

# The IMF's Growth Forecasts for Poor Countries Don't Match Its COVID Narrative

**Justin Sandefur and Arvind Subramanian**

## Abstract

The International Monetary Fund's forecasts of GDP growth in 2020 suggest a substantially muted impact of the COVID crisis—about 3 percentage points smaller—for developing countries compared to advanced economies. Simple cross-country regressions show this discrepancy cannot be explained by external vulnerabilities to trade disruptions, financial crises, or commodity price shocks, which mostly suggest a more severe crisis in the developing world. It also cannot be explained by the domestic shock, because—while current case totals are greater in advanced economies—the policy responses of social distancing and lockdowns which will directly constrain economic activity have been similar across both groups of countries, and fiscal policy responses have been significantly weaker in developing countries. We hope that the relative optimism will not induce complacency and elicit a less-than-forceful response by countries themselves nor legitimize an ungenerous, conditionality-addled response on the part of the international community in the face of an unprecedented calamity.

**Keywords:** IMF, coronavirus, covid-19, growth forecasts

**JEL:** I15, E37, O47

## **The IMF's Growth Forecasts for Poor Countries Don't Match Its COVID Narrative**

Justin Sandefur  
jsandefur@cgdev.org  
Center for Global Development

Arvind Subramanian  
asubramanian@piie.com  
Peterson Institute for International Economics and Harvard Kennedy  
School

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Data and code to replicate all estimates here are available at: <https://www.cgdev.org/sites/default/files/sandef-subramanian-imf-covid-forecast-data-code.zip>. More information on CGD's research data and code disclosure policy can be found here: [www.cgdev.org/page/research-data-and-code-disclosure](http://www.cgdev.org/page/research-data-and-code-disclosure).

**Center for Global Development**  
**2055 L Street NW**  
**Washington, DC 20036**

202.416.4000  
(f) 202.416.4050

**[www.cgdev.org](http://www.cgdev.org)**

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# 1 Introduction

The International Monetary Fund (IMF) has sounded appropriately dire about the economic impact of the raging COVID-19 pandemic. In the foreword to its flagship publication, the World Economic Outlook (WEO), IMF Chief Economist Gita Gopinath, wrote “This crisis is like no other. First, the shock is large. The output loss associated with this health emergency and related containment measures likely dwarfs the losses that triggered the global financial crisis (GFC)” [IMF, 2020].

And in a follow-up blog, the IMF Chief Economist wrote, “This is a truly global crisis as no country is spared. Countries reliant on tourism, travel, hospitality, and entertainment for their growth are experiencing particularly large disruptions. Emerging market and developing economies face additional challenges with unprecedented reversals in capital flows as global risk appetite wanes, and currency pressures, while coping with weaker health systems, and more limited fiscal space to provide support. Moreover, several economies entered this crisis in a vulnerable state with sluggish growth and high debt levels” [Gopinath, 2020].

In other words, the IMF considers the COVID-19 pandemic unprecedented in its aggregate scale, and uniformly severe in its impact on all countries, advanced economies (AEs) and emerging market and developing economies (EMDEs, also referred to here simply as “developing countries”). If anything, the impact could be more severe for developing countries because of the additional vulnerabilities the Chief Economist highlighted.

But this assessment does not seem to be reflected in the IMF’s own growth forecasts in the latest World Economic Outlook. Contrary to the narrative of a uniform impact, the IMF is actually forecasting a significantly more muted impact of the COVID-19 pandemic on emerging markets and developing economies than advanced economies. Figure 1 plots the World Economic Outlook’s projected growth decline due to the pandemic: there is significant variation, from a projected decline of over 12 percent for Ireland to just over 2 percent for India.

Table 1 shows that there is a systematic pattern to this variation. The IMF’s assessment is that growth will decline by 8.4 percentage points for the advanced economies from 2019 to 2020 and by only 5.3 percentage points for emerging markets and developing economies, a full 3.1 percentage points lower. The differential is a little less stark (2.3 percentage points) if the impact is measured in terms of the revision to the IMF’s forecast for 2020 made before the crisis (January 2020) compared to that made after (April 2020 in the latest World Economic

Outlook). In passing, we note that the World Bank’s forecast—also made in April 2020 in its Macro Poverty Outlook—is even more optimistic than the IMF for emerging markets and developing economies by about 1.6 percentage points: whereas the IMF projects growth of -2.3 percent in 2020 for the 54 emerging markets and developing economies in our regression sample, the Bank projects growth of -0.7 percent.

One implication of this projection is that for all the major developing countries, the World Economic Outlook’s forecasts suggest that the COVID-19 crisis will have a less not more severe impact than the GFC, and often substantially so (Figure 2).

What is striking about Figure 2 is the number and identity of countries for which the IMF’s forecast suggests that the GFC will have a *more* negative impact than (or a broadly similar impact to) the COVID-crisis. In our sample of 72 countries with quarterly GDP data, the GFC will have a more negative impact in 20 countries; and in another 7 countries, the impact will be broadly similar (less than 1 percentage point difference). The major countries include (and the numbers in parentheses show by how much more severe the impact of the GFC was compared to the projected impact under COVID): Argentina (7.7%), Singapore (6.7%), Hong Kong (5.7%), Turkey (4.3%), India (3.1%), Korea (2.5%), Egypt (0.8%), Japan (0.3%), China (-0.3%), Brazil (-1.1%) and Mexico (-1.3%). Is this plausible if the COVID-crisis is really a once-in-a-lifetime crisis?<sup>1</sup>

Can the IMF’s narrative for relative optimism about the impact of the pandemic on emerging markets and developing economies be reconciled with its GDP numbers? In particular, what is the role of external vulnerabilities in explaining this optimism (because on their own they should warrant a more pessimistic forecast for developing countries)? Or, does the IMF forecast reflect its assessment in the narrative of the World Economic Outlook that the domestic economic-cum-health shock will be more severe in the developing world? These are the key questions we address below.

## 2 IMF Forecast Methodology

IMF growth forecasts are a black box. Rather than one grand computable general equilibrium model (a different kind of black box, used for COVID forecasts by the World Bank and

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<sup>1</sup>Another metric for comparison would be not the growth declines but the revisions to the forecasts in the two crises. But the IMF’s forecast (in October 2008) for the impact of the GFC crisis in 2009 was off on average by a whopping 4.5 percentage points. So, to use its pre-crisis forecast as a benchmark for assessing its post-crisis forecast is not very useful. The more important and relevant question seems to be to ask whether the IMF has learnt from its previous forecasting experience of the GFC to produce more realistic estimates for what is likely to happen in the COVID crisis.

