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All That Glitters Is Not Gold: A Ranking of Global Rankings

ABSTRACT This paper examines the predictive power of different global rankings on country growth. An influential framework to shape policy decisions is to look at a specific global ranking and implement policies to reduce gaps with respect to best practices or the frontier. Using panel data regressions, we show that different rankings predict growth with quite dissimilar levels of success. Rankings with a focus on government effectiveness or, to a lesser extent, on globalization offer statistically significant and economically relevant guidance when we consider three-year-ahead growth. Others, usually presented as focused on competitiveness assessments, show zero correlation with future growth. When there are effects, they appear in trend, rather than cyclical, GDP and in foreign direct investment. Total factor productivity growth and exports do not change appreciably. We do not detect nonlinear effects.

JEL Codes: E02, O47, O50

Keywords: Growth, global rankings, competitiveness, structural reforms

Under an interpretation of "evidence-based policymaking," it is tempting to organize public policy efforts to improve growth using global indexes and rankings. Ultimately, by using granular data and comparing large sets of countries, these rankings are supposed to identify best practices, weak points, and areas of opportunity for reform. But the actual effects of changing what is measured are largely unknown. If a country has a low ranking in a specific area—say, resolving insolvency—what can be expected if it manages to pass legislation to improve the situation? More broadly, what can be expected in terms of growth if the country strives to improve its ranking?

In their growth diagnostics "mindbook," Hausmann, Klinger, and Wagner (2008) identify international rankings as one of three workhorses to guide

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policy.[1] They argue that the idea of comparing performance provides useful feedback to society and can engender valuable social conversations. However, they caution about interpreting rankings. These may not consider important information; the aggregation methodology could have large impacts and significantly alter results; and it is not obvious whether poor performance in a specific ranking is relevant for a country's main bottlenecks.

Despite their shortcomings, the relevance of rankings in the day-to-day public policy debate is difficult to match. Doshi, Kelley, and Simmons (2019) show that countries respond strategically to being publicly ranked, implementing reforms to improve their standing. They also show that professional investors change their country perceptions with these rankings. At least in Latin America, if there is one piece of economic information that makes it to the front page, it is the result of different cross-country economic rankings, especially if a country moves back a few places. A notable case is the discussion initiated by former World Bank chief economist Paul Romer in 2018 about a possibly unfair treatment of countries in the construction and updating of the Ease of Doing Business ranking, an allegation that produced enormous ripple effects.[2]

Even multilateral agencies use some of these rankings in their policy prescriptions. For example, many International Monetary Fund (IMF) Article IV consultation staff reports, when discussing the structural reform agenda with a country, use rankings to identify areas of potential improvement and changes in rankings as a measure of success.[3]

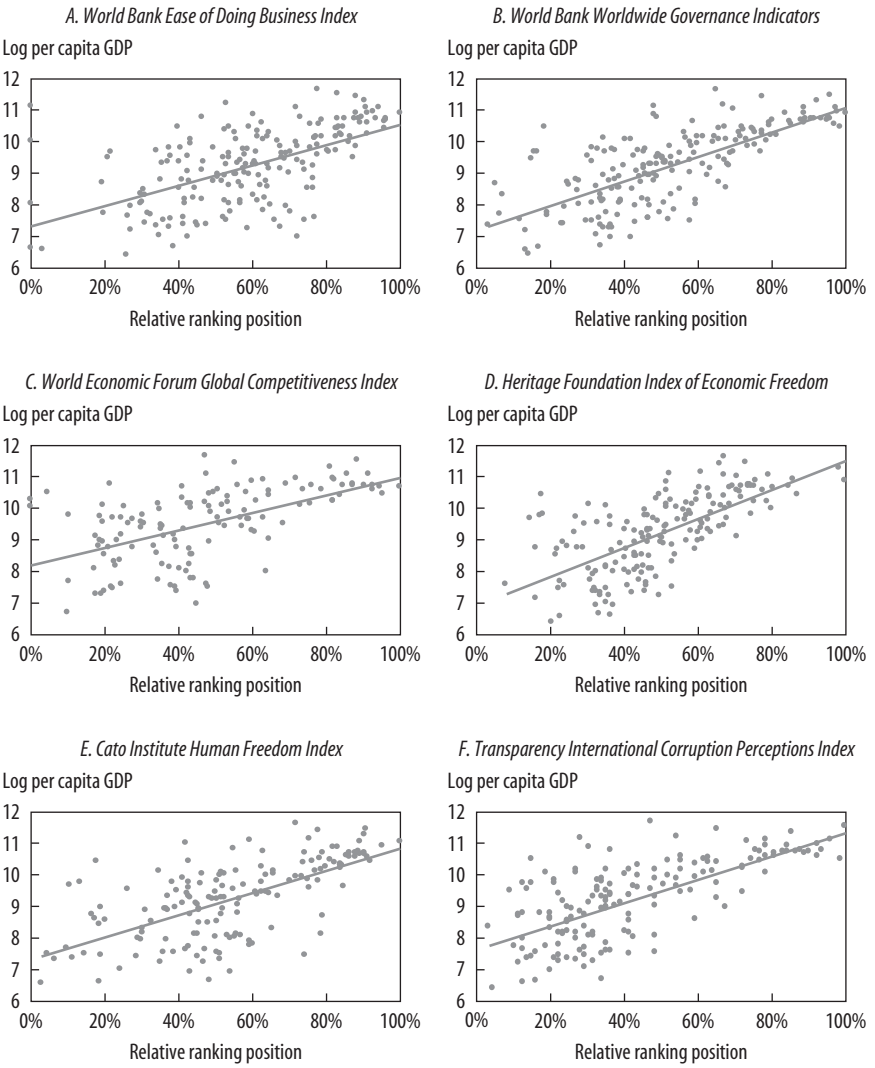
Besides their simplicity and attractive "competition feeling," global rankings have a very high correlation with country per capita income, which may explain the attention policymakers and the press pay to these indexes. Figure 1 presents scatter plots of different standardized rankings and (log) per capita GDP at purchasing power parity (PPP) in constant dollars circa 2016, confirming the very strong correlation.

1. McArthur and Sachs (2001) also offer this perspective.

2. See www.economist.com/finance-and-economics/2018/01/25/paul-romer-quits-after-an-embarrassing-row.

3. A random example from an IMF Article IV consultation: "Mauritius dropped seven places in the 2017 Doing Business rankings, driven largely by difficulties in starting a business. . . . The recently-adopted Business Facilitation Act is a welcome step to improve Mauritius' business environment. . . . Nevertheless, further reforms are necessary to meet emerging cost competitiveness challenges. . . . There is also a negative relationship between perceptions of corruption and global competitiveness rankings. This highlights the potential benefits for reinforcing anti-corruption measures." See IMF, "Mauritius: Staff Report for the 2017 Article IV Consultation," pp. 17–18.

FIGURE 1. Standardized Rankings and Per Capita GDP



Source: Based on data from World Bank Doing Business (https://www.doingbusiness.org/en/doingbusiness); Worldwide Governance Indicators (https://info.worldbank.org/governance/wgi/); World Economic Forum (https://www.weforum.org/reports); Heritage Foundation (https://www.heritage.org/international-economies/report/2017-index-economic-freedom-trade-and-prosperity-risk); Cato Institute (https://www.cato.org/human-freedom-index-new); and Transparency International (https://www.transparency.org/en/cpi#).

Note: Standardized rankings are measured as a relative ranking on a percentile scale, with zero being the lowest ranking and 100 the maximum. Log per capita GDP is at purchasing power parity (PPP) and constant dollars—2016 for the World Bank, World Economic Forum, and Heritage Foundation and 2014 for Transparency International and Cato Institute, due to data availability.

