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ALGERIA

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June 2017

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INTERNATIONAL MONETARY FUND

ALGERIA

SELECTED ISSUES

May 15, 2017

Approved By
The Middle East and Central Asia Department

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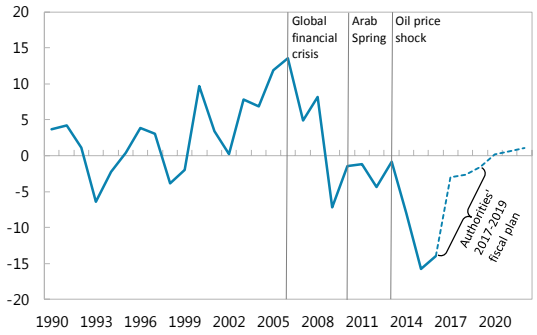
FINANCING FISCAL DEFICITS[1]

A. Introduction

1. The sharp and sustained decline in oil prices since mid-2014 has led to large fiscal deficits and exacerbated an already weak fiscal position. Even prior to the collapse in oil prices, Algeria's fiscal policy was on an unsustainable path, in particular given the exhaustibility of hydrocarbon resources at a relatively short horizon.[2] Algeria recorded consecutive fiscal deficits from 2009 to 2013, as government spending surged following the global financial crisis and the Arab Spring. The fiscal deficit widened significantly in 2014, when oil prices began to drop, and reached 15.6 percent of GDP in 2015 as oil prices fell to new lows.

2. In response to the oil price shock, the government is planning ambitious fiscal consolidation over the medium term. Following a reduction in the fiscal deficit from 15.8 percent of GDP in 2015 to 14.0 percent in 2016, the government's medium-term fiscal consolidation plan aims to bring the deficit close to zero by 2019, mainly through further spending cuts combined with higher taxes and continued subsidy reform.

Overall Budget Deficit
(Percent of GDP)



Source: Algerian authorities; and IMF staff calculations.

3. With savings in the oil stabilization fund nearly exhausted and tighter liquidity conditions in the banking system, the financing environment has become more challenging. Once-substantial savings in the oil stabilization fund (*Fonds de Régulation des Recettes*, FRR)—a key source of financing in recent years—have been nearly completely depleted.[3] Meanwhile, because of the oil price shock, liquidity in the banking sector has declined dramatically. Tighter domestic liquidity conditions mean that the capacity for the domestic banking system to absorb new government debt is more limited than in the past.

4. Tapping a broad range of financing options would allow Algeria to undertake more gradual fiscal consolidation, with less negative consequences for growth. The authorities' ambitious fiscal consolidation plan poses risks to economic activity. Indeed, staff projects that nonhydrocarbon growth will slow to almost zero in 2018 under the weight of the envisaged spending cuts. By contrast, a more gradual fiscal consolidation, made possible by more diversified financing, combined with further exchange rate depreciation and ambitious structural reforms, would have less impact on growth while still placing fiscal policy on a sustainable path.

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[1] Prepared by Andrew Jewell.

[2] Algeria's oil reserves are projected to be depleted in 21 years and its gas reserves in 54 years. See BP Statistical Review of World Energy 2016.

[3] International reserves, however, remain comfortable at US$113 billion, or nearly two years of imports, at end-2016.

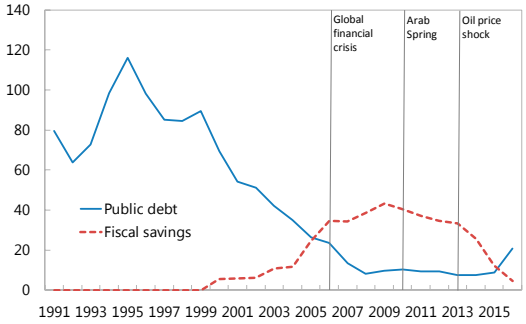
5. This paper discusses options for financing future fiscal deficits. Section B reviews how deficits were financed in the past and assesses Algeria's current debt situation. Section C examines ways to increase domestic borrowing, while Section D explores the possibility of borrowing externally. Section E discusses the option of selling state-owned assets. Section F lays out an alternative scenario in which the government undertakes more gradual fiscal consolidation. Section G concludes.

B. Background

6. Algeria suffered from intense violence and considerable sovereign debt problems during the 1990s—an experience that continues to influence policymaking today. The Algerian civil war resulted in over 100,000 deaths and came at a time when the government was struggling to address severe macroeconomic imbalances that had emerged following the fall in oil prices in 1986. By 1995, against a backdrop of civil strife, external debt had increased to 75 percent of GDP, inflation had reached 30 percent, the unemployment rate stood at 28 percent, and Algeria's debt to the Paris Club had been restructured twice. Memories of the 1990s have led to an aversion to public debt, and in particular to external debt, which many associate with economic and social hardship and feelings of loss of sovereignty.

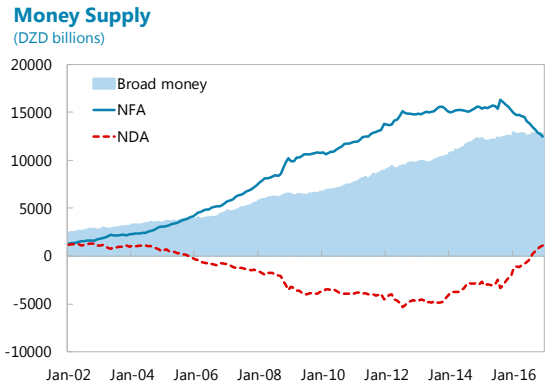
7. Since the turn of the century, Algeria has managed to achieve economic stability. Starting in 1999, Algeria experienced a long period of steady economic growth and accumulated substantial fiscal savings and international reserves, mainly thanks to booming oil prices. By 2006, the government had repaid nearly all its external debt, erasing a painful legacy from the past. In 2009, fiscal savings in the FRR reached 43 percent of GDP. Algeria weathered the global financial crisis and Arab Spring relatively smoothly, as the government ramped up spending on public sector wages, transfers, and social housing. Following the decline in oil prices in mid-2014, however, large fiscal and external imbalances emerged once again, and fiscal savings were rapidly depleted.

Public Debt and Fiscal Savings
(Percent of GDP)

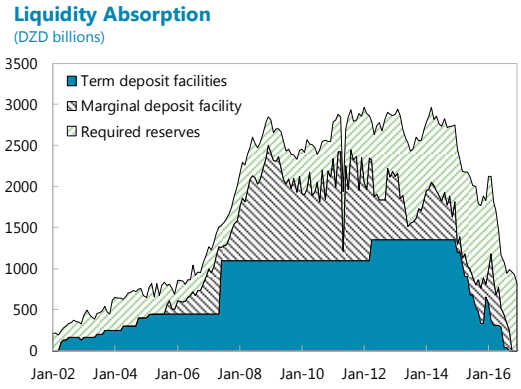


Source: Algerian authorities; and IMF staff calculations.

8. During the oil boom years, liquidity in the banking system surged. Rising oil prices led to a sharp increase in hydrocarbon exports and large current account surpluses. The dollar proceeds of hydrocarbon exports were ceded by law to the Banque d'Algérie (BA), resulting in continuous injections of liquidity into the banking system. With banks no longer having any financing needs, the BA stopped using its discount window as a monetary policy instrument and instead focused on liquidity absorption. In addition to its marginal deposit facility, the BA used term deposit auctions and required reserves to contain liquidity growth. Transactions in the interbank market progressively dried up.

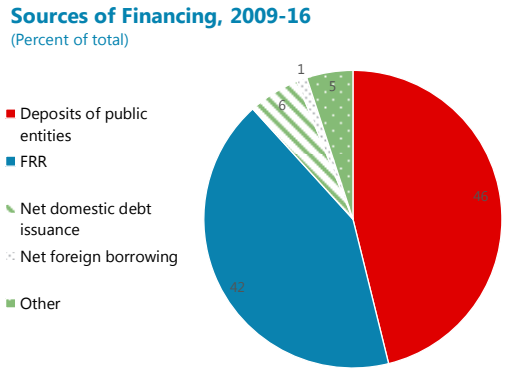


Source: Algerian authorities.

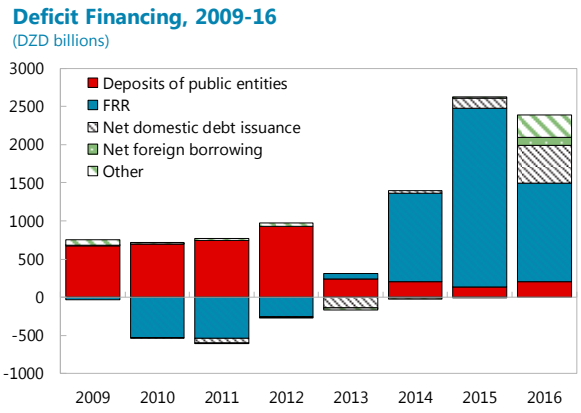


Source: Algerian authorities.

9. Despite abundant liquidity, fiscal deficits of the central government since 2009 have been financed mainly by borrowing from public entities and drawing down fiscal savings. From 2009 to 2016, Algeria recorded a cumulative fiscal deficit of 8,297 billion dinars (equivalent to US$75 billion). Of this amount, 46 percent was financed using the deposits of public entities—a practice tantamount to central government borrowing but not reflected in government debt statistics.[4] Another 42 percent was financed by drawing down savings in the FRR. The deposits of public entities financed the bulk of deficits during 2009–13, whereas savings in the FRR have been the main source of financing in the last three years. Only 6 percent of the cumulative deficit was financed by net domestic debt issuance. Net foreign borrowing has been negligible.



Sources: Algerian authorities; and IMF staff calculations.

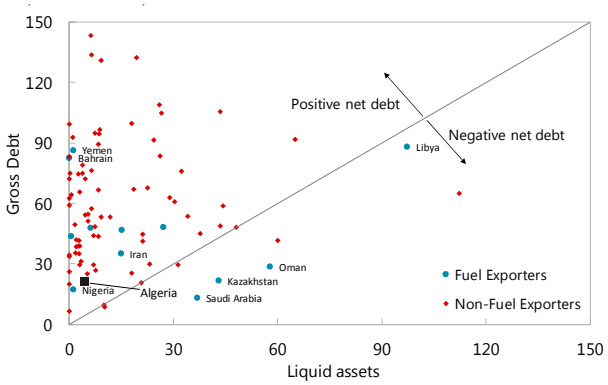


Sources: Algerian authorities; and IMF staff calculations.

[4] Public entities include Algérie Poste, local governments, and other public institutions. The government has an obligation to replenish the deposits used to finance the budget deficit, although there is no set timeframe. See also accompanying Selected Issues Paper: "Fiscal Risks in Algeria."

10. Notwithstanding the near depletion of the FRR and the lack of a sovereign wealth fund, Algeria's asset-liability position remains strong. Unlike many other commodity exporters, Algeria does not have a sovereign wealth fund. Moreover, once the FRR is completely depleted, Algeria will no longer have any liquid assets with which to finance future deficits. Nevertheless, Algeria's asset liability-position remains strong thanks to a low level of debt. Indeed, with almost no external debt, and with domestic debt at 20 percent of GDP, Algeria is among the least indebted countries in the world.

Government Gross Debt and Assets, 2016
(percent of GDP)



Sources: WEO; and IMF staff calculations.

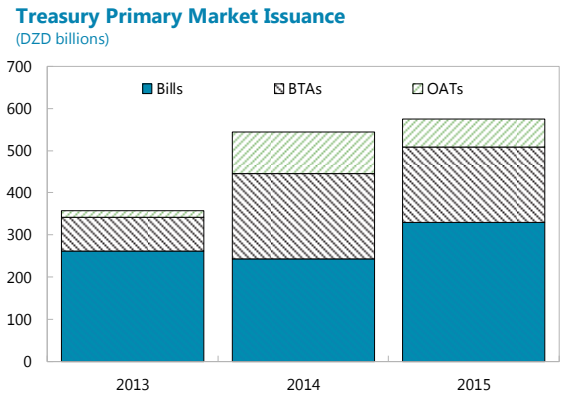
Central Government Debt, end-2016
US$1=DZD 110.9

	US$ billion	DZD billion	Percent of GDP
External debt	1.6	174.8	1.0
Domestic debt	30.7	3,407.3	19.9
Treasury securities	8.8	977.5	5.7
National Bond for Economic Growth	5.1	569.1	3.3
Debt from financial support operations	16.8	1,860.7	10.9
Total	32.3	3,582.1	21.0

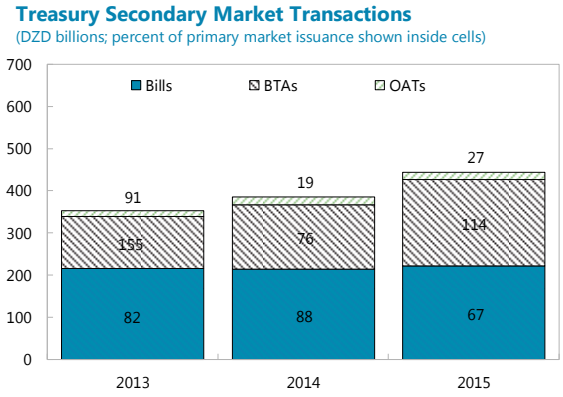
Source: Algerian authorities; and IMF staff calculations.

11. Algeria's domestic debt consists of Treasury securities and restructured debt purchased from public enterprises. At end-2016, Algeria's domestic debt amounted to DZD 3407.3 billion (equivalent to 19.9 percent of GDP). Of this amount, DZD 977.5 billion consisted of regularly-issued Treasury securities with maturities ranging from 13 weeks to 15 years. Most of this debt is held by banks and insurance companies. The National Bond for Economic Growth, a local-currency bond issued by the government in 2016, accounted for another DZD 569.1 billion. The remaining DZD 1,860.7 billion resulted from government operations to support public enterprises. Two such operations occurred in 2016, when the government purchased debt owed by a state-owned utility company and compensated the state-owned oil company for losses incurred from selling fuel in the domestic market at subsidized prices. These two operations increased public debt by 8.8 percent of GDP.

12. The domestic debt market is underdeveloped and illiquid. Despite a notable increase in regular Treasury debt issuance in recent years, the value of Treasury securities traded in the secondary market has grown only modestly. For each of the three types of Treasury securities—bills (which have maturities of 13-26 weeks), Bons du Trésor Assimilable (BTAs, with maturities of 1–5 years), and Obligations Assimilables du Trésor (OATs, with maturities of 7–15 years)—the amount traded as a share of annual issuance has declined. OATs have experienced the sharpest decline in liquidity. In 2013, secondary trading in OATs represented 91 percent of OAT issuance. In 2015, secondary trading amounted to just 27 percent of issuance.



Source: Algerian authorities.



Sources: Algerian authorities; IMF staff calculations.

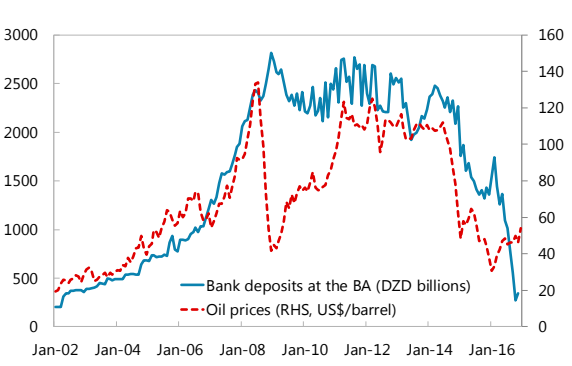
13. External debt is minimal and is mostly owed to official bilateral creditors. At end-2016, government external debt was equal to just US$1.6 billion (1.0 percent of GDP). Algeria repaid the last of its debt to the IMF in 2005 and prepaid its outstanding balance to the Paris Club group of creditors in 2006. Since 2006, external debt has remained less than US$3 billion. In 2016, the African Development Bank (AfDB) provided Algeria a €900 million budget support loan—the AfDB's first loan to Algeria in 12 years. The rest of Algeria's external debt is owed to official bilateral creditors and is on concessional terms.

14. Algeria has space to borrow more without threatening debt sustainability. In staff's baseline scenario, which reflects the authorities' medium-term debt fiscal consolidation plan, government debt is projected to fall from 21.0 percent of GDP in 2016 to 14.6 percent in 2022. In the unlikely scenario that there is no further fiscal adjustment (i.e., the primary balance remains constant at its 2016 level), debt is projected to increase to 39.4 percent in 2022—higher than the baseline scenario, but still well below the 70 percent sustainability benchmark for emerging market countries. These projections suggest that Algeria has space to borrow more.

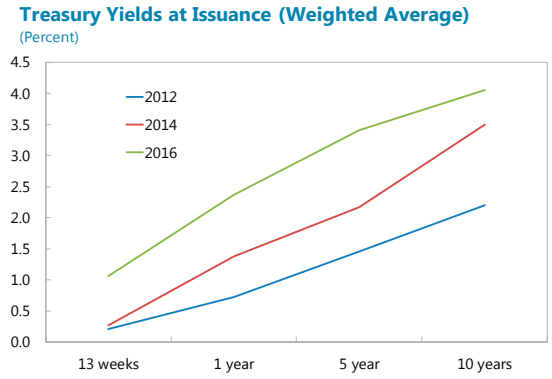
C. Domestic Borrowing

15. Domestic borrowing carries three main advantages. First, there is no exchange rate risk. Second, refinancing risk is low, owing to the fact that domestic investors have few other low-risk assets to invest in, as well as to factors that make Treasury securities desirable for banks to hold.[5] Third, increased government debt issuance facilitates the development of domestic financial markets—a particularly important consideration given the government's desire to diversify the economy and promote private sector-led growth. In particular, a well-functioning government securities market can establish a reliable yield curve that serves as a benchmark for private sector issuers. It can also support liquidity management operations of the central bank by providing more collateral to the banking system.

16. The main disadvantage of domestic borrowing by the government is that it risks crowding out credit to the private sector. Greater government borrowing could reduce the supply of loanable funds to the private sector, thus hurting private sector investment and growth. This risk of crowding out has increased with the rapid decline of liquidity in the banking system. In the six years prior to the oil price shock, banks collectively had, on average, DZD 2,400 billion in deposits at the BA (not including required reserves). This excess liquidity has evaporated in the wake of lower oil prices, implying that the capacity of banks to absorb new government debt without crowding out the private sector has become more constrained. Tighter liquidity conditions are also reflected in a significant increase in yields across the Treasury yield curve.



Sources: Algerian authorities; and IMF staff calculations.

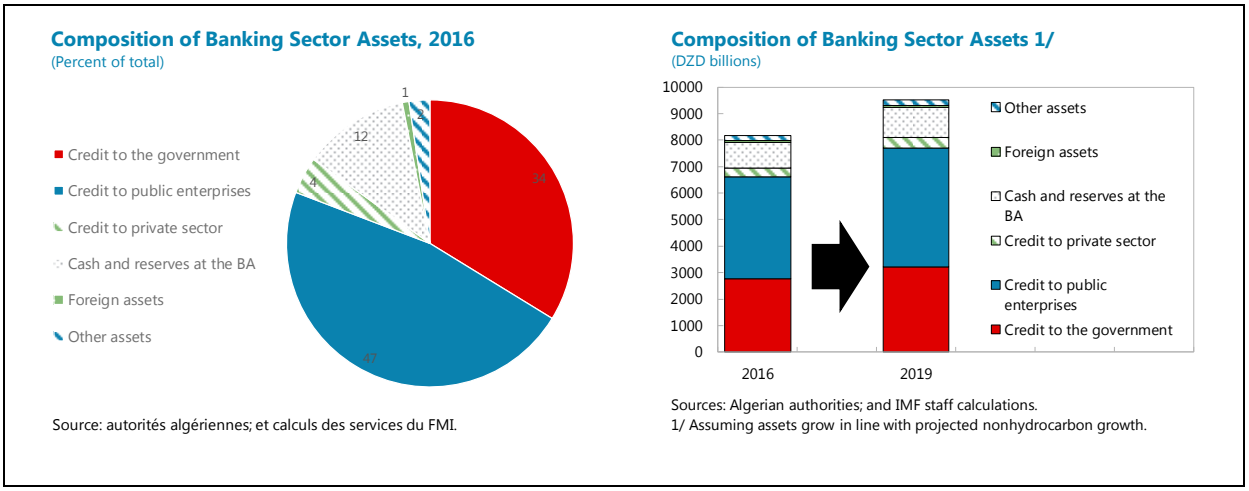


Source: Algerian authorities.

