

# PROMOTING FASTER GROWTH IN ALGERIA<sup>1</sup>

## A. Introduction

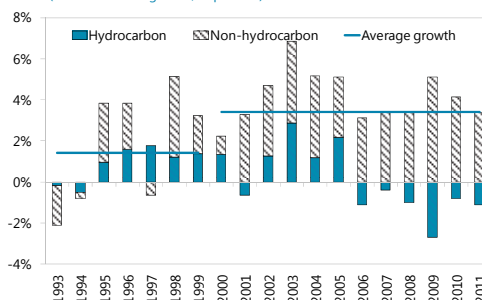
**1. Despite the availability of large hydrocarbon resources and the recent windfalls from high hydrocarbon prices, Algeria's growth has been lackluster.** Overall GDP growth has been relatively low, below 4 percent per year on average over 1995–2010, resulting in low growth of per capita GDP (2.1 percent annualized over 2000–11, following a decade of almost zero growth per capita). The hydrocarbon sector (which accounted for about 30 percent of nominal GDP over 1992–2011) grew at a slow pace over the period, with a negative contribution to real GDP growth since the mid-2000s.

**2. Nonhydrocarbon growth has been the main driver of overall growth, but is heavily dependent on performance in the hydrocarbon sector.** The rapid growth in the nonhydrocarbon sector (3.4 percent on average over the last decade) bolstered overall growth. However, this performance was largely made possible by massive transfers of resources to the nonhydrocarbon sector by way of public spending, the transfers themselves driven by large hydrocarbon revenues from high international prices.

**3. Algeria's growth needs to be bolstered and diversified.** The country lags behind other economies in the region; faster growth in the nonhydrocarbon sector is needed to reduce reliance on resources rent and provide the young and growing population with satisfying employment opportunities.

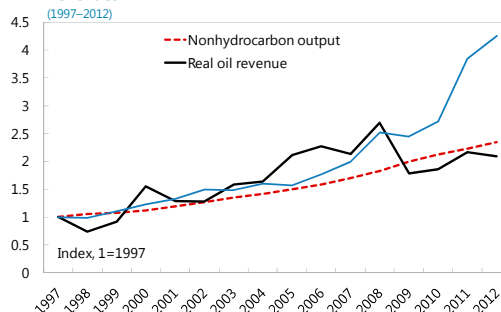
**4. This paper identifies the main sources of growth for Algeria within a cross-country framework, and draws policy recommendations to support faster growth.** A growth accounting exercise is undertaken in Section 1 to identify the contribution of factors accumulation and total factor productivity (TFP) growth to Algeria's economic performance. The determinants of growth are

**Hydrocarbon and Non-Hydrocarbon Growth**  
(Contribution to growth, in percent)



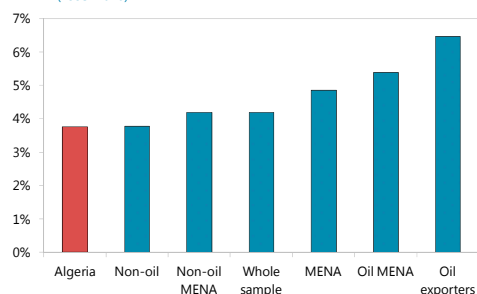
Sources: Algerian authorities; and IMF staff calculations.

**The Nonhydrocarbon Sector: Growing Thanks to Hydrocarbon Revenues**  
(1997–2012)



Sources: Algerian authorities; and IMF staff calculations.

**Annualized Real GDP Growth**  
(1995–2010)



Source: IMF staff calculations.

<sup>1</sup> Prepared by A. Lahreche and G. Albertin (both MCD).

econometrically identified in Section 2, and policy recommendations drawn in Section 3. Section 4 concludes.

## B. A Growth Accounting Exercise

### Source of Growth: The Role of Factor Accumulation and Total Factor Productivity

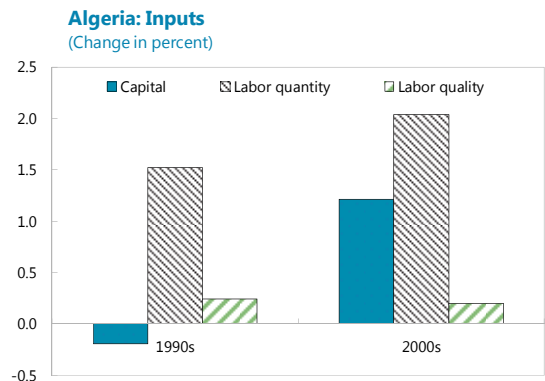
**5. A standard growth accounting framework is used to identify the main factors contributing to real growth in Algeria.** Assuming a constant return to scale production function for output ( $Y$ ) in physical capital ( $K$ ), human capital ( $H$ )—modeled as the product of labor quantity and quality—and total factor productivity (TFP) ( $A$ )<sup>2</sup>, output growth can be decomposed into the contributions from the accumulation of production inputs and TFP as:

$$\frac{\dot{Y}_t}{Y_t} = \frac{\dot{A}_t}{A_t} + \alpha \cdot \frac{\dot{K}_t}{K_t} + (1 - \alpha) \cdot \frac{\dot{H}_t}{H_t}$$

Output growth is given by TFP growth, i.e., the efficiency with which inputs of production are used, plus a weighted sum of the growth rate of physical capital and human capital, with  $\alpha$  being the share of capital remuneration in total income.<sup>3</sup> In the rest of this section, we use this growth accounting framework to identify the sources of Algeria's overall real GDP growth as well as of real growth in the hydrocarbon sector and in the nonhydrocarbon sector.

### 6. The analysis provides a decomposition of Algeria's real growth over 1990–2010, put in perspective using a cross-country comparison.

Two subperiods are singled out (1990–99 and 2000–11). We use series for real GDP and investments provided by the Algerian National Statistical Office and construct the physical capital stock using a perpetual inventory method.<sup>4</sup> Human



Sources: World Bank; TED; and IMF staff calculations.

<sup>2</sup> We assume a constant return to scale production function expressed as  $Y_t = A_t \cdot K_t^\alpha \cdot H_t^{(1-\alpha)}$

<sup>3</sup> In turn, the growth rate of total factor productivity can be derived as the growth rate of output less the weighted sum of the growth rate of physical capital and human capital.

<sup>4</sup> Physical capital stock is modeled as a function of investment ( $I$ ) and the depreciation rate ( $\delta$ ) as  $K_t = (1 - \delta)K_{t-1} + I_t$ . The initial capital stock for Algeria  $K_0$  is calculated as  $K_0 = I_0 / (\delta + g)$  based on a constant depreciation rate and initial output growth rate ( $g$ ). As common in the literature, we assume  $\delta = 0.06$  and  $g = 0.05$  as the average of emerging markets.

capital is computed using employment data provided by the Algerian National Statistical Office and adjusted for the quality of labor using the Total Economy Database (TED).<sup>5</sup> As in IMF (2007) and TED (2012), a constant capital share of 0.5 percent is assumed. The growth decomposition data provided by TED for over 120 countries are used to benchmark Algeria's performance against various samples of countries.

