ROMANIA

SELECTED ISSUES

August 2021

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INTERNATIONAL MONETARY FUND

ROMANIA

SELECTED ISSUES

July 22, 2021

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CONTENTS

CAN GOVERNANCE REFORMS LEAD TO HIGHER GROWTH IN ROMANIA?[1]

Following significant improvements in governance in Romania during the EU accession period, limited progress was made over the last decade and large gaps with regional EU peers remain. This paper examines the potential impact of closing Romania's governance gaps could have on output. We find that a sustained governance reform effort could significantly boost medium-term growth prospects. Governance reforms could also increase investment and improve public infrastructure.

A. Introduction

1.   Despite significant progress, sizable income and public infrastructure disparities with regional EU peers[2] remain. Romania has been making steady progress over the last decade in terms of income convergence with EU peers (Figure 1). However, a persistent income gap remains, highlighting the need for continued and sustained efforts to catch up. Romania also exhibits sizable infrastructure gaps with EU peers. Looking at a broad set of infrastructure indicators, we conclude that Romania lags peers in all major categories of public infrastructure (Figure 2).

Figure 1. Romania: GDP per Capita Gaps with CEE Peers
Real GDP per capita, normalize CEE=100

Sources: WEO and IMF staff calculations.

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[2] Defined throughout the analysis as Bulgaria, Czech Rep., Estonia, Hungary, Latvia, Lithuania, Poland and Slovak Rep.

Figure 2. Romania: Infrastructure Gaps with CEE Peers

Sources: WDI, Eurostat and IMF staff calculations.
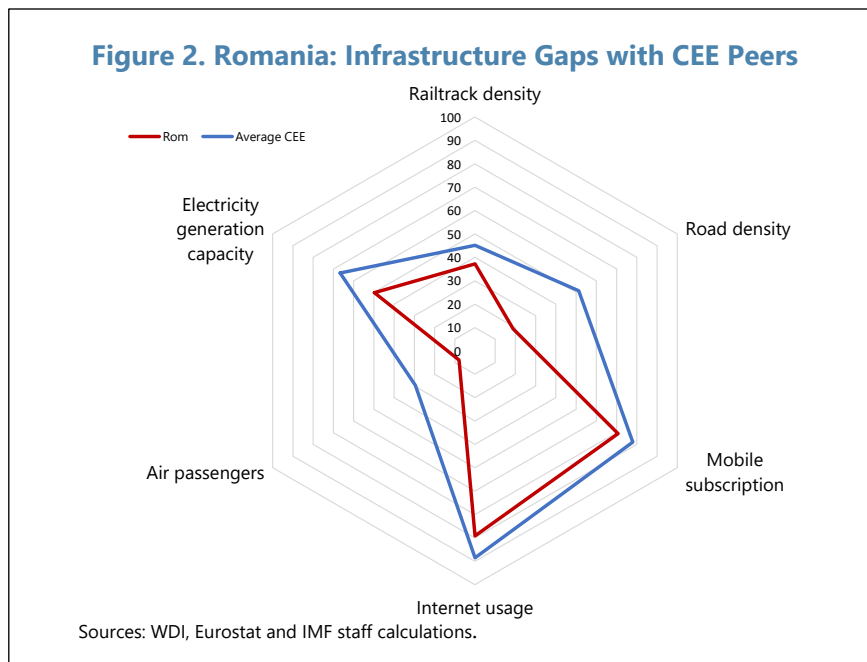
2.   At the same time, Romania has significant gaps in governance rankings when compared to EU regional peers. According to the Worldwide Governance Index (WGI)[3], following significant advances in the fight against corruption and governance reforms during 2003-2010, around the EU accession period, limited progress was made over the last decade and even reversals in terms of the gap with regional peers in some areas, namely regulatory quality, control of corruption and government effectiveness, in recent years (Figure 3).

Figure 3. Romania: Governance Gaps

(Percent gap with CEE, CEE average=100)

Sources: WGI and IMF staff calculations.

Note: The indicators are perception-based and should be interpreted with care as they are based on opinion surveys and expert assessment. Interpretation of the reported results should also take into account that there is uncertainty surrounding each point estimate.

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[3] See Annex II.

3.   **This paper investigates the extent to which progress with governance reforms could provide a boost to Romania's output and public infrastructure.** The paper uses panel data for emerging market (EM) economies to assess: (i) the potential impact of governance reforms on Romania's output growth, both the overall impact and the impact through the investment channel, and (ii) the potential impact of governance reforms on Romania's infrastructure stock. Would the infrastructure stock increase after governance reforms? Specific scenarios are examined to quantify the expected impacts.

4.   **The economic impact of governance reform has been a topic of interest in the economic literature and in policy circles.** Our analysis leans heavily on the 2019 October WEO Chapter 3, which studies the impact of a broad range of structural reforms on economic outcomes and shows that governance improvements are the cornerstone of a successful structural reform agenda, boosting returns from other reforms. Our work is also related to the 2017 November EUR REO Chapter 2, which focuses on a specific component of governance—the rule of law—and its impact on economic outcomes. In this context, the 2019 April Fiscal Monitor Chapter 2 assesses the fiscal costs of corruption, another aspect of governance, showing that corruption is linked to reduced resource allocation to education and health spending, which can be detrimental to output growth. Our main contribution to the literature is to refine and update the literature's findings pertaining to the role of governance, its components, and the investment channel. In addition, we focus on a specific country application, constructing scenarios of the economic impact of feasible governance improvements, which can be readily applied to other emerging markets economies.