17. Nevertheless, despite the decline in liquidity, the domestic banking sector should remain able to meet some of the government's projected financing need. In staff's baseline scenario, the government is projected to have a cumulative gross financing requirement of DZD 2,147 billion over the period 2017–19. At end-2016, claims of domestic banks on the government amounted to DZD 2,761 billion, or a third of total bank assets. Credit to public

[5] The Bank of Algeria requires banks to maintain a certain ratio of highly liquid assets, including Treasury securities, to meet short-term obligations. In addition, banks need collateral, including Treasury securities, to participate in central bank refinancing operations.

enterprises accounted for nearly half of total assets, whereas credit to the private sector represented just 4 percent. Assuming bank balance sheets grow in line with nominal nonhydrocarbon GDP, banks would be able to absorb an additional DZD 455 billion in government debt in the next three years without changing the composition of their assets. If public enterprises were to borrow externally to finance some of their investments, banks would be in a position to reallocate some credit to the government. In such a scenario, if banks were, for example, to reduce their claims on public enterprises by a third, they could absorb an additional DZD 1,492 billion in government debt. Two conclusions can be drawn from this analysis: (1) the financing of future budget deficits by the banking sector will likely involve some reallocation of credit toward the government, and (2) to avoid crowding out the private sector, the government will need to look beyond the domestic banking sector for financing.



18. Algeria could consider issuing another national sovereign bond. The National Bond for Economic Growth raised DZD 569 billion in 2016, with the financing coming in large part from the banking sector, either directly or indirectly. To broaden the investor base, the authorities could consider issuing another such bond but should be careful not to overly fragment the debt market between regular Treasury issuance and ad-hoc bonds. Another national sovereign bond could be useful to the extent that it attracted interest from retail investors and captured savings in the informal sector. Nevertheless, international experience suggests that the authorities should proceed with caution. In other countries with large informal sectors—even those with more developed domestic debt markets—the share of government debt held by retail investors is typically small. The risk of issuing more ad-hoc national sovereign bonds in Algeria is that it distracts from efforts to develop the market for regular Treasury issuance while yielding relatively little financing from alternative sources.[6]

19. Reforms aimed at developing the domestic debt market would support higher financing at lower costs. A sound issuance policy is the starting point for developing a liquid

[6] The government is contemplating issuing a non-interest-bearing, GDP-linked domestic bond aimed at attracting interest from retail investors who, for religious reasons, are unwilling to purchase regular Treasury debt.

domestic debt market. The Treasury should issue, at regular intervals, a balanced supply of debt securities at various maturities, so that all points on the yield curve have liquid references. The issuance policy should be guided by an overall public debt management strategy that takes into account the government's risk preferences and market development priorities. It should be complemented by a communications strategy that clearly articulates the government's macroeconomic objectives and debt program. Implementing these policies will require more resources and capacity building within the debt management office. Reforms to diversify the investor base, including policies to develop the insurance and mutual fund industries, would foster stronger and more stable demand for government debt. Upgrades to the clearing and settlement infrastructure would further support market development and strengthen investor confidence. Banks, for their part, could draw in more savings from the informal sector—which would increase their capacity to purchase government debt—by offering a broader range of services to their clients, such as debit and credit cards, e-payment services, and financial products consistent with specific religious preferences.

20. Borrowing reserves from the central bank to finance the budget deficit should be avoided. Borrowing reserves to finance the deficit would be equivalent to the creation of base money. Creating money that exceeded demand in turn would create excess cash balances and eventually drive up the overall price level and accelerate the fall in internal reserves. Without any limits on central bank financing, the government would have less incentive to rein in deficits and restore fiscal sustainability while the credibility and independence of the central bank, and therefore its ability to promote price stability, would be undermined.

D. External Borrowing

21. External borrowing has several advantages, particularly in the current global economic environment:[7]

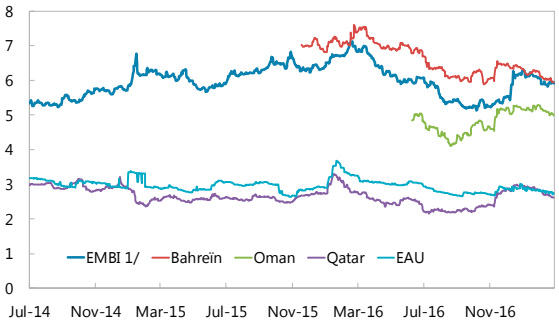
- *Mitigates crowding out effects*. By tapping foreign savings, the government would avoid crowding out credit to the private sector at a time when domestic liquidity has tightened significantly.

- *Favorable financing conditions*. Interest rates on emerging market sovereign debt remain near historically low levels, as investors continue to search for yield in a global environment of low interest rates. At end-

[7] External borrowing here refers to debt issued in foreign currency and purchased by non-residents.

- *Favorable financing conditions.* Interest rates on emerging market sovereign debt remain near historically low levels, as investors continue to search for yield in a global environment of low interest rates. At end-February 2017, the yield on the EMBI stood at 5.7 percent, having fallen 103 basis point on net over the course of the previous 14 months.[8] Yields on sovereign debt issued by GCC oil exporters fell to a lesser degree, reflecting worsening economic conditions and increased risks, but in absolute terms fell nonetheless.

EMBI and GCC Sovereign Yields
(Percent)



Source: Bloomberg, L.P.
1/ EMBI = J.P. Morgan Emerging Market Bond Index.

- *Strengthens international reserves.* After peaking at US$194 billion in 2013, Algeria's official reserves have declined rapidly and are projected to drop to US$93 billion in 2017. Borrowing externally would shore up reserves, with little risk to debt sustainability given Algeria's low level of debt.

- *Broadens the investor base.* As discussed earlier, the investor base for government debt is currently quite narrow, consisting almost entirely of domestic banks and insurance companies. Borrowing externally would broaden the investor base, allowing the government to tap savings outside of the country.

- *Sets a benchmark for the private sector.* Sovereign debt issuance at regular intervals can establish a yield curve in foreign currency that can serve as a reference for the private sector or public companies looking to borrow externally.

- *Increases awareness about the Algerian economy.* External borrowing via the issuance of international bonds would increase investors' awareness about the Algerian economy. This, in turn, could ultimately facilitate external borrowing by nongovernment entities and could also generate more foreign direct investment.

- *Creates incentives to follow sound policies.* By increasing investor scrutiny of Algeria's economy, external borrowing can create pressure on the government to follow sound macroeconomic policies and enhance transparency.

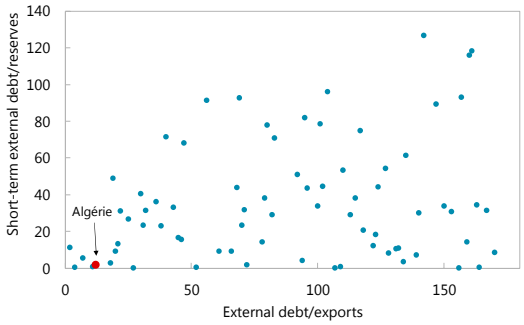
22. The main disadvantages of external borrowing relate to rollover risk and foreign currency risk. International issuance exposes the borrowing country to sudden shifts in investor sentiment that would affect its ability to roll over maturity debt. A deterioration in international

[8] The EMBI (Emerging Market Bond Index) is J.P. Morgan's index of dollar-denominated sovereign bonds issued by a selection of emerging market countries. It is the most widely used and comprehensive emerging market sovereign debt benchmark.

investor sentiment—which may not be directly related to circumstances in Algeria—would increase financing costs. In the event of a "sudden stop," Algeria would be forced to look for alternative financing sources. In addition to rollover risk, external borrowing would expose Algeria to foreign exchange rate risk. This risk would need to be managed carefully considering that the dinar is significantly overvalued and Algeria currently lacks a forward market that would allow the government to hedge its position.

23. Algeria has scope to significantly increase external debt without threatening external sustainability. Algeria's almost nonexistent external debt is unusual by international standards. At just 2.5 percent of GDP, total external debt (both government and nongovernment) is far below levels found in oil exporting countries, emerging markets, and advanced economies. Government external debt itself represents a mere 1.0 percent of GDP. Other indicators of external debt vulnerability, such as the ratio of external debt to exports and the ratio of short-term external debt to reserves, are extremely low. Nevertheless, to borrow externally, the government will first need to explain the merits of external debt and allay widespread concerns in the general public that indebtedness to foreign creditors poses a threat to Algeria's sovereignty.

External Debt Indicators
(Percent)



Sources: Algerian authorities; IMF staff calculations.

24. A sizeable portion of Algeria's financing needs in the coming years could be met through sovereign debt issuance. Emerging market economies that are active in international capital markets commonly issue several billion dollars per year, sometimes raising more than 1 percent of GDP in a given year. Gulf Cooperation Council (GCC) countries were especially large borrowers in 2016: Qatar issued US$9.0 billion (5.7 percent of GDP), while Saudi Arabia issued US$17.5 billion (6.0 percent of GDP). With a nominal GDP of US$156 billion in 2016, and with minimal external debt and still large reserves, Algeria would appear to be in a position to issue around US$2 billion, or just over 1 percent of GDP, in Eurobonds per year.

International Issuance from Selected Emerging Market Countries, 2013–16

	2013		2014		2015		2016	
	US$ bn	% GDP	US$ bn	% GDP	US$ bn	% GDP	US$ bn	% GDP
Chile	1.7	0.6	1.2	0.4	3.0	1.3	3.0	1.2
Indonesia	4.0	0.4	5.4	0.6	9.7	1.1	7.8	0.8
Mexico	6.3	0.5	12.0	0.9	7.3	0.6	11.1	1.1
Qatar							9.0	5.7
South Africa	2.0	0.3	1.7	0.2			4.3	0.7
Saudi Arabia							17.5	6.0
Turkey	14.4	1.5	7.8	0.8	1.5	0.2	3.0	0.4

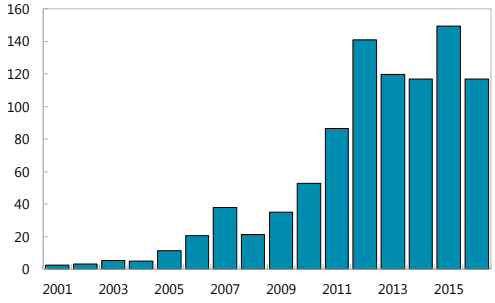
Source: Bloomberg.

25. Tapping international capital markets would require time and preparation. Algeria has never issued an international sovereign bond and needs to develop its capacity to do so. Compared to domestic debt issuance, international issuance entails greater preparation time and investor outreach—a process that typically entails hiring legal advisors, conducting roadshows, and acquiring a sovereign credit rating from one or more credit rating agencies (Algeria does not have a credit rating). Given Algeria's limited financial integration with the rest of the world, investor outreach will be especially important to raise awareness about the country's economic prospects and the government's policy agenda.

26. The interest rate at which Algeria could borrow depends on several factors. Research suggests that borrowing costs are lower for countries with strong external and fiscal positions, as well as robust economic growth and government effectiveness.[9] Although yields on emerging market sovereign debt have declined over the past year, the supply of emerging market debt could increase significantly in coming years as other oil exporters seek to finance large deficits, putting upward pressure on yields. Algeria's financing costs would also depend on whether its sovereign bonds met the criteria for inclusion in major bond indices.

27. Algeria could look to tap savings in the Islamic world by issuing Sukuk or similarly structured products.[10] Global Sukuk issuance has increased significantly since 2006, albeit from a low base, reaching US$120 billion in 2013. Issuance has been concentrated in Malaysia and in the GCC countries and has been evenly split between sovereign and corporate issuance. Demand has generally outstripped supply, leading to an oversubscription on most issues and low yields where the fundamentals of the issuer are strong. Because of their risk-sharing property, Sukuk are particularly well-suited for financing infrastructure. Malaysia, for instance, has used Sukuk for airports, marine ports, and roads, and the GCC countries have followed suit.

Sukuk Issuance, 2001–16
(US$ billions)



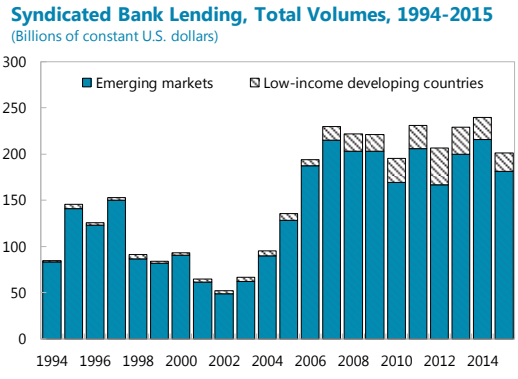
Source: Zaywa.

28. Syndicated lending is another option for external financing. Syndicated bank lending to emerging markets and low-income developing countries (LIDCs) has also grown significantly in the past decade. Although most syndicated lending has been directed to the private sector, governments have also benefited, particularly in LIDCs. Across both emerging markets and LIDCs, syndicated lending tends to finance infrastructure, energy projects, and extractive industry. In some cases, syndicated lending has provided access to external financing to countries unable to tap international bond markets because of low creditworthiness. Syndicated loans can contribute to a

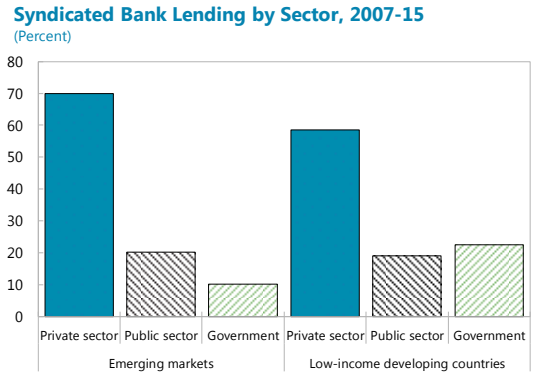
[9] See Presbitero et al. (2015).

[10] Sukuk, the Islamic equivalent of bonds, are similar to asset-backed securities. Whereas a conventional bond is a promise to repay a loan, Sukuk constitutes partial ownership in receivables, a lease, a construction project, a deferred delivery of assets, a joint partnership, or investment. The principal amount is typically not guaranteed and the return is linked to the performance of the underlying assets. See Kammer et al. (2015).

more diversified investor base and promote financial deepening, but they usually include covenants allowing for the discontinuation of financing at short notice and therefore carry some risk.



Source: Dealogic Loan Analysis.



Source: Dealogic Loan Analysis.

29. Algeria could consider borrowing from official creditors. Algeria borrowed from a range of multilateral and bilateral official creditors in the past and still has outstanding debt to Canada, France, Saudi Arabia, the United Arab Emirates, Japan, and Belgium. More recently, as mentioned above, the government borrowed €900 million from the AfDB.

E. Selling State-Owned Assets

30. Privatization of state-owned assets could yield substantial deficit financing, but attempts to date have been largely unsuccessful. There are at least 392 state-owned enterprises (SOEs) with 2015 revenues equal to 26 percent of GDP.[11] The largest SOE is Sonatrach, the national oil and gas company, but SOEs are present in all sectors of the economy. In the banking sector, for example, public banks account for 87 percent of total banking assets. Regulations to facilitate privatization were first introduced in 2001. In 2004 the government launched the sell-off of more than 1,100 public companies, but only a third of those companies were actually fully or partly privatized. Plans to sell a majority stake in Crédit Populaire Algérie, the country's third largest bank, failed in 2010. Last year, a public sector cement company canceled an initial public offering due to lack of interest, and a government scheme to list eight SOEs on the stock exchange has stalled.

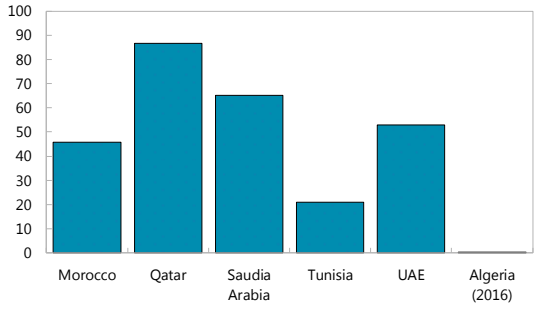
31. Successful privatization will likely take time. The government will need to communicate the benefits of selling state-owned assets while putting in place mechanisms—such as expanded unemployment insurance—to provide compensation and retraining to those who may be negatively impacted by the potential restructuring of SOEs. Another obstacle to privatization may be the possible inefficient nature of some SOEs, many of which depend on subsidized loans, episodic bailouts, and other forms of state support. Many of these SOEs will need to be restructured first to

[11] See accompanying Selected Issues Paper: "Fiscal Risks in Algeria."

attract investor interest and maximize value. In this way, privatization ultimately stands to improve not only public finances but also SOE governance and efficiency.

32. A more developed stock market would support privatization efforts. At end-2016, the Bourse d'Alger had just five listed equities with a total market capitalization of DZD 45.8 billion, equal to less than 1 percent of GDP compared to 46 percent for Morocco and 21 percent for Tunisia. The 2016 budget law allows for the sale of up to 66 percent of the share in an SOE and a complete sale after five years, subject to government approval. Creating a more dynamic stock market will require reforms on multiple levels, including relaxing the so-called "49/51 rule", which limits foreign investors to a minority stake in Algerian companies, and eliminating the right of the state and SOEs to block the sale of shares by or to foreign investors.

Market Capitalization, 2015
(Percent of GDP)



Sources: World Development Indicators; Bourse d'Alger; Bourse de Tunis; and IMF staff calculations.

F. Simulating the Financing Strategy

33. Staff has developed an alternative scenario in which the government is assumed to create fiscal space to undertake a more gradual fiscal consolidation. In this scenario, the government is projected to have a cumulative gross financing requirement of DZD 9,713 billion over the period 2017-21 compared to DZD 2,819 billion in the baseline scenario. The larger gross financing requirement reflects higher current and capital spending, which more than offset higher revenues.[12] Although spending declines over the medium term as a percent of GDP, it does so at a slower pace than in the baseline. As a result, the impact on economic growth is projected to be less severe.

34. Financing needs in the alternative scenario are assumed to be met by a combination of domestic and external borrowing. As in the baseline scenario, the FRR in the alternative scenario is depleted in 2017, and some financing needs are met by drawing on the deposits of public entities. The government borrows from official bilateral and multilateral sources in the amount of US$1.7 billion on average per year during 2017–20. Starting in 2018, the government is assumed to issue US$2 billion in Eurobonds per year at an interest rate of 5 percent and a maturity of 10 years. Remaining financing needs are met by domestic debt issuance. The alternative scenario does not assume any financing from the sale of state-owned assets.

35. Debt levels in the alternative scenario are higher than in the baseline, but remain moderate and stabilize at the end of the projection period. Total public debt peaks at 31.7 percent of GDP in 2021 before starting to decline. This is higher than the peak of 19.6 percent of GDP in the baseline scenario but nevertheless well below the level of debt in most other countries

[12] The increase in revenues compared to the baseline scenario is a function of two assumptions: more exchange rate depreciation (which leads to greater hydrocarbon revenues) and improved tax administration.

at a similar or more advanced stage of development. Domestic public debt is equal to 21.9 percent of GDP in 2022 while external public debt stands at 9.2 percent of GDP.

Alternative Scenario

	2017	2018	2019	2020	2021	2022
Gross financing requirement	1,682	1,556	1,851	1,917	1,462	1,246
FRR withdrawal	785	0	0	0	0	0
Deposits of public entities	164	131	105	84	67	54
Domestic borrowing	389	941	1,365	1,487	1,115	898
External borrowing	345	483	380	346	279	293
Multilateral	115	121	127	80	0	0
Official bilateral	230	121	0	0	0	0
Eurobond	0	241	253	266	279	293
Public debt (percent of GDP)	21.2	25.9	29.3	31.2	31.7	31.0
Domestic	18.5	20.9	22.8	23.5	23.2	21.9
External	2.7	4.9	6.5	7.7	8.5	9.2

Source: IMF staff calculations.

G. Conclusions

36. Algeria needs to undertake sustained fiscal consolidation to restore fiscal sustainability. Even when oil prices were high, Algeria's fiscal policy was unsustainable given its heavy reliance on hydrocarbon revenues and the relatively short time horizon for hydrocarbon resources. The collapse of oil prices has exacerbated an already weak fiscal position and made fiscal consolidation more urgent.

37. Nevertheless, an unnecessarily abrupt fiscal consolidation should be avoided. The authorities' medium-term fiscal consolidation is extremely ambitious and risks damaging growth and employment. More gradual spending cuts, combined with further exchange rate depreciation and wide-ranging structural reforms, would have less impact on growth while still placing fiscal policy on a sustainable path.

38. Algeria can afford a more gradual fiscal consolidation. Although fiscal savings have been nearly depleted, government debt is low and external debt is nearly nonexistent. As one of the least indebted countries in the world, Algeria has fiscal space to borrow more without threatening debt sustainability.

39. The authorities should consider borrowing both domestically and externally to finance future fiscal deficits. Increased government debt issuance would facilitate the development of domestic financial markets by creating a reliable yield curve that serves as a benchmark for private sector issuers. However, relying on domestic borrowing alone could crowd out credit to the private sector, particularly in an environment of tighter domestic liquidity. The authorities should therefore consider external borrowing, which would not only mitigate crowding out effects but also

strengthen international reserves, broaden the investor base, and raise awareness about Algeria's economy. External borrowing could entail Eurobonds, Sukuk issuance, syndicated lending, and borrowing from official creditors.