IFPRI), the IMF forecasts are an aggregation of subjective judgements made by the various area units within the Fund, subject to consistency checks by the research department. In the April 2020 World Economic Outlook report accompanying the new forecasts, the IMF highlights factors which we might reasonably expect to explain why they anticipate the growth slowdown to be much larger in some countries than others.

“There is extreme uncertainty around the global growth forecast. The economic fallout depends on factors that interact in ways that are hard to predict, including the pathway of the pandemic, the intensity and efficacy of containment efforts, the extent of supply disruptions, the repercussions of the dramatic tightening in global financial market conditions, shifts in spending patterns, behavioral changes (such as people avoiding shopping malls and public transportation), confidence effects, and volatile commodity prices. Many countries face a multi-layered crisis comprising a health shock, domestic economic disruptions, plummeting external demand, capital flow reversals, and a collapse in commodity prices. Risks of a worse outcome predominate.” [IMF, 2020, emphasis added]

Divining the IMF’s methodology is probably a fool’s errand, but it is probably the case that the growth forecasts are based on an assessment of: (i) the domestic shock related to health but more importantly the likely economic policy response both in terms of lockdown/social distancing and monetary and fiscal policies; and (ii) the external vulnerabilities, the latter being especially severe for emerging markets and developing economies.

Econometrically, our approach is very simple. We run a series of cross-country regressions to understand whether and to what extent external and domestic factors can explain the relative optimism for emerging markets and developing economies. Our dependent variable is the IMF’s forecast of growth decline in 2020, defined as the projected growth in the April World Economic Outlook for 2020 minus the actual growth for 2019:

$$Y \equiv \text{Forecast growth decline} \equiv 2020 \text{ growth forecast} - 2019 \text{ growth rate}$$

We regress this outcome on an indicator for emerging markets and developing economies (EMDE) status, first in a simple bivariate regression, and then gradually including various controls for external vulnerabilities (the vector  $E_i$ ) and proxies for the domestic shock during the covid crisis (the vector  $D_i$ ), where  $i$  indexes countries.

$$Y_i = \alpha + \beta \text{EMDE}_i + E_i' \gamma + D_i' \delta + \varepsilon_i \tag{1}$$

The basic strategy here is reminiscent of the large literature in the 1990s and early 2000s that sought to explain away the “African dummy” in cross-country growth regressions, which implied lower-than-expected economic performance conditional on observed growth determinants [Barro, 1991, Sala-i Martin, 1997, Hoeffler, 2002, Nkurunziza and Bates, 2003, *inter alia*]. Note that in our case, we attempt to explain a potential bias in growth *forecasts*, rather than a gap in actual economic performance.

We next describe the proxies we chose for each of the external vulnerabilities and the various dimensions of the domestic shock.

## 2.1 External vulnerabilities

The COVID-19 pandemic will also be an external shock to all countries acting via trade (in goods and services), commodity, and finance channels. We use a number of proxies to capture the different transmission mechanisms.

Plummeting external demand. Recognizing that trade disruptions may be uneven across trading partners and sectors, we include several measures of trade exposure: total exports as a share of GDP. We also measure international tourism earnings as a share of GDP given the extreme disruption in this sector.

A collapse in commodity prices. We measure exposure to commodity price shocks with total natural resource rents as a percentage of GDP pre-crisis. Note that we drop countries for whom oil exports exceeded 10% of GDP in the most recent available pre-crisis data from our analysis, as a linear model may not capture the extreme disruptions forecast in a few oil-rich countries.

Sudden stops/capital flow reversal. We need a measure of vulnerability to capital market disruptions that will be relevant for developing countries and advanced economies. We proxy this by a country’s history of proneness to financial crisis, using the share of years since 1990 that a country has had an IMF program [Reinhart and Trebesch, 2016].<sup>2</sup> Recognizing many developing countries’ reliance on remittances, we also include remittances as a share of GDP as an additional indicator.

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<sup>2</sup>For countries which were not IMF members as of 1990, we omit the years prior to their joining.

## 2.2 The domestic health shock

Our interest lies in forecasts of future growth, so it seems reasonable that the economic rather than health impact per se that will be relevant. However, it is possible that the health impact can trigger private and government policy responses that will in turn have economic consequences. So, we try to find proxies both for the economic and health impacts.

Domestic economic disruptions: Early efforts to model the macroeconomic effects of the pandemic have stressed the impact of social distancing – whether spontaneous by agents or imposed by government lockdowns – rather than disease per se as the proximate cause of the contraction [Eichenbaum et al., 2020, Guerrieri et al., 2020]. We capture these disruptions through two proxies, de jure/policy and de facto/outcome, respectively. The first is a policy measure which is the lockdown index developed by Hale et al. [2020]. This is a subjective assessment of the stringency of government restrictions in each country and date. For our purposes, we take the average value for each country up to April 14. The second is an outcome measure of the reduction in activity and travel as measured by the Google LLC [2020] mobility index. We rely on four of the six components measured by Google: mobility in and around retail and recreational sites, grocery and pharmacies, transit stations, and workplaces. We ignore mobility recorded at parks and residential areas, and again average values across all dates up to April 14 for each country.

Impact of disruptions: Of course, any given action will have differential impacts across countries because of different economic structures. One big difference between rich and poor countries is the role of agriculture, which is greater in the latter and which is relatively less likely to be affected than a lot of manufacturing and especially service sector activities that require closer physical contact. Since our interest is in the accuracy of GDP growth forecasts, we proxy the possibility of differential impacts of any given policy response with the share of agriculture in GDP for the World Bank [2020].

Mitigating disruptions: The health shock, the policy response, and their impacts will also depend on offsetting fiscal and monetary policy responses by the government. The endogeneity problem here is acute—these economic packages are a response to, and hence an indication of, a deep underlying shock, while simultaneously working to mitigate that shock—and thus we do not attempt to control for fiscal response in our regressions. However, we do report and discuss the magnitude of fiscal packages announced thus far, expressed as a share of GDP with data taken from Elgin et al. [2020], who draw on reports from the IMF’s

COVID-tracker among other sources. Again, we include only fiscal spending announced prior to April 14, 2020, to mimic the information set available at the time of the IMF forecasts.

The pandemic per se: Comparing the scale of the health shock from COVID-19 across countries is not as straightforward as it may seem. Taking a somewhat myopic measure, we first measure the direct COVID shock as the (base 10) logarithm of the number of total confirmed COVID-19 cases as reported by the [European Centre for Disease Prevention and Control \[2020\]](#) as of April 14, the date the IMF published its growth forecasts.