5.   **The rest of the paper presents the details of our analysis.** Section B reviews the methodologies used. Section C presents the main regression results and examines a quantitative reform scenario for Romania. Section D discusses our results pertaining to investment as a channel of transmission from governance reforms to output. Section E examines the impact of governance reforms on public infrastructure and section F concludes.

B. Methodologies

6.   **To quantify the impact of governance reforms, we consolidate the potential impacts of governance reforms into a production framework.** In the production function, $Y = F(K^{pub}, K^{pri}, Z(\gamma)))$, output is directly affected by public capital, private capital, and other production factors $Z(\gamma)$, including possible complementarity between public and private capital, where γ represents the governance reforms. Public capital accumulation, $\delta K^{pub} = G(I^{pub}(\gamma), X(\gamma))$, depends on new public investment, depreciation and other factors that affect the transformation from investment to capital . Similarly, the accumulation of private capital, $\delta K^{pri} = G(I^{pri}(\gamma), M(\gamma))$, depends on new private investment, depreciation and other factors.

7.   **The impact of governance reforms (γ) drives the final output through both capital accumulation and the production function.** Governance reforms could increase the capital stock by raising investment directly or by affecting other factors in the capital accumulation equation, for example, investment efficiency etc. Governance reforms could also affect the final output through

other factors, $Z(\gamma)$, besides the increase in capital. These factors could include higher productivity gains, the impact of complementarity between public and private capital, boosting labor market efficiency, and increasing financial market efficiency. We will explicitly quantify the impact through the investment channels and discuss the potential effects from other channels.

8.   We quantify the impact of governance reforms by using the local projection methods. Future changes in output and other macro variables are regressed on the change in the governance index

$$y_{i,t+k} - y_{i,t-1} = c_i^k + d_t^k + \beta^k GovReform_{i,t} + \theta^k X_{i,t} + \epsilon_{i,t}^k \qquad (1)$$

where the $GovReform_{i,t}$ is measured as the change in governance score from the WGI. We take the average of three WGI subindices—government effectiveness, rule of law and regulatory quality—to capture Romania's governance standings.[4] $y_{i,t+k} - y_{i,t-1}$ represents the k period ahead percentage change in the dependent variable of interest: output, public investment, private investment, or an index of the infrastructure stock. For example, if y represents output, $y_{i,t+5} - y_{i,t-1}$ measures the percentage change in output five years after the governance shock compared to before the governance shock. Following 2019 October WEO Chapter 3, we add time and country fixed effects (d_t^k and c_i^k, respectively) and control for two lags of GDP growth, two lags of dependent variables and two lags of change in governance scores (with control variable $X_{i,t}$). The sample panel data covers up to 94 EMs during 1996-2015.[5] The setup of the regression equation implicitly assumes that governance performance can affect the dependent variable (growth, investment, infrastructure and etc.) concurrently, while the dependent variable can induce changes in governance with a one-year lag, capturing the more protracted nature of changes in governance.

9.   A similar empirical methodology is employed to trace out the role of the investment channel in propagating the economic impact of changes in governance. The influence of the increase in investment (due to governance reform) on output is estimated as:

$$y_{i,t+k} - y_{i,t-1} = c_i^k + d_t^k + \beta^k InvShock_{i,t} + \theta^k X_{i,t} + \epsilon_{i,t}^k \qquad (2)$$

where, following Furceri and Li (2017), we identify exogenous investment shocks as the difference between each year's October WEO projections for investment in the current year and the actual observations for that year. The sample covers 78 EMs during 1991-2020. The rationale is that when the projection is carried out for the Oct WEO, almost all the information for the year has been incorporated and the remaining projection errors can be interpreted as purely exogenous movements in investment. $y_{i,t+k} - y_{i,t-1}$ is the k period ahead change in output. The result of this

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[4] The other three WGI subindices--voice and accountability, political stability, and control of corruption—are excluded because of their more limited relevance for the Funds' governance engagement framework (IMF 2018) and because corruption can be interpreted as a competing summary index of governance.

[5] Due to data limitations, the sample size decreases for regressions involving public and private investment (42 EMs over 1997-2015) or infrastructure index (32-42 EMs depending on projection horizons over 1996-2015). See Annex I for the full list of countries.

regression also pins down the fiscal multiplier associated with public investment, which will be discussed later. All other variables in eq. (2) are identical to eq. (1).

C.   Main Regression Results and a Reform Scenario

10.   **Governance reforms have positive and significant impacts on output.** Detailed regression results for one through four-year changes after a two-standard-deviation shock in

governance show an economically and statistically significant and persistent effect on output (see Table 1). The resulting output impulse response for up to 6 years after the shock reveals that the impact reaches its maximum two years after the shock, leading to a 2 percent increase in output level, and stabilizes at 1.5 percent six years after the shock (Figure 4).