40. Privatizing state-owned assets could complement debt financing. Transparently opening the capital of selected state-owned enterprises, including public banks, could provide deficit financing while helping to develop the stock market and improve corporate governance. Successful privatization will likely take time given the need to put in place mechanisms to compensate and retrain those who may be negatively impacted, as well as the need to restructure inefficient SOEs to attract investor interest

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FISCAL RISKS IN ALGERIA[1]

This paper aims to identify the main sources of fiscal risks in Algeria and their transmission channels. Fiscal risks are multiple and interrelated, and their potential impact on the budget deficit and public debt could be considerable. Sources of risks include implicit commitments and explicit loan guarantees given to state-owned enterprises (SOEs), the potential need to recapitalize public banks, and the reported financial difficulties of the state-run pension system. The ongoing fiscal consolidation efforts, although necessary, may intensify some of these risks. Estimates in this paper could be underestimated, as they are based on only partial data available to staff at the time of the Article IV mission.

A. Introduction: Why Worry About Fiscal Risks?

1. Algeria faces many fiscal risks that may significantly affect the central government's fiscal balance and the path of public debt. The authorities reduced an important source of fiscal risks by closing several special treasury accounts that led to spending overruns in the past. However, other sources of fiscal risks create uncertainties on fiscal outcomes and could challenge the fiscal consolidation efforts should they materialize. These sources of fiscal risks are diverse, ranging from external macroeconomic shocks, including low oil prices, to implicit and explicit guarantees granted to SOEs. In addition, the insufficiently-funded pension system could have spillover effects on the government's fiscal deficit in the future. The risks that could arise from public-private partnerships (PPPs) and those pertaining to local governments are currently relatively small. However, these could grow given the government's ambition to scale-up investment using PPPs and local governments' willingness to rely more on debt financing.

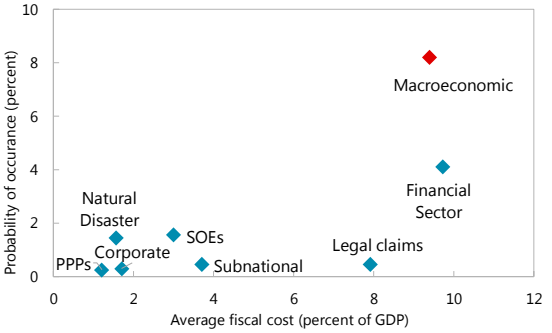
2. Understanding what factors may have a substantial impact on available fiscal space is critical. International experience in recent years has brought to light the vulnerability of countries' public finances to adverse shocks. The financial sector bailouts after the global financial crisis, the fiscal impact of the great recession, and more recently the collapse in commodity prices have left global public debt ratios at historic highs. In seeking to determine the appropriate pace of fiscal consolidation, Algeria needs to assess what fiscal space is available; this, in turn, requires understanding what plausible fiscal risks may impact the public debt trajectory and accounting for them when assessing debt sustainability under various scenarios.

3. Fiscal shocks can be large, adverse, and nonlinear. Cross-country analysis shows that, among the various sources of fiscal risks, macroeconomic shocks and financial sector bailouts are the most frequent and tend to have the highest impact. An IMF study of 230 episodes of contingent liability realizations in 83 countries (of which, 48 emerging countries) shows that financial sector bailouts accounted for the largest fraction of those episodes. The distribution of associated costs is highly skewed: the average cost was about 3 percent of GDP, but in (rare) instances the impact on

[1] Prepared by Racheeda Boukezia.

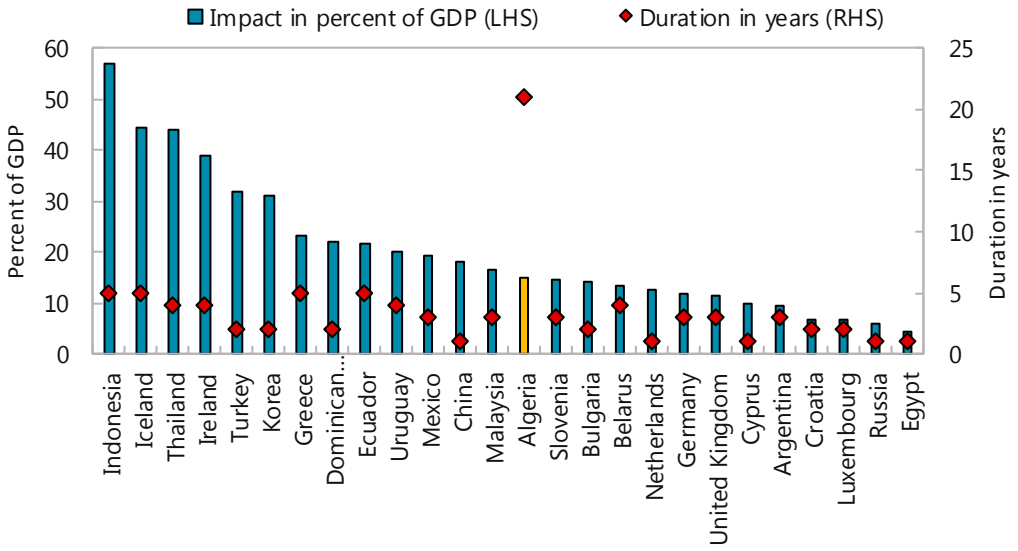
public debt was very large, exceeding 15 percent of GDP per annum. The average duration of fiscal shocks episodes is 3.2 years. The longest episode in the study's sample occurred in Algeria and lasted 21 years (1991-2012), cumulatively costing the equivalent of 14.8 percent of 2012 GDP. This took the form of debt assumptions by the central government (equal to around 82 percent of the total impact) and recapitalization of state-owned banks.

Fiscal Cost and Likelihood of Occurrence of Fiscal Risks



Sources: "Analyzing and Managing Fiscal Risks – Best Practices," B. Clements et al., IMF 2015.

Annual Fiscal Costs and Impact Duration of Largest Contingent Liability Realizations Related to the Financial Sector
(In percent of GDP and years)



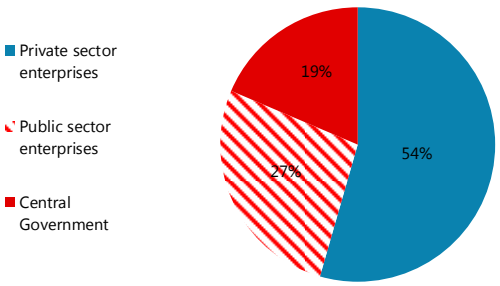
Sources: "*The Fiscal Costs of Contingent Liabilities: A New Dataset*," by Elva Bova, Marta Ruiz-Arranz, Frederik Toscani, and H. Elif Ture, 2016; and IMF staff estimates.

4. The rest of the paper discusses fiscal risks that could complicate fiscal management and the planned consolidation in Algeria. Section B sketches the Algerian public sector and presents a framework of analysis of fiscal risks. Sections C discusses the main potential sources of fiscal risks. Section D describes some of the possible transmission channels of fiscal risks and considers the link between fiscal consolidation and fiscal risks. Section E estimates the cost of some of the fiscal risks that recently materialized. Section D concludes.

B. A Framework of Analysis

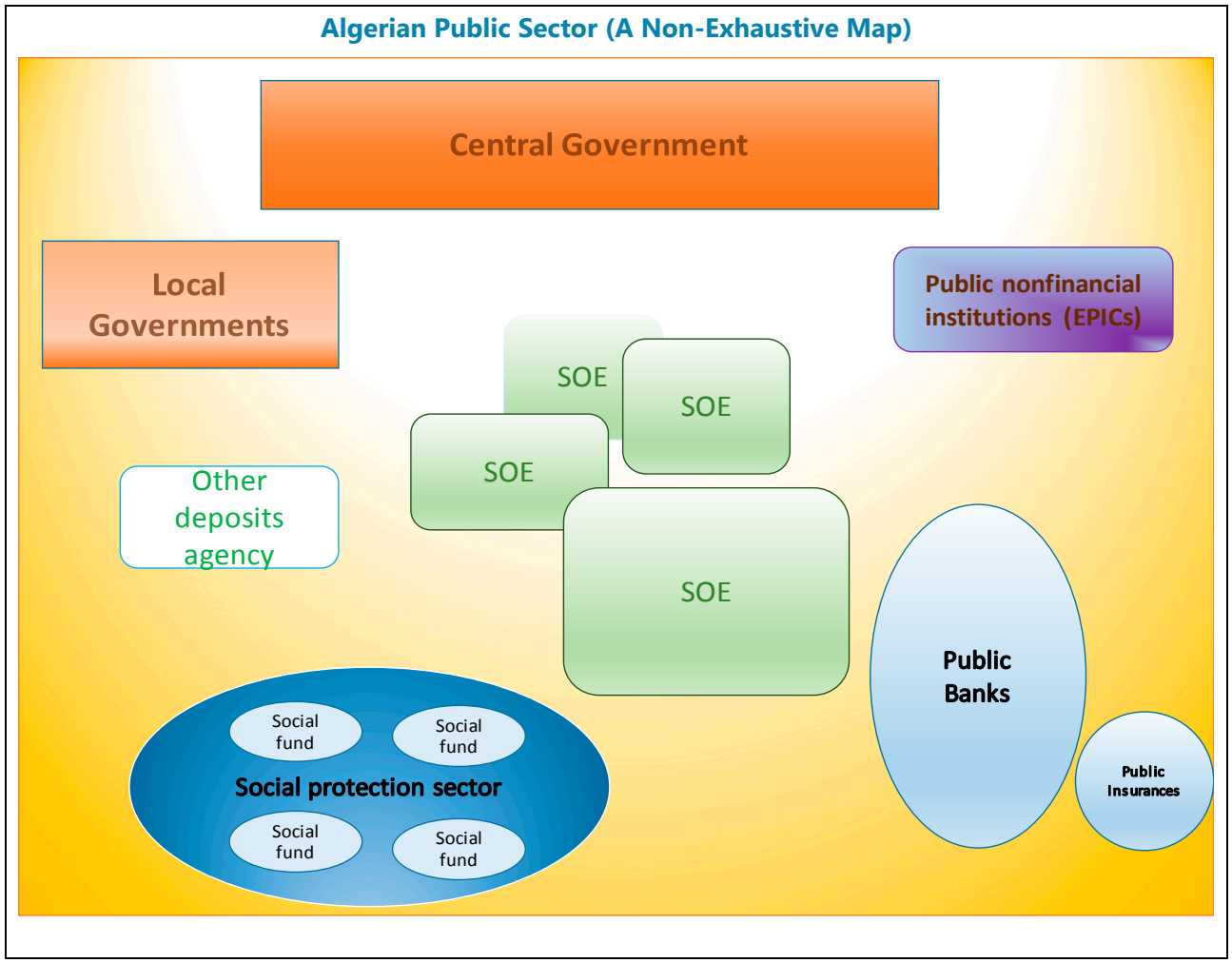
5. The Algerian public sector is very large. Like most countries, Algeria faces a wide range of fiscal risks. But two reasons make the need to identify Algeria's fiscal risks and estimate their likelihood and potential impact particularly important at this juncture. First, the public sector is much larger than in most countries. Although consolidated public sector statistics, which would provide a comprehensive view of the public sector's financial operations (flows) and assets and liabilities (stocks) are not available, data from the *Office National des Statistiques* (Algerian Bureau of Statistics) show that the public sector, including the central government, accounted for 46 percent of the country's value-added in 2015. Activities carried out by the public sector excluding the central government accounted for 27 percent of total value-added. Second, the country has entered a period of sustained and significant fiscal consolidation, which is needed, but increases the likelihood of some of the risks materializing.

Contribution to Value-Added of the Economy
(2015, Percent)



Sources: Authorities' data; and IMF staff calculations

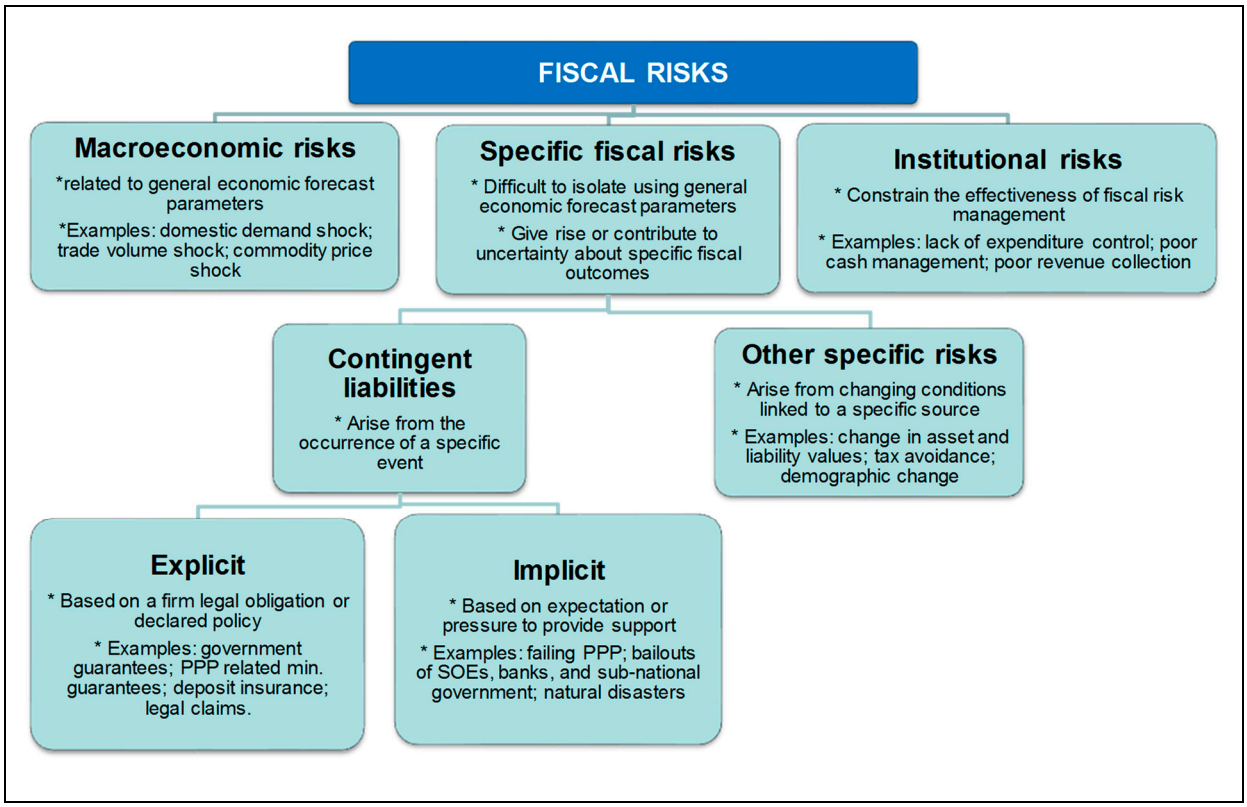
6. The public sector includes a myriad of entities. The state plays a substantial role in economic activity through its fiscal and social policies. In addition to the central government, the public sector includes close to 400 SOEs, a large social protection sector comprising several social funds, a large number of nonfinancial institutions that are autonomous commercial entities, six public banks that dominate the banking sector, other public financial institutions including ten public insurance companies and the National Postal Agency, and local governments. As explained below, these public entities are linked by a web of financial interactions, each of which opens a potential transmission channel of fiscal risks.



7. A tentative mapping of the main fiscal risks in Algeria can be drawn based on a simple analysis matrix. This analysis matrix differentiates the main fiscal risks based on their nature: macroeconomic, specific, and institutional fiscal risks.[2] Risks can affect or originate in any of the fiscal institutions described above. Specific fiscal risks could be either endogenous to the public sector (e.g., guaranteed debt) or exogenous (e.g., environmental risk), and explicit or implicit. This matrix has been established based on the different IMF studies on fiscal risks and fiscal transparency. Based on the above mapping of the public sector and this analysis matrix, the following section discusses the main sources of fiscal risks in Algeria.[3]

[2] Fiscal risks pertaining to institutional arrangements are not reviewed in this paper.

[3] See, in particular, IMF Board papers "*Fiscal transparency, Accountability and Risk*", 2012 and *"Update on Fiscal Transparency Initiative"*, 2014.



C. Main Sources of Fiscal Risks

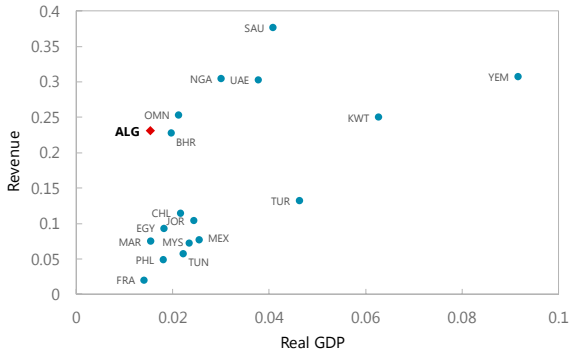
Macroeconomic uncertainty

8. Macroeconomic uncertainty, especially about oil prices, creates large fiscal risks. As with many hydrocarbon exporters, wide fluctuations in oil prices are a key source of macroeconomic volatility in Algeria. The fiscal sector in particular is considerably exposed to volatility in commodity prices as about 60 percent of fiscal revenue stems from the hydrocarbon sector. Following the fall in oil prices in 2014, hydrocarbon revenues declined by about a third in 2015.

9. Although currently low, the future path of public debt is subject to significant uncertainty because of macroeconomic risks. In the baseline scenario, gross public debt, excluding guarantees, is expected to remain relatively small (from 8.8 percent of GDP in 2015 to 14.6 percent of GDP in 2022). As illustrated in the debt sustainability analysis conducted for this Article IV consultation, under plausible alternative scenarios and stress tests, debt could increase significantly, although it would remain well within sustainable margins.[4]

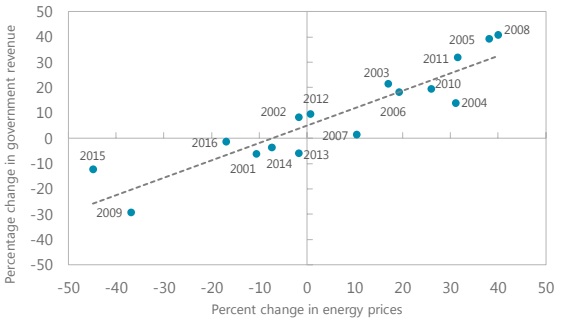
[4] See staff report for the 2017 Article IV, Annex II.

Volatility in Real GDP and Fiscal Revenue
(Standard deviation in growth rates, 2000-15)



Source: IMF WEO, October 2016.

Changes in Government Revenue in Algeria and World Energy Prices (percent)



Source: IMF WEO, October 2016.
Note: Energy Price Index includes crude oil (petroleum), natural gas, and coal price.

Implicit obligations to state-owned enterprises

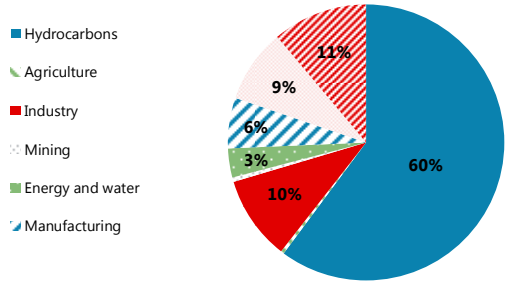
10. International experience shows that SOEs are often a significant source of implicit contingent government liabilities, including because of political interference or excessive borrowing. These risks tend to materialize in the aftermath of a crisis and are especially high in cases where the need to improve public services is high, the financial sector mainly funds the public sector, or SOEs are used to deliver services under political patronage.

11. Non-financial SOEs are omnipresent in the Algerian economy and contribute a significant share of the economy's value-added. There are currently 392 SOEs in Algeria, varying in size from economic behemoths to small companies.[5] The revenues of the two biggest SOEs, the state-owned oil company (one of the largest companies in Africa) and the state-owned gas and electricity company, were equivalent to 26.1 percent of GDP in 2015. Revenues from all other SOEs amounted to less than 4 percent of GDP. SOEs operate in most economic sectors. They contribute the largest share of the value-added in the mining and energy sectors. In terms of number of companies, SOEs are mostly in the following sectors:

- Oil industry, with one group comprising 154 subsidiaries and accounting for 88 percent of the oil industry's value-added in 2015;
- Construction, with 64 SOEs contributing to 21 percent of the sector's value-added in 2015; and,
- Transportation, with 55 SOEs accounting for 16 percent of the sector's value-added.