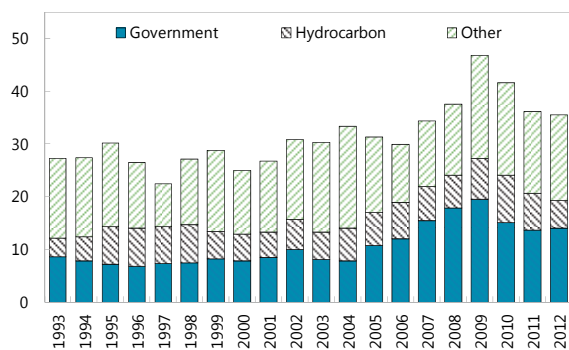
**7. Employment was the factor with the fastest growth over the period, while capital growth picked up at the end of the 2000s.** Employment grew on average by 3.6 percent a year, reflecting a growing labor force and stable participation rate. Capital barely grew until the start of the 2000s, because the low investment level in the 1990s that was just enough to offset capital depreciation. Labor quality growth was slow and stable.

### Capital and Labor Accumulation

*Low and stable investment in the 1990s weighed on capital accumulation, while employment grew as a result of the fast increase in working-age population and decline in unemployment, and despite the stable participation rate.*

#### Investment

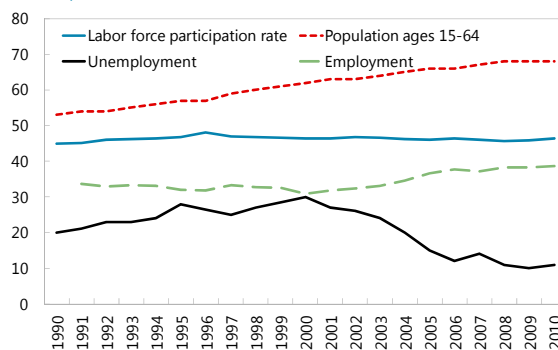
(In percent of GDP, 1993–2012)



Sources: Algerian authorities; and IMF staff calculations.

#### Employment Market Dynamics

(in percent)

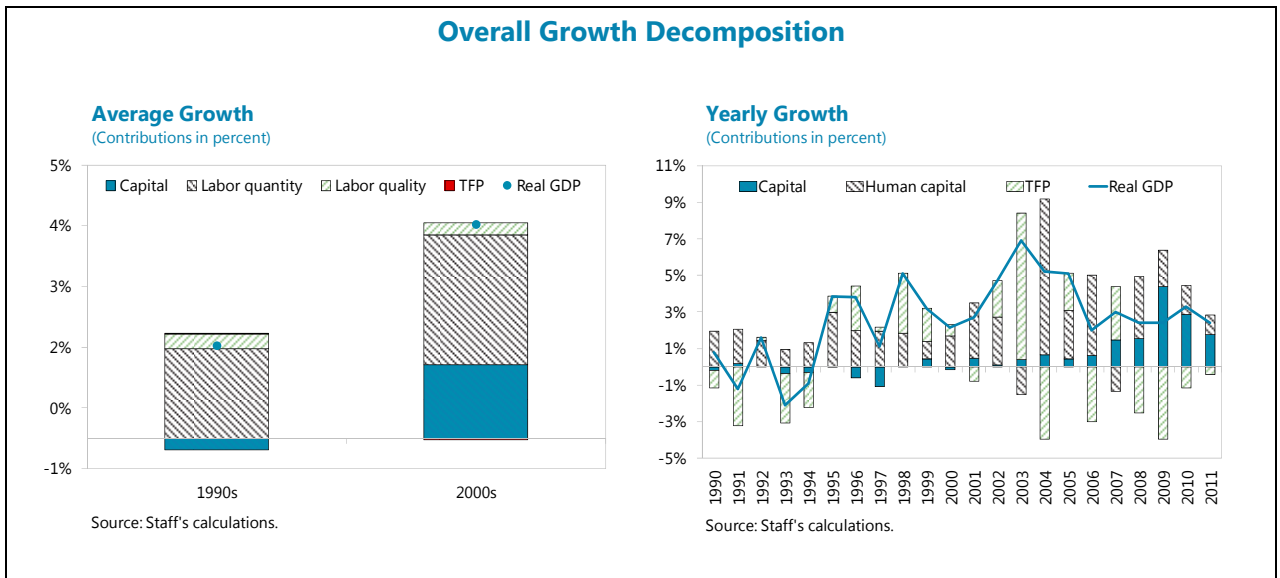


Sources: Algerian authorities; and World Bank.

**8. Overall real GDP growth was mostly driven by the accumulation of factors of production while TFP growth was negligible on average.** The accumulation of human capital consistently provided the most important contribution to real GDP growth, with growth in labor quantity playing a dominant part, while the contribution of labor quality was positive but relatively limited. Physical capital accumulation contributed negatively to real growth during the 1990s, reflecting relatively low investments compounded by the civil unrest at the time. During the following decade, the contribution of physical capital accumulation picked up, fueled by large public

<sup>5</sup> Following the methodology used in TED (2012), the quality of labor is measured using a Tornqvist index based on the shares of labor in low, medium, and high skill groupings, weighted with their relative wages.

investments, and significantly contributed to real growth. Finally, TFP growth was negligible, becoming episodically negative toward the end of the period.<sup>6</sup>



**9. The driving role of the nonhydrocarbon sector for overall growth calls for an investigation of the sources of growth within each sector.** The hydrocarbon sector accounts for a large share of GDP, but tends to be relatively insulated from the rest of the economy.<sup>7</sup> As a consequence, the analysis of overall growth might be biased by developments in the hydrocarbon sector which are not reflected in the nonhydrocarbon sector, and it is important to understand the sources of growth in the nonhydrocarbon sector, which has been driving overall growth and is the main source of employment. The growth accounting analysis is therefore applied separately on the hydrocarbon and nonhydrocarbon sectors.<sup>8</sup>

