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Macroeconomic Impact of Accelerating Public Infrastructure Investments in Morocco

Marzie Taheri Sanjani, Kassia Antoine, and Pedro Rodriguez

SIP/2026/026

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on March 5, 2026. This paper is also published separately as IMF Country Report No 26/73.

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Macroeconomic Impact of Accelerating Public Infrastructure Investments in Morocco

Prepared by Marzie Taheri Sanjani, Kassia Antoine, and Pedro Rodriguez*

Authorized for distribution by Laura Jaramillo Mayor
April 2026

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ABSTRACT: This paper studies Morocco's public infrastructure investment scale-up in 2024–2030, amounting to around 12 percent of 2024 GDP. Empirical evidence shows that improvements in infrastructure quantity and quality have contributed importantly to Morocco's productivity growth in recent decades. Model simulations suggest that the planned investment increase would raise productivity and long-run real GDP, though gains are dampened by high import leakages and crowding out of private investment. Higher investment efficiency raise growth without increasing debt, while cost overruns worsen debt dynamics without additional output gains. The analysis highlights the importance of efficient public investment management and careful fiscal risk management.

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Morocco

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SELECTED ISSUES

March 5, 2026

Approved By
Middle East and Central Asia Department

Prepared By Marzie Taheri Sanjani, Kassia Antoine (both MCD), Pedro Rodriguez (RES).

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MACROECONOMIC IMPACT OF ACCELERATING PUBLIC INFRASTRUCTURE INVESTMENTS[1]

Morocco is scaling up investment infrastructure spending in 2024-2030 for an estimated 11.9 percent of 2024 GDP. Empirical results show that improvements in infrastructure quantity and quality have been important contributors to Morocco's productivity growth in recent decades and underscores the potential gains from further investment. Model simulations suggest that the planned investment spending would raise productivity and long-run real GDP, though dampened by high import leakages and private investment crowding-out. Higher investment efficiency would raise growth without increasing debt, while cost overruns would worsen debt dynamics with no additional output gains. Model analysis illustrates the importance of efficient public investment management and careful management of fiscal risks.

A. Introduction

1. Infrastructure has been central to Morocco's development strategy, anchoring gains in productivity, competitiveness, and integration. Since the mid-2000s, sustained public investment has expanded transport, energy, and digital infrastructure, supporting economic diversification and improved productivity. The 2021 New Development Model emphasizes high-quality infrastructure to continue strengthening competitiveness and regional integration. At the same time, structural pressures—including rapid urbanization, demographic growth, and rising demand for services—underscore the need for further investment to upgrade capacity, close access gaps, and enhance resilience.

2. This paper examines Morocco's infrastructure strategy through the lens of growth payoffs and fiscal risks. It begins by quantifying the historical contribution of infrastructure to productivity growth using cross-country panel regressions, identifying which sectors have delivered the strongest returns. It then evaluates the macroeconomic implications of Morocco's current investment plans using the IMF's Flexible System of Global Models (FSGM)—a multi-region general equilibrium model calibrated for Morocco. The model captures short-term demand effects, long-run productivity gains, and interactions between fiscal policy and private sector behavior, making it very suitable for this type of scenario analysis.

B. Past Contributions of Infrastructure to Morocco's Productivity Growth

3. Closing infrastructure gaps can play a pivotal role in fostering growth and development. Beyond its function as a complement to labor and non-infrastructure capital in the

[1] This note was prepared by Marzie Taheri Sanjani, Kassia Antoine (both MCD) and Pedro Rodriguez (RES). The team gratefully acknowledges Jiae Yoo (EUR) for generously sharing the original dataset and analysis which provided an essential foundation for the empirical work. The team thanks Hannah Brown (AFR) for the incredible research assistance. The authors would like to thank the Moroccan authorities for helpful exchanges, comments and suggestions.

production process, infrastructure constitutes a distinctive form of capital. Infrastructure has the potential to generate network effects (e.g., roads) and crowd in additional investment by enhancing productivity (e.g., telecommunications), thereby boosting output both in the short term and over time (Calderón and Servén 2018).

4. A large body of literature emphasizes the role of public investment as a driver of productivity and long-term development. This relationship is at times summarized by its high fiscal multiplier compared to other types of expenditure (Abiad et al. 2016; Miyamoto et al. 2020). The 2025 IMF Fiscal Monitor estimates that increasing infrastructure investment by 1 percent of GDP can raise output by about 2 percent in advanced economies and 4 percent in emerging market and developing economies over the long term. Cross-country evidence also points to a positive and significant correlation between infrastructure quantity and quality and economic growth (Calderón and Servén 2004; Bizimana et al. 2021). For North African countries, including Morocco, recent empirical analysis indicates that better logistics performance and trade infrastructure are associated with large increases in trade volumes and meaningful gains in GDP, through stronger productivity, deeper value-chain participation, and higher investment inflows (Rayner et al. 2026).

5. Morocco has made notable progress in upgrading its infrastructure over recent decades, with room for further improvements. Infrastructure outcomes have improved across numerous dimensions over the past decade, as compared to 1991–2010. These advances have supported higher living standards and greater economic diversification, reinforced by complementary reforms in governance, trade, and investment (Cardarelli and Koranchelian 2023). While Morocco has made significant strides in catching up with peers, important gaps remain where both the quantity and quality of infrastructure could be further strengthened.

- **Electricity:** Generation capacity has expanded significantly, with a growing share of coal and gas, yet Morocco continues to import fuel and energy to meet rising demand. Generation capacity per 1,000 workers was about half of the average for middle income countries in the period 2011-2023, and about a third of the average for the MENAP countries. Moreover, electricity quality, measured by the share of output transmitted and distributed, has not kept pace with gains in generation capacity and access to electricity.