Given that our interest lies in forecasts of future growth, however, the ideal measure of the health shock is not the current COVID-19 case count, but the best current understanding of its eventual spread. Thus we also use a forward looking measure which is the highly-publicized forecast of the likely number of COVID cases in each country by the Imperial College team [[Walker et al., 2020](#)]. Among the variety of scenarios they outline, from an unmitigated pandemic to intermediate mitigation measures to full suppression, we focus on the last – in part because it is the most conservative, and also because of the high rate of actual suppression policies globally as documented below.

Both these health shock variables can be proxies for private and public responses that have economic impacts. For example, if current reported deaths are high that can panic private agents into voluntary social distancing regardless of government strictures.

Our baseline sample comprises 88 countries for which we have data on all the variables described above.

### 3 Explaining the developing country dummy

Recall that our main objective is to understand why the growth forecasts for emerging markets and developing economies are as much as 3 percentage points greater than for advanced economies.

### 3.1 Graphical illustration

Figures 3, 4, and 5 convey a sense of our overall results. Figure 3 compares how emerging markets and developing economies score relative to advanced economies on the measures of external vulnerability and the domestic shock. Specifically, it shows the standardized ( $z$ ) score of the difference in the two distributions. Of the five external vulnerability measures, developing countries are significantly more vulnerable on three (commodity dependence, remittances, and financial crisis). On tourism, both groups are broadly similar but on exports, advanced economies are more vulnerable. Overall, therefore, emerging markets and developing economies are more vulnerable than advanced economies, which should, if anything make the former more vulnerable to the COVID crisis. Put differently, the relatively optimistic growth forecast has to be despite not because of differential external vulnerabilities.

The bottom panel of Figure 3 shows how developing and advanced economies score on the proxies for the domestic impact of the shock. In terms of policy and outcomes, developing and advanced economies are broadly similar. Figure 4 depicts the evolution of these variables over time since January 1 and the two lines track each fairly closely, again suggesting similarity of policy responses by both groups. Figure 3 also shows that in terms of the fiscal policy response, emerging markets and developing economies have done substantially less than advanced economies by about 6.3 percentage points. These 3 proxies, therefore, suggest that the relatively optimistic forecast cannot stem from the domestic impact of the COVID shock.

Insofar as deaths conveys some information about likely policy responses (over and above that conveyed by the actual measures themselves that we have just discussed), we could look at future/forecast deaths or current deaths. At the time of the World Economic Outlook's publication, the epidemiological forecast was for far greater deaths in emerging markets and developing economies than advanced economies. It was only actual deaths that were significantly lower in emerging markets and developing economies, as Figure 4 shows over time.

The relative optimism can only be explained if the IMF believes one of the following going forward: that the health shock will itself be less severe in emerging markets and developing economies (although the epidemiological projections do not bear this out) which will elicit a less severe policy response from them; this is contradicted by the data suggesting similarity of policy response; that even if the health shock is as severe, their policy response will be asymmetric, reversing what has happened so far and which will be translated into earlier

and swifter exit from lockdown; or that even symmetric policy responses will have smaller economic impacts in emerging markets and developing economies because of the structures of their economy with social contact-light agriculture accounting for a much larger share of their economies. (See Figure 5.)

We can illustrate these results with one of the starkest cases of optimism in the World Economic Outlook forecast, India. The IMF predicts a 2.4 percentage point decline in growth for India, from 4.2 percent in 2019 to 1.9 percent in 2020. This decline is much smaller than the 8.4 percentage point decline forecast for advanced economies as a group. The Indian economy was weakening sharply even before the pandemic and its financial system deeply impaired. It has suffered a sudden stop with capital flows experiencing a far greater decline than in the GFC. Granted, its export-GDP ratio was lower at the start of the crisis, 20 percent compared with 50 percent for advanced economies. But its policy actions have been more severe than most advanced economies, reflected in its policy index (an Indian score of 40 out of 100 averaged over the months up to publication of the IMF report, and topping out at 100 by the end of April, compared to an average score of 28 in advanced economies) and Google mobility indicator (down 26% on average, with a low of 71% in late March, compared to an average decline of 23% in advanced economies). And its announced fiscal response has amounted to just 1.1 percentage point of GDP compared with an average of 7.8 percentage points for advanced economies. Putting these together, a reasonable forecast would have had India's GDP growth declining by more than that in advanced economies, perhaps substantially more. Instead, it is forecast to decline by substantially less, creating a potential forecast error in double digits! In fact, for April, the latest purchasing managers index (PMI), considered a reliable proxy for activity, showed a steep drop in manufacturing (PMI of 23) and a devastating and global record low in services (PMI of 5). Admittedly, these data came out after the World Economic Outlook forecast but they are consistent with the policy and outcome indicators discussed earlier.<sup>3</sup>

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<sup>3</sup>Just before the pandemic's impact on the Indian economy, all reliable macro-economic indicators were already pointing to serious weakness, ruling out high potential growth as a possible explanation for the rosy growth forecast for 2020. For the relevant 11-month period in 2019-20, the index of industrial production of capital and consumer goods grew at -5.3% and -1.5%, respectively; and non-oil imports and exports grew at -5.5% and -0.4%, respectively. On May 12, the Indian government announced a second fiscal package; how much of the headline number of 10 percent of GDP will translate into additional spending remains to be seen.

## 3.2 Regression estimates

Beginning with the full list of IMF forecasts, we restrict the sample to countries with a full set of right-hand-side variables, and drop countries with an oil export-to-GDP ratio above 10%, or which are listed by the IMF as fuel exporting countries (this drops Russia and Yemen as well), leaving us with a set of 87 countries, of which 33 are emerging markets and developing economies.

Surprisingly, the country-specific external vulnerabilities identified above do little to explain the IMF forecasts (Table 2). Adding each of the specific vulnerabilities individually (columns 2-6) or collectively (column 7) either reduces the EMDE dummy by a percentage point (in the upper panel) or virtually not at all (lower panel). Three of the vulnerability variables—trade, tourism, and remittances—enter with the right sign but not the financial vulnerability and resource dependence variables. In Table 3, we add the individual domestic shock variables (without controls in the top panel and with them in the bottom panel). The pattern that emerges is that the policy response variables, reflecting actions so far, do not significantly alter the coefficient on the EMDE dummy (the [Hale et al. \[2020\]](#) lockdown index is insignificant, and the Google mobility index has the expected sign but is only significant at the 10% level without other controls); nor does the forecast of the expected health shock. The only variables that knock down the EMDE dummy into insignificance are the COVID-19 cases as of the time of the IMF forecast and the share of services in the economy.