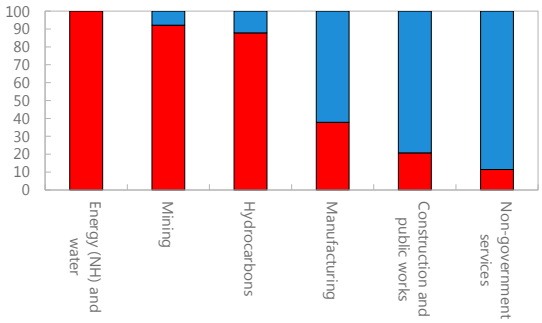
[5] Based on the information received from the authorities at the time of the mission. This figure comprises parent companies and their subsidiaries.

Sectoral Distribution of SOEs' Value-Added, 2015
(Share of total SOE value-added)



Sources: Authorities' data; and IMF staff calculations.

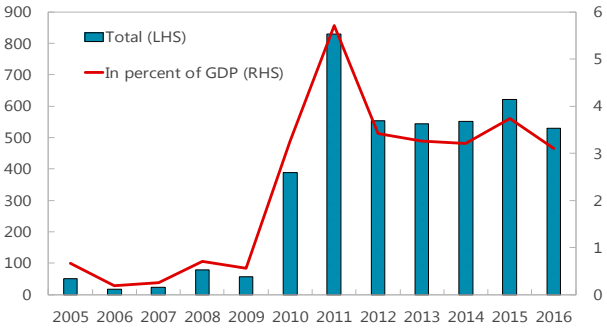
Share of Public and Private Sector in Sectoral Value-Added, 2015 (Percent)



Sources: Authorities' data; and IMF staff calculations

12. The government provides significant financial support to SOEs, while the dividends it receives from SOEs are low. Financial support to SOEs may take many forms (Box 1). The most common in Algeria are: subsidies and transfers for operating activities, debt assumptions (including payment of wages or social contribution arrears), overdraft freezing, and coverage of the differential between market interest rates and subsidized rates. While direct budget transfers to SOEs are relatively low (less than 1 percent of GDP), the cost of other types of financial support has increased significantly over time, from 0.7 percent of GDP in 2005 to slightly more that 3 percent of GDP in 2016.

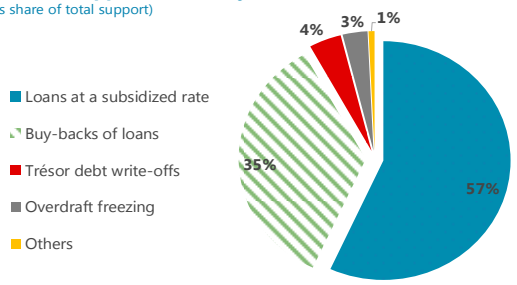
Financial Support to State-Owned Enterprises
(Billions of DA)



Source: Algerian authorities.

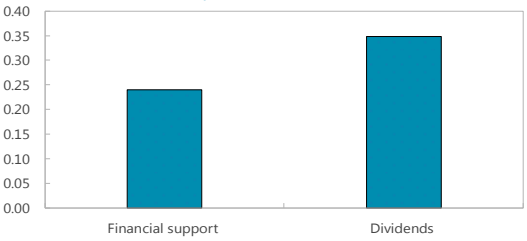
These operations have mostly taken the form of SOEs debt assumptions (also referred to as debt buy-backs) and coverage of loans subsidies. By contrast, dividends received by the state are very low, reflecting SOEs' weak financial performance.[6]

Financial Support to SOEs by Nature, 2016
(As share of total support)



Sources: Algerian authorities.

Financial Interactions between SOEs and the State as a Shareholder, 2014 (in percent of GDP)



Source: Algerian authorities.
Note: Excludes transactions that are common to all enterprises, irrespective of their public or private statute, i.e., taxation and the possibility to access loans at a subsidized rate.

[6] In 2014, a third of the SOEs were loss making.

Box 1. Types of Government Financial Support to SOEs

Loans at a subsidized rate. To encourage investment, the government introduced a wide range of subsidized loans that benefit both public and private companies. The difference between the market rate and the subsidized rate is borne by the central government and paid directly to the lending institution on behalf of the borrower.

Debt buy-backs (also called debt assumptions). Under this arrangement, the central government assumes the indebtedness of an SOE. This generally occurs when the government takes over a non-performing loan of an SOE that is jeopardizing a public bank's prudential ratios.

Trésor debt write-offs. The Treasury (Trésor) may provide cash advances and loans to some SOEs. In the event that an SOE is unable to pay back the loan, the Trésor may decide to write off the debt.

Overdraft freezing. Under this arrangement, the Trésor signs an agreement with a bank to freeze the cumulative overdraft of an SOE. Interests on the outstanding overdraft balance are paid by the central government.

On-lending. This specific form of financial support is granted to public institutions (see below) that are not able to borrow, given their financial performance. It involves two loan-agreements: a) between a financial institution and the central government, the latter borrowing on behalf of the public institution, and b) between the central government and the public institution. In Algeria, the borrower is the "Fonds national d'investissement" (FNI), an investment fund wholly-owned and funded by the State.

13. Implicit guarantees to SOEs may increase the level of public debt. The obligation for some SOEs to implement government's social policies weighs on their financial situation and translates in implicit guarantees for the government to cover their losses. For example, importing products at market prices and selling them on the domestic market at regulated prices can generate sizeable losses for the public enterprise in charge of these operations. These losses eventually tend to be financed by the central government, either through direct budget transfers or by issuing debt to the SOE. In 2016, one SOE received government T-bill issuance amounting to DZD 904.2 billion (5.3 percent of GDP) as compensation for operating losses incurred from 2011 to 2013 on such operations. Considering the uncertainty about market prices and domestic consumption, the likelihood that this type of risk materializes again in the future is high. Staff estimates that, under current market conditions, the liabilities of this particular SOE could increase government debt by DZD 230 billion per year (1.3 percent of 2016 GDP).

14. Fiscal risks from SOEs are likely to remain important as the central government may be required to provide additional financial support or forego dividends. The overall return on equity of the central government on its portfolio of SOEs is mostly likely very low or negative.[7] In 2014, one third of SOE portfolios were making losses. Based on the limited available data, conditions in the SOE sector appear to have deteriorated further, consistent with the worsening of macroeconomic conditions following the fall in oil prices. Moreover, the quasi-fiscal activities undertaken by SOEs prevent them from generating a return on equity that would be in line with a commercial rate of return. Therefore, SOE debt is expected to grow, especially for structurally

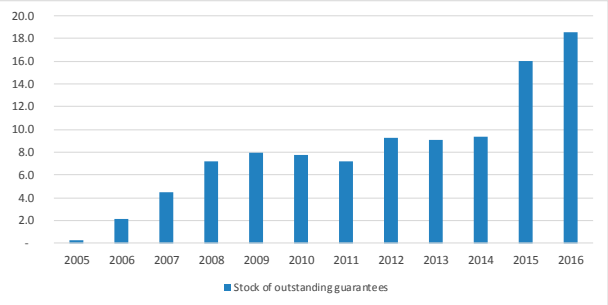
[7] The return on equity is defined as the ratio of net income to equity value.

unprofitable SOEs. Part of the debt is likely to be transferred to the central government's balance sheet through the channels described above, as the government rarely recapitalizes SOEs through direct equity injections.

Explicit debt guarantees to SOEs

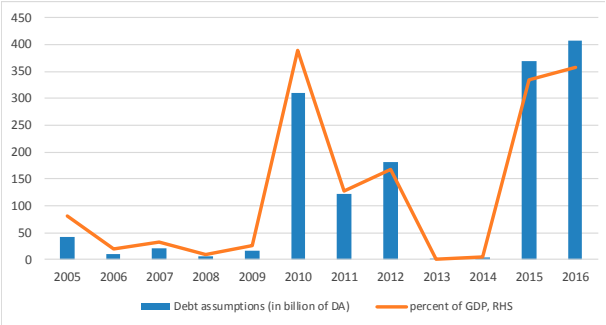
15. Risks associated with explicit guarantees have materialized in the past with a significant impact on public debt. The government provides explicit guarantees to ensure the financing of strategic projects. De facto, those guarantees are issued exclusively on SOEs debt to public banks. The size of explicit guarantees has grown significantly (from 0.3 percent of GDP in 2005 to 18.5 percent of GDP in 2016). In 2016, the level of guarantees was equivalent to 88 percent of central government debt. There have been frequent cases of the guarantees being called in the past, of at a significant cost to the government.

Guarantees, 2005–16
(In percent of GDP)



Source: Algerian authorities.

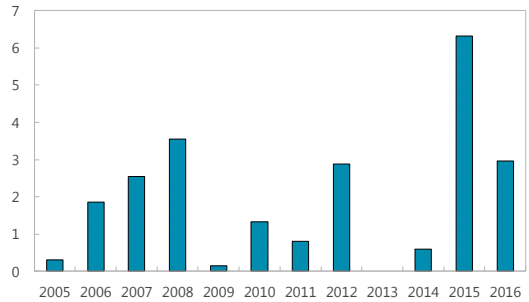
Assumptions of Debt by the Central Government, 2005–16



Source: Algerian authorities.

16. Risks associated with guarantees issued to one specific SOE are likely to materialize. Guarantees granted by the central government over 2005-16 mainly covered the financing of projects by one large SOE. In 2016, guarantees to that SOE represented 80 percent of the total stock of guarantees and 3 percent of GDP. The SOE is structurally loss-making, and instances of debt buy-backs in favor of this SOE have been frequent. In 2016, they amounted to 407.8 billion dinars, or 2.4 percent of GDP, constituting the entirety of debt assumed that year.

Guarantees Granted to One Loss-Making SOEs, 2005-16
(in percent of GDP)



Source: Algerian authorities.

17. How guarantees are granted is not governed by a legal or regulatory framework. In practice, guarantees are granted for project financing that exceeds 25 percent of bank capital. However, there is no legislation or regulation governing guarantees. The current organic law for public finances does not provide that guarantee ceilings be approved along with the annual budget.

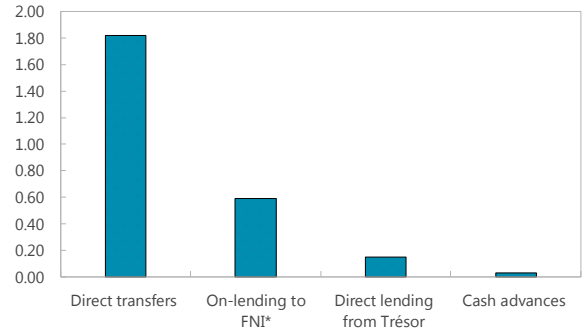
Similarly, there appears to be little risk assessment of the loans or of the SOE's debt structure when the guarantee is issued.

18. Government guarantees have conflicting objectives. The state, as the main shareholder of SOEs, seeks to ensure financing for its own investments. As such, incentives and policies are developed to encourage financing from public banks. Yet the state, as the sole owner of the public banks, also seeks to ensure that the prudential ratios of its banks are respected, which creates an additional incentive to grant loan guarantees. However, granting guarantees is risky, as the state tends to assume SOEs debt or recapitalize public banks when rising public sector NPLs worsen prudential ratios. In essence, a form of regulatory forbearance is promoted instead of minimizing fiscal risks and ensuring a level-playing field in the banking sector.

Risks from other nonfinancial public institutions

19. The Algerian public sector includes numerous autonomous commercial entities, some of which are highly dependent on central government support. Based on available information, there are 66 commercially-oriented autonomous public institutions ("*Établissements Publics à Caractère Industriel et Commercial,*" EPIC), which are not legally incorporated as enterprises. They operate in many economic sectors (communication, press, tourism, culture, utilities, etc.) and many of them implement the government's social policies. Financial support to these public institutions takes the form of direct transfers, on-lending, and direct loans or cash advances from the central government.

Financial Interactions with EPICs, 2016
(In percent of GDP)



Source: Algerian authorities.
*FNI: Fonds National d'Investissement

20. Fiscal risks associated with EPICs can be sizeable. The financial performance of EPICs suffers from the fact that many operate in sectors where prices are regulated, typically at levels that are too low to cover costs (water distribution and cereal distribution are two examples). An unexpected increase in the demand for the good, or an increase in the cost to produce the good (e.g., related to a surge in commodity prices), would increase the fiscal costs.[8]

Risks related to public banks

21. The banking sector is largely dominated by public banks. Public banks accounted for 87 percent of total banking assets in 2015. As explained above, public banks heavily support state-

[8] In 2016, transfers to EPICs from the central government to cover the cost of food subsidies (cereal and milk) accounted for about 1.3 percent of GDP.

directed economic activity by financing structural and strategic projects via state-guaranteed loans, often at a subsidized interest rate and with an interest-free grace period (up to five years). While still adequately capitalized, the banking sector is facing rising credit, liquidity, and interest rate risks because of the impact of durably low oil prices on the economy.[9]

22. Since 1991, the government has repeatedly supported public banks. This support has taken the form of either recapitalization or financial consolidation to ensure full respect of solvency ratios. Financial consolidation has entailed the systematic assumption of non-performing SOE debt, often secured by a state guarantee, as described above.[10] Other forms of financial support to public banks include freezing SOE overdrafts, assuming interest rate differentials on loans, or covering exchange rate losses on external public debt. From 1991 to 2012, the government's total support, other than bank recapitalizations, amounted to DZD 2,157.1 billion, equivalent to 13.3 percent of 2012 GDP. Bank recapitalization was less frequent and less costly, with a few operations during 1991-2012 amounting to DZD 238.8 billion (1.5 percent of 2012 GDP). A bank recapitalization also occurred in 2016 and another is planned for 2017.[11]

Financial Impact of Government Support to Public Banks
(DZD billions and percent of GDP, 1991–2012)

Period	Financial impact	Percent of 2012 GDP
Assumptions of debt (including non-performing loans)		
1991-2000	612.2	3.8
2001	349.4	2.2
2002	117.0	0.7
2005-2007	277.2	1.7
2009	72	0.4
2010	297.2	1.8
2011-2012	235.7	1.5
Losses associated with exchange rates and interest-rate differentials assumed by the central government		
1991-2012	195.7	1.2
Recapitalizations		
1991-2012	238.8	1.5
Total financial support over the period	**2,395.9**	**14.9**

Source: Algerian authorities.

[9] "The Financial Stability Implications of Lasting Low Oil Prices for Algeria," by Moez Souissi, Algeria—Selected Issues Paper, May 2016, Country Report No. 16/128.

[10] The NPLs also related to the public agencies in charge of cereal imports.

[11] The cost of these operations was not available to staff.

Social protection system

23. The Algerian social protection system is very broad. The national insurance protection system comprises: a) benefits covering illness, maternity, and disability, as well as life insurance; b) pension; c) insurance against work-related accidents and diseases; d) family benefits; and e) unemployment insurance (Box 2). Independent workers are not entitled to c, d, and e, whereas the national pension system benefits employees and independent workers, with variable contribution rates and ceilings.

24. The pension fund is reportedly incurring losses. The pension fund (CNR) has been facing financial difficulties in recent years, as paid contributions have not covered liabilities, and unpaid contributions have been increasing, because of the financial difficulties of some enterprises' and the decision by the Ministry of Labor, Employment, and Social Security to grant a smoother contribution payment schedule to these enterprises. [12] The CNR's financial gap was estimated at 3.2 percent of GDP in 2016.

25. The pension system has benefited from solidarity from other social funds to cover its losses. While each fund has its own budget, a system of intra-fund solidarity exists to cover one another's loss. Under this system, CNAS and CNAC have recently been called to cover the CNR's losses. The authorities expect this type of financing to be renewed for the CNR at least until 2020 in the amount of around DZD 540 billion per year. Studies are underway to introduce new forms of financing for the CNR, including earmarking some existing or new taxes or parafiscal taxes. Moreover, new incentives (e.g., reduced contribution rates) are being considered to foster the integration of non-registered workers in the informal sector.

26. The sustainability of the system could not be assessed. Financial support from CNAS and CNAC have thus far enabled the CNR to cover its losses. However, no actuarial analysis is available for the system as a whole that would permit an assessment of its financial long-term sustainability and the capacity of the CNAS and CNAC to sustain the CNR until at least 2020, as planned by the authorities. In the absence of other financing sources and given the large informal sector, it seems likely that the CNR financial gap will deepen over the years. [13] The possible impact on the central government budget seems limited but likely. Instances of financial support from the central government to sustain the pension system, in the form of subsidies or direct transfers, occurred in the past (1993). Another possible and likely impact is an increasing withdrawal of CNR funds from the National Postal Agency, which would put additional pressure on the government's liquidity (see below).

[12] According to the CNAS (Caisse Nationale d'Assurance Sociale, the fund in charge of social benefits on behalf of the government – see Box 2), there are around 6 million contributors to the protection system and a little more than 3 million retirees entitled to a pension

[13] Per the 2011 employment survey conducted by the Algerian statistics office, 46 percent of wage earners were not registered—a number that has grown over the years.

Box 2. An Overview of the Social Protection System

Three funds "caisses" are under the administrative responsibility of the Ministry of Labor, Employment and Social Security:

1. The *Caisse nationale d'assurance sociale des travailleurs salariés* (CNAS), in charge, on behalf of the state, of social benefits in kind and cash, family benefits, and insurance against work-related accidents and disease:

2. The *Caisse nationale des retraites* (CNR), the pension system (including for surviving spouses and other beneficiaries); and,

3. The *Caisse nationale de l'assurance chômage* (CNAC), in charge of unemployment benefits, aid schemes for distressed companies, and economic reintegration programs.

Contributions are paid by employees and employers, based on a defined contribution rate defined by law. Contribution rates for the standard system were as follows on January 1, 2017.

Sections	Employers	Employees	Social Benefits Funds	Total
Social benefits (illness, maternity, invalidity and death insurance)	11.5%	1.50%		13.00%
Work-related accidents and diseases	1.25%			1.25%
Pensions	11.00%	6.75%		17.75%
Unemployment	1.00%	0.50%		1.50%
Early retirement	0.25%	0.25%		0.50%
Social housing			0.5%	0.50%
				34.50%

The contribution basis is an employee's salary net of family benefits (covered entirely by the central government's budget), severance benefits, and other specific benefits.

Independent workers contribute to the *Caisse nationale de sécurité sociale des non salariés* (CASNOS). Contributions are mandatory and are allocated equally between pensions and other benefits. Contributions are computed based on an annual salary higher than DZD 216,000 and not exceeding DZD 4,320,000.

Pension system

The pension system is a pay-as you-go system under which contributions from current employees pay for the pensions of current retirees (*système par répartition*). The system covers all employees, including from the public sector. Some categories (e.g., vulnerable populations) are, however, covered directly from direct transfers from the central budget.

The legal retirement age is 60 provided the employee a) has worked for at least 15 years and contributed to the system for at least 7.5 years, or b) is 58 years old in 2017 (59 in 2018) provided he or she contributed to the system for at least 32 years. Women are entitled to receive pensions starting at age 55. Some other categories of citizens are entitled to early retirement. In practice, if an employee did not work for at least 15 years but has at least contributed for 5 years, he or she is entitled to a pension, provided the age condition (60 years old) is met.

Option to retire beyond the legal retirement age has been introduced in 2017 to seek to increase the CNR's revenues.

Pension benefits are indexed on salaries. Per the most recent information available, the minimum pension cannot be less than 75 percent of the multisector minimum guaranteed salary (SNMG) or higher than 80 percent of the average salary used for the pension benefit calculation. However, a pension mark-up system applies to some categories of citizens under various conditions. Moreover, surviving spouses and children are entitled to a survival pension that cannot be inferior to 75 percent of the SNMG

Treasury correspondents

27. Financing the deficit using private deposits and deposits of public entities entails fiscal risks for the government. Algeria has been using deposits at the National Postal Agency and at the Trésor, including the deposits of public institutions, local governments, social protection funds, and private depositors, to finance its deficits.[14] The balances on these deposits accounts are sizeable and constitute an immediately available funding source for the government.[15] The financing of the government's deficit through these deposits is currently not included in the public debt, although the government in essence incurs a liability. Furthermore, the fungibility of private deposits and social protection funds with government accounts may create liquidity pressures for the government in case of substantial and unexpected withdrawals from depositors.

Local governments

28. Financial support to local governments comes from a financial equalization system administered by the "Caisse de solidarité et de garantie des collectivités locales" (CSGCL). The CSGCL is also responsible for providing financial assistance to loss-making local governments or localities hit by natural or other disasters. In addition, it provides temporary support for inter-community investment projects.

29. Local governments are not currently a significant source of fiscal risks. The CSGCL's revenues derive solely from local taxes. Local governments have made efforts to increase the property tax base and improve tax collection to offset the reduction in revenues from the business turnover tax (*taxe sur l'activité professionnelle*, TAP).[16] These efforts have translated into an increased share of property taxes in local government revenues (from 5 percent in 2014 to 11 percent in 2016 and a projected 20 percent in 2017).

30. Fiscal risks associated with local governments may increase in the future. Given local governments' limited sources of revenues, the central government is considering allowing local governments to borrow directly from public banks with the CSGCL's guarantee. This would mechanically create another source of fiscal risks and should therefore be introduced with appropriate safeguards to assess, limit, and report guaranteed debt.