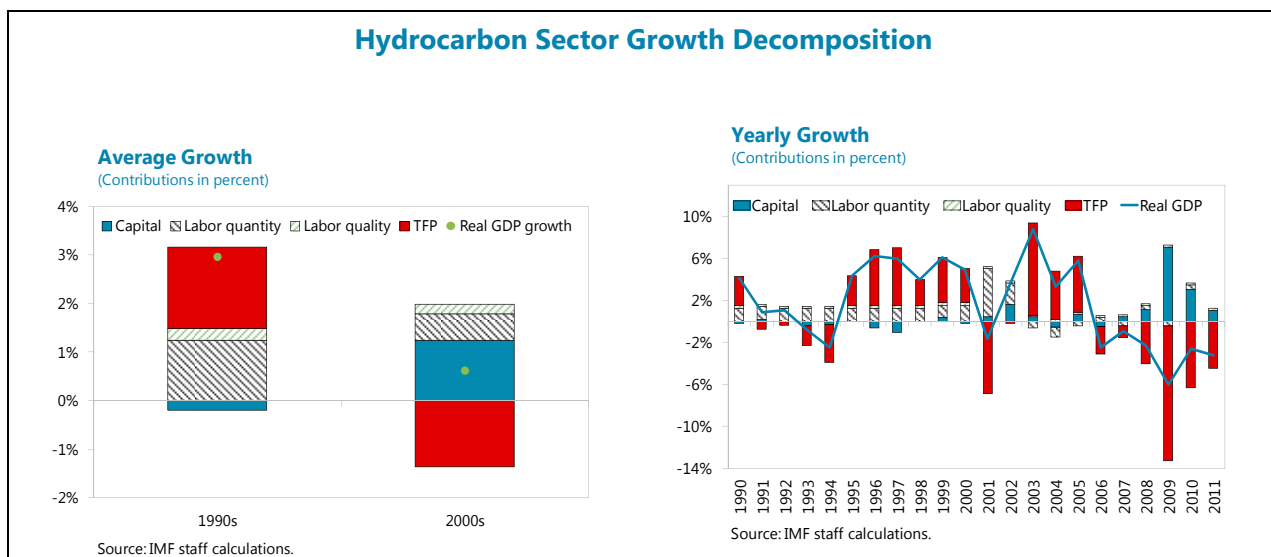
**10. The contributions of labor, capital, and TFP growth to hydrocarbon growth have been uneven.** During the 1990s, TFP was the main determinant of real growth in the hydrocarbon sector. During the period, a healthy international demand for hydrocarbon products, coupled with limited investment, explains both the limited contribution of capital and the large contribution of TFP growth. During the late 2000s, physical capital accumulation became the main source of growth, reflecting the substantial pick-up of Sonatrach investments in the hydrocarbon sector. The negative contribution of TFP growth can be explained by (1) the slowdown in production, itself partly due to

<sup>6</sup> The results on TFP growth are robust to the use of various employment data, and to the use of different assumptions on the shares of labor and capital (Appendix).

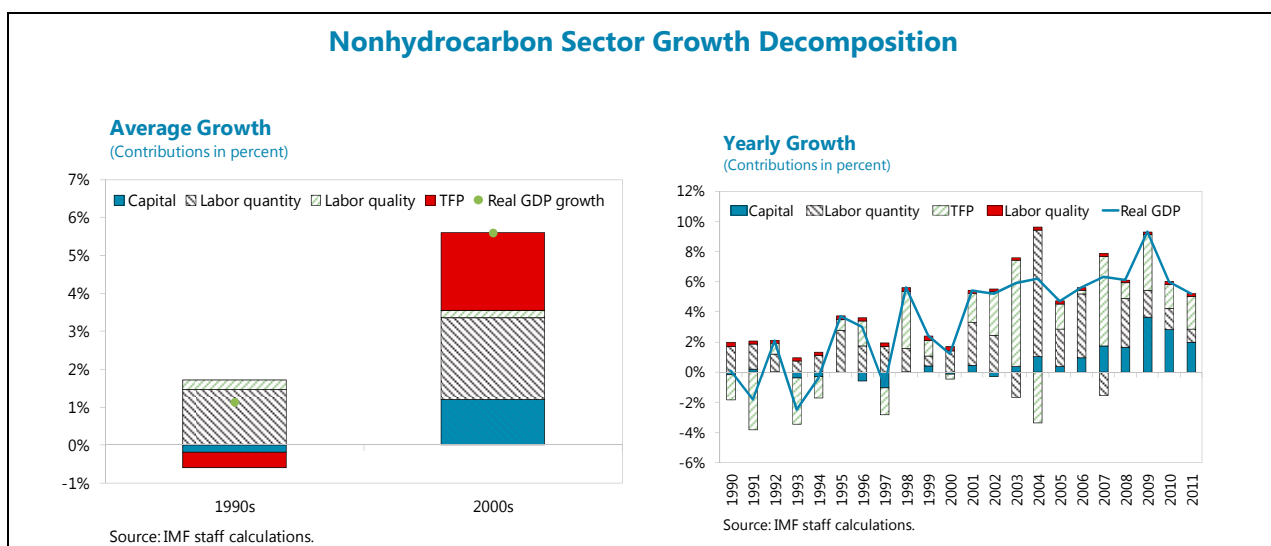
<sup>7</sup> For instance, Sonatrach employment is only 0.6 percent of total employment.

<sup>8</sup> See Appendix for a definition of data.

ageing infrastructure and (2) the delayed impact on output of recent large infrastructure investments.<sup>9</sup>



**11. Human capital accumulation was a major source of growth in the nonhydrocarbon sector, with TFP growth providing a significant positive contribution in the 2000s.** TFP growth accounted for 36 percent of overall growth in the 2000s. Rapid employment growth was the main contributor to growth, while labor quality had a marginal impact.



<sup>9</sup> An additional downward bias on TFP in the hydrocarbon sector comes from the fact that measuring the hydrocarbon sector output by physical production ignores the fact that hydrocarbon investment does not only increase production, but also increases reserves.

**12. These results are consistent with existing analysis on oil-exporting countries.** So far, only a few growth accounting exercises have distinguished between the sources of growth in the hydrocarbon and nonhydrocarbon sectors, but available analysis confirms the findings for Algeria. For instance, a recent analysis on Saudi Arabia points to the overwhelming role of factor accumulation in explaining growth; it also underscores a slowdown in overall TFP growth over the 2000 decade; and provides evidence of more robust TFP growth in the non-oil sector than in the economy as a whole.<sup>10</sup>

### Strengthening Algeria's Growth: Lessons from a Cross-Country Comparison

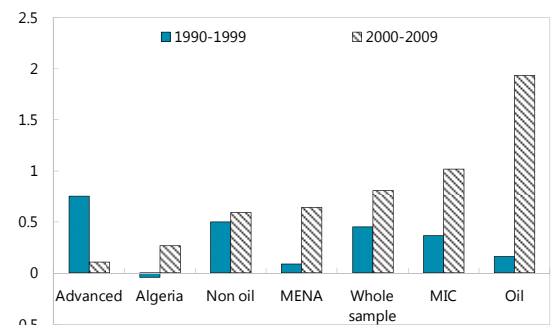
**13. A cross-country analysis highlights that, over the last two decades, lackluster TFP growth and insufficient physical capital accumulation have hampered Algeria's growth performance compared to other economies.** The TED database provides data on the drivers of growth for a large number of countries over 1995–2010.<sup>11</sup> For this study, Algeria's performance is benchmarked against a number of relevant subgroups.

