist, Goldberg, and Jolliffe 2021, JEP*
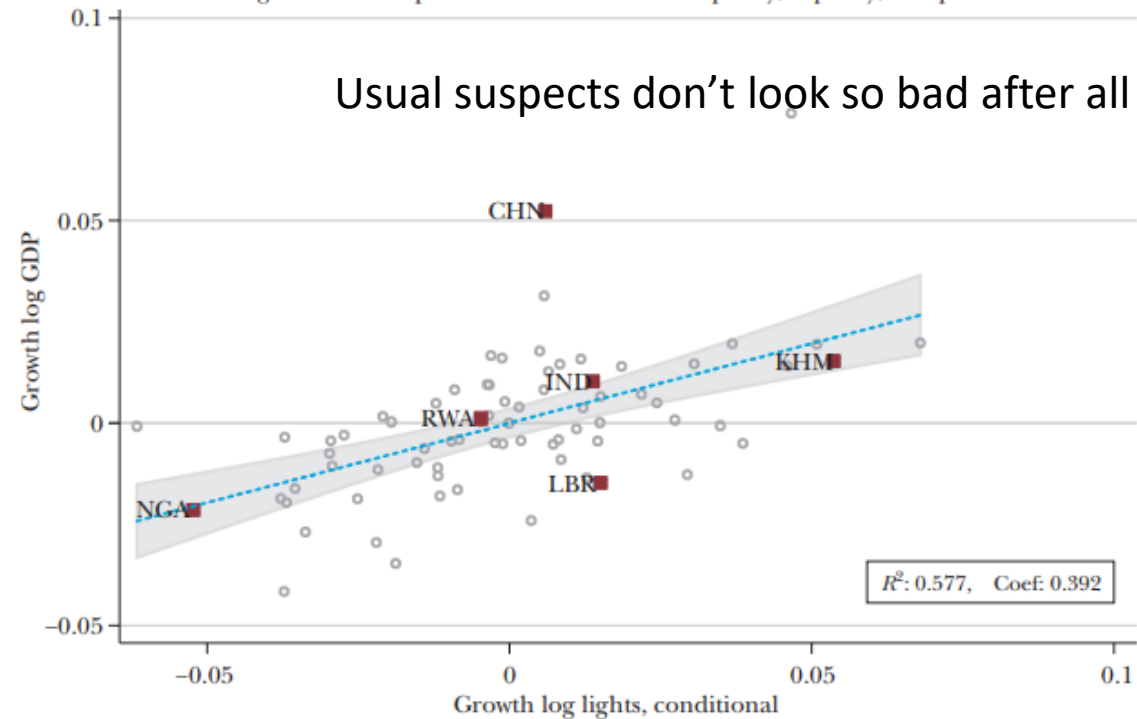
# Where do we see differences in growth estimates?

