

LIGHT IN THE DARKNESS

Satellite images reveal which countries cheat on their economic statistics

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The temptation is great for government officials to manipulate economic statistics. Foremost among them is gross domestic product, the most commonly used measure of a country's economy, which often serves as a proxy for a government's financial stewardship. In a free society, groups like the civil service, media, businesses, and opposition leaders serve as a check on the impulse to flatter GDP figures. In autocratic regimes, there are fewer barriers.

Turns out, there is an easy way to tell if a country's GDP is being artificially inflated. How easy? Just look at the night sky.

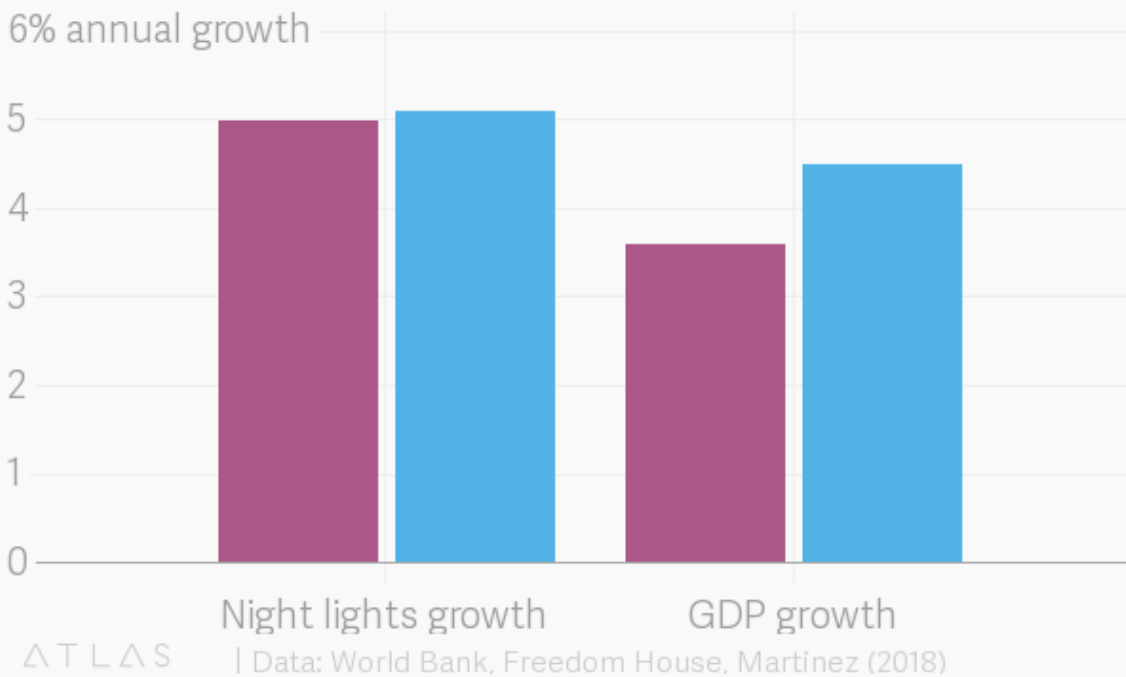
A large body of research shows that the brightness of a country's nighttime lights, as seen from satellites, is [highly correlated](#) with GDP growth. The more money people have, the more likely they are to have lights on at night. Businesses will also stay open later, resulting in even more light.

If autocrats are goosing GDP, then the reported growth in those countries should be higher than nighttime light data would suggest. This is exactly what the University of Chicago political scientist Luis Martinez found. In a recently released [working paper](#), Martinez finds that in countries with similar growth in nighttime brightness, the more autocratic regimes report higher GDP growth. His analysis examined the World Bank's GDP growth data, Freedom House's political freedom ratings, and satellite data from the US's National Oceanic and Atmospheric Administration from 1992 to 2008.

The following chart shows the average growth of nighttime light brightness and GDP for governments that Freedom House designates as “free” and “not free.” Notice that the growth in nighttime light is almost identical, while GDP growth is much larger for countries considered “not free.”

GDP growth verses nighttime lights growth, 1992-2008

■ "Free countries" ■ "Not free countries"



It is possible that the GDP disparity is down to something other than the nature of a country’s government. Perhaps there is some difference in satellite data across regions, or maybe autocratic regimes grow in a way that doesn’t generate as much light after dark. Martinez looked into these and other possibilities, and stands by his conclusion that it is governance that explains the disparity. On average, Martinez estimates that autocratic regimes inflate their GDP growth by 15-30%.

If Martinez is right, it would mean that some countries are substantially less wealthy than their reported statistics suggest. By the official statistics, the fastest-growing countries in the world from 1992 to 2005 were Myanmar and China, with both growing by about 120% over the period, or around 6.3% per year. After adjusting for possible manipulation using nighttime light data, Martinez suggest they only grew by around 90%, or 4.9% per year.

The study is part of the new field of “forensic economics.” Rather than just accepting government statistics at face value, researchers can use newly available streams of data, like those from satellite images, to double-check the data. For example, a 2013 study used prices from online retailers to argue that the Argentinian government was [manipulating inflation statistics](#) (pdf).

As more alternative data becomes available, it will be increasingly difficult for the manipulators of government statistics to get away with it.