**14. TFP growth in Algeria has been lagging behind international averages.** During the 1990s

TFP growth in Algeria was close to zero percent, well below the performance of oil exporters, emerging markets, advanced economies, and low-income countries. During the 2000s, TFP growth improved somewhat, but the gap with international averages remained large.

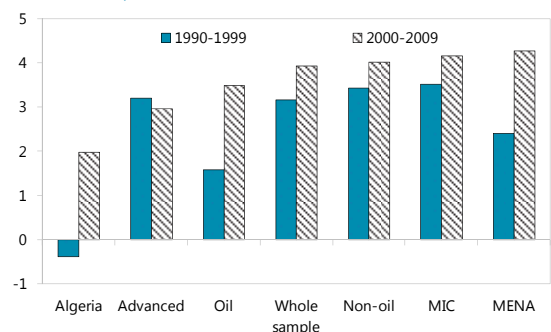
**15. The rate of physical capital accumulation improved significantly in Algeria during the 2000s but remained well below comparator groups.** During the 1990s, the accumulation of physical capital in Algeria was, on average, negative, as the civil unrest in the country and limited hydrocarbon resources weighed on investment. In all other country groups, capital accumulation was positive. During the 2000s, physical capital accumulation grew faster as public investment picked up, but it

**TFP Growth**  
(Average, in percent)



Sources: Staff's calculations using TED and authorities' data

**Capital Accumulation**  
(Growth, in percent)



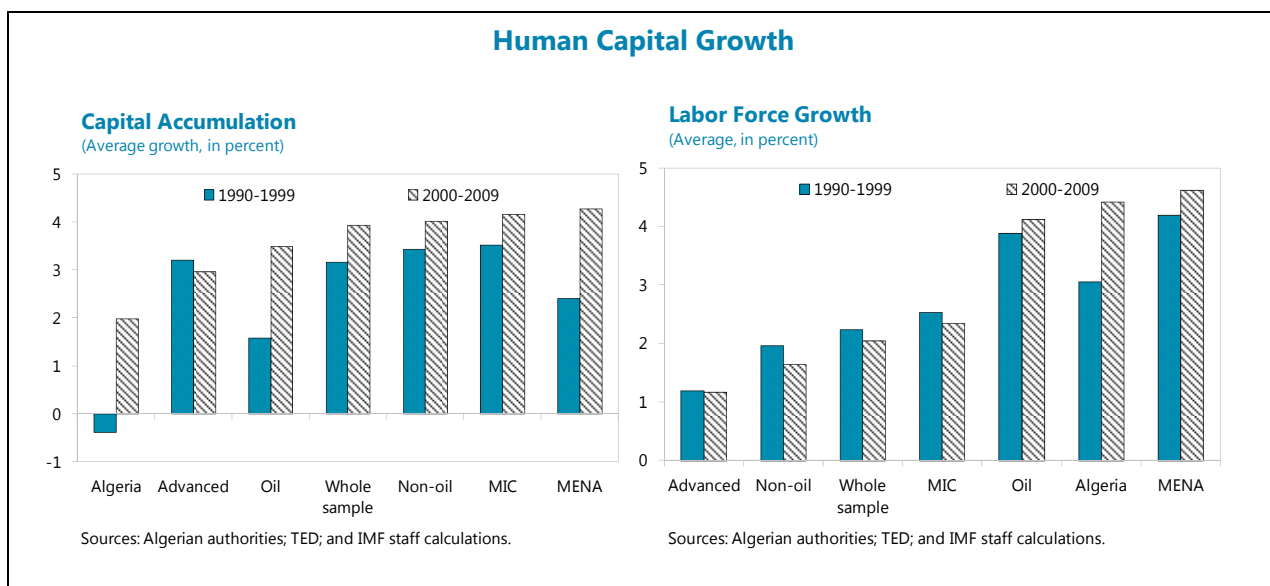
Sources: Staff's calculations using TED and authorities' data.

<sup>10</sup> Saudi Arabia—Selected Issues, IMF Country Report No. 12/272, <http://www.imf.org/external/pubs/ft/scr/2012/cr12272.pdf>

<sup>11</sup> The TED database provides comprehensive annual data covering GDP, population, employment, labor quality, capital accumulation, and total factor productivity for about 123 countries worldwide.

remained significantly below other group averages.

**16. Algeria performed relatively well with respect to human capital.** During the 1990s, the labor force grew on average by a healthy 3 percent a year, and increased further during the second half of the period to reach about 4½ percent, well above the sample average. In addition, labor quality compared favorably to other group averages.<sup>12</sup>



**17. These cross-country comparisons suggest that Algeria's growth potential that could reach 6 percent per year.** Algeria would have been growing faster had the country performed as well as the average of the sample in capital accumulation and TFP growth.

- Had TFP growth been aligned with the international average, growth would have increased by about 0.8 percentage points annually.
- In addition, a pick-up in investments to bring physical capital accumulation to the international average would have added about 0.65 percentage points to annual real growth.

Adding up the two effects would therefore have brought yearly growth to almost 6 percent on average.

<sup>12</sup> This result should however be taken with some caution as international comparison data are otherwise lacking (for instance, Algeria does not participate in the OECD PISA rating exercise).

## C. Determinants of Growth: A regression analysis

### The Growth Equation

**18. A standard growth equation is estimated to assess the contribution of various determinants to growth and compare Algeria's performance in a cross-country setting.** The growth equation is estimated on a panel of 106 countries, over a 15-years period (1995–2010), and includes determinants traditionally identified in the literature (see for instance Bouis et al., 2011 or Berg and Miao, 2010)

$$g_{it} = \alpha_0 + \beta \mathbf{X}_{it} + \mu_i + \nu_t + \varepsilon_{it}$$

where  $i$  denotes the country and  $t$  the year;  $g_{it}$  is the real GDP per capita growth rate,  $\mathbf{X}_{it}$  is a vector of variables including the main determinants of growth,  $\mu_i$  and  $\nu_t$  are fixed effects for countries and years, respectively, and  $\varepsilon_{it}$  is the residual.