A simple cross-country regression of different relative rankings and per capita income yields an adjusted R^2 between 0.34 and 0.76 and a beta parameter between 1.7 and 3.6, with a very high statistical significance (see table A1 in the online appendix).[4] A naïve (and incorrect) interpretation would be that a 10 percent improvement in a specific ranking (about fifteen positions if there are 150 countries) would yield a higher GDP on the order of 20 to 35 percent. This may partly explain the relevance that the public debate attaches to these rankings. This interpretation is wrong, however, as there are severe problems of reverse causality. Some of the elements measured by the different rankings are institutional changes brought about by development (and not the other way around). A subtler problem is that some rankings depend on perceptions, which, in turn, change with income and growth or may precede them. Also, there are different ways to measure growth fundamentals, such as competitiveness or property rights protection. Another possibility is that rankings reward high-income or high-growth countries as a way to influence the policy agenda (see Doshi, Kelley, and Simmons, 2019). Or the measures could simply be noise, implying a problem not of reverse causality but of irrelevance. Irrespective of the reason, the association between global rankings and per capita GDP must be handled with extreme care.

The central question addressed in this paper is whether movement in a ranking has effects on (near) future growth. If a country improves its ranking on, say, the World Bank's Ease of Doing Business Index, what can be expected in the next three years? Ultimately, we are addressing the effect of the wide range of policy changes *as measured* by these rankings. Our main result is simple: only a handful of rankings (and specific ranking questions) have some predictive power with respect to future growth. Measures of globalization, government effectiveness, and rule of law appear to be the most relevant. Unsurprisingly, the economic growth literature identifies these areas as critical. Unexpectedly, however, shifts in the most emblematic rankings appear to have no statistical correlation with future GDP growth performance. This does not mean that rankings are irrelevant, as they may provide relevant granular information. Broad policy implications, however, must be handled with care.

We are not the first to study the relationship between global rankings and growth. Using the World Bank's Ease of Doing Business Index, Adepoju (2017) finds that this ranking does not affect growth in a broad sample of

4. Supplementary material for this paper is available online at http://economia.lacea.org/contents.htm.

countries, although there is a positive effect in a subsample of countries. However, he focuses on the contemporaneous relationship, which makes it difficult to disentangle causality. Ani (2015) finds similar results in a cross-sectional analysis, but again with the simultaneity issue of rankings and growth. Djankov, McLiesh, and Ramalho (2006) find a strong effect of the WBDB, although the result has the same simultaneity shortcoming. Potrafke (2014) studies the contribution of globalization in several economic dimensions using the KOF Globalization Index.

Our paper offers three main contributions. First, we analyze several rankings simultaneously, which allows us to present useful comparisons. Second, we study the effect of rankings on future rather than contemporaneous growth. Third, we explore nonlinearities and different transmission mechanisms that may exist from rankings to growth.[5]

The paper is organized as follows. The next section discusses the estimation strategy and the econometric challenges involved. We then present econometric results for headline rankings and for some ranking components. Later sections explore possible nonlinearities in the predictive power of rankings, some potential transmission channels, and rule of law as a subcomponent of some of the rankings. The final section presents some concluding remarks.

Methodology and Data

We consider a simple empirical approach inspired by the standard growth literature, in which GDP growth is explained by fundamentals—such as rule of law, human capital, and so forth—and possibly by (conditional) convergence toward a country-specific steady state. There are other useful approaches to analyze growth, for example, temporary accelerations and long-run trends (Rodrik, 2005). While a ranking improvement could arguably be more closely related to growth spurts than to sustained growth, we are limited to the more standard approach by the availability of ranking data.

Specifically, we consider here that a vector of global rankings information $\mathbf{X}_{i,t}$ in country i and year t would influence growth as follows:

$$\Delta Y_{i,t+s,t+s+p} = \alpha_i + \alpha_t + \beta \mathbf{X}_{i,t} + \gamma Y_{i,t-1} + e_{i,t},$$

5. Corcoran and Gillanders (2015) study the relationship between World Bank Ease of Doing Business Index and foreign direct investment.

where $\Delta Y_{i,t+s,t+s+p}$ is growth in country i between $t + s$ and $t + s + p$; α_t is a possibly time-varying constant; α_i is a country-specific fixed effect; $Y_{i,t-1}$ is the per capita GDP level in country i in period $t - 1$; β and γ are parameters; and $e_{i,t}$ is a well-behaved disturbance. Finally, $\mathbf{X}_{i,t}$ may also include growth fundamentals in addition to global rankings, though our focus is on the latter.

The empirical growth literature typically measures growth in nonoverlapping five-year periods, with data spanning forty years or more. Also, in that literature, growth is usually explained by contemporaneous fundamentals (that is, they belong to the same five-year period). We have only an average of fifteen years for all rankings, and even less for those that appear in the press more often. This forces us to consider shorter, overlapping periods. Because overlapping periods mechanically induce serially correlated disturbances, we report robust standard errors.

As our base case, we consider average per capita GDP growth in the following three years, a horizon that seems relevant from a practical policy perspective. To contrast results, we also estimate contemporaneous growth, growth in period $t + 1$, and average growth between $t + 1$ and $t - 5$. We consider alternative specifications to evaluate the robustness of our results. Specifically, in addition to growth, we consider a country's relative GDP distance to the world frontier (defined as U.S. per capita GDP) and include different controls. We also discuss a rank-rank specification, whereby we try to explain a country's future relative growth ranking with the different relative global rankings.

For $Y_{i,t}$, we use data on per capita GDP at PPP in constant dollars from the IMF's World Economic Outlook. This allows us to use more recent global rankings, as it includes growth forecasts for the next few years. For reference, in the entire sample, median growth is 2.2 percent per year, and the interquartile range is 3.8 percent.

We consider eight different global rankings. They all encompass several inputs, though we do not directly observe these in all cases. When a particular ranking shows some predictive power on growth, we also investigate the relevance of that ranking's subcomponents (insofar as we have access to the data). Table 1 lists the rankings and the available number of countries and years. As the number of countries varies within rankings, all regressions are based on unbalanced panels.

The behavior of standardized rankings is far from homogeneous. The simple pairwise correlation for the common sample and for a specific year (2014) shows several pairs quite far apart (table 2). This suggests that some rankings may be more valuable than others for the purpose of signaling growth.

TABLE 1. Global Rankings Description

Institution	*Index*	*N, T*	*Description*	*Subcomponents*
World Bank	Ease of Doing Business Index (WBDB)	188, 15	Calculation of distance to frontier in ten categories, each one based on a combination of survey (multiple questions) and hard data.	Starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency.
World Bank	Worldwide Governance Indicators (WBGI)	191, 18	Six dimensions based on over 30 individual data sources aggregated through principal components analysis. We calculate the simple average of the six indicators.	Voice and accountability, control of corruption, government effectiveness, political stability, regulatory quality, and rule of law.
World Economic Forum	Global Competitiveness Index (WEF)	152, 11	Aggregation of 199 indicators in 12 subcategories.	Institutions, appropriate infrastructure, stable macroeconomic framework, good health and primary education, higher education and training, efficient goods markets, efficient labor markets, developed financial markets, ability to harness existing technology, market size, production sophistication, and innovation.
IMD World Competitiveness Center	World Competitiveness Ranking (IMD)	63, 19	Benchmarks economic performance based on over 340 criteria related to competitiveness.	
Heritage Foundation	Index of Economic Freedom (HER)	180, 21	Economic freedom based on 12 qualitative and quantitative indicators.	Property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom.
Cato Institute	Human Freedom Index (CATO)	158, 6	The state of human freedom based on 80 indicators that encompass personal, civil, and economic freedom.	Rule of law; security and safety; movement; religion; association, assembly, and civil society; expression and information; identity and relationships; size of government; legal system and property rights; access to sound money; freedom to trade internationally; and regulation of credit, labor, and business.
Transparency International	Corruption Perceptions Index (CORR)	173, 12	Aggregation of 13 surveys or assessments, with a minimum of 3 per country, of experts and business executives regarding the number of corrupt behaviors in the public sector.	
KOF Swiss Economic Institute	KOF Globalization Index (KOF)	185, 24	Composed of 23 variables in 3 different subindexes. The weighting technique is based on principal components analysis. Missing values of individual variables are often inter- and extrapolated.	Economic globalization (flows and restrictions), political globalization (personal, informational, and cultural), and social globalization.