Figure 4. Romania: Output Response to Governance Reforms

(Percent change)
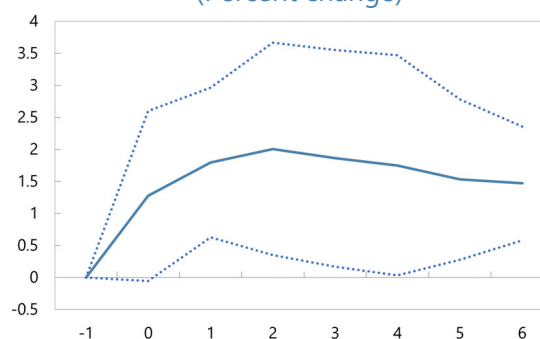
Sources: WDI, WGI, WEO and IMF staff calculations

Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

Table 1. Romania: Regression Results for the Impact of Governance Reforms on Output

VARIABLES	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
GovShock	0.0602	0.0848**	0.0949*	0.0879*	0.0828
	(0.0381)	(0.0336)	(0.0477)	(0.0486)	(0.0494)
L1.GovShock	0.0252	0.0284	0.0150	0.0213	0.0257
	(0.0155)	(0.0260)	(0.0263)	(0.0351)	(0.0295)
L2.GovShock	0.0137	0.00162	-0.00105	0.00280	0.00833
	(0.0185)	(0.0183)	(0.0257)	(0.0246)	(0.0312)
L1.GDP_growth	-0.00105	-0.000392	0.000276	0.00246	0.000920
	(0.00145)	(0.00130)	(0.00161)	(0.00175)	(0.00197)
L2.GDP_growth	0.000644**	0.00145**	0.00132	-0.000396	-0.00193*
	(0.000271)	(0.000538)	(0.00106)	(0.000799)	(0.000892)
Observations	1,390	1,389	1,295	1,201	1,107
Number of countries	94	94	94	94	94

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

11.   These estimation results suggest that a feasible governance reform effort in Romania would significantly boost medium-term growth prospects. A reform scenario, motivated by the pace of governance reforms observed during the EU accession period,[6] suggests that closing ½ of the governance gap with the EU peers by 2026 (see Figure 5) would increase annual medium-term output growth rate by 0.3pp. The persistent reform effort would close ¼ of Romania's income gap with its EU peers by 2026, increasing its GDP level by 2.7 percent.

Figure 5. Romania: Governance and Output Catch-Ups

Governance gap with CEE peers
Governance index, normalize CEE=100

Output catch-up with CEE peers
Real GDP per capita, normalize CEE=100

Sources: WGI and IMF staff calculations.
Note: The indicators are perception-based and should be interpreted with care as they are based on opinion surveys and expert assessment. Interpretation of the reported results should also take into account that there is uncertainty surrounding each point estimate.

Sources: WEO and IMF staff calculations.
Note: Impact on output cumulated from yearly governance improvement shocks and estimated impulse response for output.

12.   The impact could be even larger if reforms target gains in government effectiveness, where the gap with peers is the largest. Among the subindices we used to construct the governance index, government effectiveness (see Annex II. for detailed definition) shows the largest potential for increasing output. Figure 6 plots the output responses to a two standard deviation shock in government

Figure 6. Romania: Output Response to Government Effectiveness Reforms
(Percent change)

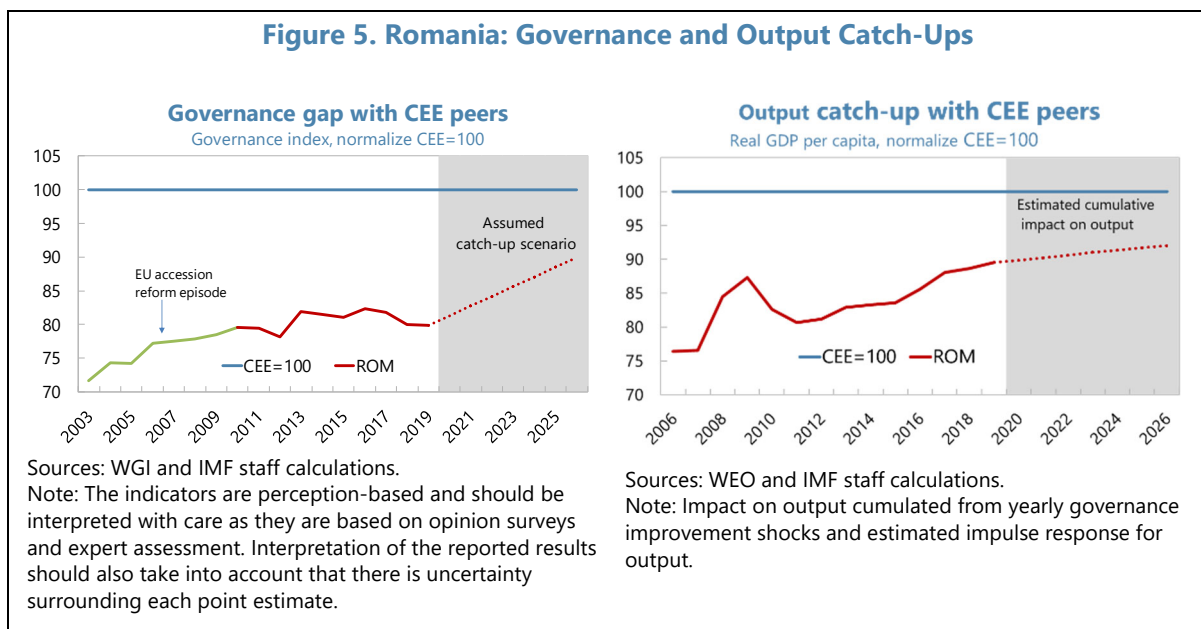Sources: WDI, WGI, WEO and IMF staff calculations.
Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