- **Roads:** Infrastructure quantity, measured by road density, has remained relatively low and broadly stable, reflecting the concentration of population and economic activity in the northern regions. By contrast, quality, measured by the share of paved roads, has continued to improve and is now broadly comparable with MENAP and investment-grade peers.

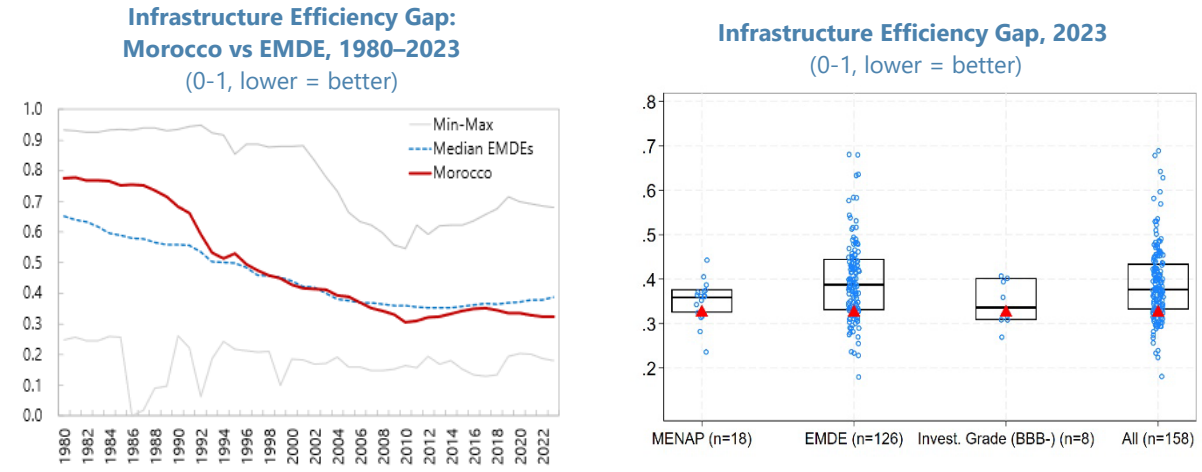
- **Telecommunications:** Internet access expanded rapidly in the late 2010s, supported by digital-transformation policies, and now exceeds comparator averages. However, telecommunications quality, measured by internet speed, continues to lag, with 5G services becoming operational only in late 2025.

- **Ports:** Port infrastructure stands out as an area of particularly strong progress. The launch of Tanger Med Terminal 1 in 2007 and Terminal 2 in 2019 significantly expanded capacity, enabling

manufacturing growth, particularly in automotive. While container handling per 1,000 workers remains below regional averages, Tanger Med is now the largest port by container capacity in the Mediterranean and Africa. Importantly, gains have also been achieved in port quality, as measured by the Liner Shipping Connectivity Index, reflecting Morocco's improved integration into global shipping networks, including a broader range of liner services, operators, and vessel sizes.

6. Beyond infrastructure outcomes, the efficiency with which investment translates into results is a key dimension of Morocco's infrastructure performance. Public spending efficiency refers to how effectively governments convert a given level of expenditure into maximum possible outcomes (Figure 1). The public spending efficiency gap reflects the difference between actual results and those achievable under optimal management, technology, and institutional practices. Estimates in the 2025 IMF Fiscal Monitor show that Morocco's infrastructure spending efficiency gap narrowed substantially between 1980 and 2010. Morocco's infrastructure spending efficiency compares favorably to emerging markets, with scope to further improve performance and move closer to the global efficiency frontier.

Figure 1. Morocco: Infrastructure Spending Efficiency Gap



Source: IMF 2025 Fiscal Monitor.

Figure 2. Morocco: Benchmarking Investment in Infrastructure, 1991–2023

Sources: UN, IEA, International Road Federation, European Commission, World Bank, and IMF staff estimates.

7. Infrastructure quantity and quality are found to be significant drivers of economic growth. Extending the work of Bizimana et al. (2021) and using the methodological framework by Calderón and Servén (2004, 2010), the analysis estimates an augmented production function incorporating physical infrastructure indicators for a panel of 95 countries over 1990-2023. It employs principal component analysis (PCA) to construct composite indices of infrastructure quantity and quality across sectors. In addition to electricity, roads and telecommunications, the PCA also considers port infrastructure. This methodological innovation aims to capture the role ports play in regional integration and enabling export potential. According to UN Trade and Development (UNCTAD), over 80 percent of the goods traded globally are seaborne, making port infrastructure indispensable for participation in global supply chains. Moreover, ports increasingly function as logistics hubs, generating ancillary services that contribute to economic activity.[2]

8. The empirical results underscore that not only the scale but also the quality of infrastructure are key drivers of medium-term productivity gains (Table 1). Controlling for country-specific factors and lagged output, the results show that infrastructure indicators remain positive and highly significant across estimation methods. The index that combines quantity and quality offers the best model fit.

9. Based on the regression results, fitted values for Morocco suggest that infrastructure quantity and quality have been important contributors to growth in the past two decades (Figure 3). It is estimated that improvements in the composite indices of infrastructure quantity and quality across sectors have accounted for roughly one-fifth of Morocco's productivity growth since 2005, with contributions split nearly evenly between quantity and quality improvements. These contributions are higher than the averages estimated MENAP and middle-income countries in the sample. Looking at the sectoral composition, the estimates show that improvements in telecommunications represent the largest contributor, followed by ports.