Note: *N*, number of countries; *T*, number of years of the ranking used.

TABLE 2. Standardized Rankings Correlations

Ranking	*WBDB*	*WBGI*	*WEF*	*HER*	*KOF*	*CATO*	*CORR*	*IMD*
WBDB	1.00	0.85	0.80	0.83	0.72	0.85	0.82	0.66
WBGI	0.82	1.00	0.75	0.87	0.70	0.87	0.93	0.71
WEF	0.82	0.78	1.00	0.71	0.77	0.72	0.77	0.83
HER	0.80	0.82	0.73	1.00	0.77	0.83	0.86	0.78
KOF	0.71	0.70	0.80	0.72	1.00	0.80	0.73	0.61
CATO	0.77	0.86	0.65	0.77	0.75	1.00	0.80	0.61
CORR	0.78	0.91	0.80	0.77	0.70	0.75	1.00	0.84
IMD	0.67	0.70	0.87	0.73	0.60	0.50	0.81	1.00

Note: Above diagonal, correlations in 2008; below diagonal, full sample correlations. See table 1 for information on the rankings.

Behind headline rankings, there are country-specific scores. For instance, the World Bank's Ease of Doing Business Index (WBDB) calculates a "distance to the frontier" that compares actual and best practice, and the World Economic Forum's Global Competitiveness Index (WEF) combines a large number of indicators and arrives at an overall grade. Insofar as these scores are comparable across time, it would be best to use them directly instead of using a simple ranking. Unfortunately, these scores are seldom comparable throughout each specific sample, since methodological changes and the creation of new subindicators are rather common.

Alternatively, using the headline ranking or absolute position has two shortcomings. First, it provides information only on the order, not on the intensity of country differences and changes. Second, the entry or exit of countries in a ranking produces changes that are irrelevant (that is, measurement error) and possibly biases the results.

To overcome these problems, and because we observe the specific score $D_{i,t}$ (except for IMD, where we observe only the ranking), we construct $\mathbf{X}_{i,t}$ for the above equation as a standardized score or distance to frontier between 0 and 1. Specifically,

$$\mathbf{X}_{i,t} = \left(D_{i,t} - min_t\left\{D_{i,t}\right\}\right) \Big/ \left(max_t\left\{D_{i,t}\right\} - min_t\left\{D_{i,t}\right\}\right),$$

where $D_{i,t}$ is the score for country i in year t.

The empirical growth literature highlights three distinctive econometric issues that we need to consider here. None of them have fully satisfying solutions, or at least a cost-free solution in terms of generating other challenges. First, there is likely endogeneity. As the growth literature has long recognized, some of the aspects measured by rankings could be consequences

of development, rather than the other way around. The literature offers two broad solutions to address endogeneity: using lags of the same fundamentals as instruments (for example, Barro, 2015) or finding clever but always scarce external instruments (for example, Acemoglu, Johnson, and Robinson, 2001). In our case, the rankings may be affected not only by income level but also by short-term growth, especially if a ranking "chases" successful countries.

We tackle this issue by using lagged fundamentals directly and looking at outer, not contemporaneous, growth. The question we want to answer is this: what is the effect of today's ranking of distance-to-frontier scores on future growth? Critically, to the extent that simultaneity would result in econometric results showing that fundamentals influence growth more than is actually the case, finding no effect can be interpreted in an uncontroversial way.

Regressions explaining current standardized ranking scores with contemporaneous and past growth shed some light on the extent of this potential simultaneity problem (table 3). The results suggest that standardized ranking scores are strongly associated not only with GDP levels but also with current GDP growth in all rankings. However, lagged GDP growth appears to consistently influence current rankings in the case of the IMD World Competitiveness Ranking (IMD). The World Bank's Worldwide Governance Indicators (WBGI) ranking has a small correlation with one-year lagged growth, though the coefficient is barely statistically significant and quite small: an additional 1 percent growth would move future rankings by less than 0.031 percent (table 3, panel A), which is less than one-third of one position in a 100-country ranking.

Simple Granger causality tests shed further light on the potential endogeneity issue (table 4).[6] At a 5 percent confidence level, growth Granger-causes both the WEF and IMD indexes, while the WBDB, WBGI, KOF, and IMD indexes Granger-cause growth. In principle, endogeneity would be more problematic for the WEF and IMD.

The second econometric challenge we face is the usual problem arising from the inclusion of a lagged dependent variable in a dynamic panel, which yields inconsistent ordinary least squares (OLS) estimates. One possibility would be to simply exclude lagged GDP from the regressions. In fact, in this paper we are not particularly interested in the convergence parameter (and its direct effect on growth is not very relevant for the horizon we are analyzing). Moreover, because of the short span of the available data,

6. We thank one of the referees for this.

TABLE 3. Explaining Ranking DTF Scores with GDP

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
A. Lag of up to two years (t, t – 1, t – 2)								
GDP growth (*t*)	0.094*	0.123***	–0.560***	0.071*	0.051***	0.131***	0.087***	0.386***
	(0.050)	(0.019)	(0.025)	(0.039)	(0.019)	(0.046)	(0.028)	(0.128)
GDP growth (*t* – 1)	–0.123***	0.031*	0.038	–0.026	0.018	–0.079	–0.037*	0.653***
	(0.046)	(0.017)	(0.044)	(0.036)	(0.017)	(0.050)	(0.021)	(0.150)
GDP growth (*t* – 2)	–0.063	0.025	0.027	0.030	0.040**	–0.045	–0.002	0.526***
	(0.050)	(0.019)	(0.033)	(0.043)	(0.015)	(0.039)	(0.021)	(0.102)
Lagged GDP level (log)	0.201***	0.079***	–0.125***	0.121***	0.059*	0.145***	0.111***	0.211***
	(0.050)	(0.016)	(0.026)	(0.026)	(0.026)	(0.043)	(0.022)	(0.057)
No. observations	2,576	3,311	1,508	3,601	3,874	912	3,026	1,024
R^2	0.468	0.306	0.189	0.388	0.334	0.122	0.494	0.256
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Lag of up to three years (t, t – 1, t – 2, t – 3)								
GDP growth (*t*)	0.099	0.123***	–0.56***	0.071*	0.051***	0.131***	0.087***	0.386***
	(0.050)	(0.019)	(0.025)	(0.039)	(0.019)	(0.046)	(0.028)	(0.128)
GDP growth (*t* – 1)	–0.115**	0.029*	0.050	–0.038	0.008	–0.078	–0.034*	0.698***
	(0.049)	(0.017)	(0.051)	(0.034)	(0.016)	(0.049)	(0.021)	(0.150)
GDP growth (*t* – 2)	–0.091*	0.028	0.033	0.006	0.029*	–0.047	–0.003	0.431***
	(0.048)	(0.020)	(0.039)	(0.036)	(0.016)	(0.043)	(0.021)	(0.088)
GDP growth (*t* – 3)	–0.064	0.017	0.028	0.102***	0.025*	–0.014	–0.028	0.339***
	(0.043)	(0.014)	(0.034)	(0.020)	(0.014)	(0.047)	(0.025)	(0.110)
Lagged GDP level (log)	0.213***	0.080***	–0.128***	0.113***	0.051**	0.147***	0.113***	0.189***
	(0.051)	(0.015)	(0.027)	(0.026)	(0.025)	(0.045)	(0.022)	(0.057)
No. observations	2,573	3,298	1,508	3,591	3,691	912	3,020	1,024
R^2	0.475	0.313	0.190	0.395	0.349	0.123	0.496	0.265
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Notes: DTF, distance to frontier. The dependent variable is standardized DTF. Robust standard errors are in parentheses.