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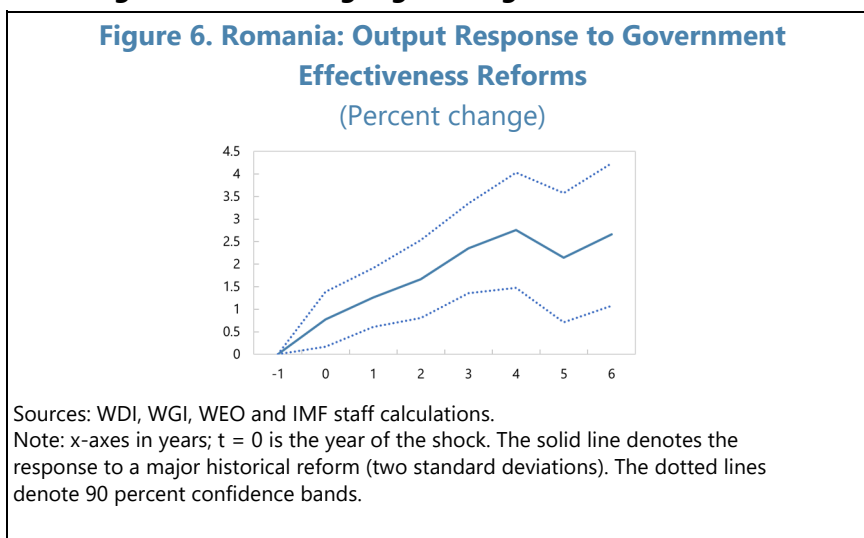
[6] The implied pace of reforms for this scenario—a 0.45 standard deviations increase in the governance index per year—is broadly consistent with the progress observed during the EU accession period (2003-2010), which saw a 0.42 standard deviation increase per year. The impact on output is calculated as the accumulation from yearly governance improvement shocks, using the impulse response shown in Figure 4

effectiveness, one of the subindices used to construct the governance index. The impact on output from reforms in government effectiveness is persistent and larger than for the broader index. As already shown in Figure 4, output increases by 1.5% as a response to the shock to the overall constructed index at a 6-year horizon. The output response to an improvement in government effectiveness almost doubles this number. The response to higher regulatory quality shows a similar pattern as for the overall index, while the response to strengthening the rule of law is less significant and diminishes at a 6-year horizon (see Figure 7).

Figure 7. Romania: Output Response to Other Governance Subindices

Output response to reform in regulatory quality
(% change)

Output response to reform in rule of law
(% change)

Sources: WDI, WGI, WEO and IMF staff calculations
Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

D. The Role of the Investment Channel

13.   To shed more light on the impact of governance on output, we study the role of investment as a transmission channel. Regression results (from equation (1)) suggest that both public investment and private investment respond positively and significantly to shocks in governance (see Table 2 and Table 3), with the increase in private investment being more persistent in the medium term (see Figure 8). The impacts reach peak levels for public investment 3 years after the shock, and 1 year after the shock for private investment. Regression results from the output-investment equation (i.e., equation (2)) are in line with Furceri and Li, suggesting that output responds positively and significantly to investment shocks—a 10 percent increase in public investment increases output by 0.2-0.4 percent depending on the horizon, and similar results apply to an increase in private investment (see Table 4, Table 5 and Figure 9).

14.   Based on the results from regression equation (2) in Table 4, we infer that the short-term fiscal multiplier is 0.45 and the medium-term fiscal multiplier is 0.85. A 10 percent increase in the public investment increases output by 0.23 percent on impact and 0.42 percent in a 3-year horizon. Considering that on average, public investment is 5 percent of GDP, the fiscal multiplier can be calculated. We consider the short-run multiplier to be in line with the literature,

Table 2. Romania: Regression Results for the Impact of Governance Reforms on Public Investment

Public Investment	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
GovShock	0.583**	0.804***	1.012***	1.108***	0.749*
	(0.237)	(0.222)	(0.223)	(0.295)	(0.380)
L1.GovShock	0.438***	0.644***	0.657***	0.486*	0.680***
	(0.0963)	(0.168)	(0.199)	(0.233)	(0.209)
L2.GovShock	0.424***	0.431***	0.156	0.385*	0.391
	(0.0976)	(0.136)	(0.227)	(0.212)	(0.249)
L1.GDP_growth	0.00151	0.00277	0.00276	0.00548	0.00602
	(0.00197)	(0.00308)	(0.00488)	(0.00494)	(0.00541)
L2.GDP_growth	-0.000651	0.00468	0.00400	0.00323	-0.00766
	(0.00212)	(0.00335)	(0.00334)	(0.00450)	(0.00539)
L1.PubInv	-0.225***	-0.283***	-0.351***	-0.302***	-0.295**
	(0.0472)	(0.0712)	(0.0572)	(0.0910)	(0.0989)
L2.PubInv	-0.0450	-0.273***	-0.194***	-0.241**	-0.120
	(0.0618)	(0.0409)	(0.0616)	(0.0869)	(0.128)
Observations	545	544	502	461	420
Number of countries	42	42	42	42	42