Public-Private Partnerships

31. Fostering investment using public-private partnership is at an incipient stage. A PPP framework law is being drafted but some PPPs have already been developed under ad-hoc provisions in laws governing specific sectors. This has been the case in some highly capital-intensive industries, such as the desalination industry and electricity production). Other PPPs have been

[14] See accompanying paper on "Financing Fiscal Deficits," by Andrew Jewell.

[15] These deposits represented 6.7 percent of GDP at end-2016.

[16] The rate on professional activity has been reduced from 2 percent to 1 percent of revenues, except in the construction sector.

initiated in the transport industry (airport, subway, port terminals) and water distribution; these are exclusively management-delegation contracts.

32. Oversight of PPP contracts seems to be in place but could be strengthened. The government believes PPPs could be a useful vehicle to finance investment projects at lower cost for the budget while improving their efficiency. As such, it intends to increase the use of PPPs in the future. The CNED-PPP,[17] a dedicated unit in the Ministry of Finance, has been tasked with developing alternative financing models for investments other than capital expenditures from the budget. This unit is finalizing the PPP framework law and drafting guidance and procedures on the use of PPPs. It is also in charge of providing oversight of PPP projects, including technical support for their launch, tender, execution, and financial evaluation.

33. Risks associated with PPPs are low but could increase. The net present value of existing PPP contracts is unknown, but the authorities believe it is low. The fiscal risks associated with PPPs may be mitigated by the fact that, for foreign companies, the special purpose entities supporting the contracts will depart from the 51/49 rule that normally requires majority Algerian ownership in any joint-venture. Thus, a foreign private partner in a PPP would be able to control the investment, financing, and execution of a project and would bear the associated risks.[18] While currently contained in Algeria, risks inherent to PPPs are typically important in most countries where PPPs are used (e.g., implicit guarantees and increased financial debt of the government in case of an unexpected rise in prices). As the use of PPPs becomes more widespread in Algeria, related fiscal risks will increase.

34. The PPP framework should provide tools to limit and monitor the risks associated with the PPPs. The current draft PPP law mostly focuses on describing the typology of the contracts and the activities eligible to PPPs. It could be strengthened to:

- Ensure that PPP projects are integrated within the overall investment strategy, the medium-term budget framework, and the budget cycle. PPPs may be more expensive than traditional public investments if higher financing, transactions, and renegotiation costs are not offset by efficiency savings. The PPP framework should ensure that PPPs are selected based on efficiency gains and are part of a unified investment decision-making process, with projects considered alongside more traditionally procured investments. Therefore, the framework should specify the criteria to help guide decisions on when a PPP should be considered as a procurement option.

- Require transparent budgeting, reporting, and accounting, including of future-cash flows associated with the contracts and the contingent liabilities over the life of the contracts; and,

[17] PPP unit of the National Fund for Investment and Development (*Caisse nationale d'equipement et de développement*, CNED).

[18] The current PPP practice makes an exception for subsidized activities, for which the risks associated with the differential between the market price and the regulated price would continue to be borne exclusively by the central government.

- Prescribe limits on the public sector's exposure to PPP risks. Ceilings can be imposed on the total stock of PPPs' direct and contingent liabilities, the flow of PPP-related payments and contingent commitments permitted in a given year, or both.

Environmental risks

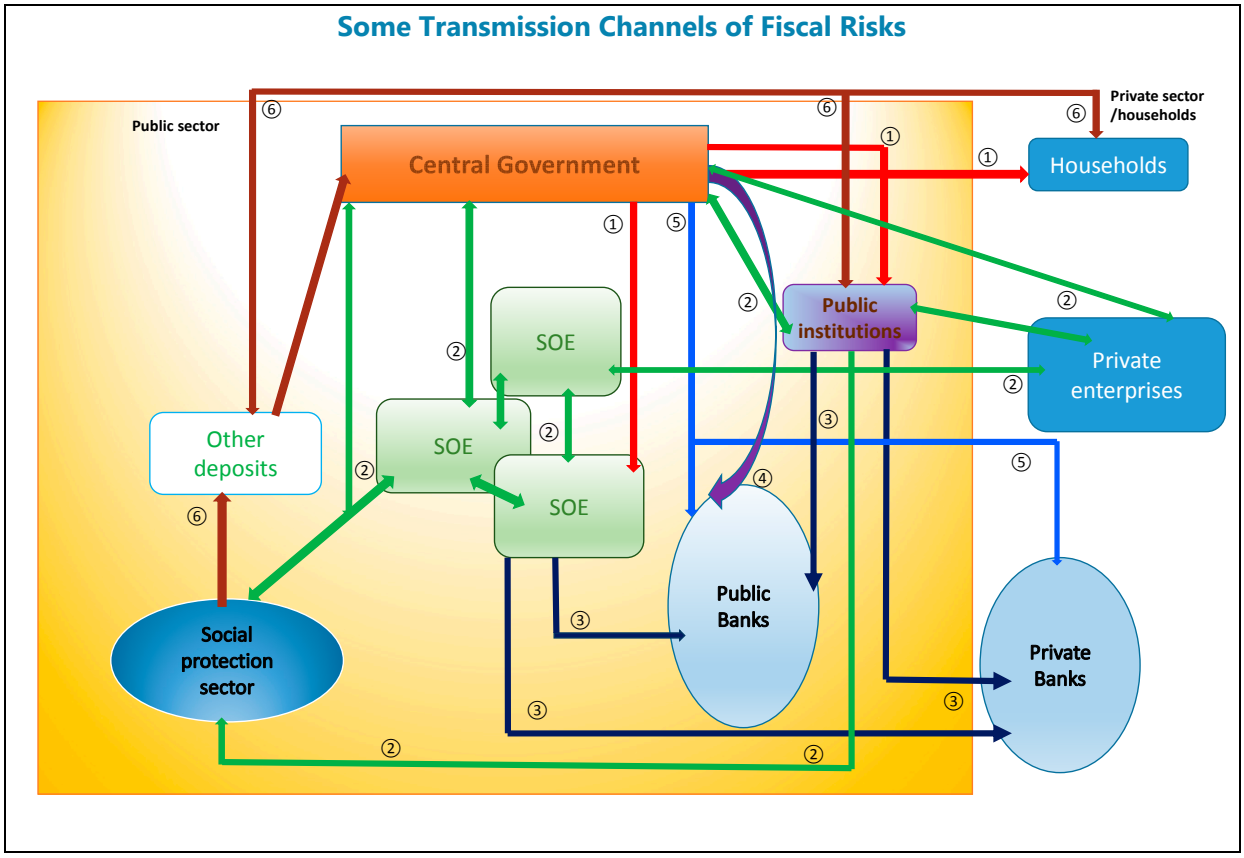
35. Earthquakes and floods have been costly to public finances. Algeria is in a highly seismic region, and several earthquakes have occurred in the north of the country in recent history. The deadliest, in 2003, killed 2000 people and left 10,000 injured. The government has provided substantial assistance in the past in response to natural disasters. The international database for disaster (EM-DAT) reports total cost to the budget of DZD 363.1 billion (8.8 percent of GDP in 2003). Other environmental disasters (floods) have impacted the budget from 2004 to 2012 to a lesser extent (DZD 93 billion, equivalent to less than 1 percent of 2012 GDP).

D. Likelihood of Risks and Transmission Channels

36. Some of the fiscal risks identified above have a relatively high likelihood of materializing. Among these risks, the risk that the government assumes debt guarantees granted to some SOEs is the most significant and the most likely to materialize. The total stock of guaranteed debt amounted to 18.5 percent of GDP in 2016. In addition, financial compensation for the operating losses of one SOE is likely to recur and could be sizeable, considering that the compensation for losses incurred in 2014-16 amounted to about DZD 230 billion per year (1.3 percent of 2016 GDP). Finally, the financial sustainability of the social protection system, without further reforms or new financing mechanisms, appears to be in jeopardy. However, staff could not estimate the likelihood or potential impact of risks in this sector in the absence of actuarial data.

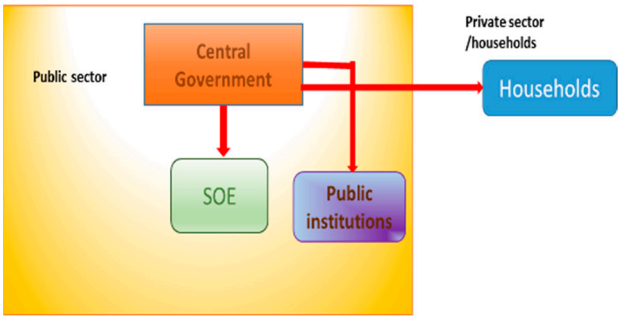
37. The size and complexity of the public sector amplify fiscal risks. Because of the magnitude of the public sector and the complex web of financial interactions within public entities, the financial difficulties of any given entity have a high probability of being quickly transmitted to the central government's budget. Moreover, the planned fiscal consolidation, while necessary, is likely to put more stress on economic growth and could trigger the materialization of some fiscal risks, in particular those stemming from guarantees granted to SOEs whose financial performance has been declining.

38. Inter-linkages within the public sector suggest that the transmission channels of fiscal risks are multiform. The interactions between various public entities are numerous and take many forms. For example, the public financial sector provides loans to SOEs to support large investments; many SOEs essentially execute the government's social policies; the government regulates the price of many food products, commodities, and services, including housing and transportation; and the social protection system contributions are largely driven by the public sector. In return, the central government is expected to support loss-making SOEs and recapitalize public banks when their prudential ratios deteriorate. The figure below and Box 3 illustrate some possible transmission channels of fiscal risks.

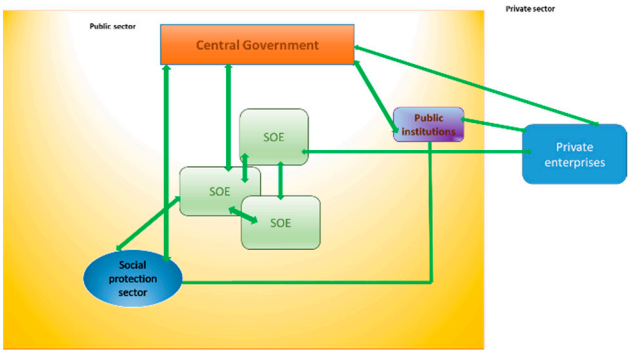

Some Transmission Channels of Fiscal Risks
Public sector
Private sector /households
Central Government
Households
Public institutions
SOE
SOE
SOE
Private enterprises
Other deposits
Social protection sector
Public Banks
Private Banks

Box 3. Examples of Transmission Channels of Selected Fiscal Risks

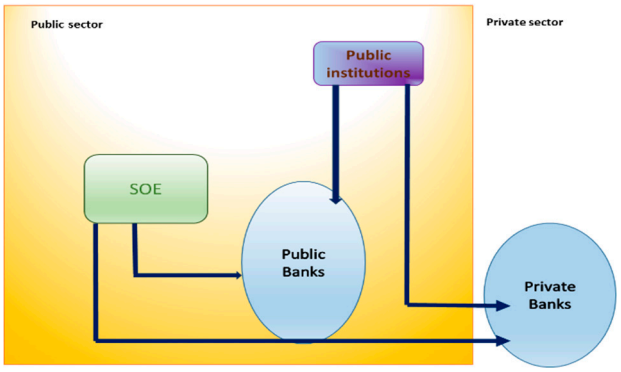
1. *Subsidies and transfers to SOEs and EPICs*. Direct transfers and subsidies to SOEs and other nonfinancial public institutions are significant and help sustain social policies implemented on behalf of the government. They are not linked to any financial performance and sustainability indicators. However, they are subject to macroeconomic risks, as the cost of subsidies is linked to fluctuations in world prices and domestic demand.



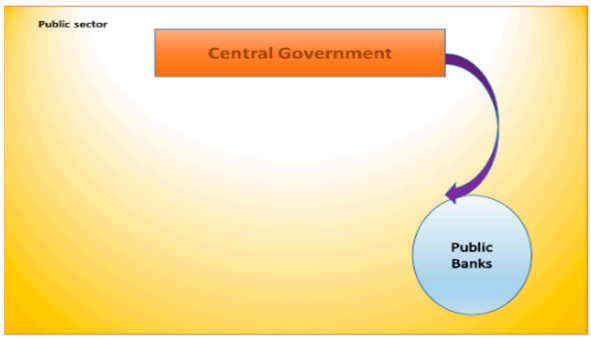
2. *Payment arrears.* SOEs are a significant contributor to economic activity. When SOEs have financial difficulties, either structurally or as a result of a weaker economic environment, these difficulties may translate into payment arrears to other public institutions including: the social protection sector (social contributions), public banks (debt service), other SOEs (mostly, via utility payments), and the central government (taxes). Arrears in social contributions have reportedly already impacted the liquidity of the CNR and could, in the long term, impact the sustainability of the social protection system. Arrears to the private sector (e.g., payment to contractors) or from the private sector to public entities also constitute a channel of transmission of fiscal risks.



3. *Banking system liquidity*. A number of SOEs and other public institutions experience cash-flow difficulties, which could be aggravated by fiscal consolidation. The immediate consequence could be larger drawdowns of their deposits with their banks (mostly public) to finance their expenditures, which would worsen liquidity pressures in the banking system. Another possible consequence is an increase of long-term bank financing by SOEs from public banks, which would increase liquidity pressures in the financial sector, this time on the asset side of banks' balance sheets (see "The financial stability implications of low oil prices for Algeria," Selected Issue Paper for the 2016 Article IV consultation).

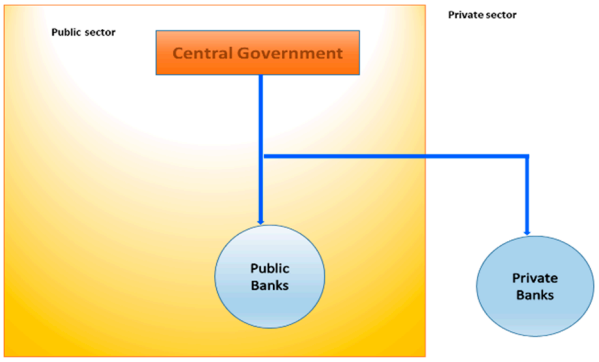


4. *Banking sector credit risk.* Borrowing from SOEs in financial difficulty could translate into non-performing loans and weaker prudential ratios. To maintain these ratios at regulatory levels, banks may require different forms of public support, including recapitalization or financial consolidation

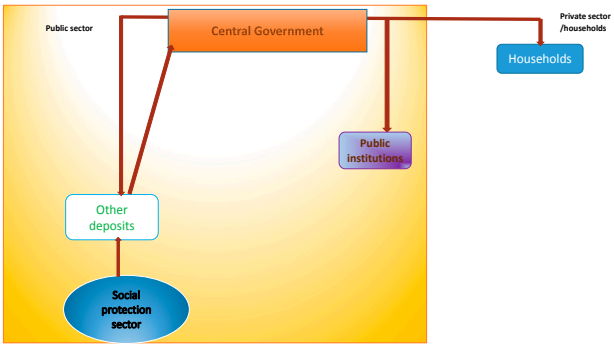


Box 3. Examples of Transmission Channels of Selected Fiscal Risks (concluded)

5. *Debt guarantees.* The structurally weak financial performance of some SOEs, including as a result of their role in implementing large and strategic investment projects on behalf of the government, explains the demand for government guarantees from public banks. A deterioration of the financial performance of an SOE (for instance resulting from the weaker macroeconomic environment induced by fiscal consolidation) could trigger the obligation for the government to assume the guaranteed debt. Alternatively, in some instances, it could lead to the recapitalization of a public bank.



6. *Social protection sector.* In the absence of new financing mechanisms or further reform, the financial difficulties of the social protection system could increase and, ultimately, spill over to government debt. Furthermore, as noted, the Trésor has been using deposits from its correspondents (local governments, public institutions, the social protection system, and private depositors) held at the National Postal Agency as a source of financing of its deficits. While massive withdrawal of these deposits is unlikely, this practice constitutes nonetheless a potential source of liquidity pressure.



E. Estimated Impact of Some Fiscal Risks that Have Recently Materialized

39. The impact of some recently materialized fiscal risks has been significant. The organization of the public sector and the complex interactions between public institutions suggest that, in case of materialization of fiscal risks, the resulting impact on government debt can be sizeable. Indeed, the cumulative impact of identified fiscal risks that materialized between 1991 and 2016 is estimated at 33.9 percent of 2016 GDP. The actual cost is likely higher as the list is not necessarily exhaustive.

Estimated Impact of Recently Materialized Fiscal Risks		
Nature of the fiscal risk	**Amount (DZD billions)**	**Percent of 2016 GDP**
Fiscal risks that materialized between 1991 and 2016		
State-owned enterprises		
Debt write-off	169.6	1.0
Overdraft freezing	133.6	0.8
Others (including the assumption of arrears)	29.4	0.2
Contingent liabilities		
Assumptions of debt (2005-2015)	1,083.6	6.3
Exposure to financial sector		
Financial consolidation of public banks	2,396.4	14.0
Environmental risks		
Earthquake and floods	456.1	2.7
Total	**4,268.7**	**25.0**
Fiscal risks that materialized in 2016		
State-owned enterprises		
Debt write-off	4.5	0.0
Overdraft freezing	0.0	0.0
Others (including the assumption of arrears)	2.2	0.0
Contingent liabilities		
Assumptions of debt	605.8	3.5
Implicit guarantees (financial compensation for accumulated loss)	904.2	5.3
Exposure to financial sector		
Public bank recapitalization	amount not provided	not estimated
Total	**1,516.7**	**8.9**

F. Conclusion

40. Fiscal risks are manifold in Algeria. Key sources of fiscal risk include government guarantees of loans to state-owned enterprises, the potential need to recapitalize public banks, implicit commitments given to state-owned enterprises, and the reported financial difficulties of the

state-run pension system. Many of these risks have materialized in the past, at a sizeable cost to the government. Looking ahead, the planned fiscal consolidation, although necessary, increases the likelihood of some of the risks materializing and could amplify their impact.

Fiscal Risks and Fiscal Consolidation

Source of Fiscal Risk	Likelihood	Potential Impact	Impact of Fiscal Consolidation on Likelihood
Macroeconomic uncertainty	High	High	→
Implicit obligations to SOEs	High	High	↗
Explicit debt guarantees	High	High	↗
Other nonfinancial public entities (EPIC)	High	Medium	→
Public banks	High	Medium	↗
Social protection sector	Reportedly, high	?	↗
Local governments	Low	Low	→
PPP	Low	Low	→
Environmental risks	Medium	High	→

41. The complex web of financial interactions within the public sector generates significant fiscal risks that need to be closely monitored and safeguarded against. While fiscal risks are multiple and interrelated, there are few safeguards to prevent the impact of these risks from spreading from one public entity to another and, ultimately, to the central government's budget. Furthermore, little is known at the central government level about the probability of occurrence of the various risks, and consolidated statistics on the financial operations and debt of the public sector as a whole do not exist. Such statistics would allow a better understanding of the wider implication of fiscal policies. Putting in place a process to identify, quantify, report, and manage fiscal risks is therefore important, particularly as fiscal consolidation is expected to increase the likelihood that some of these risks materialize.

STRUCTURAL REFORMS: STRATEGIES AND POSSIBLE PAYOFFS[1]

Algeria needs to implement wide-ranging structural reforms to improve the investment climate, support the diversification of the economy, and facilitate the emergence of a dynamic private sector. A strengthened institutional and legal framework would help accelerate much-needed product market, labor market, and financial sector reforms. Effective reform implementation will require careful sequencing and should take into consideration preconditions, complementarities, and the short-term costs of reforms. The public sector could contribute to enabling private sector growth, including by restructuring and gradually privatizing non-strategic state-owned enterprises. Macroeconomic policies should support reforms, notably by using some of the available fiscal space to cushion transitory costs. If well implemented, such a reform package could significantly improve Algeria's potential growth and promote more inclusive growth.

A. Introduction

1. The collapse in oil prices has exposed the shortcomings of Algeria's growth model. Historically, the role of the state has been central in the economy, which has relied heavily on government redistribution of hydrocarbon revenues. Even when oil prices were high, this model was unsustainable considering that Algeria's proven hydrocarbon reserves are projected to be exhausted in 1–2 generations' time.[2] With prolonged lower oil prices, it has become even more evident that the government no longer has sufficient resources to sustain high levels of spending and continue creating jobs for a young and fast-growing population.

2. In response to the oil price shock, the authorities are working on a strategy to reshape the country's growth model. Algeria adopted a new constitution in 2016, which establishes as an explicit objective the promotion of a diversified and more market-based economy. Accordingly, the government started working on a strategy to reshape the country's growth model, with World Bank support. The aim is to reduce the dependence on hydrocarbons and foster the emergence of high value-added tradable sectors. The authorities acknowledge that successfully transitioning to this new model hinges on the emergence of a dynamic private sector that would become the main engine of growth and job creation.