TABLE 4. DTF Scores and GDP Growth: Granger Causality Tests

Ranking index	*DTF causes GDP growth (1)*	*GDP growth causes DTF (2)*	*No. observations (3)*
WBDB DTF score	0.008	0.147	2,199
WBGI	0.006	0.071	2,437
WEF	0.320	0.006	1,184
HER	0.811	0.059	3,241
KOF	0.006	0.220	4,047
CATO	0.888	0.691	456
CORR	0.250	0.054	2,595
IMD	0.044	0.000	854

Note: DTF, distance to frontier. Columns 1 and 2 present *F* test *p* values, considering two lags of the corresponding variable.

fixed effects should take care of most of the problem. However, given the combination of a high correlation between ranking results and GDP level (see figure 1) and the existence of conditional convergence (say, the so-called iron law of 2 percent), not controlling for GDP level would bias the rankings parameter upward. We thus need to include this lagged variable.

Finally, the third issue we face is that of not controlling for all relevant country characteristics that could correlate with the rankings and thus bias the results. We discuss this issue further below.

This brings us to the estimation procedure choice. As explained by Barro (2015), there is no perfect solution to these problems. On the one hand, if the object of interest is the convergence rate, fixed-effects estimates (as well as Arellano-Bond estimates) are probably a bad choice, as they overestimate the convergence rate by a significant margin in relatively short samples, as per Monte Carlo experiments. On the other hand, simple OLS with time fixed effects would yield a truer convergence parameter, but it would tend to produce higher and more significant fundamental parameters, reflecting this omitted cross-country variation. Precisely because of this problem, Acemoglu and others (2005, 2008) prefer fixed effects, which use the within-country variation of fundamentals as the only source of identification.

Insofar as Barro's (2015) Monte Carlo exercises suggest that fixed effects do not produce particularly large biases for right-hand-side variables other than the lagged GDP level, we prefer this method here. In addition, standard exclusion regression tests point to significant country fixed effects. Moreover, to a large extent, this method is a more demanding hurdle for rankings.

For the estimation method to have power, we need within-country variation of our standardized ranking score; if all variation were between countries, we would not be able to identify effects. Of the overall variation, however,

within-country variation ranges from 0.20 (WBGI, WEF, and CATO) to 0.45 (Heritage Foundation Index of Economic Freedom [HER] and WBDB).

Aggregate Ranking Results

We first analyze one ranking at a time, with its own available sample, and focus on average growth between $t + 1$ and $t + 3$ (and the ranking observed in year t). Standard tests indicate that in all cases, the most appropriate estimation should include country fixed effects and time dummy variables (table 5). We are thus identifying the effects of rankings based on within-country variations. As discussed above, the likely ranking endogeneity is dealt with by using rankings observed in t and the GDP level in $t - 1$ to explain growth in outer years.

The results reveal significant heterogeneity across rankings.[7] The WBDB, WBGI, KOF, and Corruption Perceptions Index (CORR) yield statistically significant coefficients measured in the standard manner (at different significance levels, with WBGI the highest, followed by KOF). We also present adjusted p values to take into account the possibility of false discoveries, following Benjamini and Hochberg (1995). We prefer this method as we would like to raise the bar for those rankings that appear most significant without curtailing the chances of those that appear less statistically relevant (as would be the case with the Bonferroni method). After this adjustment, only the WBGI remains statistically significant (still at 1 percent).

Although the results could be influenced by data availability, many of the rankings basically convey zero information in the metric we consider here. Of course, there is always the possibility that these rankings have effects at other horizons, which we explore below.

To have an idea of the economic relevance of the estimated parameters, consider that the rankings cover between 60 and 180 countries (approximately). In a sample of 150 countries with a uniform distribution, a parameter of 10 implies that moving fifteen positions (10 percent) closer to the frontier would correlate with about 0.1 percent of higher growth. Changes in both the WBGI and KOF rankings imply economically relevant effects.

These results could reflect a problem of omitted variables. We thus also estimate our baseline specification adding a couple of standard determinants

7. The fragility of cross-country growth regressions is a well documented issue. See, for example, Levine and Renelt (1992).

identified in the empirical growth literature, namely, growth of the terms of trade in periods $t + 1$ to $t + 3$ and the ratio of investment to GDP in period t (see table A2 in the appendix). The main result is that the relevance of the WBGI remains intact. KOF Globalization, however, loses significance. If we control for education and rule of law, we unfortunately lose too many observations (as rankings are fairly recent, whereas standard determinants have lags). The main results are also robust to controlling for China's growth (table A3).

More broadly, it is not evident that controlling for too many country characteristics is appropriate, as rankings are supposed to measure these exact same characteristics. Ultimately, our aim is to evaluate whether rankings contain information, not whether they compete with fundamentals.

We also evaluate two other left-hand-side variables to check robustness. First, we consider the rank-rank specification mentioned earlier, whereby we try to explain a country's future relative growth ranking with the different relative global rankings. We construct a ranking score for GDP growth between periods $t + 1$ and $t + 3$ (in the same way we measure index ranking scores). The results show, again, that the WBGI is the most robust, while the KOF remains statistically significant if measured conventionally or with false-discovery-corrected p values (table 6). This specification is useful in terms of interpretation: the 0.285 coefficient for the WBGI implies that falling ten places in the relative ranking would correlate with a drop of nearly three places in the growth ranking (assuming a uniform distribution).

The second left-hand-side variable that we consider measures a country's distance to a frontier GDP (namely, U.S. per capita GDP). The results remain practically unchanged in terms of which rankings are statistically relevant with conventional tests (table A4).

The results do change substantially, however, if we consider contemporaneous growth as the dependent variable (table A5, panel A). Specifically, in this case both the WEF and IMD competitiveness rankings, as well as the CORR corruption index, become large and very significant, while the WBGI doubles. This is largely in line with the results of the reverse regressions discussed above. In contrast, when we consider average growth five years out (table A5, panel C), the results are quite similar to the baseline case, though with somewhat smaller and less significant coefficients. Only the WBGI and KOF indexes remain relevant. When we consider only $t + 1$ growth (panel B), the HER and CATO coefficients are still not significantly different from zero, whereas the IMD and WEF coefficients become statistically significant (in contrast to the results based on longer growth horizons).