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

Table 3. Romania: Regression Results for the Impact of Governance Reforms on Private Investment

Private Investment	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
GovShock	0.409	0.922***	0.826***	0.679**	0.768*
	(0.326)	(0.192)	(0.227)	(0.273)	(0.356)
L1.GovShock	0.602***	0.513***	0.528**	0.449**	0.939***
	(0.191)	(0.114)	(0.191)	(0.182)	(0.212)
L2.GovShock	0.0418	0.0384	0.0675	0.265**	0.421***
	(0.0951)	(0.116)	(0.216)	(0.116)	(0.0956)
L1.GDP_growth	-0.00119	-0.00410	-0.0153*	-0.00573	-0.00205
	(0.00427)	(0.00553)	(0.00739)	(0.00684)	(0.00313)
L2.GDP_growth	-0.0111**	-0.0115*	-0.00410	-0.00967*	-0.0163***
	(0.00415)	(0.00588)	(0.00798)	(0.00507)	(0.00478)
L1.PrivInv	-0.393***	-0.354**	-0.536***	-0.353**	-0.653***
	(0.0940)	(0.140)	(0.128)	(0.142)	(0.115)
L2.PrivInv	0.0693	-0.240**	-0.0701	-0.184	-0.287*
	(0.0792)	(0.110)	(0.135)	(0.127)	(0.146)
Observations	518	518	478	438	399
Number of countries	40	40	40	40	40

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

Figure 8. Romania: Investment Response to Governance Reforms

Public investment response to governance reform
(% change)

Private investment response to governance reform
(% change)

Sources: WDI, WGI, WEO and IMF staff calculations.

Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

Table 4. Romania: Regression Results for the Impact of Public Investment on Output

| VARIABLES	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
PubInvShock	0.0225**	0.0339***	0.0345**	0.0423**	0.0398*
	(0.00856)	(0.0117)	(0.0152)	(0.0175)	(0.0203)
L1.PubInvShock	0.00466	0.00369	0.00934	0.00594	0.000420
	(0.00315)	(0.00729)	(0.0117)	(0.0133)	(0.0158)
L2.PubInvShock	-0.00337	-0.00866	-0.0212	-0.0295	-0.0328*
	(0.00246)	(0.00907)	(0.0139)	(0.0173)	(0.0165)
L1.GDP_growth	0.00384***	0.00464***	0.00569***	0.00646***	0.00601**
	(0.000567)	(0.00111)	(0.00149)	(0.00200)	(0.00218)
L2.GDP_growth	0.000495	0.00304**	0.00417**	0.00401*	0.00390*
	(0.000392)	(0.00125)	(0.00181)	(0.00205)	(0.00227)
Observations	1,683	1,605	1,527	1,450	1,374
Number of countries	78	78	78	78	72

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

while the medium-term estimate is on the conservative side. Furceri and Li 2017 find the fiscal multiplier to be 0.2 in the short-run and 0.6 at a 5-year horizon. Ramey 2019 argues that most of the literature has found fiscal multipliers to be below 1. However, the author also points out that larger multipliers could arise in economic downturns (e.g. ZLB) or for investment-specific spending. Blanchard and Leigh 2012 find the short-run fiscal multiplier to be 0.9 to 1.7 for European countries during recession periods. A survey of infrastructure investment multipliers by Ramey 2021 concludes that short-run multiplies can be significantly below 1, while long-run investment multipliers can be significantly larger than 1. For the purpose of this study, it is important to note that while the estimated multipliers determine the size of the investment channel in transmitting the impact of governance reforms on output growth, it does not affect the estimated overall impact of governance reforms on output growth.

Table 5. Romania: Regression Results for the Impact of Private Investment on Output

VARIABLES	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
PrivInvShock	0.0156***	0.0295***	0.0396***	0.0455***	0.0414***
	(0.00441)	(0.00657)	(0.0107)	(0.0136)	(0.0139)
L1.PrivInvShock	0.00975*	0.0220**	0.0259*	0.0205	0.0206
	(0.00528)	(0.0107)	(0.0141)	(0.0150)	(0.0157)
L2.PrivInvShock	0.0116**	0.0162*	0.00997	0.00721	0.0168
	(0.00437)	(0.00798)	(0.00957)	(0.00920)	(0.0111)
L1.GDP_growth	0.00393***	0.00470***	0.00571***	0.00641***	0.00586**
	(0.000549)	(0.00111)	(0.00154)	(0.00205)	(0.00218)
L2.GDP_growth	0.000348	0.00277**	0.00377*	0.00362	0.00355
	(0.000412)	(0.00125)	(0.00187)	(0.00217)	(0.00240)
	(0.00140)	(0.00325)	(0.00659)	(0.00545)	(0.0119)
Observations	1,638	1,563	1,488	1,413	1,339
Number of groups	75	75	75	75	69