*Angrist, Goldberg, and Jolliffe 2021, JEP*



Figure 2
**Average Growth across Measures: GDP, Survey, and Lights**

Some oil rich countries ?
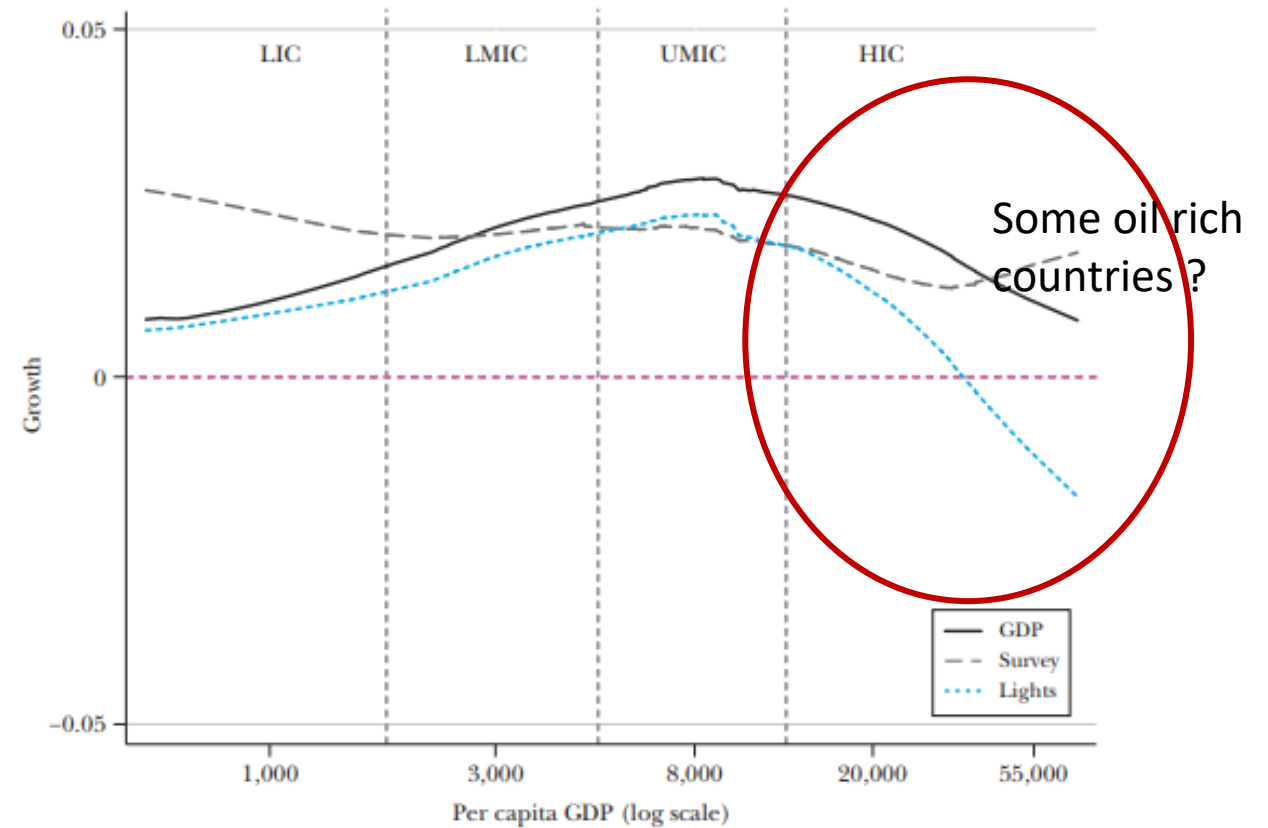
*Source:* Author calculations using data from the World Bank and NOAA.
*Note:* We run a LOWESS smoothed nonparametric regression of growth rates by income level on log GDP per capita terms. Each income category is labeled: LIC = Low-income country; LMIC = Lower-middle-income country; UMIC = Upper-middle-income country; HIC = High-income country. The categorization of countries is based on the current World Bank classification. For details of the calculations, including average growth rates for each measure and standard deviations across countries and over time, see the online Appendix.

# Is it manipulation or statistical capacity ?

- Opportunities to manipulate?

- Resources to manipulate?

Table 2

**Summary Statistics for Systems of National Accounts: Capacity, Quality, and Integrity**

| | Quality | | Capacity | | Integrity | | |
| | Revision | Monitoring and process | Data use | Resources | Statistical professional practice | No prior data access | Legal environment |
|---|---|---|---|---|---|---|---|
| High income | 0.92 | 1.00 | 1.00 | 0.88 | 1.00 | 1.00 | 0.96 |
| Upper-middle income | 0.96 | 0.96 | 1.00 | 0.71 | 0.96 | 0.83 | 0.92 |
| Lower-middle income | 0.95 | 1.00 | 0.75 | 0.65 | 0.95 | 0.95 | 0.85 |
| Low income | 0.80 | 0.90 | 0.60 | 0.30 | 1.00 | 0.90 | 1.00 |
| East Asia & Pacific | 0.86 | 1.00 | 1.00 | 0.71 | 1.00 | 1.00 | 1.00 |
| Europe & Central Asia | 0.97 | 0.97 | 1.00 | 0.80 | 0.97 | 0.97 | 0.97 |
| Latin America & Caribbean | 0.93 | 1.00 | 0.93 | 0.67 | 1.00 | 0.93 | 1.00 |
| Middle East & North Africa | 0.86 | 1.00 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| North America | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| South Asia | 1.00 | 1.00 | 0.50 | 0.75 | 1.00 | 1.00 | 0.50 |
| Sub-Saharan Africa | 0.87 | 0.93 | 0.67 | 0.40 | 1.00 | 0.80 | 0.87 |

*Note:* This table summarizes novel data compiled by the World Bank and IMF and aligned to the United Nations Fundamental Principles of Official Statistics. IMF staff routinely conduct in depth audits with countries around the world including visits to National Statistics Offices and joint review of data sources and process documentation. We group a subset of the indicators arising from these audits displayed in the left-hand column of online Appendix Table B1, available at the *JEP* website, to three high-level categories: Quality (indicators 4.3 and 0.4); Capacity (indicators 5.1 and 0.2); and Integrity (indicators 1.1, 1.2, and 0.1). Table B1 in the online Appendix includes more background on each indicator.

# Willful manipulation by Dictators or woeful capacity to measure stuff?

- Dictators messing with data – it confirms our priors

- But poor country Dictators may have statistical offices that are poorly staffed without much knowhow, have informality that is not easy to measure, and may have more smallholder agriculture in the economy.

- Rainfed agriculture is pretty volatile as well – and hard to measure in GDP stats

- Yes, Dictators may want to mess with data in general – but magnitude is likely to be less that what is reported in the paper.
    - Improving capabilities and governance in measuring and managing data can help produce better estimates.