We interpret this as an indication that (a) the IMF forecasts fail to incorporate epidemiologists best understanding of the likely scope of the pandemic at the time of the World Economic Outlook’s publication, and (b) the IMF’s relative optimism about the COVID crisis in developing countries is not easily reconciled with the stringent lockdown measures imposed in many developing economies to date. We would emphasize that our results on the unwarranted optimism of the forecast for emerging markets and developing economies do not incorporate the fiscal response variable because of endogeneity concerns. Adding them would re-inforce our results because advanced economies have been significantly more ambitious in offsetting the growth decline with fiscal packages.

We undertake a series of robustness checks (Table 4). In columns 1 and 2 we broaden our sample. Recall that our sample was limited by the availability of the domestic policy response variables. For our larger sample, the EMDE dummy is slightly larger (nearly 3.5 percentage points) and the results on its persistence remain broadly unchanged. In columns 3 and

4 we disaggregate emerging markets and developing economies into upper middle income, lower middle income and low income countries (based on the World Bank’s definition). The overall finding is that the positive dummy is stronger for the lower middle and low income countries. In columns 5 and 6, we change the dependent variable from the IMF’s forecast for growth decline to to the IMF’s forecast revision (that is, the difference in growth projection between April 2020 after the COVID crisis became known and January 2020). The size of the EMDE dummy is smaller but the overall results remain the same. In columns 7 and 8 we re-do the regressions with World Bank projections. Since, it does not make publicly available its growth projections for individual advanced economies, the sample is restricted to only emerging markets and developing economies, so that comparisons can only be made within them. The main finding is that the relative optimism is greater for lower middle and low income countries.

## 4 Conclusions

The IMF is to be commended for calling attention to the exceptionally unusual nature of this crisis and highlighting the need for bold policy responses at the country level and through multilateral cooperation. But there seems to be a discrepancy between the dire narrative and the less dire numbers, in particular for developing countries.

External vulnerabilities, which afflict developing countries to a greater extent, make this discrepancy even more puzzling. But it cannot be explained by the domestic impact of the COVID shock. The key facts are these: developing country responses have been as strict in terms of lockdowns and social distancing—measured by policy and outcome proxies—as those taken by advanced economies; and their fiscal policy response has been meager, substantially smaller than that of advanced economies, which should make the growth decline more severe in developing countries.

Nor can this discrepancy be reconciled by recourse to the health dimension of the shock. Recall that the health shock is relevant only to the extent that it signals likely private and public policy responses. But both *de jure* and *de facto* measures of social distancing show strikingly similar patterns between advanced economies and developing countries. Furthermore, epidemiological forecasts for future deaths and cases at the time of the World Economic Outlook were quite similar for advanced economies and developing countries. It is only current deaths that are significantly greater for advanced economies. Only if this was the proxy

for policy responses can the relative optimism for developing countries be explained. But it begs the question why current deaths as opposed to actual policy actions is the better proxy for well, policy actions.

Could there be other factors that explain this discrepancy? One possibility is that although the World Economic Outlook was released on April 14, the forecasts were prepared a few weeks earlier by the area departments when the data on the COVID pandemic and the policy responses presented here may not have been available. But as Figure 4 shows the major policy choices made by many of the developing countries became public information no later than the last week of March (India announced its lockdown on March 24 and in fact, the stringent policy actions in China and Korea were taken well before March). In any event, since the actions were so dramatic and potentially impactful (as the China data available in March revealed) IMF forecasts should have reflected these actions.

Another explanation is political. If lower growth requires higher levels of financial resources to offset the shock in developing countries, and the IMF (and World Bank) feels unable and/or unwilling to galvanize those resources, it might lean toward raising the forecast in order to lower the financing requirement. Suggestions that the 2021 forecast were also too optimistic, implying a shallower fall because of the crisis and a faster, steeper rebound from it, added to the feeling that forecasts were not immune from political considerations. We cannot speak to these issues but the evidence we have presented is not inconsistent with that view.<sup>4</sup>

Yet another explanation is bureaucratic. Growth forecasts are made by area departments, and even though the World Economic Outlook is ultimately the product of the research department, the latter's say may be limited—and perhaps should be institutionally strengthened. Area departments deal directly with client country governments and have a greater incentive to internalize the latter's desires and preferences. The question, of course, is why this should lead to differential optimism between advanced and developing economies.

If the main finding of this paper, namely that optimism about developing country growth is unwarranted, it also has a first-order implication for the global growth forecast. Suppose as an illustrative, ball-park exercise, we apply this finding and say that developing countries as a whole should be impacted no better than advanced economies. Suppose too that the

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<sup>4</sup>In their official history of the World Bank, Kapur et al. [1997] document the upward bias of the growth forecasts by the Bretton Woods institutions, especially during crises, because that reduces pressures on rich countries to be forthcoming with additional financing.

IMF’s forecast decline for advanced economies is reasonable. Then, the developing country growth decline and the global growth decline should be close to 8 percentage points down relative to 2019. This in turn implies that global growth for 2020 should be closer to -4.5 percent rather than the current forecast of -3 percent, as developing countries account for about 55 percent of global GDP on a PPP basis. In other words, correcting just the relative optimism for developing countries, yields a global growth forecast that is about 50 percent more pessimistic than the current one.

Our finding that the IMF does not see developing countries as especially vulnerable to external shocks is also striking. If low income countries are indeed less vulnerable and more resilient than we have believed so far, this would force a broader re-assessment of under-development itself.