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

Figure 9. Romania: Output Response to Investment Shocks
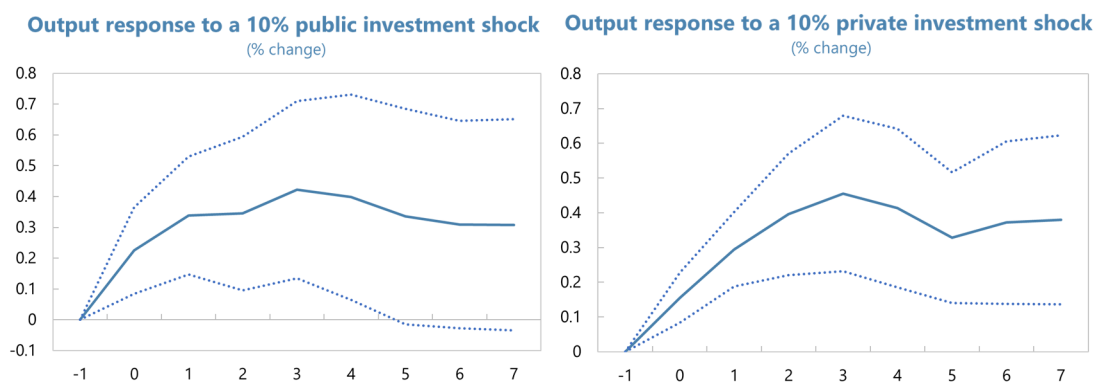
Output response to a 10% public investment shock (% change)

Output response to a 10% private investment shock (% change)

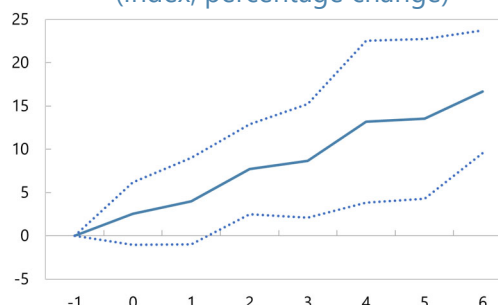Sources: WDI, WGI, WEO and IMF staff calculations.
Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

15.   The results suggest that investment is the main channel of transmission of improvements in governance to output. To determine the contribution of the investment channel under the reform scenario, we first consider the increases in output (see Table 1) and in public and private investment (see Tables 2 and 3) due to governance shocks by using regression equation (1), and then calculate the increase in output that is induced by the increase in investment based on regression equation (2) (see Tables 4 and 5). We find that public and private investment channels each account for about 1/3 of the total increase in output under

Figure 10. Romania: Infrastructure Response to Governance Reforms
(Index, percentage change)
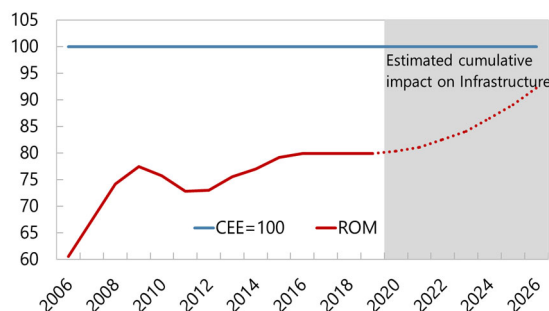
Sources: WDI, WGI, WEO and IMF staff calculations.
Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

the reform scenario.[7] Governance reforms can also boost output through other channels, including the labor channel. For example, while emigration has decreased labor productivity in Romania as skilled people have been leaving, better governance can help retain these workers and thus have a positive impact on output by increasing human capital (Cooray and Schneider 2016). We also note that the positive impact of governance reforms is not limited to output. Our analysis and previous literature suggest that governance reforms are positively linked with a reduction in inequality (see annex III) and informality (2019 October WEO Chapter 3).

E.   Bridging the Infrastructure Gap

16.   Governance reforms could also help with the infrastructure catchup between Romania and peer countries. To measure the impact of governance reforms on the infrastructure stock, we first construct an infrastructure index out of several indicators, as a summary measure for the infrastructure level of the country. Four infrastructure indicators are used: internet usage (percent of population), air passengers carried (passengers carried per population), mobile usage (percent of population) and rail track density (kilometer per thousand hectare). These series are standardized first, as they are in different units. Then common information is extracted by using the Principal Component Analysis (PCA) to form a single indicator (the first principal component). The regression results, based on equation (1), suggest that this infrastructure indicator responds positively and significantly to governance reforms. (see Figure 10 and Table 6). Under the reform scenario, Romania would close 61 percent of the infrastructure gap with CEE peers by 2026. (see Figure 11).

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[7] Given that our long-run fiscal multiplier is estimated on the conservative side relative to the literature, we note that a higher multiplier would increase the role of the public investment channel.