[2] Evidence suggests that port infrastructure and logistics performance have significant positive effects on domestic economies, particularly in emerging markets (Munim and Schramm, 2018).

Table 1. Morocco: Infrastructure and Growth – 5-Year Averages

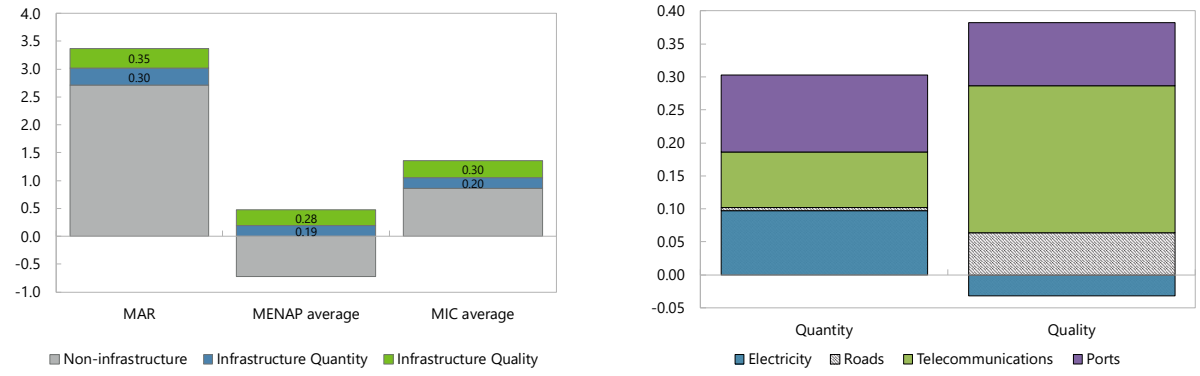
Dependent variable: GDP per worker (log difference)	(1) Panel with time effects	(2) Within estimator	(3) Difference GMM	(4) Panel with time effects	(5) Within estimator	(6) Difference GMM
Lag output	-0.105***	-0.287***	-0.321***	-0.140***	-0.317***	-0.350***
	(0.016)	(0.031)	(0.075)	(0.018)	(0.048)	(0.088)
Education	0.025	0.011	0.049	0.029	0.025	0.070
	(0.015)	(0.024)	(0.050)	(0.018)	(0.030)	(0.053)
Financial development	0.011	-0.011	-0.009	0.001	-0.031	-0.017
	(0.011)	(0.016)	(0.039)	(0.015)	(0.025)	(0.040)
Government burden	-0.053**	-0.110***	-0.050	-0.095***	-0.138***	-0.077
	(0.022)	(0.036)	(0.074)	(0.025)	(0.042)	(0.066)
Trade openness	-0.003	-0.045*	-0.033	-0.001	-0.005	0.016
	(0.013)	(0.026)	(0.068)	(0.015)	(0.034)	(0.068)
Institutional quality	0.101*	0.114	0.167	0.150**	0.149	0.122
	(0.056)	(0.084)	(0.167)	(0.065)	(0.105)	(0.226)
Inflation	0.012	0.021**	0.025	0.026**	0.037***	0.027
	(0.009)	(0.009)	(0.024)	(0.011)	(0.012)	(0.032)
Modern sector share	0.256*	0.685***	1.306**	0.421**	1.656***	2.057**
	(0.131)	(0.210)	(0.647)	(0.183)	(0.416)	(0.844)
Terms of trade	0.042	0.040	0.032	0.068	0.141**	0.054
	(0.028)	(0.028)	(0.039)	(0.055)	(0.059)	(0.083)
Terms of trade shocks	-0.146	-0.044	0.294	-0.133	-0.145	0.137
	(0.119)	(0.117)	(0.231)	(0.150)	(0.147)	(0.243)
Infrastructure quantity	0.027**	0.075***	0.099**	..	..	..
	(0.011)	(0.020)	(0.043)	..	..	..
Infrastructure quantity & quality	..	..	..	0.034***	0.050***	0.059**
	..	..	..	(0.009)	(0.018)	(0.022)
Observations	385	385	214	215	215	117
N. countries	95	95	89	72	72	64
R-sq	0.26	0.45	..	0.46	0.46	..
N. instruments			57			51
Arellano-Bond test for AR (2)			0.16			0.50

Source: UN, Penn World Table 11.0, International Road Federation, European Commission, International Telecommunication Union, World Bank, Barro and Lee (2021), International Country Risk Guide (ICRG) dataset, UN Conference on Trade and Development (UNCTAD) and IMF staff estimates.

*** p<0.01, ** p<0.05, and * p<0.1. Infrastructure quantity and quality refers to the first principal component of the underlying physical measures: electricity (generation capacity in MW per 1,000 workers and the share of electricity losses in transmission and distribution), roads (length in Km per area and the share of paved roads), telecommunication (the share of internet access and international internet bandwidth per user), and ports (TEU per 1,000 workers and Liner shipper Connectivity Index).