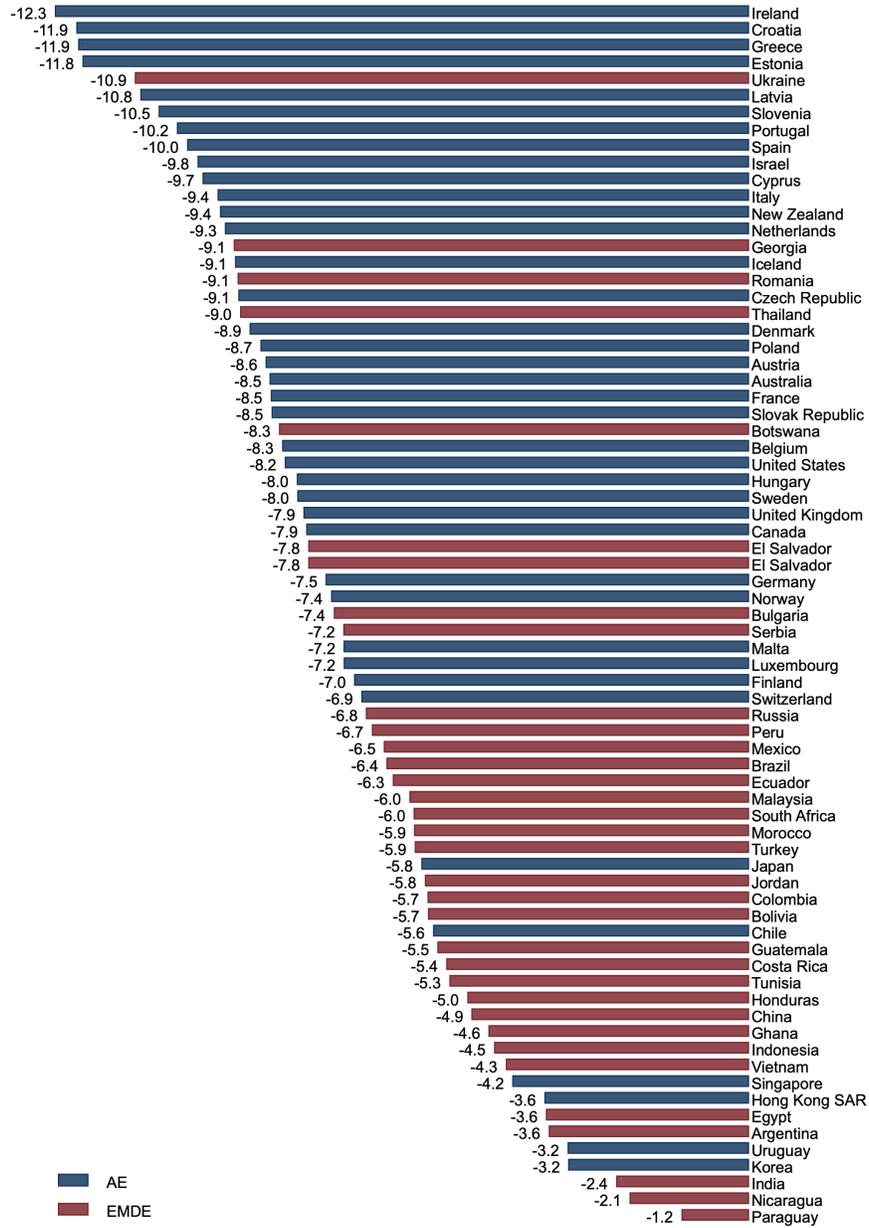
Going forward, we wonder whether the IMF will change its narrative or its numbers. We fervently hope that the current numbers do not lead to complacency on the part of individual countries, eliciting a policy response that is inadequate to the COVID pandemic. We also fervently hope that these numbers do not legitimize an ungenerous, conditionality-addled international response to helping developing countries in the face of an unprecedented health and economic calamity.

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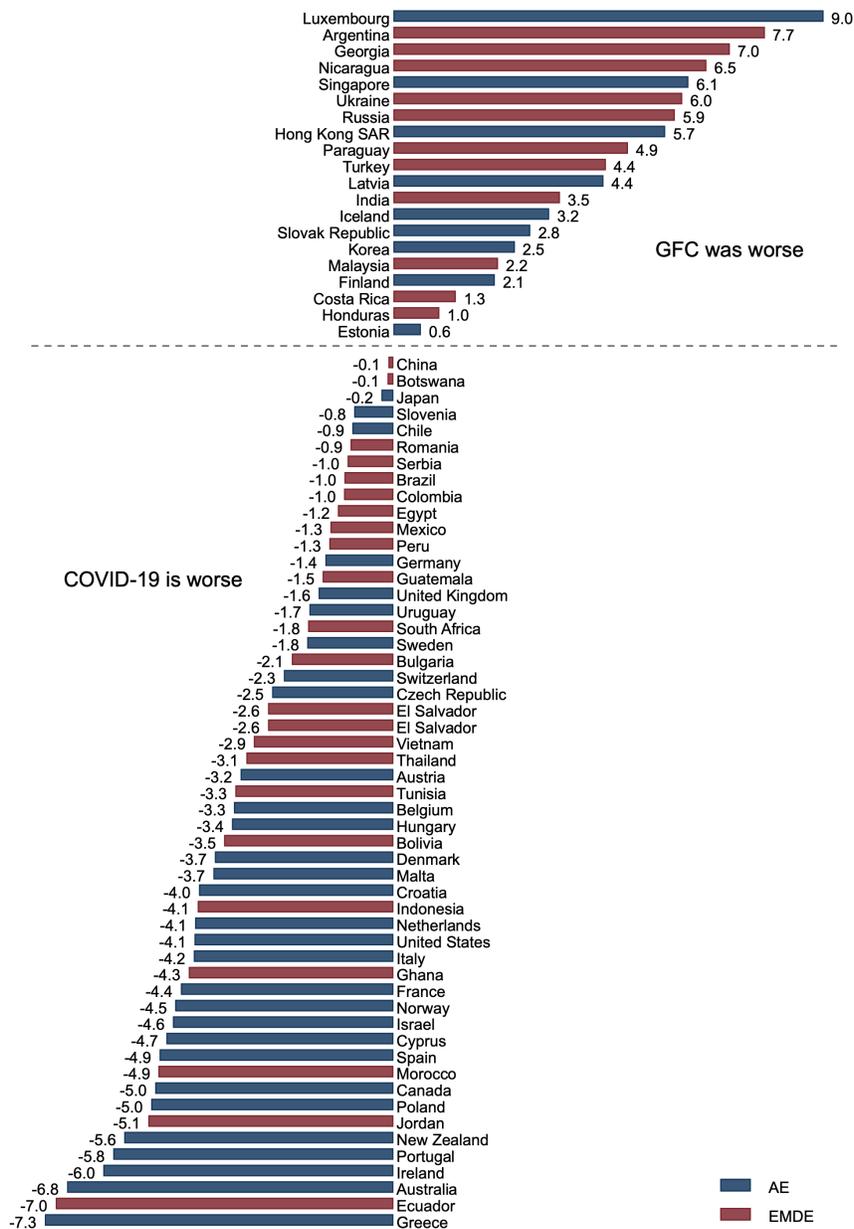
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Figure 1: IMF's Projected Growth Decline in 2020