Figure 11. Romania: Infrastructure Catch-Up with CEE Peers

(Index, normalize CEE = 100)

Sources: WDI and IMF staff calculations.
Note: Infrastructure index is constructed out of four infrastructure indicators. We aggregate the impacts on infrastructure from each year's governance catchup shock based on the regression results to calculate the infrastructure index increase for a certain year.

Table 6. Romania: Regression Results for the Impact of Governance Reforms on Infrastructure Index

Infrastructure Index	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
GovShock	0.121	0.189	0.364**	0.409**	0.623**
	(0.104)	(0.143)	(0.149)	(0.188)	(0.268)
L1.GovShock	0.0381	0.211*	0.355*	0.472*	0.569**
	(0.0532)	(0.113)	(0.182)	(0.266)	(0.213)
L2.GovShock	0.196**	0.274*	0.519**	0.515**	0.720**
	(0.0872)	(0.147)	(0.228)	(0.212)	(0.243)
L1.GDP_growth	0.00312	0.00698	0.0112**	0.0177***	0.0221***
	(0.00297)	(0.00416)	(0.00497)	(0.00532)	(0.00527)
L2.GDP_growth	0.00180	0.00578	0.0102**	0.0126***	0.0114***
	(0.00152)	(0.00341)	(0.00378)	(0.00338)	(0.00368)
L1.infra_index	0.212**	0.353**	0.546***	0.624***	0.696*
	(0.0716)	(0.129)	(0.182)	(0.200)	(0.330)
L2.infra_index	0.133**	0.182	0.0977	-0.0227	-0.279
	(0.0491)	(0.114)	(0.160)	(0.313)	(0.499)
Observations	394	379	365	334	304
Number of countries	40	37	33	32	32

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

F. Conclusions and Policy Recommendations

**17.	Efforts to improve economic governance need to be re-energized in Romania**.
Empirical evidence for EMs confirms that governance improvements can have a significant positive
impact on output. Applying these estimates to Romania, we find that bridging half of the gap in
governance rankings with regional peers could add 0.3 percentage points annually to Romania's
medium-term growth. Persistent reform efforts could close ¼ of Romania's income gap with its EU
peers by 2026. The main channel of impact involves public and private investment, each accounting
for 1/3 of the total impact on output. Furthermore, governance improvements could also help
alleviate social challenges such as migration, inequality and informality.

**18.	To maximize medium-term growth prospects, improving government effectiveness
should be a key focus of the governance reform agenda.** This is the area of governance where
gaps with regional peers are the widest. Furthermore, empirical estimates show that gains in
government effectiveness have the largest output impact among governance sub-components
investigated. Given the centrality of the investment channel in generating output gains,
improvements in public investment management should be a priority, covering all aspects from the
planning stage to more efficient procurement to speed-up project implementation. SOE
performance is another area in need of improvements. Governance of SOEs needs to be
strengthened, which will help boost public investment and accelerate the absorption of EU funds.
Consistent implementation of corporate governance reforms and improved monitoring of SOE
financial performance would be important reform components. While the main discussion of the
paper focuses on the impact on growth, reforms in other areas of governance could be favored if
needed for other policy targets.

Annex I. List of EM Countries and Data Sources

List of Countries

Albania	Georgia	Peru
Algeria	Grenada	Philippines
Angola	Guatemala	Poland, Rep. of
Antigua and Barbuda	Guyana	Qatar
Argentina	Hungary	Romania
Armenia	India	Russia
Azerbaijan	Indonesia	Samoa
Bahamas, The	Iran	Saudi Arabia
Bahrain	Iraq	Serbia
Barbados	Jamaica	Seychelles
Belarus, Rep. of	Jordan	South Africa
Belize	Kazakhstan	Sri Lanka
Bosnia and Herzegovina	Kosovo, Rep. of	St. Kitts and Nevis
Botswana	Kuwait	St. Lucia
Brazil	Lebanon	St. Vincent and the Grenadines
Brunei Darussalam	Libya	Suriname
Bulgaria	Lithuania	Syria
Cabo Verde	Malaysia	Thailand
Chile	Maldives	Timor-Leste, Dem. Rep. of
China	Marshall Islands, Rep. of the	Trinidad and Tobago
Colombia	Mauritius	Tonga
Costa Rica	Mexico	Tunisia
Croatia	Micronesia, Federated States of	Turkey
Dominica	Montenegro, Rep. of	Turkmenistan
Dominican Republic	Morocco	Tuvalu
Ecuador	Namibia	Ukraine
Egypt	North Macedonia, Republic of	United Arab Emirates
El Salvador	Oman	Uruguay
Equatorial Guinea	Pakistan	Vanuatu
Eswatini	Palau	Venezuela
Fiji, Rep. of	Panama	
Gabon	Paraguay	

Data Sources

1) IMF WEO Database

2) World Bank World Development Index (WDI)