Figure 3. Morocco: Contribution of Infrastructure Quantity and Quality to Productivity Growth

(Between 2005–2009 and 2020-latest, Annualized Averages in Percentage Points)



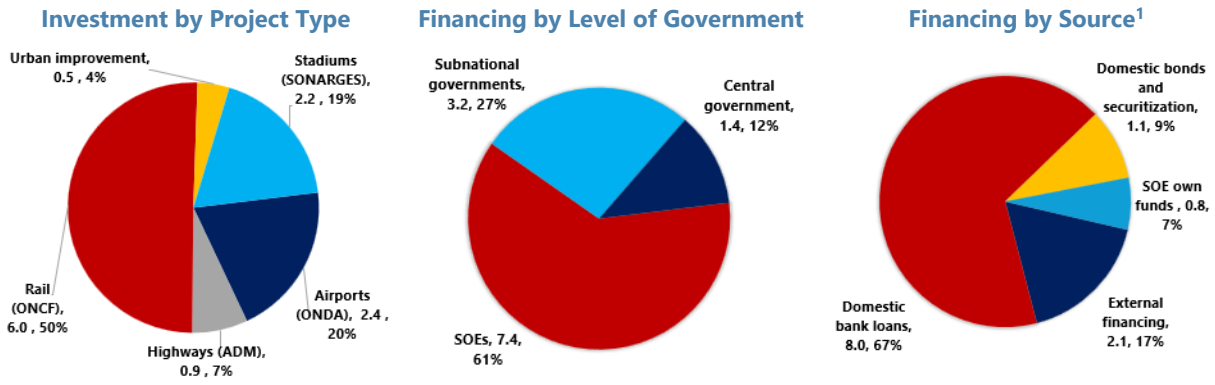
Source: Authors' calculations.

C. Model Analysis of Morocco's Investment Program 2024–2030

10. Morocco is planning on accelerating public spending on connectivity and tourism infrastructure by an estimated 11.9 percent of 2024 GDP between 2024-2030. [3] This includes upgrading railways (6.0 percent of GDP), airports (2.4 percent of GDP) and roads (0.9 percent); constructing and renovating stadiums (2.2 percent); and enhancing urban and tourism infrastructure (0.5 percent).

11. SOEs have a central role in implementation, and a large share of the projects will be financed with domestic resources (Figure 4). [4] SOEs in the corresponding sectors would finance 7.4 percent of GDP of these investments (through concessional external financing, domestic loans and bonds, and own funds), subnational governments would cover 3.2 percent of GDP (through bank loans), and the central government would finance 1.4 percent of GDP (within the budget).

Figure 4. Morocco: Public Investment in Connectivity and Tourism Infrastructure 2024–2030
(MAD 190 billion, 11.9 percent of 2024 GDP)
(Percent of 2024 GDP and share of total)



Source: National authorities and IMF staff estimates.
Note: Data as of October 2025.
1/ In this chart, the portion of investment included in the central government budget (1.4 percent of GDP) is assumed to be financed 80 percent through domestic financing and 20 percent through external financing. In the FSGM model, this amount of 1.4 percent of GDP is accommodated within the central government budget by reducing other spending.

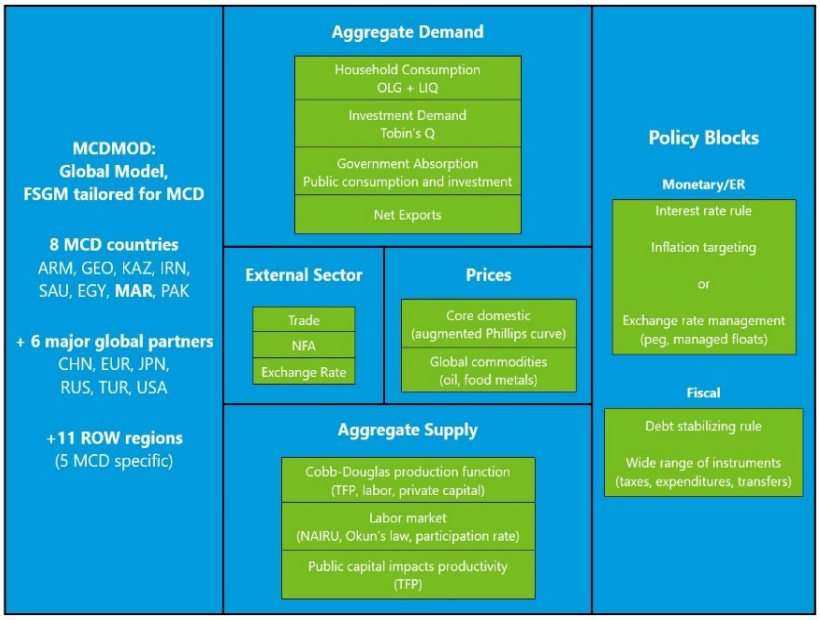
[3] This figure does not include other ongoing multi-year investment, including dams and digital transformation water desalination plants, energy transition projects, and health sector infrastructure.

[4] SOEs are major actors investing in and operating infrastructure in Morocco. In 2024, SOEs invested over 6 percent of GDP, compared to 5.8 percent by the Treasury (excluding sales of real estate assets). Commercial SOEs directed most investments to mining, energy, and water (3.4 percent of GDP), followed by infrastructure and transport (0.8 percent of GDP) and housing and territorial development (0.7 percent of GDP).

D. Analytical Framework: IMF FSGM

12. The simulations use MCDMOD, the MCD-specific calibration of the IMF's Flexible System of Global Models (FSGM)—a multi-region dynamic general equilibrium model covering Morocco (Andrle et al. 2015) (Figure 5). FSGM operates at an annual frequency with forward-looking expectations, combining micro-founded household and firm behavior with reduced-form external-sector relationships. Within a consistent framework, the FSGM traces both short-run aggregate demand effects via Keynesian multiplier channels and long-run supply-side effects via public capital productivity spillovers. Results are expressed as deviations from a no-investment scenario,[5] which facilitates direct cross-scenario comparison.