3. The structural impediments to private sector development are multiple and intertwined. In addition to undertaking fiscal consolidation to restore macroeconomic balances, Algeria needs to pursue a mix of reforms that complement and reinforce each other to relax the multiple structural constraints that impede private sector growth. Notable structural issues include a restrictive business environment, difficult access to finance, weak governance, insufficient

[1] Prepared by Moez Souissi and Greg Auclair.

[2] Algeria's oil reserves are projected to be depleted in 21 years and its gas reserves in 54 years. See BP Statistical Review of World Energy 2016.

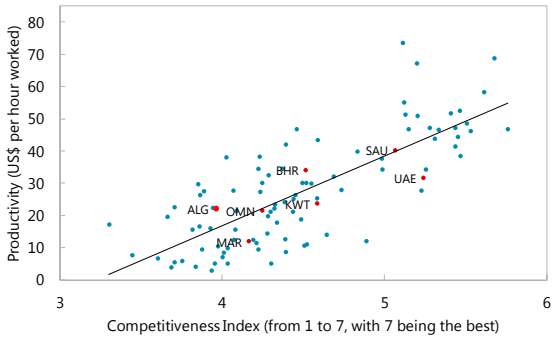
transparency and competition, high barriers to entry, rigid labor markets, jobs-skills mismatches, and excessive growth in wages with respect to productivity.

4. This paper aims to inform the discussion on the design and possible payoff of a structural reform strategy that would help achieve the authorities' objectives. Building on a diagnostic of key structural issues (Section B), the objective of this paper is twofold: outline some important considerations for a successful reform strategy based on a review of relevant literature and cross-country examples, in light of the specifics of Algeria's situation (Section C); and estimate the likely impact of structural reforms on potential growth (Section D). Section E concludes.

B. A Snapshot of the Economy

5. Algeria lags its peers and competitors on indicators of competitiveness and productivity. Algeria has traditionally ranked low in survey-based measures of competitiveness.[3] In the World Economic Forum's Global Competitiveness Report 2016–17, Algeria ranked 87 out of 138 economies. In 2015, Algeria's productivity (i.e., output per capita) ranked in the bottom third of 104 countries and was the lowest among MENA oil exporters. Low productivity coincided with low overall competitiveness, as assessed by the World Economic Forum.

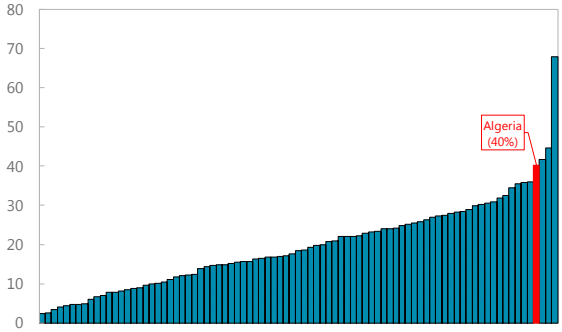
Productivity vs. Competitiveness, 2015



Sources: World Economic Forum; and IMF staff calculations.

6. The economy is dominated by the state and heavily reliant on hydrocarbons. Following independence in 1962, Algeria pursued a socialist, centrally-planned growth model. The economy today remains dominated by the state, with a large share of activity conducted by the public sector and based directly or indirectly on hydrocarbons. Over the past decade, a large share of new job creation has been either in the public sector, which today is very large by international standards, or in the construction sector, which is driven largely by public investment. In 2016, the broader public sector (i.e., the civil service and public enterprises) was the largest employer,

Public Sector Share of Total Employment
(Percent, by country)



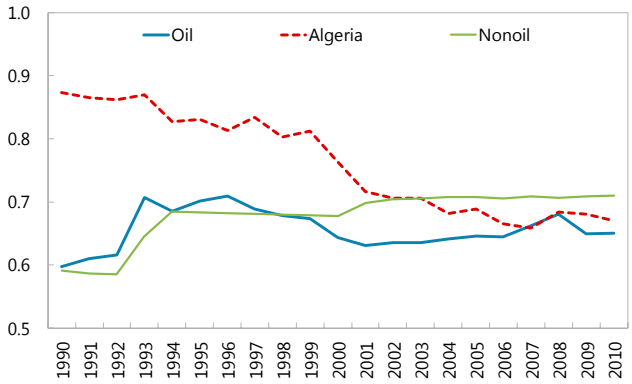
Sources: ILO; and IMF staff estimates.

[3] Caution is needed when comparing survey-based structural indicators across countries. Although these indicators are updated regularly and survey methodologies are revised frequently, they are partly constrained by the data that can realistically be collected. Nonetheless, the use of multiple indicators from a variety of sources provide comfort about the robustness of the key messages.

providing jobs for nearly 40 percent of the working population (ONS, 2016a).

7. Algeria's nonhydrocarbon exports are minimal and lack sophistication. More than 60 percent of bilateral nonhydrocarbon exports are within five product categories, a share that has remained broadly stable over the past decade. Furthermore, most indicators of economic complexity, diversity, and export quality are low compared to many peers and competitors in the MENA region and oil exporters in other regions. Available data suggest that the export quality index for Algeria, which was relatively high at the start of the 1990s, has been declining since. This trend was largely driven by developments in mineral fuel exports, while the quality of nonhydrocarbon exports declined compared to oil and non-oil exporters.[4]

Overall export quality index
(1990-2010)



Source: IMF diversification toolkit.

8. State-owned enterprises (SOEs) dominate the economy, and many rely heavily on government support. SOEs accounted for about third of overall value-added in the economy in 2015 (ONS, 2016b). They are widespread, and some are dominant players in their sector. For instance, 87 percent of banking assets are held by public banks. Many SOEs encounter problems of inefficiency related to their social mandate, governance challenges, and low performance incentives. As a result, many are loss-making and often rely on government support, in the form of direct transfers, guaranteed debt buybacks, bank recapitalizations, and financial support to cover price subsidies.[5] Although SOEs are subject to the same taxation policies as their private sector competitors, the favorable treatment they receive from the government can create an unlevel playing field between public and private enterprises (Oxford BG, 2015).

C. Constraints to Private Sector Development

9. The private sector has been affected by Dutch disease.[6] Over the past 20 years, Algeria has experienced a significant reduction in industrial activity, with manufacturing falling from 15 percent of GDP in the 1980s to 5 percent in 2015. The private sector is dominated by low-productivity activities. Construction and services represent more than two-third of the private

[4] See 'Fostering Export Diversification in Algeria,' IMF Country Report No. 14/342.

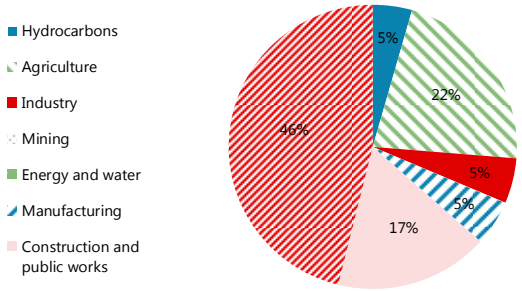
[5] In 2014, more than a third of SOEs incurred operational losses. For a detailed analysis of the situation of public enterprises, see accompanying Selected Issues Paper: "Fiscal Risks in Algeria."

[6] Dutch disease could be the outcome of market failures and defined as the crowding out of the non-tradable sector by the income generated from hydrocarbon exports (and redistributed by the government), which creates inadequate incentives for the private sector to engage in innovative activities and exports. See Cherif and Hasanov (2014).

sector's total value-added, while manufacturing represents only 5 percent. Moreover, while the private sector employs about 50 percent of the labor force (including in the informal sector), formal private sector firms tend to be rather small, with 98 percent employing less than 9 employees in 2011 (ONS, economic census of 2011).

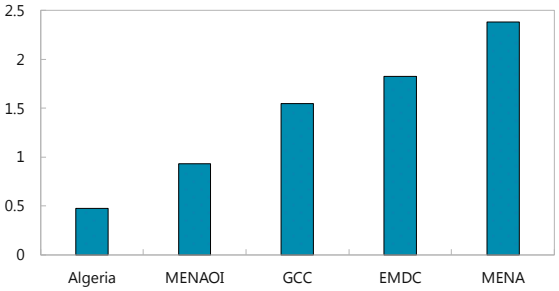
10. Longstanding and multiple structural obstacles hinder private sector development. Over the past years, the creation of new private firms in Algeria was relatively low compared to regional peers and emerging market countries. Structural impediments to private sector development are multiple and intertwined. Indeed, Algeria ranks behind regional peers and other resource-rich countries in almost all key structural areas in international surveys. Notable structural issues include a restrictive business environment, difficult access to finance, weak governance and corruption controls, insufficient transparency and competition, high barriers to entry, a rigid labor market, jobs-skills mismatches, and excessive growth in wages with respect to productivity.

Sector Distribution of Private Sector Firms' Value-Added
(2015, Percent)



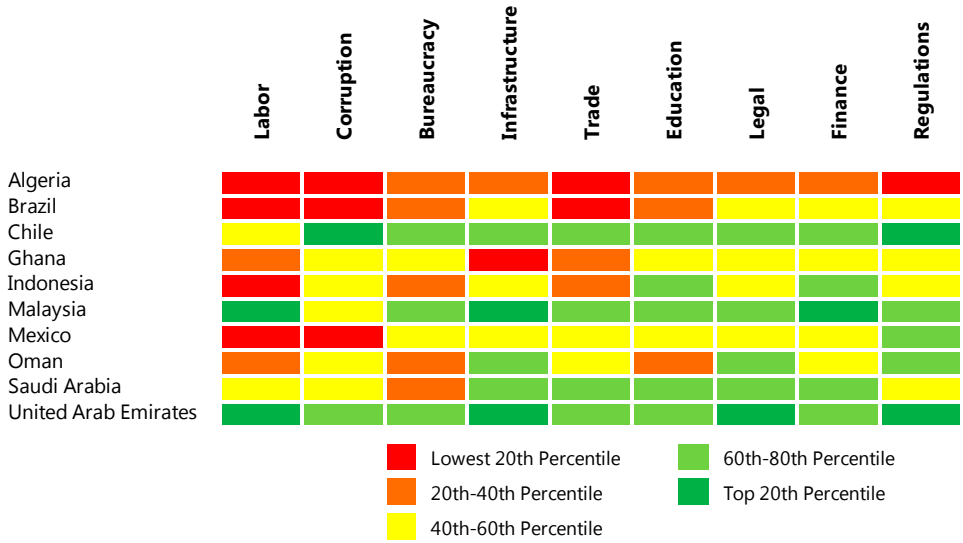
Sources: Authorities' data; and IMF staff calculations

New Business Density, 2008-14
(New registrations per 1000 population ages 15-64, average)



Sources: World Bank; and IMF staff calculations.
Note: MENAOI stand for oil importers in the MENA region, and EMDC for emerging market countries.

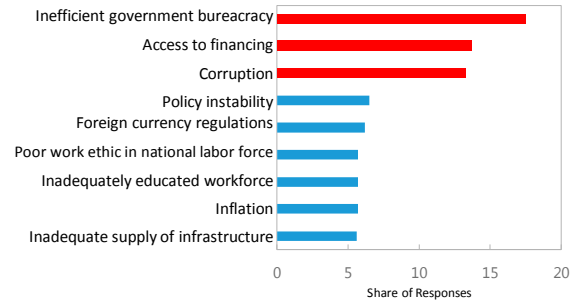
Key Structural Impediments



Sources: World Bank; World Economic Forum; PRS Group; and IMF staff calculations. Percentile rank includes all countries with data available.

11. The business climate does not promote entrepreneurship, partly due to complex regulations and red tape. In 2017, Algeria ranked 156 out of 190 on the World Bank's Ease of Doing Business Index. Not only are regulations heavy and complex, but their application is also described as problematic. Private sector entrepreneurs report that bureaucracy is pervasive and administrative procedures are cumbersome. They also consider poor governance and corruption to be significant obstacles to doing business, with negative implications for private sector investment and growth.

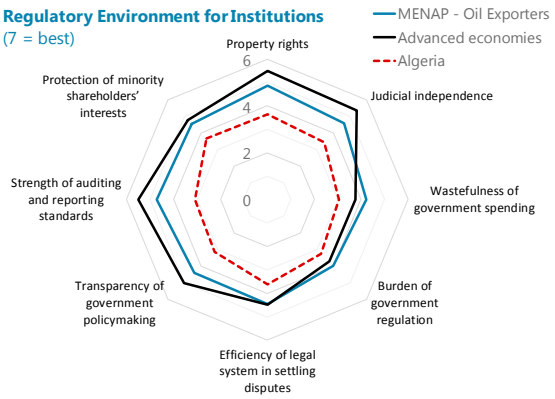
Executive Opinion Survey, 2016



Source: World Economic Forum Executive Opinion Survey,
Note: From a list of 16 factors, respondents are asked to select the five most problematic and rank them from 1 (most problematic) to 5.

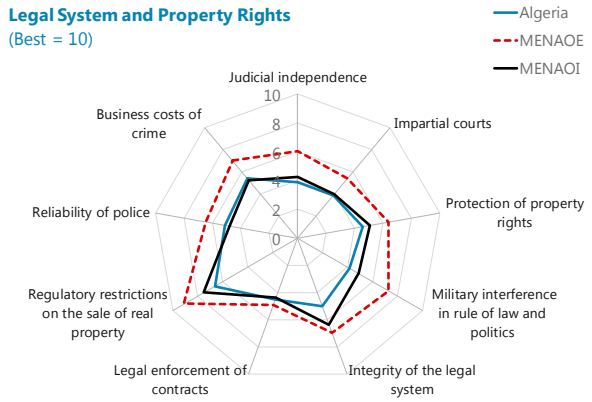
12. There are potential gaps in the institutional and legal frameworks that could hurt private sector activity. Several indicators suggest that Algeria's frameworks are weaker than in other MENA oil exporters and advanced economies. Algeria's legal and institutional frameworks do not seem to adequately ensure the rule of law and property and contractual rights, or to ensure a quick settlement of contract disputes and bankruptcy proceedings.

Regulatory Environment for Institutions
(7 = best)



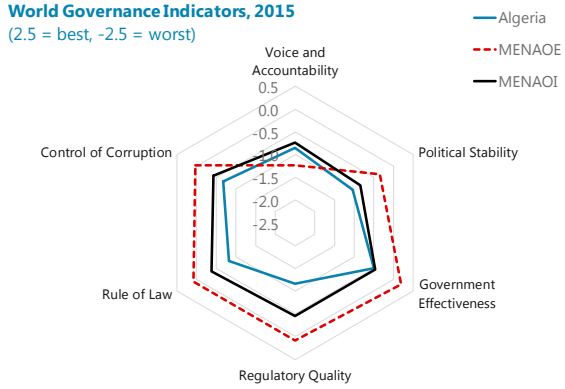
Sources: World Economic Forum 2016 Global Competitiveness Index; and IMF staff estimates.

Legal System and Property Rights
(Best = 10)



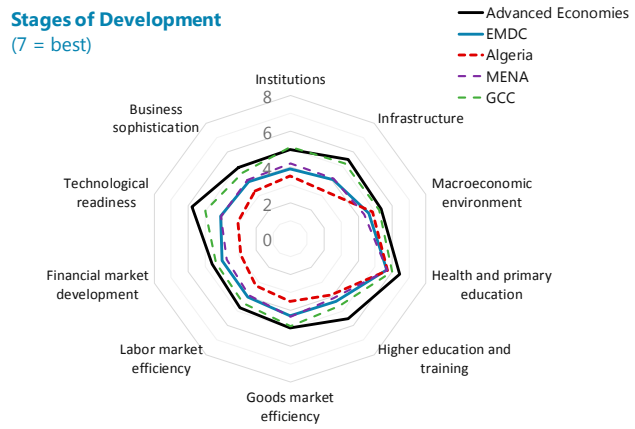
Source: Fraser Economic Freedom Index.
Note: Latest data are 2014.

World Governance Indicators, 2015
(2.5 = best, -2.5 = worst)



Source: World Bank World Governance Indicators.

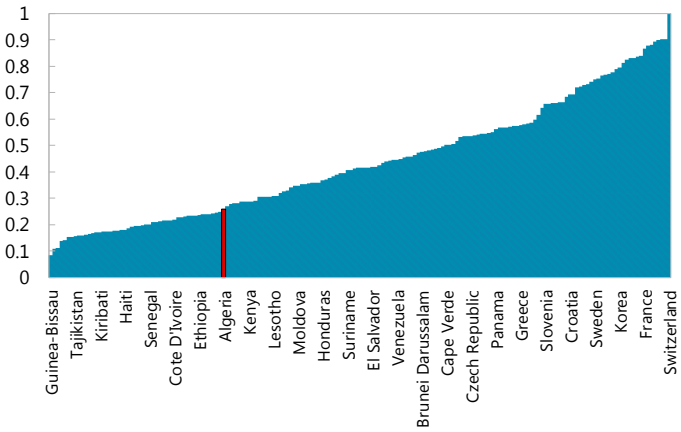
13. The market for goods and services is inefficient. In 2016, Algeria scored below the average of the MENA region and lagged significantly behind peers and competitors in the pillar on goods-market efficiency of the World Economic Forum's Global Competitiveness Report. Survey respondents considered that local competition is practically nonexistent (Algeria ranked 138th in the sample of 140 countries). They expressed concerns about markets being dominated by very few companies (109th), had little trust in the ability of anti-monopoly policy to address the issue in an efficient way (110th), and considered both tariff and non-tariff barriers as major impediments to market entry (130th).



Sources: World Economic Forum 2016 Global Competitiveness Index; and IMF staff estimates.
EMDC= Emerging market countries

14. Inadequate access to finance is another factor inhibiting private sector development. The financial system is small and shallow, and the banking system is dominated by state-owned banks. Credit to the private sector, particularly to small and medium-sized enterprises (SMEs) and firms operating in the tradable sectors, remains relatively low by international comparison (23 percent of GDP). This reflects the small size of the private sector; insufficient financial infrastructure, including substantial collateral requirements for lending to SMEs and lengthy bankruptcy settlement proceedings; and the prevalence of state-directed lending.[7] Moreover, Algerian capital markets are nascent, and market capitalization amounts to less than 1 percent of GDP. Several factors thwart the development of financial markets, including lengthy administrative procedures and subsidized bank lending that make market financing unattractive.

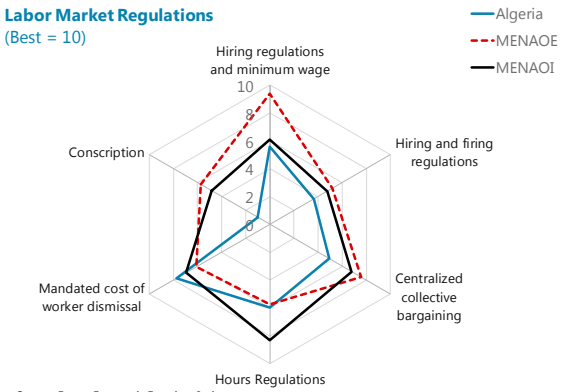
Algeria: Financial Development Index



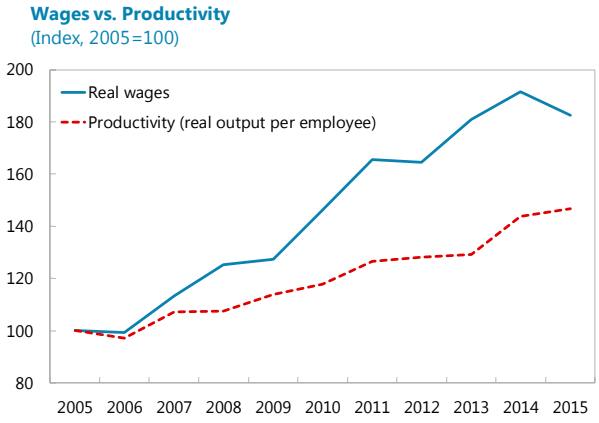
Source: IMF Financial Development Index.

[7] While public banks have been subject to directed lending constraints, private banks in the past mostly focused on international trade finance, which generated the bulk of their revenues. Following the implementation of stricter prudential standards in 2014, private banks have increasingly reoriented their business model towards standard banking, but they have continued to refrain from lending to SMEs beyond government-sponsored lending programs. See "Financial System Stability Assessment – Algeria," IMF Country Report No. 14/161.