The main determinants of growth account for

- *Catch-up effects*, with the lagged real GDP level. Countries with lower initial GDP per capita are expected to grow faster, because the lower stock of capital implies higher marginal returns to investment (and hence higher growth), and because these countries can benefit from their exposure to existing technologies and institutions in more developed countries. The ability to benefit from the exposure to the technological advance in the rest of the world is measured by openness.
- *Factor accumulation*: growth of the working age population; human capital (measured by the secondary enrollment rate); investment to GDP ratio; knowledge accumulation (measured by R&D spending in USD to capture the fact that R&D may require a critical mass to effectively impact growth). An increase in the working age population, in the quality of labor, in the stock of capital, or in the overall knowledge stock of the economy, is expected to enable growth.
- *Policy-related variables*: current government spending in percent of GDP, inflation (level and standard deviation), and exchange rate misalignment. Current spending is generally seen as creating pressure on available financing resources, thereby generating a crowding-out effect on the private sector that can negatively affect investment and growth. Higher and more volatile inflation reflects macroeconomic instability that affects the planning horizon of agents, and constrains their ability to invest. Finally, overvaluation tends to divert resources from the tradable sectors, thereby lowering the positive externalities that come through the exposure to technological progress and know-how, and negatively weighing on growth.
- *Governance*: government effectiveness and political stability. A more effective government is expected to create a more enabling environment for private-sector growth and to ensure that public resources are used at their best. Political stability is expected to improve the planning horizon of agents, thereby also enabling investment decisions.



The equation is estimated both on yearly data, and on four-year (nonoverlapping) averages, to ensure robustness of the results.

The results suggest that:

- Countries with lower initial GDP tend to grow faster, consistent with the catching-up hypothesis;
- Factor accumulation contributes to growth, and is dominated by the contributions of population growth and investment. Knowledge accumulation is also significant (although only at the 15 percent level on the four-year average estimate), while human capital has a positive but nonsignificant contribution to growth (with a significance level of about 15 percent);
- Higher current spending and higher and more volatile inflation tend to lower growth, pointing to the importance of policy and environment variables for growth. More open countries and countries with less exchange-rate misalignment also tend to grow faster; and
- Finally, governance-related variables affect growth, with better government effectiveness and higher political stability supporting growth.

#### Growth Equation Estimation Results

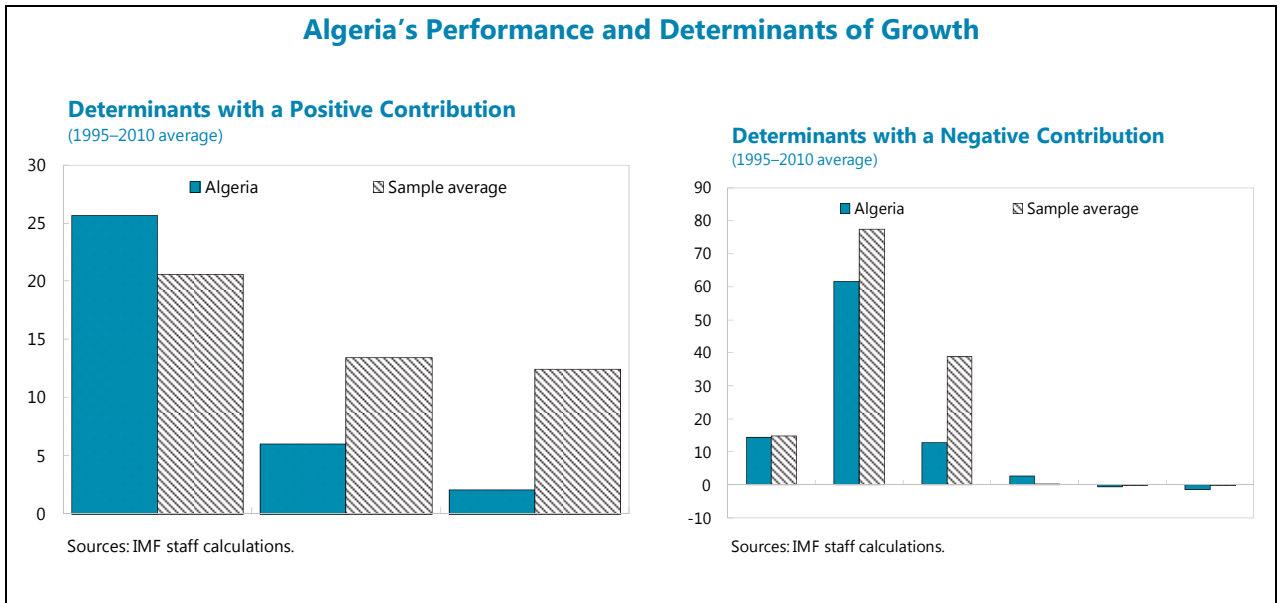
	Yearly data	4-year averages
Lagged GDP	-7.51*	-10.51***
Log of gross fixed capital formation	4.45**	1.74***
Working age population growth	0.50	0.77*
Log of secondary gross enrollment rate	0.90	2.12
Log of R&D spending (USD)	1.58*	0.88
Log of public current spending/GDP	-3.14***	-4.41***
Inflation	-0.05***	-0.02*
Inflation, 3-year standard deviation	-0.01***	-0.00
Log of openness	3.30***	3.54***
Real exchange rate misalignment	3.92***	3.15**
Government effectiveness index	1.89**	3.54***
Political stability index	1.75***	2.21
Constant	73.59***	91.26***
Year fixed effects	YES	NO
Country fixed effects	YES	YES
R-squared, within	0.49	0.44
Nb groups	104	106
Nb obs.	703	335

Source: IMF staff calculations.

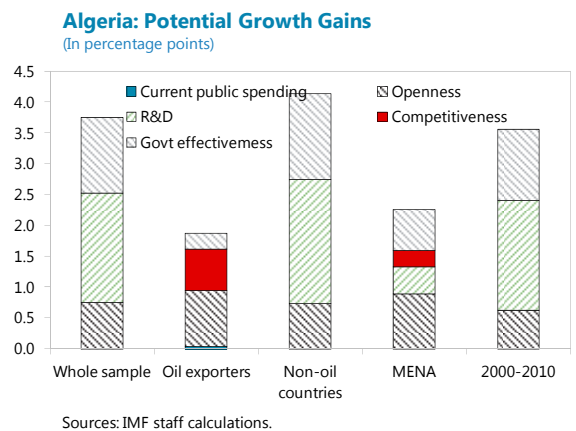
\*\*\*, \*\* and \* denote significance at the 1, 5 and 10 percent levels, respectively  
Student t are corrected for heteroskedasticity.

## Estimating the Growth Potential

**19. Although Algeria performed relatively well on a few variables, its performance was below the average of the sample for a number of important determinants.**<sup>13</sup> A stable macroeconomic environment and a relatively high investment ratio were the main strengths of the country compared to the average of the sample. Conversely, Algeria displayed a somewhat higher level of current spending, less openness, less R&D, and slightly more real appreciation than the sample average. Over the period, political stability was lower, due to the civil unrest in the 1990s, and government effectiveness was below the sample average.