TABLE 5. Ranking Specific Results

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
WBDB	1.815*							
	(1.055)							
	[0.174]							
WBGI		12.670***						
		(3.406)						
		[0.002]***						
WEF			−3.844					
			(2.372)					
			[0.172]					
HER				2.224				
				(2.515)				
				[0.432]				
KOF					5.041**			
					(2.506)			
					[0.182]			
CATO						1.880		
						(2.265)		
						[0.408]		
CORR							2.434*	
							(1.356)	
							[0.198]	
IMD								1.273
								(0.886)
								[0.208]
Lagged GDP (log)	−0.127***	−0.120***	−0.097***	−0.078***	−0.032***	−0.191***	−0.084***	−0.063***
	(0.016)	(0.022)	(0.011)	(0.019)	(0.010)	(0.032)	(0.010)	(0.014)
Constant	1.178***	1.059***	0.958***	0.737***	0.292***	1.773***	0.799***	0.658***
	(0.147)	(0.191)	(0.112)	(0.163)	(0.091)	(0.304)	(0.098)	(0.148)
No. observations	2,575	3,328	1,508	3,612	4,383	910	3,030	1,024
R^2	0.312	0.341	0.168	0.222	0.145	0.276	0.251	0.350
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hausman random effects	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Country effects *F* test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Time effects LM test	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times$ 100). Robust standard errors are in parentheses; in brackets, transformed p values of the Benjamini-Hochberg procedure for multiple testing and model specification tests.

TABLE 6. Explaining Growth Ranking

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
WBDB	0.048							
	(0.033)							
	[0.198]							
WBGI		0.285***						
		(0.072)						
		[0.001]***						
WEF			–0.131*					
			(0.073)					
			[0.201]					
HER				0.074				
				(0.066)				
				[0.303]				
KOF					0.140**			
					(0.055)			
					[0.046]**			
CATO						0.055		
						(0.070)		
						[0.435]		
CORR							0.061	
							(0.040)	
							[0.211]	
IMD								0.046
								(0.028)
								[0.21]
Lagged GDP (log)	–0.374***	–0.248***	–0.327***	–0.155***	–0.060***	–0.572***	–0.209***	–0.152***
	(0.048)	(0.034)	(0.046)	(0.042)	(0.017)	(0.100)	(0.033)	(0.044)
Constant	3.689***	2.441***	3.593***	1.827***	0.825***	5.879***	2.364***	1.954***
	(0.437)	(0.294)	(0.442)	(0.362)	(0.147)	(0.937)	(0.308)	(0.447)
No. observations	2,575	3,328	1,508	3,612	4,383	910	3,030	1,024
R^2	0.802	0.825	0.822	0.840	0.805	0.757	0.821	0.882
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times$ 100). Robust standard errors are in parentheses; in brackets, transformed p values of the Benjamini-Hochberg procedure for multiple testing and model specification tests.

TABLE 7. Ranking-Specific Results: Common Sample

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*KOF* (3)
WBDB	0.725		
	(1.358)		
	[1.589]		
WBGI		12.970***	
		(3.725)	
		[0.005]***	
KOF			2.747
			(3.326)
			[1.093]
Lagged GDP (log)	–0.171***	–0.181***	–0.172***
	(0.020)	(0.018)	(0.012)
Constant	1.553***	1.580***	1.552***
	(0.176)	(0.163)	(0.172)
No. observations	1,781	1,781	1,781
R^2	0.378	0.392	0.379
Country fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes

***$p < 0.01$.

Notes: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times$ 100). Robust standard errors are in parentheses; in brackets, transformed p values of the Benjamini-Hochberg procedure for multiple testing and model specification tests.

Finally, we consider an estimation using a common sample for the three rankings with sample-specific significant results (table 7). The only ranking that remains statistically significant and economically relevant is the WBGI, with both conventional and false-discovery-corrected p values. Despite the large sample change in comparison with the previous results, the coefficient is very similar in the two cases. The same common-sample estimate using the rank-rank specification yields very similar results (table A6).

We also consider regressions with a group of rankings simultaneously, excluding those that show p values north of 50 percent for three-year-ahead average growth, and in different combinations (table 8). In some cases, the sample shrinks considerably to the common maximum sample. The results indicate the following: (1) none of the rankings are consistently statistically relevant, but some appear to have higher significance than others; (2) in smaller samples, CORR appears to have a statistically significant and economically relevant effect; (3) in larger samples, and especially when considered as a pair with other rankings, both WBGI and KOF have economically relevant effects; and (4) WBDB is no longer significant, while IMD has the opposite sign from that expected.

TABLE 8. Horse Race Results

Explanatory variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
WBDB	2.857					1.387	
	(2.194)					(1.101)	
WBGI	21.310**	9.084***	8.010**	10.780***		12.050***	
	(9.610)	(3.292)	(3.260)	(3.104)		(3.270)	
KOF	11.560	3.156		4.941	5.038*		
	(7.041)	(2.867)		(3.069)	(2.842)		
CORR	1.997	−1.347	0.233		0.619		2.060
	(2.561)	(1.451)	(1.337)		(1.513)		(1.890)
IMD	−2.301*						0.915
	(1.306)						(0.881)
Lagged GDP (log)	−0.208***	−0.101***	−0.105***	−0.126***	−0.088***	−0.165***	−0.065***
	(0.025)	(0.021)	(0.014)	(0.027)	(0.022)	(0.012)	(0.016)
Constant	1.875***	0.890***	0.953***	1.092***	0.806***	1.464***	0.667***
	(0.214)	(0.226)	(0.116)	(0.225)	(0.195)	(0.179)	(0.156)
No. observations	511	2,211	2,576	2,873	2,486	2,193	1,008
R^2	0.49	0.247	0.28	0.348	0.229	0.383	0.342
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

$^*p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times$ 100). Robust standard errors are in parentheses.

When we consider contemporaneous instead of future growth in this horse race, several rankings increase their significance (table A7). Moreover, in this case, all rankings except KOF become relevant even when considered simultaneously (which again restricts the sample considerably). In regressions with pairs and triplets, WBGI, IMD, and CORR become strongly correlated with growth. Of course, it is impossible to know how much of this is explained by reverse causality, but it is likely very relevant.

Finally, when we consider five-year-ahead average growth, the results became generally less precise (table A8). Still, in larger samples, KOF gains relevance, while in smaller samples, CORR continues to correlate with future growth. WBGI loses significance, suggesting that its effect is more concentrated in the initial years.

What can we make of the sudden relevance of some rankings when we consider contemporaneous growth? There are at least two alternative interpretations. One is that changes in rankings actually signal higher, but short-lived growth. This could happen if there is a third variable (the measured fundamental) that affects both growth and the ranking or if the growth reflects a confidence shock. In our sample, growth has a persistence of only 0.2

(independently of whether we control for lagged GDP), implying that this effect would vanish very quickly. The alternative, less benign interpretation is that some of the rankings are affected by current growth, either because they include subjective evaluations (for example, surveys) or simply because they analyze a country with a friendlier scale when it is growing more. At this stage, it is difficult to evaluate which interpretation is correct, but in either case, a ranking would not be particularly relevant as a policy guide if its effects are very short-lived. If the rankings just move to try to predict or chase growth, they would be largely irrelevant.

Overall, considering the three-year period as our baseline metric—a horizon that seems appropriate in a policy discussion—the results suggest that the KOF Globalization Index and WBGI are quite relevant, while the CORR is somewhat less so. The other rankings, in contrast, have no statistical capacity to predict future changes in growth. This, in turn, suggests that a change in these rankings does not trigger confidence effects.