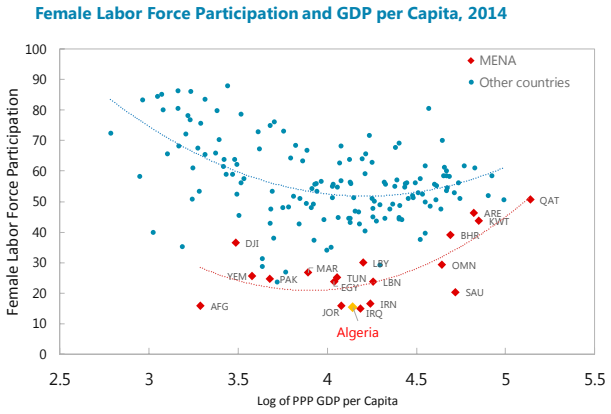
15. Several issues impede the functioning of labor market and hinder the effective allocation of labor. The unemployment rate remained high at 10.5 percent in 2016, while the labor force participation rate—at 41.8 percent— was low by international standards. In addition, the private sector has created only 141,000 new formal jobs since 2013—less than 2 percent of the working population in 2016. Jobs in the informal sector accounted for about 38 percent of total employment in 2016. These facts reflect: (1) the lack of labor market flexibility due to costly hiring and firing regulations; (2) large labor costs driven by high payroll taxes and excessive wage hikes relative to productivity gains; (3) mismatches between skills offered by job seekers and those sought by firms, and (4) strict eligibility requirements that limit access to the unemployment insurance system, contributing to a large informal sector.[8] These issues have prevented private firms from hiring high-skilled workers and, in turn, from engaging in high-value-added tradable sectors. They have also contributed to the exclusion of important parts of the population—especially women and youth, whose participation rates remain very low compared to regional peers (16.6 and 26.7 percent respectively, in 2016).



Source: Fraser Economic Freedom Index.
Note: Latest data are 2014.



Sources: Algerian authorities; and IMF staff calculations.



Sources: World Bank; and IMF staff estimates.

[8] Young people have an incentive to get an education that is suited to employment in the public sector, which offers higher wages than the private sector (this is true across sectors and most occupations, except in non-tradable sectors such as financial and personal services and real estate). Gaps between wages and productivity started increasing significantly in the wake of the Arab Spring when the Algerian authorities granted large wage increases in the public sector. See Dauphin *et al* (2016) and Callen *et al* (2014).

D. Important Considerations for a Successful Reform Strategy

What are the key areas for reforms?

16. Algeria suffers from structural deficiencies in many areas, calling for an ambitious reform agenda. Structural reforms should aim to increase productivity by reducing barriers to efficient investment, employment, and competition (Box 1). Reforms are needed to revamp the business environment, strengthen institutional and legal frameworks, reinforce competition in product markets, ensure adequate access to financing for businesses, enhance the functioning of labor markets, and improve the outcomes and standards of the education system.[9]

17. Continued efforts are needed to reduce bureaucracy and strengthen the institutional and legal frameworks. Reducing unnecessary red tape and accelerating the transition to a digital economy would help enhance the competitiveness and efficiency of private sector firms, while building strong institutions and legal frameworks would contribute to the success of the reform program. International experience suggests that where the rule of law is lacking and corruption is a concern, resistance to reforms is likely to be stronger. In recent years, the authorities have started reforming the regulatory and institutional frameworks by modernizing public administration and strengthening economic and financial governance (AfDB, 2011). Further efforts are needed to better secure property and contractual rights, ensure more transparency, and prevent corruption and rent-seeking behaviors. The judicial system should be geared to the norms of a market economy to ensure quicker settlement of contract disputes and bankruptcy proceedings.

18. Greater competition should be promoted in product markets. Strengthening competition requires reducing barriers to the entry of new investment projects and the exit of obsolete ones. Restructuring SOEs and privatizing nonstrategic ones would help alleviate implicit barriers to entry posed by some SOEs. Further reducing price restrictions by deepening subsidy reform can create incentives for private enterprises to emerge.[10] Strengthening the powers of the competition authority would help ensure an adequate enforcement of competition rules.[11]

[9] We draw on previous staff reports as well as FSAP and TA reports. See "The Financial Stability Implications of Lasting Low Oil Prices for Algeria," IMF Country Report No. 16/128; "Fostering Private Sector Job Creation in Algeria," IMF Country Report No. 14/342; "Price Competitiveness in Algeria," IMF Country Report No. 14/34; "Promoting Faster Growth in Algeria," IMF Country Report No. 13/48; "Fostering Export Diversification in Algeria," IMF Country Report No. 14/342 and "Financial System Stability Assessment—Algeria," IMF Country Report No. 14/161.

[10] For example, international experience suggests that phasing out subsidies that reduce the domestic cost of imported agricultural products, such as milk, can support the emergence of domestic farmers.

[11] A National Competition Council was created in 2013. It is an independent administrative authority endowed with investigative powers. Its objectives include monitoring markets in terms of free competition and fair pricing and steering and regulating the behavior of economic actors to promote more competition.

19. Algeria's transition to a private sector-led growth model would benefit from increased openness to trade and foreign investment. Promoting more regional trade integration, including with the Maghreb and European countries, pursuing WTO accession, and relaxing the requirement of a minimum 51 percent Algerian ownership in foreign investments ("51-49 rule"), for instance for investments in tradable sectors, would help lower the cost of inputs, attract foreign investors, promote technology transfers, increase competition in the domestic market, and make Algerian businesses more competitive.

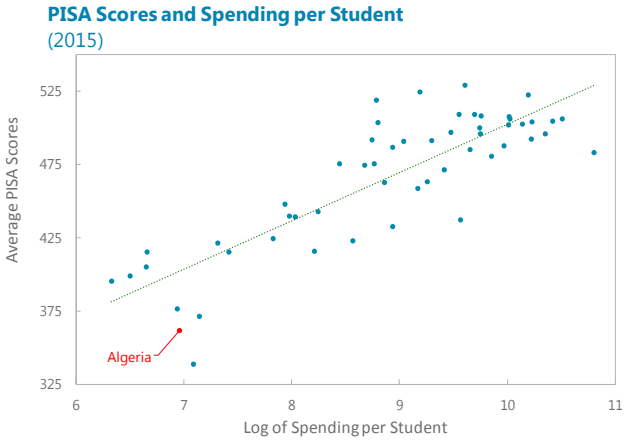
20. Financial sector reforms would help mobilize savings and improve the allocation of resources. Revisiting the strategic positioning of public banks and channeling their activities either towards non-commercial development activities or direct competition with private banks on similar terms would promote competition in the banking sector, stimulate innovation, and reduce the cost of financial intermediation.[12] Strengthening creditors' rights and modernizing the bankruptcy framework would increase bank incentives to increase credit supply to SMEs. Promoting modern payment technologies could help reduce transaction costs, increase financial inclusion, and attract unbanked agents to the financial system. Strengthening prudential frameworks would help prevent excessive risk-taking behaviors and promote banking sector soundness. Restructuring existing public programs that support young entrepreneurs and reviewing current legal and regulatory frameworks would help eliminate constraints to the development of capital venture firms and microcredit.[13] Reducing widespread interest rate subsidies, lifting the restrictions on foreign investors to access domestic bond markets, and attracting domestic investors through the partial divestment of some loans to public enterprises would increase the attractiveness of capital markets and promote better self-selection of investment projects.

21. The functioning of the labor market can also be improved. Relaxing hiring procedures and reviewing the currently stringent layoff rules would lower hiring and firing costs. Allowing for more flexible working hours would facilitate higher employment rates for women and youth. Ensuring that labor regulations are fully enforceable and removing room for discretionary enforcement would reduce uncertainty for firms and increase labor demand. Incentives to work in the informal sector could be reduced by reforming the existing unemployment benefit scheme. Moreover, the effectiveness of current active labor market policies (i.e., wage subsidies and entrepreneurial schemes) should be assessed to ensure that they are targeted to the most vulnerable groups, e.g., unskilled women and youth.

[12] See "Financial System Stability Assessment – Algeria," IMF Country Report No. 14/161.

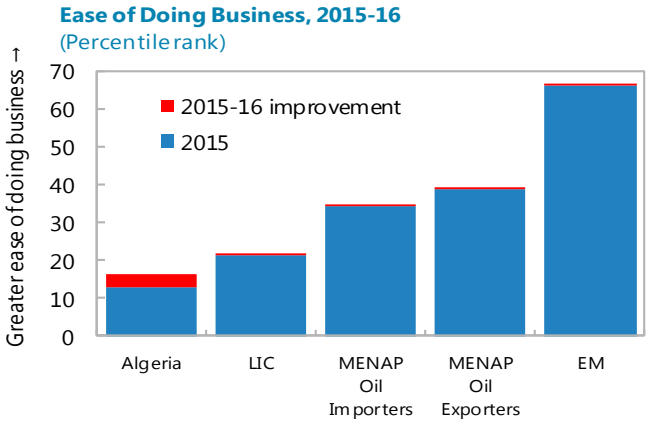
[13] The authorities have established a number of investment funds at both the national and regional level, but activity remains low and could be increased, and business selection models could be improved to ensure the most effective use of public resources. Furthermore, existing government programs that target microenterprises (ANGEM), young self-employed individuals (ANSEJ), and unemployed adults (CNAC) are all heavily subsidized and implemented in cooperation with public banks, leaving little space for conventional microfinance providers or private banks.

22. Stepping up reform of the education system can help form future generations that are adaptable to private sector needs. In the most recent OECD PISA global education survey, Algeria's performance was one of the lowest among PISA-participating countries and economies (it ranked 68 out of 69). The education and vocational system needs to be reviewed to improve the quality of education, which in turn would help attract foreign investors who seek a skilled labor force. Furthermore, to ensure that students acquire the right skills to find jobs, revisions to the curriculum should be made, with input from the private sector.



Sources: OECD PISA global education survey; and IMF staff calculations

23. The authorities are seeking to address structural issues. Encouraging steps in the right direction have been taken, indicating that reform momentum is building. Last year the government adopted a broad strategy to reshape the country's growth model, which it is now fleshing out with World Bank support.[14] The objectives of the new model are to reduce dependence on hydrocarbons and move towards a private sector-led growth model. The authorities also took steps to enhance the business environment, which resulted in an improvement in the World Bank's Doing Business ranking from 163rd in 2016 to 156th in 2017. A new investment code was promulgated, and the 51-49 rule was removed from its scope. The rule can now be amended through budget laws, which is easier. The authorities should seize this opportunity to relax the rule, at least for nonstrategic sectors, in future budget laws. New laws to foster the development of small and medium-sized enterprises were adopted, and regulations for using foreign currency were eased for export companies. There is an ongoing dialogue between trade unions, employers, and the government to review the labor code, which offers an opportunity to increase labor market flexibility while ensuring adequate protection for workers.



Sources: 2016 World Bank Doing Business Indicators; and IMF staff estimates. EM = Emerging Market Countries. LIC = Low Income Countries.

[14] This strategy aims to promote economic diversification and develop private sector activities in high value-added sectors such as agribusiness, renewable energy, services, digital economy, mining processing, and other manufacturing industries. For a detailed discussion of Algeria's untapped potential for diversification, see "Promoting Faster Growth in Algeria," IMF Country Report No. 13/48.

Box 1: What Reforms? A Selected Literature Review

A large existing literature provides aggregate, sector, and firm-level evidence of the transmission channels through which structural reforms can boost productivity and growth.

- *Institutional and legal reforms.* Property rights and the ability to enforce contracts are the two critical elements of a country's institutional and legal frameworks (Dabla-Norris *et al*., 2013). When property and contract rights are insecure, entrepreneurs have high private discount rates, and therefore avoid investments characterized by long time horizons and up-front fixed costs (Richards and Waterbury, 1996). Evidence suggests that strong institutions that secure these rights can promote private investment and entrepreneurship (Dabla-Norris, Ho, and Kyobe, 2016) and have a first-order effect on long-term economic growth (Acemoglu, Johnson and Robinson, 2005).
- *Product market reforms.* When firm renewal is obstructed either by regulatory or institutional barriers, the economy's ability to adopt new technologies can be severely handicapped, with negative consequences for long-run income. Regulations limiting market entry may also hinder the adoption of existing technologies by reducing competitive pressures, constraining technology spillovers, and discouraging the entry of new high technology firms. For instance, low product market competition is found to impair productivity growth, inhibit new firm creation and business investment, and reduce the speed of diffusion of new technologies and production techniques (Conway *et al*., 2006). Reduction in productivity resulting from entry costs is found to be larger when labor markets are not competitive (Poschke, 2010). In contrast, product market reforms are found to improve competition, contributing to boosting aggregate productivity by raising the capacity of the economy to allocate capital and labor resources to fast-growing sectors.
- *Financial sector reforms.* Theoretical and empirical studies find that developed financial markets help improve productivity by lowering the cost of capital. Cross-country empirical evidence suggests that productivity payoffs from undertaking banking system reforms (including privatization and the strengthening of supervision) are higher for countries that tend to have more bank-based financial systems (Dabla-Norris *et al*., 2013). Also, reducing financial repression and restrictions on the price or quantity of credit can facilitate the reallocation of resources to more productive uses, both across and within sectors (Larrain and Stumpner, 2013). Policies that encourage the formation and development of securities markets can be particularly effective for a more efficient allocation of capital across firms and industries (Rajan and Zingales, 2001; Tressel, 2008), thus increasing private investment and spurring innovation (Levine, 2005).
- *Labor market reforms.* The combination of rigid hiring and firing practices and weak income protection systems encourage informality, making it costly for labor to move to more productive sectors (Dabla-Norris, Ho, and Kyobe, 2016). Firm-level evidence suggests that less stringent labor market regulations facilitate the movement of labor to more productive firms, and foster firm entry and exit (Henrekson and Johansson, 2010). Labor market reforms typically include the strengthening of unemployment benefit systems, which appears to boost employment relatively quickly since it improves job search and hiring without significantly affecting layoffs. Reforms to unemployment benefits are also found to be associated with stronger investment and output growth (Bouis et al., 2012).

How to sequence and package reforms?[15]

24. Algeria is designing a strategy for implementing structural reforms. Based on international experience, structural reforms can be implemented all at once, piecemeal, or somewhere in between.

- Under the so-called "big-bang" approach, also known as "shock therapy" in its Eastern European incarnation, a government implements as many reforms as possible across many areas (labor market, product market, financial sector, etc.) in a very short period.

- Under the "piecemeal" approach, a government implements reforms within a given area before moving to another area, without regard to the possible interdependence among reforms in different areas (Wei, 2004).

- Under a gradualist approach, a government implements reforms in different areas simultaneously over an extended period, taking into account reform preconditions and complementarities. This approach is more cautious than the big-bang approach but more pragmatic than the piecemeal approach.

25. A big-bang approach is unlikely to succeed in Algeria. Although many researchers consider the big-bang approach to be less prone to time inconsistency and therefore more credible, such an approach seems to be neither desirable nor possible for Algeria for the following reasons:[16]

- *Algeria's institutional and legal frameworks are relatively weak*. International experience suggests that the institutional and legal frameworks need to be sound for sweeping reforms to succeed (Dabla-Norris, Ho, and Kyobe, 2016). Algeria's still-developing institutional and legal frameworks do not adequately ensure the rule of law or guarantee contractual and property rights. In this environment, firms are less likely to engage in complex activities and undertake long-term investments. A big-bang approach to structural reforms could exacerbate this situation by creating even higher uncertainty for firms.

- *Algeria's technical capacity may be insufficient*. Cross-country experience suggests that it may not be practical to introduce many reforms simultaneously when the government lacks technical capacity (Gelb and Fisher, 1991). Indeed, insufficient technical capacity can prevent a government from addressing the distributional effects of certain reforms, leading to public resistance and causing the government to shy away from critical reforms. The distributional

[15] To identify the most binding constraints to growth in an economy and, accordingly, determine the appropriate sequencing of reforms, researchers typically perform growth diagnostics using the well-known framework proposed in Hausmann, Rodrik, and Velasco (2005). Such diagnostics go beyond the scope of this paper, which instead tries to lay out guiding principles for implementing reforms considering that existing structural issues are complicated by their interrelated nature.

[16] Time inconsistency refers to the fact that winners from early reforms will oppose later reforms which could hurt them. Knowing that, losers from early reforms will oppose the earlier measures. In countries with powerful interest groups and many distortionary policies, the big-bang approach resolves the time-inconsistency issue. See Martinelli and Tommasi (1995) and van Wijnbergen (1992).

effects of reforms can be especially high in economies such as Algeria that have large distortions (OECD, 2008). As reform fatigue sets in, reform gains risk being delayed or even forgone, further intensifying public resistance and eventually leading to reform reversal.

26. A piecemeal approach may fail in Algeria due to the interrelated nature of the multiple binding constraints to private sector development. Focusing on one area at a time would leave intact constraints present in other areas. Therefore, proceeding in an excessively incremental manner would not address the multiple distortions that hinder Algeria's private sector development. Furthermore, a piecemeal approach ignores the fact that reforms are interrelated, and that the success of certain reforms depends on action in other areas. For example, Brazil in the early 1990s lowered barriers to trade. Contrary to economic theory, however, there was little movement of workers across industries due to labor market rigidities. Moreover, many workers were laid off and ended up in the informal sector (McMillan, 2004). The lesson from this experience is that trade reforms should have been coupled with labor market reforms.

27. A gradual but sustained approach seems best suited for Algeria. Such an approach implies that Algeria would implement reforms progressively but across several areas at the same time. Where reform preconditions exist, certain reforms should precede others. For example, strengthening the legal and governance framework would facilitate the privatization of SOEs. Where complementarities exist, reforms should be implemented together. For example, product market reforms and reforms to open the economy to more FDI would reinforce each other. Such an approach would have the following advantages in the Algerian context:

- *Spreads out adjustment costs*. Structural reforms can have short-term negative effects as the economy adjusts to policy changes.[17] These adjustment costs tend to be higher in economies, such as Algeria, with large distortions (Little, Scitovsky and Scott, 1970). A gradualist approach that spreads out the adjustment costs is less likely to encounter public resistance (Agenor and Montiel, 1999).[18]

- *Gives the government more time to strengthen the institutional and legal frameworks*. Resource-dependent economies such as Algeria are particularly exposed to the so-called "institutional trap" (Guriev et al., 2009), whereby vested interests take advantage of weak institutions to extract rents during the reform process (including from the privatization of state assets), thus slowing or even reversing the development of institutions and increasing resistance to reforms.

[17] For example, reforms aimed at increasing labor market flexibility may trigger immediate layoffs—especially in a weak economic environment—whereas hiring can take more time. Product market reforms may lead to rapid downsizing or the exit of incumbent firms but only gradual new firm entry. Financial sector reforms that reduce the costs of access to credit, but do not increase access to financial services for a broader part of the population, benefit mostly the better-off households and firms who can take advantage of cheaper credit and invest, leading in the short run to greater inequality.

[18] With several major changes occurring simultaneously, firms face a turbulent environment in which it would be difficult for them to interpret the signals from policy changes. Firms must adapt to new conditions. In the absence of adequate innovation capabilities, which seems to be the case for Algeria's private sector firms, adjustment costs could be high, fueling resistance to reforms (Dosi, 1988).

- *Creates incentives for an acceleration of reforms*. Cross-country experience shows that successful implementation of certain reform can sometimes set the conditions for "an avalanche" of reforms down the road. For example, product market reforms can increase the pressure for reform in other areas such as labor market reforms (e.g., New Zealand in 1980s). Also, trade liberalization can create a need for supply chain improvements (e.g., India in the mid-1990s).

- *Adapts to existing technical capacity*. Given Algeria's limited technical capacity, a gradualist approach would be preferable as it would allow for trial and error, mid-course adjustment, and room to retreat if necessary (World Bank, 1991).

28. Although reforms should be implemented gradually, implementation should occur in a reasonably short time frame. Gradualism implies a deliberate choice of extending the time needed to implement the reform package to ease the cost of transition and build support for reforms. However, too long a time lag between reforms might not be desirable (OCDE, 2016). For example, New Zealand took about five years between the liberalization of product markets and labor market reforms in the 1980s, which mitigated the potential overall gains from reforms (Caldera Sánchez, de Serres, and Yashiro, 2016). Too slow a pace of reform also increases uncertainty, which in turn can lead private investors to adopt a wait-and-see attitude and delay the expected benefits of reforms.[19] Furthermore, cross-country experience suggests that a slow pace of reform implementation is associated with more intense resistance by vested interests, which can ultimately lead to reform reversal. This risk is especially acute in Algeria, where the population still has vivid memories of the costs associated with the structural reforms of the 1990s.

29. Effective implementation requires careful sequencing. Under a gradualist approach, the sequencing of reforms is especially important. This paper does intend to prescribe specific rules for the sequencing of reforms in Algeria but there is a broad consensus in the literature about key considerations:

- *Compatibility with macroeconomic stability*. Structural reforms need to be introduced in a manner compatible with macroeconomic stability. The overall reform package should include reforms that support short-term growth—for example, legal reforms to improve the investment climate, trade and FDI liberalization to help with diversification and ease balance of payments pressures, and financial deepening to facilitate credit flows.

- *Complementarity*. The complementarity of policies should determine the timing of actions. For example, product market reforms can lower the resistance to labor market reforms by reducing rents (Blanchard and Giavazzi, 2003). Product market reforms reduce barriers to market entry, thereby strengthening competition, creating new jobs, and reducing the incentive for workers to capture a proportion of overall rents. Moreover, product market reforms tend to reduce the

[19] Countries that used gradualism took from four to fourteen years to implement their reform packages, with the average length being just over eight years (Popov, 2000; EBRD, 2001 and Staehr, 2003).

price of goods, resulting in higher real wages. These combined effects facilitate labor market reforms.