Figure 5. Morocco: Structure of MCDMOD: The FSGM-Based General Equilibrium Model for MCD Countries



Source: Infographique of MCDMOD base on Andrle et al. 2015.
OLG – Overlapping Generations (households)
LIQ – Liquidity-constrained households
NFA – Net Foreign Assets

13. The model transmits the investment shock through three main channels.[6] Morocco-specific calibrations are outlined in Table 2.

- **Crowding-out and structural crowding-in:** In the near-term, public borrowing raises sovereign spreads, increasing real corporate interest rates, initially crowding out private investment. Over the medium-term, private investment is crowded-in as public capital accumulates and boosts productivity, improving private returns.

- **Import leakage:** Given the nature of the infrastructure investment—that includes a large share of imported goods such as high-speed rail and airport equipment—it is assumed that 60 percent of spending would be used for imports, therefore only 40 percent of the spending would support domestic output, dampening the impact of the investment on output.

[5] The no-investment scenario is the steady state scenario that does not incorporate the public investment spending shock.

[6] A key model limitation is that FSGM does not explicitly capture active labor market policies: the Okun coefficient and persistence parameter governs unemployment dynamics.

- **Productivity spillovers:** Public capital raises total factor productivity by entering the private production function. This supply-side effect becomes the dominant growth driver after construction and depends critically on government investment spending efficiency.

Table 2. Morocco: Selected FSGM Calibration Parameters

Parameter	Value	Description
α^{kG} (TFP elasticity to public capital)	0.29	A 10 percent of GDP increase in public capital raises TFP by 2.9 percent, the primary driver of medium-term GDP gains.
μ^{G} (Import content of investment)	0.60	60 percent of infrastructure spending is imported, limiting demand multipliers.
Λ (Liquidity-constrained households)	0.65	65 percent of households consume all current disposable income, amplifying fiscal multipliers.
Φ^{G} (Okun coefficient)	–0.50	A 1 percent output gap lowers the unemployment rate by 0.5 percentage points.
Φ^{p} (Unemployment persistence)	0.90	High labor market persistence delays employment gains.
Γ (Phillips curve coefficient)	0.18	Core inflation reacts modestly to the output gap.
Σ (Sovereign risk sensitivity)	3.00	A 1 percent of GDP rise in debt raises the risk premium by 3 bps.
Δ^{G} (Public capital depreciation rate)	0.04	Public capital depreciates at 4% annually consistent with long-lived transport infrastructure
Exchange rate regime		Managed float against EUR/USD basket; limits nominal exchange rate adjustment.
Sources: IMF staff estimates based on Morocco-specific macroeconomic, fiscal, and financial data.		

E. Scenario Design

14. Key assumptions underpinning the modeling of the infrastructure push include:

- **Consolidated public sector.** This combines central government, subnational governments, and SOEs.

- **Total investment.** 11.9 percent of 2024 GDP, phased over 7 years 2024-2030, with some front-loading. [7]

- **Two phases**. There are two distinct phases, separated by a structural break in 2030. Phase I (2024–2030) covers construction, with investment front-loaded in 2024–2025, peaking during 2026–2029, and concluding in 2030 to coincide with the FIFA World Cup. Phase II (post-2030) focuses on capital utilization and debt servicing. In Phase II, new investment stops, TFP gains

[7] The simulation distributes the 11.9 percent of 2024 GDP investment across 7 years, with higher public investment in earlier years (1.7 percent of GDP in 2024) and following a gradually declining trend thereafter, falling to 1.2 percent of GDP by 2030.

from the accumulated capital stock drive growth and private investment, and debt servicing costs are met via user fees on infrastructure. [8]

- **Total financing:** The financing mix is modeled as follows: domestic bank loans (6.9 percent of GDP, of which 3.2 percent of GDP corresponds to regional borrowing), concessional external debt (1.8 percent of GDP), domestic bonds and securitization (1.1 percent of GDP), SOE own funds (0.8 percent of GDP), and investment accommodated within the existing central government budget by reducing other spending (1.4 percent of GDP). [9]

- **Reinvestment to maintain the capital stock.** Annual reinvestment starts in 2031 to offset 4 percent capital depreciation per year.

- **Baseline scenario and 4 alternative scenarios.** Five scenarios are simulated:

  - **Scenario A: Baseline**

  - **Scenario B: Higher public investment spending efficiency by +20 percent**. In the model, this implies that with the same amount of public investment, Total Factor Productivity of private capital stock (TFP) is 20 percent higher than in the baseline.

  - **Scenario C: Lower public investment spending efficiency by −20 percent**. In the model, this implies that with the same amount of public investment, TFP is 20 percent lower than in the baseline.

  - **Scenario D: Cost Overruns by +30 percent**. International experience shows that large infrastructure projects can face cost overruns ranging from 20-50 percent (Flyvbjerg et al., 2003). [10] In the model, this implies that 30 percent higher investment spending does not lead to higher output.

  - **Scenario E: Tax Financing of 4.6 percent of GDP**. In contrast to the baseline, that assumes 3.2 percent of GDP is regional borrowing and 1.4 percent of GDP is accommodated within the budget by reducing other spending, this alternative scenario assumes that this amount of 4.6 percent of GDP is instead financed by raising consumption tax effective rates to generate 4.6 percent of GDP in tax revenues.

[8] In the model, user fees on infrastructure are modeled as lower lump-sum transfers from the public sector to households.

[9] In the model, spending is accommodated within the existing public sector budget by reducing lump-sum transfers to households.

[10] Cost overruns in large transport infrastructure are widespread and significant. In a global sample of 258 projects, average overruns were about 20 percent for roads, 34 percent for bridges and tunnels, and 45 percent for rail, with nine out of ten projects exceeding initial estimates (Flyvbjerg, Holm, and Buhl 2003, 2004). Later evidence shows airports averaging roughly 25–30 percent overruns, with wide dispersion (Flyvbjerg 2014).