Ranking Components

One could argue that by combining so many different areas, rankings may lose predictive capacity. In this section, we investigate whether specific areas or pillars of some of the rankings have a differential impact on future growth. We consider the three rankings that simultaneously appear to have some correlation with future growth and have publicly available disaggregated rankings. These are the WBGI, KOF, and WBDB

World Bank governance data have, by design, six different areas, constructed using the principal component of several data sources. In the previous section, we considered the simple average of the six rankings. Here we analyze them separately. When all are considered simultaneously, none is statistically significantly different from zero in predicting growth (table 9, column 7). When considered one at a time, each is relevant and statistically significant, suggesting that they are highly collinear. When analyzed in groups, the best fit occurs with the average of five of the six categories (all but voice and accountability). The statistical significance of each variable seems to be very similar across the different categories, implying, from a policy perspective, that all of them should be considered.

The KOF Globalization Index has three categories, two of which have subcategories (tables 10 and 11). This index is analyzed by Dreher (2006), who adds an older version of the index to an otherwise standard growth regression.

TABLE 9. World Bank Governance Indicators: Components

Explanatory variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Voice and accountability	4.726*						2.183
	(2.438)						(2.125)
Political stability		4.121***					1.688
		(1.322)					(1.433)
Government effectiveness			8.934***				1.387
			(2.780)				(2.227)
Regulatory quality				3.266			−1.637
				(2.197)			(1.765)
Rule of law					6.105**		−0.574
					(2.836)		(3.627)
Control of corruption						6.577***	4.177**
						(2.508)	(1.876)
Lagged GDP (log)	−0.111***	−0.115***	−0.117***	−0.113***	−0.115***	−0.113***	−0.079***
	(0.021)	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.018)
Constant	1.019***	1.056***	1.052***	1.050***	1.046***	1.035***	0.704***
	(0.192)	(0.195)	(0.190)	(0.200)	(0.195)	(0.192)	(0.146)
No. observations	3,378	3,348	3,346	3,346	3,375	3,356	3,328
R^2	0.325	0.33	0.335	0.324	0.326	0.331	0.228
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times 100$). Robust standard errors are in parentheses.

TABLE 10. KOF Globalization Index: Components

Explanatory variable	*(1)*	*(2)*	*(3)*	*(4)*
Economic globalization	2.482*			2.612*
	(1.470)			(1.465)
Social globalization		−0.038		−2.082
		(2.374)		(1.898)
Political globalization			2.796*	1.348
			(1.501)	(1.442)
Lagged GDP (log)	−0.021***	−0.031***	−0.032***	−0.021***
	(0.004)	(0.011)	(0.011)	(0.004)
Constant	0.193***	0.306***	0.294***	0.191***
	(0.036)	(0.094)	(0.095)	(0.037)
No. observations	3,858	4,388	4,405	3,858
R^2	0.128	0.140	0.143	0.130
Country fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times$ 100). Robust standard errors are in parentheses.

His main finding is that the overall index is quite robust in positively affecting growth. The economic integration category seems to have a large effect, and, among the subcomponents, he finds that actual economic flows seem robust, while information flows (part of social globalization) are less so. Our results are similar, although information flows are statistically significant. In particular, the economic globalization ranking seems relevant thanks to actual flows (namely, foreign direct investment [FDI], trade, income, and portfolio flows) rather than trade restrictions, while social globalization seems relevant thanks to information flows (measured by internet service, telephones, and newspapers). Some subcategories are relevant when considered alone but not when considered with others (specifically, cultural globalization and political globalization).

In the case of the WBDB (table 12), very few components seem to have predictive power in our exercise. Getting electricity, trading across borders, enforcing contracts, and resolving insolvency yield significant results when considered alone. When considered simultaneously with other variables, however, they lose significance, even in pairs. Although this suggests some collinearity, it is likely that the results are not robust to changing samples (in the case of globalization, the samples varied less). Still, the average of getting electricity and trading across borders is significant, so there seems to be value in considering the questions in this subcategory.

TABLE 11. KOF Globalization Index: Subcomponents

Explanatory variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Economic globalization							
Actual flows	3.746**						3.188**
	(1.864)						(1.391)
Restrictions		1.985**					1.483
		(0.990)					(1.087)
Social globalization							
Personal contact			−3.905*				−4.674*
			(2.139)				(2.401)
Information flows				1.475			−0.212
				(1.762)			(1.767)
Culture proximity					−0.094		−1.067
					(1.078)		(1.048)
Political globalization						2.796*	0.678
						(1.501)	(1.582)
Lagged GDP (log)	−0.033***	−0.021***	−0.031***	−0.032***	−0.032***	−0.032***	−0.021***
	(0.011)	(0.004)	(0.011)	(0.011)	(0.011)	(0.011)	(0.004)
Constant	0.299***	0.199***	0.316***	0.303***	0.306***	0.294***	0.205***
	(0.093)	(0.037)	(0.098)	(0.095)	(0.098)	(0.095)	(0.040)
No. observations	4,291	3,695	4,300	4,388	4,405	4,405	3,670
R^2	0.153	0.136	0.144	0.141	0.14	0.143	0.151
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times 100$). Robust standard errors are in parentheses.

TABLE 12. World Bank Ease of Doing Business Index: Components

Explanatory variable	*Starting a business* (1)	*Dealing with construction permits* (2)	*Getting electricity* (3)	*Registering property* (4)	*Getting credit* (5)	*Protecting minority investors* (6)	*Paying taxes* (7)	*Trading across borders* (8)	*Enforcing contracts* (9)	*Resolving insolvency* (10)
A. Individual regressions										
Average GDP growth	−0.450	1.115	3.675**	2.700	0.655	1.266	0.110	2.622*	9.663*	2.065**
	(1.453)	(0.776)	(1.702)	(2.327)	(0.947)	(1.196)	(1.409)	(1.564)	(5.722)	(1.042)
Lagged GDP (log)	−0.123***	−0.102***	−0.144***	−0.144***	0.115***	−0.119***	−0.117***	−0.123***	−0.162***	−0.120***
	(0.016)	(0.014)	(0.029)	(0.019)	(0.015)	(0.017)	(0.017)	(0.019)	(0.025)	(0.016)
Constant	1.159***	0.957***	1.329***	1.344***	1.084***	1.111***	1.098***	1.144***	1.454***	1.137***
	(0.146)	(0.132)	(0.263)	(0.176)	(0.137)	(0.158)	(0.159)	(0.172)	(0.220)	(0.151)
No. observations	2,575	2,263	1,617	732	2,375	2,296	2,291	2,259	748	2,271
R^2	0.310	0.194	0.267	0.365	0.262	0.240	0.236	0.245	0.277	0.326
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Simultaneous regression										
Average GDP growth	−0.199	0.196	1.434	2.336	3.772	0.996	−0.757	1.980	5.405	−0.321
	(1.597)	(1.078)	(1.675)	(2.926)	(2.397)	(1.559)	(1.291)	(2.512)	(3.774)	(1.186)
No. observations	648	648	648	648	648	648	648	648	648	648
R^2	0.298	0.298	0.298	0.298	0.298	0.298	0.298	0.298	0.298	0.298
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
C. Simultaneous regression omitting (4) and (9)										
Average GDP growth	2.041*	0.479	1.087		1.224	−0.561	0.130	−0.105		1.385
	(1.049)	(0.778)	(1.311)		(1.276)	(1.345)	(1.234)	(1.281)		(1.022)
No. observations	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408	1,408
R^2	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259	0.259
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ ($\times 100$). Robust standard errors are in parentheses.

In sum, when looking at these three rankings, one finds considerable heterogeneity within the statistical significance of the different subcomponents, comparable to what we find across rankings. The implication is that even if aggregate rankings convey information, different components may tell quite different stories. The only exception seems to be the WBGI, in which all aspects seem to matter. This may reflect the aggregation procedure behind the construction of the index.