**20. Simulations are run to assess Algeria's potential growth.** Performance on the three indicators on which Algeria performed well is kept unchanged. The simulation assesses the gain in yearly growth that would have been observed had other significant determinants been brought to the average performance of the sample, and of a number of subsamples (oil exporters, non-oil-exporting countries, MENA countries, and the whole sample over the 2000–10 subperiod).



<sup>13</sup> Working-age population growth and the enrollment ratio have no significant impact on growth and are therefore not shown on the graphs. Note that the investment data and the capital data in the previous section are not directly comparable: investment data do not take into account capital depreciation; in addition, the sample for international comparison is different in the two exercises.

**21. Algeria's growth potential could be as high as 5.7 percent a year.**<sup>14</sup> Algeria's growth would have been up to 4 percentage points higher had it performed as well as non-oil countries in the sample, in terms of knowledge accumulation (R&D), openness, government effectiveness, and competitiveness.<sup>15</sup> If Algeria had performed as well as the overall sample, its gain would have been 3¾ percent a year. Averaging the potential gains computed over the different subsample, the potential growth gain would have been 3.1 percentage points. With growth hovering around 2.6 percent per year over 2008–11, these results suggest, Algeria's growth potential would have been 5.7 percent a year—in line with the broad outcome of the growth accounting exercise.

## D. Policy Recommendations

**22. Algeria's growth is underpinned by a number of strong fundamentals.** The large hydrocarbon resource has so far been managed prudently, allowing the country to enjoy sizeable buffers in a stable domestic macroeconomic environment, marked, until 2011, by low and stable inflation, a flexible exchange rate, and limited external vulnerabilities outside of the exposure to the hydrocarbon sector. Overall, these advantages have allowed Algeria to rank favorably in macroeconomic stability indicators (Algeria ranks 23<sup>rd</sup> in macroeconomic environment in the World Economic Forum's *Global Competitiveness Report 2012–13*, its best ranking among all components of the global competitiveness index). However, the empirical analysis underscores areas where progress would support faster growth, notably capital accumulation, knowledge incorporation, and employment growth.

### Increasing Capital Accumulation

**23. The empirical analysis suggests that a major source of growth could be found in faster capital accumulation.** Investment rates increased significantly in the second half of the 2000s, reaching almost 47 percent of GDP in 2009. However, this increase came after years of lower investment rates, notably in the private sector (which includes state-owned enterprises). Sustaining a high level of productive and efficient public investment and fostering private investment will be critical to strengthen capital accumulation.

**24. Public capital spending should be directed toward projects that generate positive spillovers onto the rest of the economy.** Public capital spending is likely to remain the main source of investment in the short term. Despite the recent push in public investment and the progress achieved (for instance in electricity connection, phone access, and road development) there remains great need for infrastructure, which is essential to removing bottlenecks to factor mobility and productivity growth. The World Economic Forum survey ranks the inadequate supply of

<sup>14</sup> The simulations ignore the impact of improving political stability because the estimate for Algeria is biased by the long period of civil unrest in the country.

<sup>15</sup> The impact of current spending is limited over the estimation period, because Algeria was very close to the average in terms of current spending to GDP until 2011. The current level of current spending to GDP (close to 30 percent in 2012) suggests that the impact on growth would be large if current values were used.

infrastructure as the fourth most important impediment to business in 2011. For instance, improvements are needed in port or railway infrastructure, or in broadband access.

#### Infrastructure in Algeria and Selected Neighboring Countries

	Year	Algeria	Egypt	Morocco	Tunisia	Turkey
Quality of port infrastructure	2011	3.0	4.0	4.5	4.6	4.2
	2007	3.3	3.5	4.1	4.8	3.4
Container port traffic (TEU: 20 foot equivalent units)	2011	265.6	6,709.1	2,058.4	466.4	5,547.4
	2007	200.1	5,181.6	916.4	420.5	4,678.7
Rail lines	2011	3,512.0	5,195.0	2,109.0	1,119.0	9,594.0
Air transport, registered carrier departures worldwide (in thousand)	2011	44.0	11.0	92.0	44.0	40.0
Mobile cellular subscription (per 100 people)	2011	99.0	101.0	113.0	117.0	89.0
Fixed broadband subscriptions (per 100 inhabitants)	2011	2.8	2.2	1.8	5.1	10.3
Roads, paved (percent of total roads)	2009	74.0	89.4	70.3	75.2	88.7

Sources: World Bank; and International Telecommunication Union.

**25. Increasing infrastructure investment requires an effort on the quality of spending, and better leverage of the private sector.** Algeria is in a fortunate position as it can devote large public resources to infrastructure spending, but absorption capacity and delays in implementation have so far been a constraint. Measures to improve the efficiency and quality of public spending, such as integrated PFM IT systems and improved tracking of program authorizations, are needed; especially as large investment needs have to be balanced by the necessity to maintain a sustainable medium-term fiscal stance. Avenues should also be explored for increasing private-sector participation whenever synergies can be found. Notably, implementation of the government's large housing program would be accelerated by greater private-sector involvement, including foreign direct investment.

**26. The environment for private investment needs to be improved.** The weak business climate is an impediment to private-sector development in Algeria, and a number of measures can be identified that would bring improvements.

- *Lowering the cost of creating a business.* The cost of creating a business is high, due to the large number of procedures and the length of time it takes to start a business. The efficiency of one-stop shops should be improved, and all the necessary administrative services should be available.
- *Improving tax administration and revisiting the tax system.* Overall corporate taxation is burdened by the TAP (*Taxe sur l'Activité Professionnelle*)—a tax on turnover that funds local governments—which raises effective corporate taxation and can complicate tax payment for businesses that have a large geographic spread.<sup>16</sup> Eliminating this tax while ensuring revenue

<sup>16</sup> The recent establishment of a large corporate administration in the Ministry of finance, which collects the TAP and redirects it to local governments, has improved the situation for large businesses.

neutrality to preserve nonhydrocarbon revenues would support economic activity. Similarly, facilitating the payment of taxes by developing wire transfer and online payment systems is warranted.