F. Baseline Scenario Results

15. The baseline scenario delivers sustained productivity gains and growth, with higher public sector debt (Figure 6). The investment program raises real GDP by 2 percent above the no-investment scenario by 2030. From 2031 onward, productivity spillovers from accumulated public capital lift long-run (and potential) output to about 3 percent, primarily via higher TFP. Annual public investment spending widens the fiscal deficit on average to about 1.2 percent of GDP in 2024-2030. Public debt rises by 7–8 percent of GDP through 2030 but begins declining thereafter as debt amortization (which the public sector covers via user-fees) begins and stronger growth improve the debt ratio.

16. Private investment is subdued in the near term because of crowding out and recovers over the medium term as productivity gains take hold. The real exchange rate depreciates due to the supply side expansion that increases TFP and competitiveness and reduces relative domestic prices. Although better competitiveness raises exports in the near-term, thanks to higher productivity and depreciation of the REER, the high import content in the infrastructure program leads to a widening of the current account deficit in 2024-2030. The current account begins to narrow after the construction phase ends in 2031 and as exports make further gains. In the context of the managed float, the nominal exchange rate depreciation is minimal, therefore the real exchange rate depreciation translates to lower inflation in the near term. Inflation sees a modest short-lived rise—about 0.1 percentage point—due to the demand pressures but as supply-side factors increase inflation falls and stays below steady state until 2034 and stabilizes as the supply effect is fully absorbed and the economy converges to steady state. Higher public sector borrowing raises the sovereign risk premium, which contributes, along with lower inflation, to higher real corporate interest rates during the construction phase, crowding out private investment through 2030. From 2031, higher TFP contributes to improved private returns (profitability), which raises real private investment.

G. Alternative Scenarios Results

17. The results from the alternative scenarios illustrate that the macroeconomic gains of the infrastructure spending push depend critically on public infrastructure spending efficiency, cost control, and financing design. Results of the alternative scenarios are also reported as deviations from the no-investment scenario.

- **Public infrastructure spending efficiency drives growth without altering fiscal costs**. A 20 percent efficiency gain (Scenario B) raises long-run GDP to 3.5–4 percent above baseline, while a 20 percent shortfall (Scenario C) limits gains to 2.0–2.5 percent. In both cases, debt peaks at 7– 8 percent of GDP above the no-investment scenario, underscoring that both the quantity and quality of public spending determine the growth returns.

- **Cost overruns erode fiscal space with no growth upside.** A 30 percent cost overrun (Scenario D), pushes debt 2-3 percentage points of GDP above the baseline scenario (Scenario A) by 2034, with GDP gains similar to the baseline scenario.

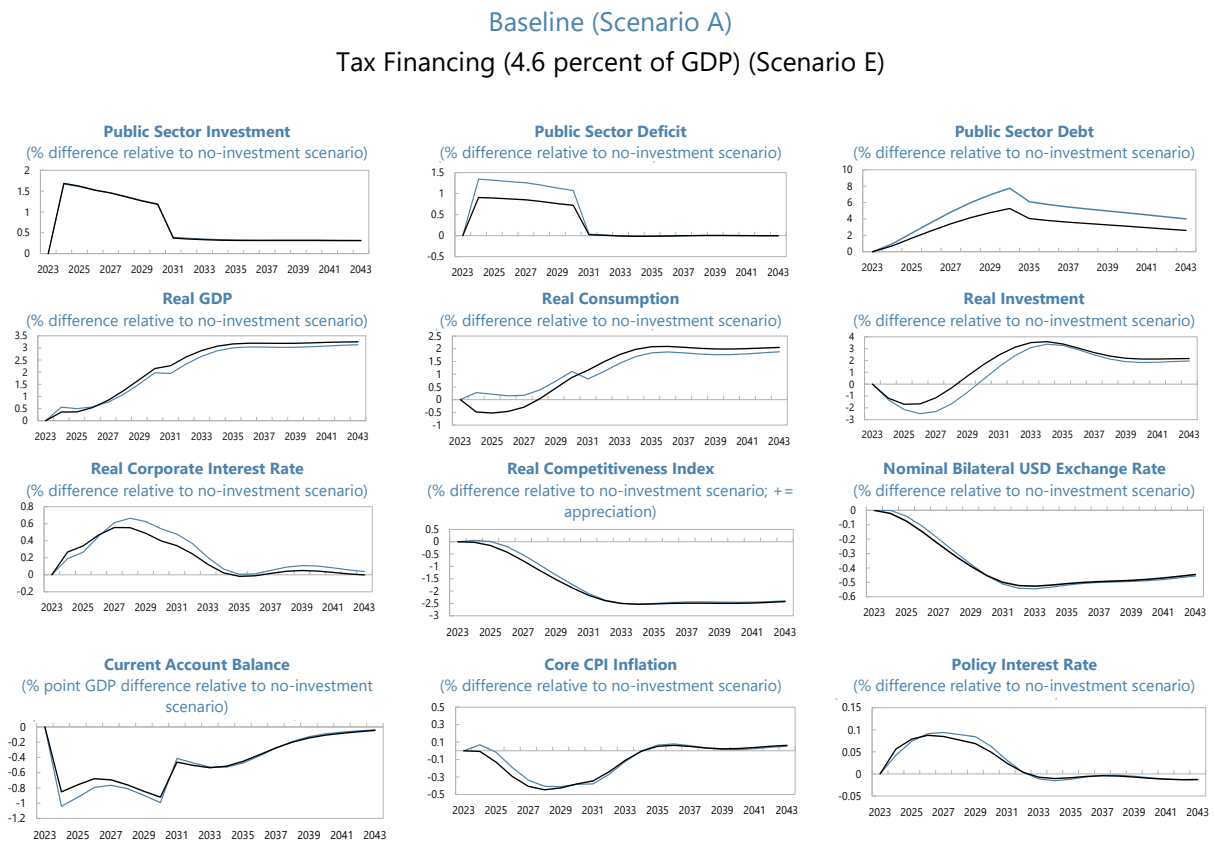
- **Tax financing reduces the debt buildup, though with some compression in short-term demand.** If higher consumption taxes are raised to finance 4.6 percent of GDP of investment spending (Scenario E), public sector debt is 3-4 percentage points of GDP lower than the baseline (Scenario A). Real consumption falls temporarily through 2027 as higher taxes reduce disposable income, but by year 10, growth and investment recover as real interest rates decline. Real GDP in Scenario E is higher than in baseline Scenario A, including because the lower debt burden results in a lower risk premium.