Nonlinearities

So far, we have been analyzing a linear relationship between rankings and future growth. It is possible, however, that changes in rankings have effects on growth that are nonlinear. We explore here two specific nonlinear forms.

First, we reestimate our baseline case, augmented by the possibility that larger changes in a country's relative position have greater effects on growth. The idea is that only large changes may capture relevant structural changes. Concretely, we consider a dummy variable for absolute changes in rankings that are larger than the (year- and ranking-specific) median of all absolute changes. In this case, we still assume that the effects are symmetrical, but they are potentially different for large changes.

As shown in table 13, the results barely change with this nonlinear possibility, and, more important, none of the rankings shows evidence of larger changes having a differential effect. WBGI continues to be the most relevant ranking, while KOF and CORR remain statistically significant. The only difference with our baseline result is that WBDB is significant in this case, with an economic effect that is not irrelevant. Intriguingly, excluding larger changes in this ranking seems to make it more informative.

The second nonlinearity we explore is a potential differential effect depending on the sign of the relative change. Possibly, negative changes could gather more attention in the public discussion and thus have larger effects. Alternatively, positive changes may reflect actual reforms rather than inaction (and reforms by peers). We consider a dummy variable that takes a value of one for positive changes in the relative country position and zero otherwise. Here again, the results do not change much (see table 13). The only nonlinearity that appears statistically significant is with the WBGI: a positive movement in the ranking has a smaller effect on future growth than a negative change. The rankings that are not informative under our baseline continue to be so, even allowing for these nonlinearities.

TABLE 13. Exploring Nonlinearities

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
A. Change in relative position greater than the median								
Standardized DTF	2.342*	−0.316	−1.742	0.073	8.516***	0.227	2.961	0.960
	(1.265)	(0.760)	(2.643)	(2.226)	(2.437)	(3.069)	(1.506)	(0.884)
Dummy × Standardized DTF	−0.813	12.310***	−0.622	1.180	−0.262	−0.374	0.253	0.516
	(0.521)	(3.544)	(0.617)	(1.180)	(0.484)	(0.922)	(0.357)	(0.516)
Lagged GDP (log)	−0.114***	−0.132***	−0.107***	−0.067***	−0.010***	−0.170***	−0.093***	−0.066***
	(0.014)	(0.017)	(0.011)	(0.013)	(0.013)	(0.040)	(0.012)	(0.013)
Constant	1.040***	1.158***	1.020***	0.622***	0.842***	1.581***	0.848***	0.663***
	(0.127)	(0.145)	(0.108)	(0.110)	(0.108)	(0.373)	(0.110)	(0.137)
No. observations	2,387	2,628	1,343	3,427	4,231	612	2,801	937
R^2	0.258	0.323	0.169	0.215	0.303	0.188	0.273	0.341
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Positive change in relative position								
Standardized DTF	1.594	11.730***	−2.755	0.611	8.199***	−1.483	3.093*	1.117
	(1.299)	(3.740)	(2.510)	(2.248)	(2.392)	(3.466)	(1.597)	(1.032)
Dummy × Standardized DTF	0.511	−1.201**	0.118	0.228	0.508	0.274	−0.148	−0.161
	(0.485)	(0.550)	(0.509)	(0.522)	(0.365)	(1.033)	(0.342)	(0.377)
Lagged GDP (log)	−0.114***	−0.131***	−0.109***	−0.068***	−0.010***	−0.167***	−0.093***	−0.065***
	(0.014)	(0.018)	(0.011)	(0.013)	(0.013)	(0.042)	(0.012)	(0.013)
Constant	1.047***	1.147***	1.040***	0.620***	0.845***	1.569***	0.846***	0.660***
	(0.127)	(0.147)	(0.106)	(0.110)	(0.109)	(0.383)	(0.109)	(0.139)
No. observations	2,387	2,628	1,343	3,427	4,231	612	2,801	937
R^2	0.256	0.325	0.168	0.213	0.302	0.191	0.273	0.340
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is average per capita GDP growth between $t + 1$ and $t + 3$ (× 100). Robust standard errors are in parentheses.

Exploring Transmission Mechanisms

Rankings may influence growth through different channels. For example, they may temporarily boost investment, affecting aggregate demand and the output gap, or they may influence trend growth through persistent higher investment or more dynamic total factor productivity (TFP). To explore these mechanisms, we consider the same baseline regression, but instead of explaining next year's GDP growth, we consider a number of independent variables of interest.

Specifically, we first analyze average net FDI flows (as a percent of GDP) in years t to $t + 1$ (from the World Bank database). This is not entirely new. Corcoran and Gillanders (2015) explore how the WBDB ranking affects FDI using a cross-section of countries. They find that it matters only for middle-income countries, and the key aspect of the ranking is the ease of trade across borders.

The results bring no surprises (see table 14). The WBGI ranking is again strongly associated with FDI. Under a uniform distribution and 100 countries, an improvement of 1 percent in a country's ranking distribution accounts for a higher FDI, equivalent to 2.07 percent of GDP. The WEF ranking, in contrast, appears to be associated with a lower FDI.

We also consider decomposing GDP growth into trend and cyclical components. Trend GDP here corresponds to a simple Hodrick-Prescott (HP) filter for each country. Cyclical GDP, in turn, is the output gap calculated as the (log) difference between actual and trend GDP. We apply our baseline regression trying to explain these two variables: trend growth between $t + 1$ and $t + 3$ and the average output gap in the same period. In the former case, we also consider lagged potential GDP growth as a control. The results for trend GDP provide a slightly different perspective than before (see table 15). In addition to the three rankings that previously appeared to contain information on future growth, the IMD Competitiveness Index also displays a statistically significant (though not very large) coefficient. The WEF Competitiveness Index again has the opposite sign. As for the cyclical component of GDP, the results show that no ranking has a statistically significant impact. There is no evidence of cyclical or demand-side effects from changing position in the rankings.

Finally, we explore whether rankings influence the growth of TFP and exports in years $t + 1$ to $t + 3$ (see table 16). Neither shows any statistically significant reaction to our different rankings.

TABLE 14. Exploring Mechanisms: Investment

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
A. Investment								
FDI net flows	–0.160	2.070***	–1.547**	–0.182	1.072	0.840	0.059	0.141
	(0.364)	(0.720)	(0.781)	(0.552)	(0.671)	(0.590)	(0.492)	(0.390)
Constant	1.449***	–0.328	1.869***	0.632**	–0.460*	0.626*	0.751***	1.128***
	(0.182)	(0.390)	(0.373)	(0.258)	(0.245)	(0.321)	(0.180)	(0.202)
No. observations	1,398	2,335	834	2,475	3,555	634	2,042	638
R^2	0.047	0.122	0.024	0.132	0.256	0.021	0.073	0.171
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Authors' calculations, based on data from the World Bank (FDI).
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.
Note: Robust standard errors are in parentheses.