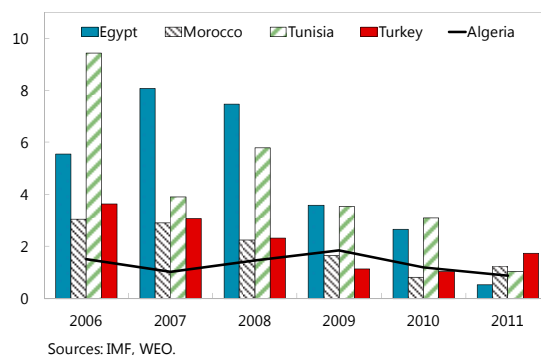
- *Facilitating trade.* The time needed to process both exports and imports is long in Algeria, despite the establishment of green lines by the customs administration; faster customs procedures would provide some improvements. The requirement to use trade credit to finance imports is costly for businesses, and could be lifted.
- *Improving access to finance.* Access to finance is ranked as one of the main impediments to businesses, and seems particularly to affect very small enterprises with limited balance sheets. On that front, the modernization of the credit bureau is a welcome step, and more could be done; for instance, through the establishment of rating agencies. Reforms to the capital markets, to encourage equity and debt finance, are also needed, and would need to be initiated by the public sector, where most of the strong enterprises are.

## Supporting Faster Accumulation of Knowledge and a More Efficient Economy

**27. Productivity gains are largely related to knowledge improvements, which are enhanced by openness.** Measures to support a faster accumulation of knowledge include:

- *Trade openness.* The empirical analysis suggests that trade openness is associated with faster growth: trade increases productivity and spurs knowledge accumulation through imitation and reaction to competitive pressure. To support a more diversified export sector, Algeria needs to strengthen its exports promotion policy and facilitate trade transactions, notably by speeding up WTO accession.<sup>17</sup> To encourage exports, the requirement that exporters surrender a part of their nonhydrocarbon export revenues to commercial banks could be eased.
- *Labor mobility.* Algeria could envisage policies to tap more effectively into its large network of workers abroad, notably the highest skilled, in order to enhance knowledge accumulation.
- *Foreign direct investment.* In particular, developing a climate welcoming to FDI will be of critical importance. FDI inflows into Algeria are small by international standard (about 1 percent of GDP), and the country missed the opportunity of the mid-2000s when large FDI flows were channeled into other countries of the region. Moreover, FDI is mostly concentrated in the hydrocarbon sector, where

**Foreign Direct Investment in Selected Countries**  
(In percent of GDP)



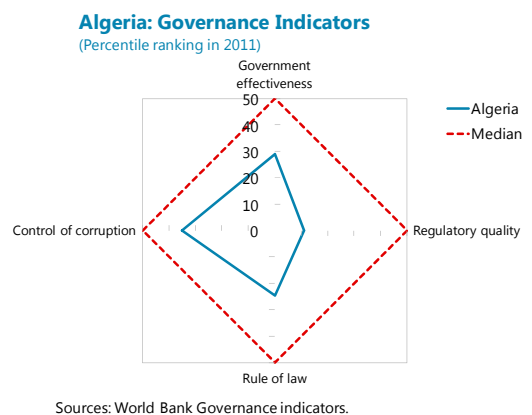
<sup>17</sup> Algeria's Working Party at the WTO was established in 1987.

spillover effects into knowledge and private-sector growth are limited. The decision taken in 2009 to impose an across-the-board 51 percent national stake in all FDI projects has worsened Algeria's attractiveness, even in the hydrocarbon sector (Appendix 3). Opening the FDI regime, at least in nonstrategic sectors, would support faster capital accumulation in the short term, and may also support knowledge diffusion within the economy through the network of local suppliers.

## 28. Policies to enable innovation and increase absorptive capacity are also needed.

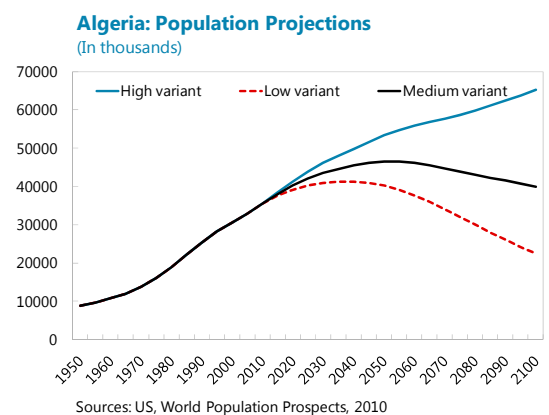
- *Investment in education is needed.* Cooperation between enterprises and universities should be developed to ensure that higher education matches the needs of the productive sector, in addition to providing strong teaching and research resources.
- *Institutions to foster innovation also need to be boosted.* Because most of the financial resources in Algeria are concentrated in the hydrocarbon and public sectors, actors such as capital venture firms are lacking. The authorities have established investment funds at both the national and regional level, but activity remains low and could be increased, and business selection models could be improved to ensure the most effective use of public resources. Efforts to develop startup incubators are welcome but should be reinforced.

**29. Governance is key to ensuring that policies yield the expected outcomes, and that factors are allocated to their best use.** While Algeria ranks relatively high in terms of macroeconomic governance, its performance in terms of other indicators has room for improvement. In particular, a sound competitive environment, a strong business climate, and efficient use of public resources should be encouraged.



## Preserving Algeria's Existing Strengths

**30. Algeria also needs to maintain its main strengths.** Labor quantity has been critical in driving growth over the last 20 years and it will be important to ensure that this source of growth continues to be tapped as effectively as possible. The natural rate of population growth is expected to slow down in the UN baseline scenario, and natural population increase will be a lesser source of human capital growth, as the country undergoes its demographic transition. To ensure that Algeria preserves its growth potential, policies need to address the labor market by:



- *Using 46 percent in 2010 the largely untapped population of nonparticipating workers.* Algeria's low participation rate implies that a large source of employment growth is still to be tapped, notably among women and youth, where the employment rates are only 12 percent and 20 percent, respectively.
- *Enhancing labor quality.* Labor quality is difficult to measure, and the TED might be painting a somewhat optimistic portrait of labor quality. Other sources suggest there is room to improve labor quality in Algeria—for instance, Algeria only ranks 108 on higher education and training in the WEF 2012–13 Report. In particular, an effort is needed to improve the jobs/skills match which is not favorable in Algeria and leads to high unemployment among the high-education population.
- *Improving labor market flexibility.* Official employment is marked by the overwhelming size of the public sector (36 percent of the working population are permanent wage earners, of which 76 percent are in the public sector), where employment is guaranteed and unit labor costs have been increasing following the recent wage increases; higher wages in the civil service have probably increased the reservation wage in other sectors. Reducing the cost of hiring and firing, facilitating recruitment, and reducing unit labor costs will be key.

## E. Conclusion

**31. Algeria has large untapped growth potential.** Following a lost decade of civil unrest, real growth reached 3.5 percent per year in the 2000s, higher than during the 1990s, but below the performance of other oil exporters and emerging markets, and below its potential level, estimated to be around 6 percent a year.