Figure 6. Morocco: Macroeconomic Impact of Morocco's Infrastructure Investment Program: Baseline and Stress-Test Scenarios

Baseline (Scenario A)
Higher public investment spending efficiency (+20%) (Scenario B)
Lower public investment spending efficiency (-20%) (Scenario C)
Cost overrun (+30%) (Scenario D)

Note: Blue = Baseline (Scenario A); Red = Higher public investment spending efficiency (Scenario B); Black = Lower public investment spending efficiency (Scenario C); Green = Cost Overrun (Scenario D). All panels show deviations relative to the no-investment scenario.
Sources: IMF staff FSGM (MCDMOD) simulations.

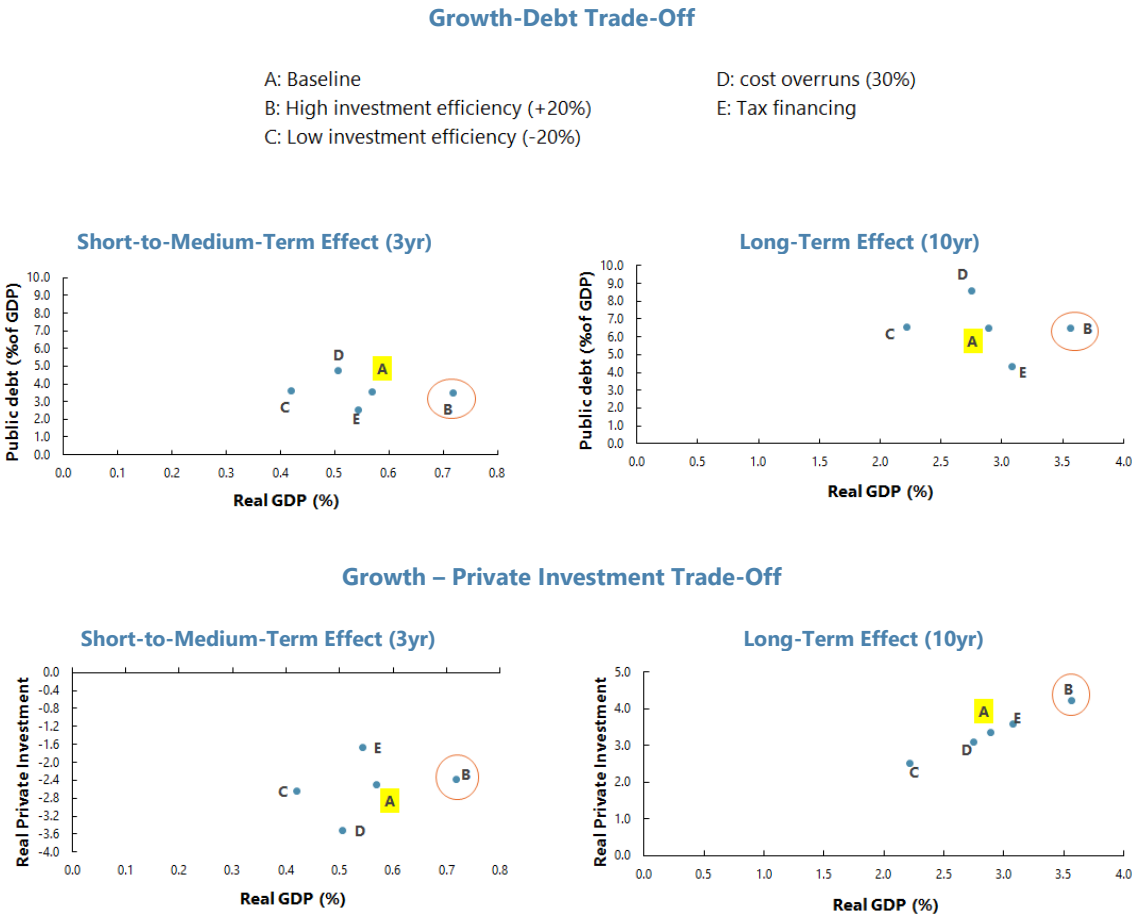
Figure 7. Morocco: Macroeconomic Effects of Tax Financing the Regions and Treasury Share



Note: Scenario E: instead of accommodating 4.6 percent of GDP of investment within the existing budget by reducing other spending, investment is accommodated by raising consumption taxes. All panels show deviations relative to the no-investment scenario. Blue = Baseline (Scenario A); Black = Tax financing (Scenario E).
Sources: IMF staff FSGM (MCDMOD) simulations.