TABLE 15. Exploring Mechanisms: GDP Trend and Cycle

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
A. Trend								
Average GDP growth ($t+1$ to $t+3$)	−0.044	0.95***	−0.091	0.17	0.40	0.040	0.17**	0.216***
	(0.073)	(0.239)	(0.125)	(0.207)	(0.241)	(0.118)	(0.094)	(0.048)
Constant	0.044***	0.007***	0.044***	0.047***	0.025***	0.045***	0.043***	0.027***
	(0.007)	(0.014)	(0.004)	(0.011)	(0.009)	(0.004)	(0.006)	(0.028)
No. observations	2,575	3,328	1,508	3,612	4,383	910	3,030	1,024
R^2	0.201	0.35	0.252	0.168	0.186	0.226	0.282	0.329
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Cycle								
Average GDP gap ($t+1$ to $t+3$)	0.039	0.051	0.152***	−0.330	−0.221	−0.144	−0.149	0.036
	(0.024)	(0.142)	(0.076)	(0.323)	(0.225)	(0.112)	(0.267)	(0.065)
Constant	−0.015	0.130	−0.077	0.436	0.070	0.075	−0.032	−0.059
	(0.012)	(0.92)	(0.036)	(0.410)	(0.065)	(0.065)	(0.068)	(0.053)
No. observations	2,575	3,336	1,520	3,615	4,416	910	3,032	1,024
R^2	0.006	0.012	0.010	0.010	0.007	0.005	0.004	0.029
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Note: Robust standard errors are in parentheses.

TABLE 16. Exploring Mechanisms: Productivity and Exports

Explanatory variable	*WBDB* (1)	*WBGI* (2)	*WEF* (3)	*HER* (4)	*KOF* (5)	*CATO* (6)	*CORR* (7)	*IMD* (8)
A. Total factor productivity								
TFP average growth ($t+1$ to $t+3$)	−1.021	−4.380	−2.515	−3.706	1.129	−1.033	−0.751	−1.864*
	(1.595)	(2.657)	(2.965)	(2.522)	(2.610)	(3.285)	(0.975)	(0.738)
Constant	0.004	0.022	0.012	0.017	−0.010	0.002	0.001	0.009*
	(0.011)	(0.015)	(0.016)	(0.014)	(0.016)	(0.019)	(0.010)	(0.005)
No. observations	1,341	2,090	944	2,411	2,878	696	2,108	899
R^2	0.083	0.136	0.056	0.133	0.086	0.054	0.131	0.237
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Goods exports								
Average export growth ($t+1$ to $t+3$)	17.710	3.404	2.488	−1.356	14.045	−0.505	12.000	−3.889
	(21.292)	(9.038)	(5.415)	(5.027)	(12.519)	(7.885)	(13.425)	(2.296)
Constant	−0.052	0.033	0.035	0.048	0.076**	0.048	−0.003	0.048***
	(0.150)	(0.047)	(0.025)	(0.036)	(0.031)	(0.045)	(0.074)	(0.012)
No. observations	2,327	2,962	1,456	3,387	3,821	877	2,886	1,013
R^2	0.035	0.033	0.075	0.051	0.029	0.117	0.042	0.333
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Authors' calculations, based on data from the Conference Board (TFP) and the International Monetary Fund (exports).
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.
Note: Robust standard errors are in parentheses.

A Specific Look at Rule of Law

Finally, we examine four different rankings' components that measure the concept of rule of law (and we observe the specific score in each case). Each source has a different approach to measure this concept. Some focus on enforcing contracts, others on property rights. All of them, however, try to assess a critical growth fundamental, namely, the functioning of the basic platform for well-performing markets.

We consider as a benchmark (or the true fundamental) the law-and-order indicator from the Political Risk Services Group. The reason is simple: Barro (2015) shows that this indicator is relevant for explaining growth (in regressions without fixed effects up to 2009, with nine nonoverlapping five-year periods). More generally, decades of cumulative work reveal that the indicator provides valuable information.

With data through 2016, our regressions considering one ranking at a time show they correlate rather poorly with the benchmark. A between-country estimator shows significant and large coefficients, but far from 1.00. This suggests that in a cross section, all rankings measure rule of law in correlated ways (table 17). However, an estimation with country fixed effects and time dummy variables shows that the within-country variation of different rankings has very little resemblance to the benchmark. The only exception is the WBGI, which is not a revelation, insofar as the benchmark is one of the information sources considered in the construction of this index (among several others).

When we consider the four rankings simultaneously in one regression explaining the benchmark, even the between-country estimation shows that only the WBGI correlates with the benchmark. The other three rankings have insignificant (or negative) coefficients. The results are quite disappointing: movements in these rankings are unrelated to changes in the benchmark. Although these indexes are trying to measure the same object, they end up with very different results.

Concluding Remarks

After thirty years of highly scrutinized work, the empirical growth literature has uncovered several stylized facts on structural reforms. Among the most relevant, richer countries tend to grow less (conditional on a set of fundamentals); that is, there is convergence. Also, several variables explain growth

TABLE 17. Explaining Law and Order

	Between					*Within*				
Explanatory variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
WBDB Enforcing contracts	70.320***					1.698				
	(9.464)					(2.290)				
WBGI Rule of law		74.080***			131.200***		36.810***			18.940***
		(4.342)			(23.470)		(8.696)			(6.149)
HER Property rights			53.610***		−57.870***			11.720**		−1.712
			(4.681)		(13.300)			(4.589)		(3.158)
CATO Rule of law				67.340***	11.340				0.066	−1.992
				(4.499)	(14.890)				(3.497)	(2.654)
Constant	0.152**	0.227***	0.368***	0.315***	0.099**	0.594***	0.529***	0.667***	0.630***	0.536***
	(0.063)	(0.025)	(0.026)	(0.023)	(0.043)	(0.014)	(0.045)	(0.026)	(0.016)	(0.037)
No. observations	275	2,473	2,329	783	764	275	2,473	2,329	783	764
R^2	0.289	0.682	0.497	0.629	0.701	0.005	0.248	0.240	0.074	0.102
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**$p < 0.05$; ***$p < 0.01$.

Note: The dependent variable is the law-and-order indicator from *The International Country Risk Guide*, published by the Political Risk Services Group. Robust standard errors are in parentheses.

more or less consistently, including macroeconomic stability, openness, schooling, population dynamics (fertility), rule of law, government investment, and democracy. The debate is still open on the degree of endogeneity of these variables, but they still provide a very good guideline for discussion.

At the same time, policymakers should be aware that making progress on the plethora of global indexes and rankings that have become available in the last couple of decades has very different implications regarding future growth. There are several explanations for this: the various rankings perhaps measure overly specific aspects (which are irrelevant for a reform discussion), support specific agendas (more ideological than deeply rooted in what matters for development), focus too much on surveys (which may measure past growth), or mainly capture formalities (and not actual practice). Also, as Hausmann, Klinger, and Wagner (2008) argue, changes in a particular ranking may not be very informative if there are other bottlenecks for growth. It is an empirical fact, however, that a change in several of these rankings has close to zero predictive power with respect to future growth. This finding is in line with Kraay and Tawara (2013), who report, using Bayesian averaging techniques, that the specific policy indicators that matter for one outcome are, on average, not important correlates of other closely related outcomes. This illustrates the difficulty of using highly specific policy indicators to identify reform priorities based on cross-country data.

Unsurprisingly, the rankings that closely resemble the findings reported in the empirical growth literature are the most useful in terms of signaling future growth. Specifically, the World Bank's ranking of government effectiveness, the WBGI—and to a lesser extent rankings of globalization, transparency, and corruption (as they could reflect false discoveries)—would seem to merit attention in countries' internal policy discussions. Interestingly, the most relevant transmission channels seem to be through their effects on trend growth and FDI, while nonlinear effects seem largely absent.

Other rankings seem largely irrelevant in the metrics we use in this paper. This does not mean that they should be completely disregarded, as they contain useful granular information. But policymakers should not be tempted to organize a structural reform discussion around them, as they do not convey statistically significant information to predict future growth. Of course, this does not imply that fundamentals are not relevant. Rather, the way some rankings measure fundamentals is much less useful than expected.

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