**32. To achieve higher growth, Algeria will have to preserve its strengths and engage in wide-ranging structural reforms.** Preserving macroeconomic stability is critical to maintaining an enabling macroeconomic environment; ensuring that the youth and women participate in the labor market will be essential to preserving one of the country's main sources of growth. Efforts will also be needed to improve on a number of areas where progress has hitherto been insufficient. Because capital accumulation is critical to growth, it will be important to ensure that public investment remains sufficient, is well prioritized and well targeted to areas where positive spillovers to growth can be expected, such as infrastructure and human capital development. Efforts to ensure the labor force remains up to the requirements of modern business will also be needed, as well as policies to enhance the flow of workers within the domestic economy. Reforms to the business environment are also required to ensure that the business climate enables private investment, both foreign and domestic. Beyond factor accumulation, knowledge is essential to growth; for Algeria, staying the course will require efforts to improve the flow of knowledge from outside by stepping up trade, labor, and capital flows with the rest of the world.

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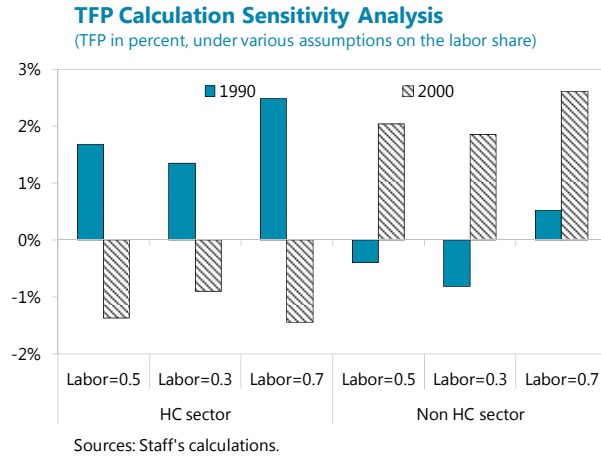
## Appendix 1. Data Description

Variable	Source and definition
Real GDP	IMF WEO; real GDP in LCU
Log of gross fixed capital formation	Gross fixed capital formation (WEO) in percent of nominal GDP (WEO)
Working age population growth	World Bank, WDI
Log of secondary gross enrollment rate	World Bank, WDI
Log of R&D spending (USD)	World Bank, WDI
Log of public current spending/GDP	World Bank, WDI
Inflation	WEO
Inflation, 3-year standard deviation	WEO
Log of openness	Total exports and imports of goods and services, WEO, GDP, WEO
Real exchange rate misalignment	See below
Government effectiveness index	World Bank WGI
Political stability index	World Bank WGI

Real exchange rate misalignment is computed following Berg and Miao (2010) and Tabova and Baker (2011).

## Appendix 2. Sensitivity Analysis

A sensitivity analysis shows that the main conclusion—that TFP worsened in the hydrocarbon sector but increased in the nonhydrocarbon sector over the period under study—is robust to various assumptions regarding the shares of capital and labor in the production process.



## Appendix 3. Foreign Equity Ownership: A Cross-Country Comparison

*(Index: 100 = full foreign ownership allowed)*

		Mining, oil and gas	Agriculture and forestry	Manufacturing	Telecom	Electricity	Banking	Insurance	Transport	Media	Construction	Health care
Algeria	A new FDI legislation was introduced in 2009 setting, a 49 percent ceiling on foreign investors' stakeholding in any new FDI project. This was extended to foreign participation in investments in the financial sector in 2010.	49	49	49	49	49	49	49	49	49	49	49
<b>Maghreb countries</b>												
Morocco	Most sectors have been fully opened up to foreign investors participation. However, some statutory ownership restrictions remain. Airport and port operation and the electricity sectors are closed to foreign capital participation. Foreign ownership in companies providing domestic or international air transportation services is limited to a maximum of 49 percent. In the oil and gas sector, the National Agency retains a share of 25 percent of any recognition license or exploitation permit.	93.8	100	100	100	0	100	100	39.8	100	100	100
Tunisia	All sectors have been opened up to full foreign capital participation. As the only exception, the electricity transmission and distribution sectors are closed to foreign ownership. Foreign capital participation is not restricted by law in electricity generation, but the public monopoly and difficulty of obtaining the required operating license make it difficult for foreign investors to engage.	100	100	100	100	71.4	100	100	100	100	100	100
<b>MENA oil exporters</b>												
Saudi Arabia	Saudi Arabia has opened up many sectors of its economy to foreign investors. However, sectors such as mining, oil and gas, air and railway transportation, health care, and media are closed to foreign equity ownership. Foreign capital participation in the financial services sectors is allowed up to a maximum share of 60 percent. Unlike most other countries in the Middle East and North Africa region, Saudi Arabia does not impose any legal ownership restrictions on the electricity sector.	0	100	75	70	100	60	60	40	0	91.7	50
Yemen	Many sectors are fully open to foreign equity ownership. However, a number of restrictions remain in service sectors. Foreign ownership in electricity transmission is limited to a maximum of 49 percent. Furthermore, the telecommunications, electricity distribution, airport, and port operation sectors are closed to foreign capital participation.	100	100	100	50	71.1	100	100	60	100	100	100
<b>Other MENAP countries</b>												
Afghanistan	Afghanistan is among the countries with the least statutory restriction on foreign ownership. Among all sectors covered by the indicators no such restrictions were identified.	100	100	100	100	100	100	100	100	100	100	100
Egypt	Most sectors are fully open to foreign investors participation. Statutory ownership restrictions are imposed on some sectors, including the media. In other sectors, such as construction and air transportation, foreign ownership is limited to a minority stake.	100	100	100	100	100	50	100	76	50	83	100
Pakistan	Several sectors are fully open to foreign equity ownership. However, a number of restrictions remain in the service sectors, including the media. Foreign capital participation in such companies is permitted only up to a maximum of 25 percent and is further subject to government approval. Foreign ownership in nationwide television channels is limited to a less-than-50 percent stake. In the financial services sector, a maximum of 49 percent foreign ownership of Pakistani banks is allowed, while foreign capital participation in insurance is allowed up to a 51 percent share.	100	100	100	100	100	49	51	79.6	37	100	100
<b>Regional averages</b>												
Middle East and North Africa		78	100	95	84	68.5	82	92	63.2	70	94.9	90
High-income OECD		100	100	93.8	89.9	88	97.1	100	69.2	73.3	100	91.7
Eastern Europe and Central Asia		96.2	97.5	98.5	96.2	96.4	100	94.9	84	73.1	100	100
Sub-Saharan Africa		95.2	97.6	98.6	84.1	90.5	84.7	87.3	86.6	69.9	97.6	100

Source: World Bank, Investing Across Borders, 2010.