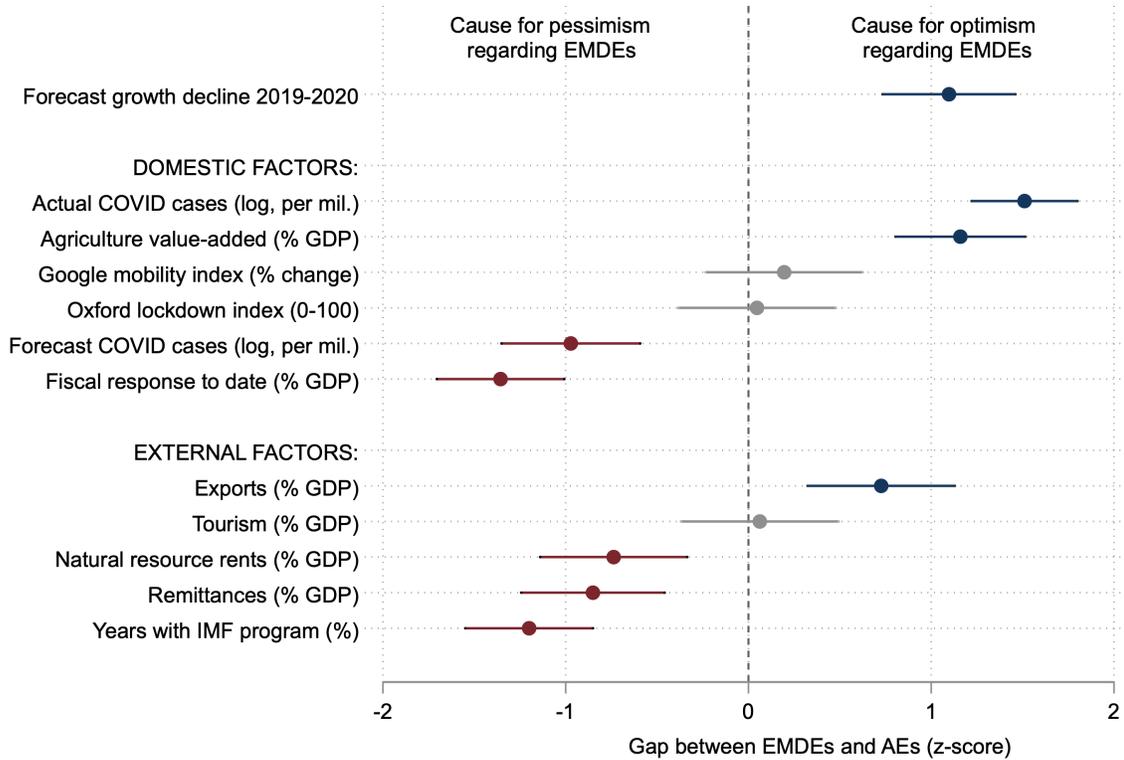
Forecast growth in 2020 from April [IMF, 2020] minus actual growth in 2019; percentage points.

Figure 2: Relative Impacts of COVID Crisis and GFC



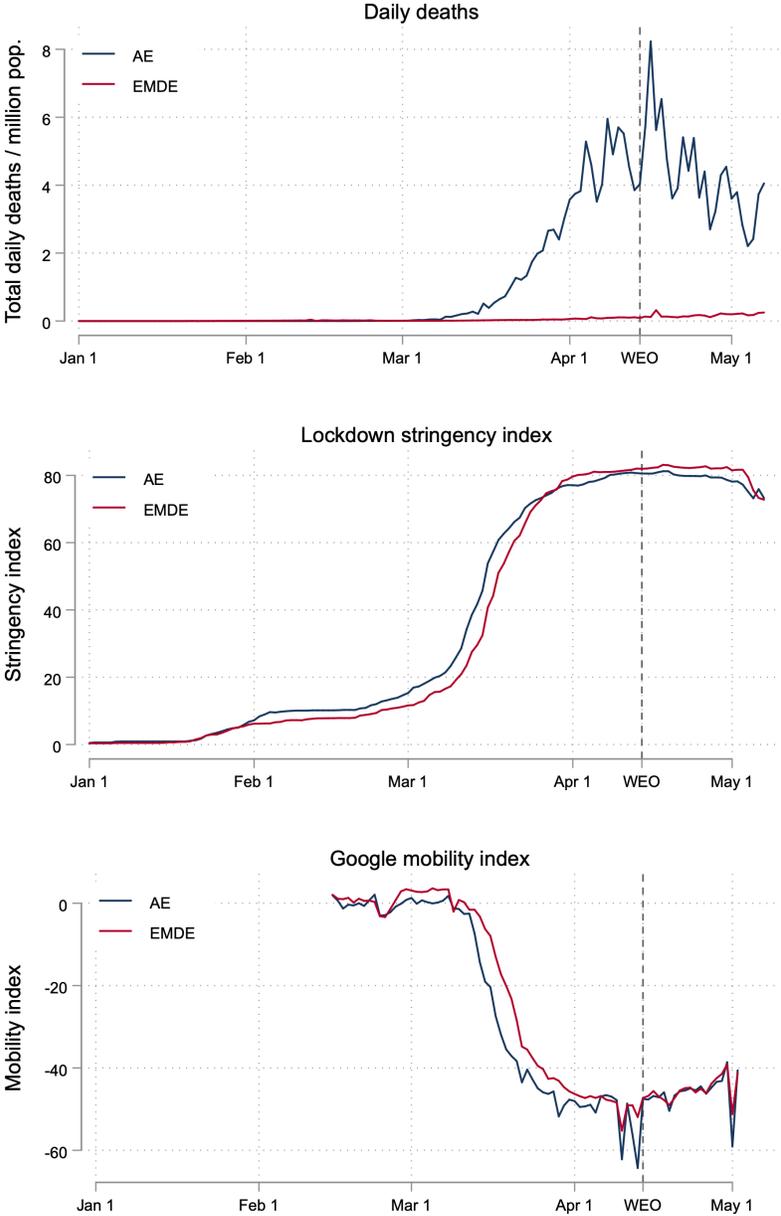
*Difference between decline in growth between IMF [2020] forecast for 2020 and 2019 actual growth (COVID) and decline in growth between Q32008-Q2009 and Q32007-Q22008 (GFC); percentage points.*

Figure 3: Comparing vulnerabilities between AEs and EMDEs



The figure presents descriptive statistics (differences in means and 95% confidence intervals) corresponding to Table 1, after transforming the variables as follows. For each variable, the coefficient shows the gap between EMDEs and AEs. Each variable has been (a) converted to a z-score using the mean and standard deviations of the cross-country distribution, and (b) had its sign flipped, where appropriate, so that higher values represent greater cause for optimism. Thus, for example, EMDEs are shown to be less vulnerable to trade disruptions because exports to GDP are roughly 0.7 standard deviations higher in AEs, but they are more vulnerable to a loss in remittances because EMDEs have a roughly 0.8 standard deviation higher ratio of remittances to GDP pre-crisis.