18. In terms of growth, the high public spending efficiency scenario outperforms the others, while the cost overruns scenario underperforms. Figure 8 summarizes the results across the different scenarios for growth, public debt, and real private investment. While short-run impacts are similar, high efficiency (Scenario B) delivers the strongest growth with baseline-level debt. Low efficiency (Scenario C) yields weaker growth for similar debt. Cost overruns (Scenario D) result in the highest debt and lowest returns. Tax financing (Scenario E) achieves growth slightly higher than in the baseline in the medium term, with less debt. The crowding in of the private investment is highest under Scenario B, and weakest under Scenario D due to persistently high corporate borrowing costs.

Figure 8. Morocco: Long-Term Trade-Offs Under FSGM Scenarios: Growth, Investment, and Debt Impacts of Morocco's Infrastructure Plan



Note: A = Baseline; B = Higher public investment spending efficiency (+20 percent); C = Lower public investment spending efficiency (−20 percent); D = Cost Overrun (+30 percent); E = Tax Financing (4.6 percent of GDP). Left panels: 3-year horizon; right panels: 10-year horizon. X-axis: real GDP deviation from no-investment scenario (percent). Top panels Y-axis: public debt deviation from no-investment scenario (percent of GDP); Lower panels Y-axis: private investment deviation from no-investment scenario (percent).
Sources: IMF staff FSGM (MCDMOD) simulations.

H. Key Takeaways of the Model Analysis

19. The results of the model analysis illustrate key channels and risks that influence the macroeconomic impact of the large public investment push.

- **Structural factors affect the growth impact.** Near-term growth is supported by higher TFP. However, the impact is dampened by high import leakages, private investment crowding-out, and expectations of future taxation to meet debt-servicing requirements.

- **Enhance public sector investment spending efficiency.** Higher investment efficiency maximizes GDP and promotes higher private investment in the long run—highlighting that both quantity and quality drives growth returns. Strengthening public investment management would support greater public spending efficiency.

- **Prevent cost overruns.** Cost overruns are especially harmful because they raise debt with a weak growth payoff. Cost controls could be tightened with independent validation, phased disbursements, and real-time tracking.

- **Ensure maintenance.** Higher infrastructure requires upkeep. Reinvesting to offset depreciation is critical for long-run growth. Higher maintenance costs therefore need to be incorporated into the budget.

- **Monitor public debt.** While the model is focused on the consolidated public sector, it is important to keep in mind that the higher debt levels will not be reflected in central government statistics. Close monitoring and reporting of SOE and subregional debt is critical.

- **Mitigate contingent liabilities.** The model assumes that user fees post-2030 are sufficient to cover debt servicing and maintenance costs. If this were not the case, then it would create significant fiscal pressures and the materialization of contingent liabilities. Therefore, user fee structures need to be adequately designed to at least cover debt servicing and maintenance costs.

I. Conclusion

20. Infrastructure quantity and quality have been important drivers of Morocco's productivity growth in the past. Empirical results show that improvements in infrastructure since the mid-2000s have accounted for a sizable share of productivity gains, with both quantity and quality contributing meaningfully. While Morocco has made strong progress, particularly in ports and digital access, remaining gaps in electricity quality, road density, and broadband performance point to continued scope for growth-enhancing investment.

21. Morocco's infrastructure scale-up presents significant long-term growth potential, conditional on strong implementation. The large-scale investments planned for 2024–2030 could durably raise long-term productivity, if delivered efficiently, and within fiscal constraints. Model simulations show that medium- to long-term gains are driven by productivity spillovers from accumulated public capital, with real GDP around 3 percent higher in the long run under the baseline, while debt rises during construction before declining as growth strengthens. Higher efficiency would raise growth without increasing debt, whereas the incurrence of cost overruns would worsen fiscal outcomes. Strengthening public investment management, mitigating cost overrun risks, embedding maintenance in the budget, and managing contingent liabilities are essential to safeguard the program's fiscal sustainability and growth dividend.

Appendix I. List of Indicators

Indicators	*Description*	*Source*
Lag output	Lagged log difference of real GDP at constant 2021 national prices (2021 US$) per worker, using 5-year averages	Penn World Tables 11
Education	Percentage of Secondary Schooling Attained in Population	Barro and Lee
Financial development	Domestic credit to private sector (% of GDP)	World Bank
Trade openness	Trade (% of GDP)	World Bank
Institutional quality	ICRG Political Risk Index (100 = highest)	ICRG
Inflation	Inflation, consumer prices (annual %)	World Bank
Government burden	General government final consumption expenditure (% of GDP)	World Bank
Modern sector	Share of non-agricultural activities in total value added	World Bank
Terms of Trade	Net barter terms of trade index (2000 = 100)	World Bank
Electricity quantity	Total net installed capacity of electric power plants (MW/'000 workers)	UN
Electricity quantity	Electric power transmission and distribution not lost (% of output)	IEA Energy Statistics Data Browser, International Energy Agency (IEA) through World Bank
Roads quantity	Road network density	International Road Federation, European Commission
Roads quality	Share of paved roads	International Road Federation, European Commission
Telecommunications quantity	Percent of individuals using the internet	International Telecommunication Union (ITU) through World Bank
Telecommunications quality	International internet bandwidth per user	International Telecommunication Union (ITU) through World Bank
Ports quantity	Container port traffic per worker (TEU: 20ft equivalent units)	UN Conference on Trade and Development (UNCTAD)
Ports quality	Liner shipping connectivity index, 2023Q1=100	UN Conference on Trade and Development (UNCTAD)

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