3) Worldwide Governance Index (WGI) by Daniel Kaufmann and Aart Kraay

4) Eurostat

Annex II. Definition of Worldwide Governance Index

1.   Government Effectiveness: Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

2.   Regulatory Quality: Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

3.   Rule of Law: Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

4.   Voice and Accountability: Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

5.   Political Stability and Absence of Violence/Terrorism: Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.

6.   Control of Corruption: Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Annex III. Governance and Inequality

1. Governance reforms could also reduce inequality, as measured using the Gini index for disposable income taken from the Standardized World Income Inequality Database (SWIID). The higher the Gini index is, the more inequality the country has. Regression results suggest that the Gini index does respond negatively and significantly to governance improvements based on the same set of sample countries as in the main text (see charts and table below). Under the reform scenario we defined in section C, Romania's Gini index would be reduced by 3.1 percent by 2026, closing 55 percent of the inequality gap with CEE peers. This is calculated by measuring the impact of governance reforms on the level of Gini index using the regression equation (1).
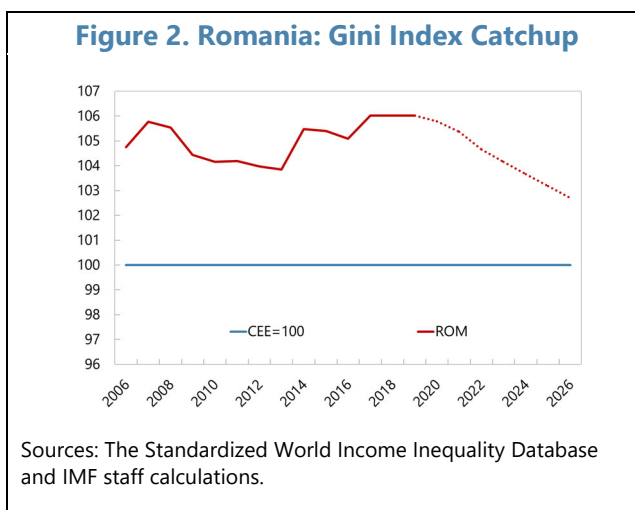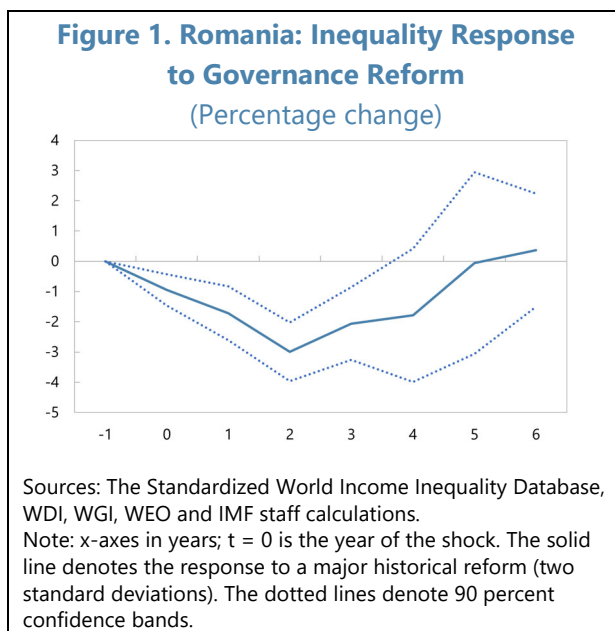
Figure 1. Romania: Inequality Response to Governance Reform
(Percentage change)

Sources: The Standardized World Income Inequality Database, WDI, WGI, WEO and IMF staff calculations.
Note: x-axes in years; t = 0 is the year of the shock. The solid line denotes the response to a major historical reform (two standard deviations). The dotted lines denote 90 percent confidence bands.

Figure 2. Romania: Gini Index Catchup

Sources: The Standardized World Income Inequality Database and IMF staff calculations.

Table 1. Romania: Regression Results for the Impact of Governance Reforms on Gini Index

Gini index	(1) $y_t - y_{t-1}$	(2) $y_{t+1} - y_{t-1}$	(3) $y_{t+2} - y_{t-1}$	(4) $y_{t+3} - y_{t-1}$	(5) $y_{t+4} - y_{t-1}$
GovShock	-0.0446**	-0.0811**	-0.141***	-0.0971**	-0.0842
	(0.0149)	(0.0256)	(0.0277)	(0.0345)	(0.0635)
L1.GovShock	-0.0112	-0.0300	-0.0408	0.00528	0.0882***
	(0.0178)	(0.0237)	(0.0478)	(0.0399)	(0.0249)
L2.GovShock	-0.0261**	-0.0383	0.00682	0.102**	0.0942*
	(0.0117)	(0.0235)	(0.0375)	(0.0312)	(0.0439)
L1.GDP_growth	0.00157*	0.00243*	0.00242	-0.000182	3.71e-06
	(0.000716)	(0.00114)	(0.00193)	(0.000568)	(0.000520)
L2.GDP_growth	0.000914**	0.00122**	0.000771	0.000956	0.000950
	(0.000392)	(0.000514)	(0.000716)	(0.00101)	(0.00108)
L1.Gini	0.200***	0.586***	0.0842	-0.101	-0.316
	(0.0556)	(0.164)	(0.268)	(0.169)	(0.308)
L2.Gini	0.316***	-0.0402	-0.165	-0.336	-0.689**
	(0.0395)	(0.0997)	(0.209)	(0.275)	(0.265)
Observations	537	475	415	355	295
Number of countries	62	60	60	60	58

Note: Standard errors (asymptotic Driscoll-Kraay SEs are used) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Fixed effects are included but not shown.

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