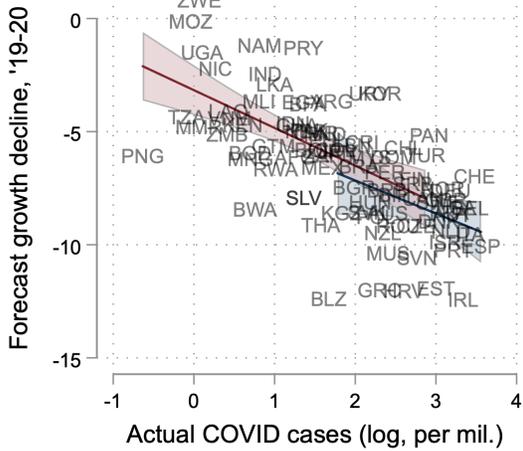
Figure 4: Time series of the COVID crisis for Advanced Economies (AE) and Emerging Markets and Developing Economies (EMDE)



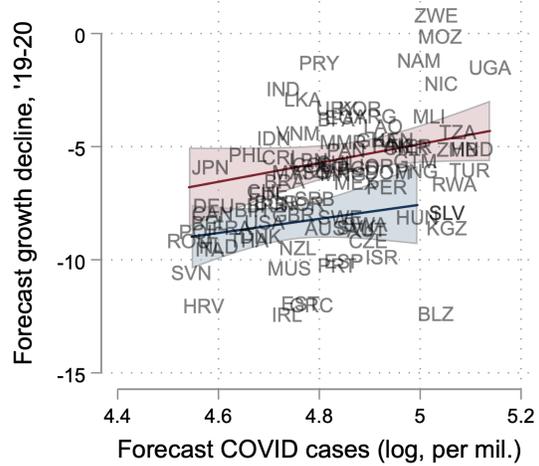
Actual cases come from *European Centre for Disease Prevention and Control [2020]* as of April 29. The stringency index is the average over all countries in each group from *Hale et al. [2020]*. The mobility index is the average over all countries in each group from *Google LLC [2020]*.

Figure 5: Correlates of the IMF forecast of growth decline

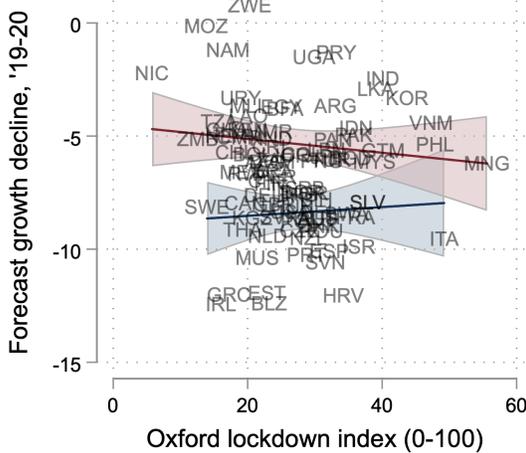
The IMF forecasts were highly correlated with case totals circa publication



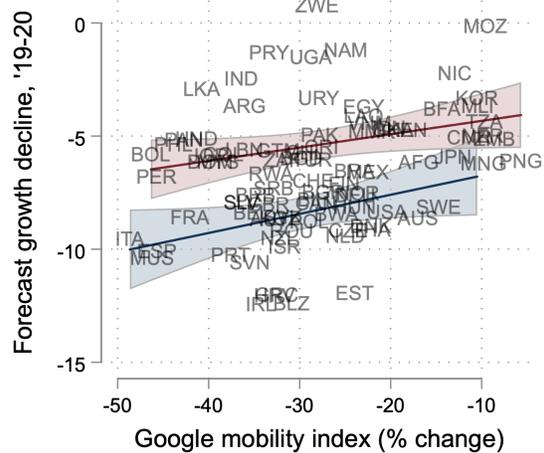
But the IMF growth forecasts appear to ignore the epidemiological forecasts



Forecasts of The Great Lockdown are uncorrelated with actual lockdowns...



...and modestly correlated with mobility, leaving a large unexplained optimism-gap for EMDEs.



Graphs are based on the regression sample of 87 countries used below. The vertical axis shows forecast growth in 2020 from April [IMF, 2020] minus actual growth in 2019; percentage points. Lines represent a linear fit with 95% confidence interval, run separately for AE and EMDE countries.

Table 1: Summary statistics

	Advanced Economies (AE)	Emerging Markets & Developing Economies (EMDE)
	(1)	(2)
<u>IMF forecasts:</u>		
Growth forecast revision 2020	-8.51 (0.30)	-6.22 (0.32)
Forecast growth decline 2019-2020	-8.38 (0.37)	-5.35 (0.33)
WB forecast growth decline 2019-2020	NA	-3.74 (0.33)
<u>External vulnerabilities:</u>		
Natural resource rents (% GDP)	1.10 (0.41)	5.73 (0.99)
Years with IMF program (%)	11.1 (3.10)	49.9 (4.13)
Exports (% GDP)	49.7 (4.38)	33.0 (2.54)
Tourism (% GDP)	4.60 (0.76)	4.32 (0.62)
Remittances (% GDP)	0.81 (0.17)	5.53 (0.87)
<u>Domestic COVID shock:</u>		
Actual COVID cases (log, per mil.)	2.83 (0.079)	1.31 (0.11)
Forecast COVID cases (log, per mil.)	4.74 (0.021)	4.89 (0.019)
Oxford lockdown index (0-100)	27.7 (1.28)	27.3 (1.31)
Google mobility index (% change)	-29.3 (1.51)	-27.3 (1.49)
Agriculture value-added (% GDP)	2.10 (0.23)	12.6 (1.29)
Fiscal response to date (% GDP)	7.81 (0.89)	1.52 (0.30)
Observations: 88	34	54

See the text for full variable definitions. Countries are the unit of observation. Standard errors for group means are reported in parentheses. Note the sample size for the fiscal response, which is not included in the regressions below, is slightly smaller: 75 countries overall, of which 46 are EMDE.

Table 2: Do external vulnerabilities explain the IMF's COVID forecasts?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dummy: EMDE	3.03*** (0.51)	2.63*** (0.54)	2.46*** (0.63)	2.49*** (0.53)	2.96*** (0.46)	3.38*** (0.56)	2.27*** (0.60)
Natural resource rents (% GDP)		0.087* (0.042)					0.046 (0.041)
Years with IMF program (%)			0.015 (0.0095)				0.0081 (0.0091)
Exports (% GDP)				-0.032** (0.011)			-0.023* (0.011)
Tourism (% GDP)					-0.24*** (0.050)		-0.19*** (0.052)
Remittances (% GDP)						-0.074 (0.049)	-0.043 (0.046)
Constant	-8.38*** (0.40)	-8.47*** (0.40)	-8.54*** (0.41)	-6.78*** (0.68)	-7.26*** (0.42)	-8.32*** (0.40)	-6.45*** (0.64)
Observations	88	88	88	88	88	88	88

The dependent variable is the reduction in growth between 2019 and 2020 as forecast in the April 2020 edition of the IMF's World Economic Outlook. Unless otherwise stated, regressors are measured for 2019 or the most recent available pre-crisis year. Countries are the unit of observation. Each column presents a separate, cross-sectional, OLS regression. Standard errors are in brackets and stars represent statistical significance at the 10 (\*), 5 (\*\*), and 1 (\*\*\*) percent levels.

Table 3: Does the pandemic or the lockdown explain the IMF's COVID forecasts?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>Panel A: No controls</u>							
Dummy: EMDE	3.03*** (0.51)	0.54 (0.67)	2.46*** (0.57)	3.02*** (0.51)	2.90*** (0.50)	2.01** (0.60)	1.92** (0.63)
Actual COVID cases (log, per mil.)		-1.63*** (0.33)					
Forecast COVID cases (log, per mil.)			3.83* (1.83)				2.49 (1.91)
Oxford lockdown index (0-100)				-0.017 (0.029)			0.022 (0.029)
Google mobility index (% change)					0.066** (0.024)		0.045 (0.027)
Agriculture value-added (% GDP)						0.097** (0.032)	0.062 (0.037)
Constant	-8.38*** (0.40)	-3.75*** (0.99)	-26.5** (8.69)	-7.91*** (0.89)	-6.44*** (0.80)	-8.58*** (0.39)	-19.6* (9.27)
Observations	88	88	88	88	88	88	88
<u>Panel B: With controls</u>							
Dummy: EMDE	2.27*** (0.60)	0.50 (0.68)	2.12*** (0.60)	2.28*** (0.61)	2.28*** (0.60)	2.06** (0.63)	1.99** (0.64)
Actual COVID cases (log, per mil.)		-1.39*** (0.32)					
Forecast COVID cases (log, per mil.)			3.24 (1.75)				3.02 (1.86)
Oxford lockdown index (0-100)				-0.0098 (0.026)			0.011 (0.028)
Google mobility index (% change)					0.027 (0.026)		0.018 (0.029)
Agriculture value-added (% GDP)						0.043 (0.035)	0.027 (0.037)
Constant	-6.45*** (0.64)	-2.59* (1.06)	-21.8* (8.35)	-6.17*** (0.98)	-5.67*** (1.00)	-6.63*** (0.66)	-20.7* (9.12)
Observations	88	88	88	88	88	88	88

The dependent variable is the reduction in growth between 2019 and 2020 as forecast in the April 2020 edition of the IMF's World Economic Outlook. COVID cases are measured as the log of infections per 1 million population. Forecasted infections are taken from Walker et al. [2020], assuming suppression policies in all countries. In Panel B, controls include all regressors listed in Table 2. Countries are the unit of observation. Each column presents a separate, cross-sectional, OLS regression. Standard errors are in parentheses and stars represent statistical significance at the 10 (\*), 5 (\*\*), and 1 (\*\*\*) percent levels.

Table 4: Robustness tests

	Bigger sample		4-part income categorization		Dependent var: IMF growth forecast revision		Dependent var: WB forecast growth decline	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Income groups:								
Dummy: EMDE	3.70*** (0.97)	2.31 (1.23)						
Dummy: Upper middle income			3.23** (1.17)	2.47 (1.30)	0.38 (0.66)	1.54* (0.74)	2.93 (2.37)	1.12 (2.23)
Dummy: Lower middle income			3.66** (1.16)	0.59 (1.60)	3.12*** (0.65)	3.88*** (0.91)	3.25 (2.37)	-1.25 (2.49)
Dummy: Low income			4.60** (1.39)	-0.96 (2.45)	4.45*** (0.78)	5.62*** (1.39)	3.81 (2.51)	-3.63 (3.16)
External factors:								
Natural resource rents (% GDP)		0.19** (0.072)		0.20** (0.072)		-0.13** (0.041)		0.19* (0.081)
Years with IMF program (%)		-0.0065 (0.016)		-0.0013 (0.016)		-0.0080 (0.0090)		-0.0032 (0.019)
Exports (% GDP)		-0.017 (0.019)		-0.016 (0.020)		0.0025 (0.011)		-0.019 (0.030)
Tourism (% GDP)		-0.16** (0.051)		-0.17** (0.052)		-0.13*** (0.030)		-0.20** (0.065)
Remittances (% GDP)		0.058 (0.062)		0.073 (0.063)		-0.037 (0.036)		0.077 (0.069)
Domestic factors:								
Forecast COVID cases (log, per		2.62 (3.40)		3.50 (3.43)		0.33 (1.95)		6.14 (4.32)
Agriculture value added (% GDP)		-0.037 (0.051)		0.035 (0.066)		0.019 (0.038)		0.050 (0.073)
Constant	-8.75*** (0.82)	-19.3 (16.1)	-8.75*** (0.82)	-23.7 (16.2)	-8.81*** (0.46)	-9.43 (9.24)	-6.73** (2.18)	-33.0 (20.4)
Observations	143	143	143	143	143	143	108	108
$R^2$	0.094	0.253	0.100	0.270	0.264	0.390	0.023	0.253

The dependent variable in columns (1)-(4) is the reduction in growth between 2019 and 2020 as forecast in the April 2020 edition of the IMF's World Economic Outlook. In all columns, we omit the mobility index and lockdown policy index, allowing the sample increase as a result. In columns (3)-(8), we switch from a binary division of AE and EMDE countries to the World Bank's 4-part income categorization. Note that the World Bank does not report forecasts for most high-income countries, so these are omitted entirely from the World Bank sample in columns (7) and (8). Countries are the unit of observation. Each column presents a separate, cross-sectional, OLS regression. Standard errors are in brackets and stars represent statistical significance at the 10 (\*), 5 (\*\*), and 1 (\*\*\*) percent levels.