- *Lead time*. Structural reforms should be phased in, considering the time needed for the requisite preparatory work and, where applicable, the gestation period. For example, the phasing in of capital market reforms should consider the time required to put in place a functioning institutional structure (stock market authority and other self-regulating private organizations), recruit and/or train the requisite personnel, and prepare and adopt the legislation.

- *Distributional effects*. Although structural reforms improve growth prospects in the long run, they can affect income distribution and even increase inequality in the short run, leading to social tensions that can derail reform efforts (IMF, 2016). As reforms are phased in, they should include compensatory measures, such as conditional targeted cash transfers and unemployment benefits, that address these distributional effects. Structural reforms should also be complemented by a regional perspective to ensure that the growth impact of reforms is inclusive (OECD, 2016).[20] Moreover, as discussed below, well-targeted safety nets can help mitigate the distributional effects of some structural reforms.

How do SOEs fit in the overall reform strategy?

30. SOEs enjoy a variety of privileges that give them a competitive advantage over private sector firms. SOEs create implicit barriers to product market competition. Despite incurring frequent losses, they appear to have almost no bankruptcy risk given the support they receive from the government. Some have preferential access to resources, for instance credit, putting private sector firms at a disadvantage. Easy access to resources reduces incentives to increase productivity and innovate, negating possible spillovers to the private sector. SOE reform is therefore needed to provide economic space for the private sector to emerge.

31. Reforming SOEs, if not managed properly, risks blocking other economic reforms. Among those who stand to lose from reforms most directly are the SOEs' employees, since they enjoy more protections than their private sector counterparts. When Algeria attempted to restructure and privatize SOEs in the 1990s, public sector unions conducted several waves of strikes (Werenfels, 2002). Prior engagement with unions is therefore important to gain support for reforms and build trust in the government's commitment to offset the possible distributional effects.

32. The privatization of SOEs should be gradual. The privatization of SOEs often occurs alongside deregulation (Chang, 2007). International experience suggests that unless legal and institutional frameworks are strong enough to ensure a transparent and competitive environment,

[20] Certain structural reforms can benefit leading regions more than lagging regions. For example, labor market reforms could be of lesser benefit to lagging regions if there are no complementary measures to support better matching of workers to jobs or to facilitate physical access to jobs. Many of the labor market matching considerations, particularly for low-skilled workers, may involve efforts to tailor worker training to the needs of firms located in the area.

privatization should be gradual. The experiences of Hungary and Russia in the early 1990s are instructive (IMF, 2014):

- *Hungary*: The government opened the sale of state-owned firms to strategic investors, including foreign investors. In parallel, the government set up a strong and transparent privatization agency, which concentrated all ownership rights of the state, making it easy for potential buyers to negotiate with the authorities in good faith. New laws on banking, insurance, state asset management, accounting and reporting, bankruptcy, and liquidation contributed to a rapid and sweeping transformation of the corporate sector. Allowing foreign investors to participate in the privatization process resulted in an inflow of foreign capital, which led to technological improvements and increased competition.

- *Russia*: By contrast, Russia's attempt to implement a rapid privatization program sparked massive popular opposition, ultimately prompting the government to reverse course in nearly all sectors. Under the initial privatization program, the government distributed vouchers that could be sold or exchanged for shares in institutions being privatized. Although a large percentage of state-owned enterprises were privatized in a short period, the process led to the transfer of ownership of several SOEs to oligarchs, causing a public outcry. A weak institutional framework and lagging banking sector reforms contributed to the failure of the privatization process.

33. SOEs that would remain under state ownership may need to be restructured. Based on cross-country experience (Vietnam, China, and Kazakhstan, among others), Algeria may wish to first classify SOEs into one of two broad categories. The first would include firms dedicated to public welfare, whereas the second would encompass those that carry commercial activities. The latter would include public enterprises operating in the industrial and services sectors. Boosting market competitiveness and improving profitability should be a top priority for commercial SOEs. Reforms are also needed to improve the incentive system for employees and managers.

How to overcome resistance to reforms?

34. Resistance to reforms is likely to mount. Algeria is in a better shape to initiate reforms now than in the 1990s, when it faced a previous oil price shock, as it has since built human and physical capital, reduced poverty and inequality, and has more fiscal space. Notwithstanding these improved conditions, resistance to reforms is likely to be high, because of the trauma associated with the reforms of the 1990s during a period of civil strife, and the expected resistance of stakeholders who may lose out in the short term.

35. To overcome resistance to reform, Algeria needs the sustain the current reform momentum. International experience suggests some clear patterns correlated with reform success. Among the key institutional and design factors that can contribute to building and sustaining reform momentum are:

- *Identifying and exploiting the drivers of reforms*. Evidence suggests that the strongest reform momentum tends to coincide with periods of stress and turbulence (IMF, 2015) and that

countries that successfully sustained reforms had developed strong drivers of reforms. For example, the desire to join the European Union was an important driver of reforms in some post-communist Eastern European countries. In Algeria, the authorities are appropriately seizing the difficult macroeconomic context as an opportunity to reshape the country's growth model.

- *Building results-based monitoring and evaluation systems, and publicizing results*. Such systems help track tangible progress on reforms, and demonstrate their impact. Evaluation of reforms helps create feedback loops among players, allowing for revisions and improvement over time. Publicizing reform results is essential for sustaining reform in the face of resistance.

- *Engaging the opponents of reform*. International experience shows the benefits of engaging those who will be most directly affected by a reform. Inclusive consultations are no guarantee against conflict when sensitive reforms are under consideration. Over time, however, they can create greater trust among the parties involved and make reform opponents more willing to rely on commitments to mitigate the cost of the reform for them.

- *Communicating effectively*. If reform advocates can build a broad consensus among experts and the public on the merits of reform, they are likely to be in a stronger position when engaging with the reform's opponents. Communicating the reform's objectives, expected benefits, and process can help reduce anxiety about expected changes. It can also prepare civil servants for their role in implementing the reform.

How can macroeconomic policies support reforms?

36. Long-term gains of structural reforms come with transition costs. The short-term costs of structural reforms can be caused for instance by the closing of incumbent firms and associated costs (e.g., loss of capital) or by the time lags in adjusting to the new equilibrium.[21] Some structural reforms might even be contractionary in the short term, for instance if they increase perceived income insecurity and precautionary savings. Possible transitional costs and distributional effects of reforms can raise political and public resistance. Macroeconomic policies can help mitigate these effects.

- *Implementing fiscal reforms*. Fiscal reforms can promote greater equity in sharing the potential costs of the adjustment. For example, energy subsidies, which are costly and highly regressive, should be gradually replaced with targeted monetary transfers. Eliminating tax exemptions and strengthening tax administration can help make the tax system more inclusive while increasing nonhydrocarbon revenues, allowing for compensatory spending.

- *Conducting a gradual fiscal adjustment*. One difficulty in Algeria at the current juncture is that it must conduct simultaneously a critical mass of structural reforms and a sustained fiscal consolidation that reduces the means to support the structural changes. All available space should be used to conduct fiscal consolidation gradually to offset the short-term costs of

[21] Blanchard and Giavazzi (2003); Everaert and Schule (2008); Cacciatore and Fiori, (2010); Cacciatore et al. (2012).

structural reforms. Strengthening the efficiency of public investment would also help reduce the impact of capital spending cuts on growth.

- *Strengthening the monetary policy transmission mechanisms*. Some reforms may create inflationary pressures in the short run. The central bank should continue to strengthen monetary policy transmission channels to help anchor inflation expectations around the inflation target.

- *Allowing further exchange rate depreciation and taking measures to unify the exchange rate system*. Further exchange rate depreciation would contribute to eliminating real exchange rate overvaluation and, hence, mitigating the effects of Dutch disease. It would also inflate oil revenue in local currency and help reduce pressure on the budget. Measures are also needed to unify the foreign exchange market to eliminate arbitrage opportunities and allow the country to benefit from a more efficient allocation of resources.

E. Quantifying Possible Payoffs of Structural Reforms in Algeria

37. To quantify the impact of structural reforms on potential growth, two different methodologies are used. One approach is to estimate the long-run correlation between structural change and growth across countries. This methodology can help identify important reforms based on a country's distance from the frontier on a given indicator and the expected payoff from improvement. Another approach is to create a 'synthetic' control (i.e., estimate a counterfactual without reform). This technique can help estimate the impact of reforms in specific country cases.

Distance-to-frontier analysis

38. Distance-to-frontier analysis is based on the long-term, cross-country association between growth and a set of structural indicators. The impact of reform is simulated as:

$$g_i^A = \beta_i (I^A - I^B)$$

where g_i^A is the growth impact of reforms in policy area i; β_i is the parameter for improving in that policy area, which is estimated from a cross-country panel; and, I^A and I^B are the values of that indicator for Algeria and for a chosen benchmark. Generally, the included indicators measure the quantity or quality of the regulations, infrastructure, technologies, and institutions that shape economic activity.

39. For robustness, we estimate the impact of reforms in Algeria using two different datasets and analyses. Since neither dataset is comprehensive, we use both IMF (2008) and Mitra (2016) to quantify the impact of different areas of reforms:

- IMF (2008) includes annual indicators of enacted reforms in international trade, FDI, and the financial and agricultural sectors.[22] The data coverage is 1973-2005 and includes most emerging and developed economies. As Algeria has not improved significantly in most structural areas, since 2005, the database may still be indicative of its current levels, although its relative standing has likely changed.

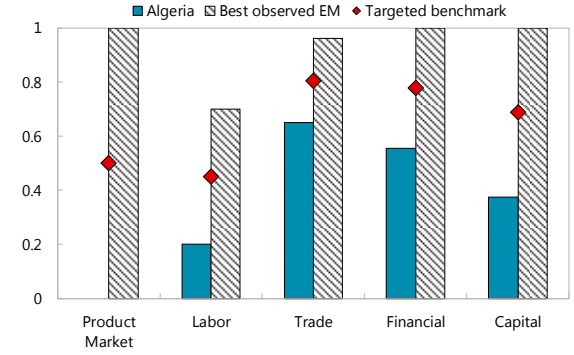
- Mitra (2016) draws on structural indicators from several sources, including the Fraser Institute's Economic Freedom of the World Index, International Financial Statistics, the International Labor Organization, the PRS Group, World Bank Doing Business, World Bank Education Statistics, the World Economic Forum's Global Competitiveness Report, the World Economic Outlook, and the World Governance Indicators.

40. The analysis from IMF (2008) suggests that gains in potential growth from structural reforms could be large.[23] If Algeria were to progress on structural indicators in different areas halfway between its current levels and the highest attainment observed for an emerging market, potential GDP growth could increase by: (i) 0.5 percentage points from product market reforms; (ii) 0.3 percentage points from current account reforms ; (iii) 0.3 percentage points from labor reforms (following Bouis and Duval, 2012); (iv) 0.2 percentage points from financial sector reforms, and (v) 0.1 percentage points from capital account reforms. The overall potential output gains from undertaking the full range of reforms might come close to 1.4 percentage points over the medium term.

[22] *Domestic financial sector restrictions*: the indicator includes measures of securities market and banking sector restrictions; *Capital account restrictions*: the index is based on a broad set of restrictions including, for example, controls on external borrowing between residents and nonresidents, as well as approval requirements for foreign direct investment (FDI); *Current account restrictions*: the indicator is measured along two dimensions: tariff restrictions, which measures average tariff rates; and a broader indicator of current account restrictions, which captures surrender requirements for export proceeds, and other items under Article VIII of the Articles of Agreement; *Product market regulation:* the indicator captures restrictions in the agricultural sector and in telecommunications and electricity markets; and *Labor market regulation*: the index is a measure of employment protection legislation (Aleksynska and Schindler, 2010).

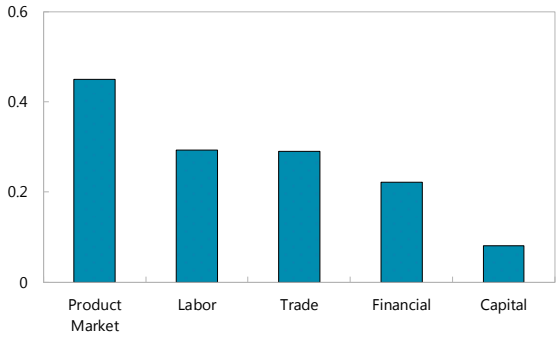
[23] Taken from Ostry (2008). The coefficients are estimated for low-middle income countries. Each regression includes as controls the lagged level of real GDP per capita, an indicator variable for democratic regimes, the level of terms of trade, and the level of tertiary school enrollment. All specifications were estimated by panel OLS with country and year fixed effects. The indicators in the structural reforms database are standardized between zero and one, with higher values of the indicator implying lower restrictions.

Structural Indicators



Source: IMF Structural Reforms Database (2008).

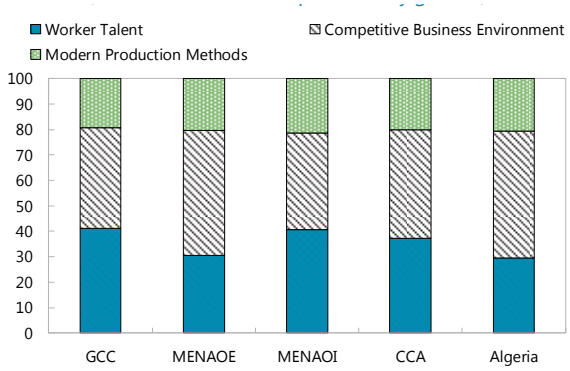
Algeria: Illustrative Growth Payoff by Reform Area



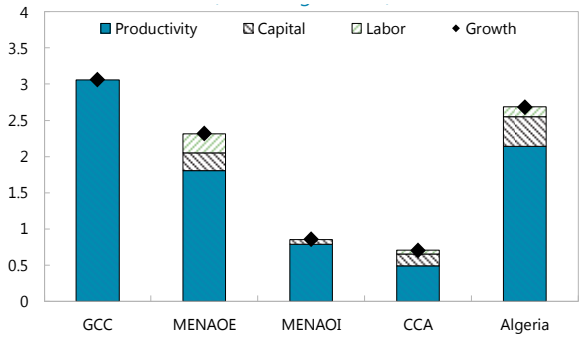
Sources: IMF Structural Reforms Database (2008); and IMF staff estimates.

41. Applying the estimates from Mitra (2016) also points to potentially larger gains from reforms, mostly from improvements to productivity. In Mitra et al. (2016), the authors first decompose growth into three main factors—capital, labor, and productivity—using a standard Cobb-Douglas production function. They then regress the average growth over 2007–14 of each factor against a set of relevant indicators to estimate β_i. Assuming Algeria converges halfway to EMDC levels across indicators, the results show that reforms could increase potential growth by 2.7 percentage points. The main channel would be the impact on productivity, which could alone account for 2.1 percentage points of additional growth. The impact of reforms on capital would be 0.4 percentage points and the impact on labor 0.15 percentage points.

Contributions to 2007–14 Potential Productivity Growth
(Percent share of total productivity growth)



Additional Growth If Underlying Structural Variables Converge Halfway to Average EMDC Levels
(Percentage points)



Sources: World Economic Outlook, Global Employment Trends, World Bank Doing Business Report, WEF Global Competitiveness Report; and IMF staff calculations.

42. The results from Mitra (2016) indicate potential productivity growth is associated following elements, as described below:

- *Worker talent*—represented in the paper by the quality and quantity of education as well as diaspora support. An improvement in the quality of education (by 1 unit for instance in the Global Competitiveness Report, where 1 is poorest and 7 is highest) would raise productivity growth by 0.7 percentage points. Making better use of diaspora support has a significant influence on productivity growth—increasing it by 0.6 percentage points.

- *A competitive business environment*—where the government delivers basic services efficiently, promotes the rule of law, reduces corruption and fraud, and streamlines business regulations—significantly influences productivity. An improvement in this area (for example, enough to move up one place in the Global Competitiveness Report rankings, where 1 is poorest and 7 is highest) would raise productivity growth by 1.4 percentage points.

- *Modern production methods*—the application of technologies and management techniques that help firms efficiently use energy, capital, and worker talent, while instituting policies that encourage innovation. Technology transfer through FDI serves as a proxy.

43. It is important to highlight some limitations of the approach. First, the distance-to-frontier methodology implicitly assumes that reform impacts are homogenous across countries. Second, it assumes that it is possible to isolate the effects of specific reforms, and abstracts from the complementarity of these reforms and the appropriate sequence of implementation. Thus, the results may be biased because the impacts are not necessarily additive.

Synthetic Control Method (SCM)

44. The synthetic control method seeks to approximate a counterfactual without reforms. If the counterfactual GDP without reforms could be observed for countries that undertook reforms, then the difference between their actual GDP and the counterfactual would be attributable to the impact of reforms. Trying to approximate this counterfactual through SCM is a useful alternative to regression techniques since it can be applied to individual cases and avoids correlations between the dependent and explanatory variables.

45. The synthetic control method works by combining a set of countries into a single unit based on their similarity to the country of interest. If country A were to implement reforms, it may be difficult to find a relevant comparator because each country has many unique characteristics. One way to address this limitation is to combine multiple countries (country B, C, D, etc.) into a single entity (fictional country) that closely mimics country A's key characteristics or economic behavior over time. Additionally, if we select the comparator countries (B, C, D, etc.) that did not implement reforms, while country A did, we can attribute the difference in outcomes between country A and the synthetic unit to reforms. Our analysis uses a matching period of 15 years to estimate each country's synthetic GDP. During this period, neither the country of interest nor its comparators initiated reforms. Once reforms are initiated in the country of interest, we

observe the divergence between actual and synthetic GDP over the following 10 years. A detailed description of SCM is provided in Box 2.

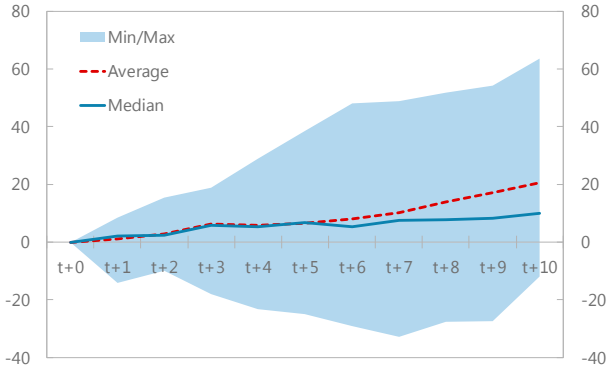
46. We estimate the GDP impact of comprehensive economic reforms using the IMF structural reforms dataset (IMF, 2008). Comprehensive structural reform is defined as an improvement in the percentile rank of a country by 15 or more points on at least four indicators in a five-year timespan. By this definition, there were 12 cases of comprehensive structural reforms.[24] The pool of "no-reform" countries for the synthetic GDP excludes countries that improved their percentile rank by 15 or more points on two or more indicators during the pre- and post-treatment periods. Countries were matched based on the similarity of the evolution of their PPP GDP per capita.

47. The results show that comprehensive structural reforms increased GDP per capita significantly in many, but not all cases. The largest impact of reforms is observed in Albania, Hungary, Portugal, and El Salvador. Conspicuously, two of these countries implemented reforms to gain EU entrance, which entailed new trade, financial, and monetary arrangements and supporting structural and investment funds. While EU accession may be an exceptional case, the impact of comprehensive reforms is demonstrated to be large: on average, GDP per capita is 20 percentage points higher after 10 years. The results for EU accession countries underscores that structural reform strategies work when complemented with increased access to trade and significant external technical and financial support.

48. Over the 10-year post-treatment timespan, only one country performed worse than its synthetic control. In Chile during the 1980s, radical reforms combined with an overvalued currency and a banking crisis resulted in a severe GDP contraction, highlighting how reforms, when not adequately conceived, sequenced, and/or implemented, can lead to negative outcomes.

49. Had Algeria implemented comprehensive reforms in 2006, it may have achieved a GDP capita of around US$ 1,140 above its current level in PPP terms. SCM indicates half of the countries in sample that implemented comprehensive reforms realized per capita GDP growth 10 percentage points higher than their counterfactuals after a decade. Taking the median impact estimated through SCM, Algeria would have achieved a PPP per capita GDP of around US$16,170 in 2016, i.e. an increase of 41 percent from 2006 levels (as opposed to the 31 percent increase realized).

Impact of Comprehensive Strucutral Reforms
(Percentage point change in GDP per capita from t_0 attributable to reforms)



Sources: IMF Structural Reforms Database (2008); and IMF staff estimates.

[24] Not counting cases where countries undertook more than one reform wave over the 1973-2006 timespan of the database. In this case, only the first reform wave is used for estimates.

Box 2. The Synthetic Control Method

Developed by Abadie and Gardeazabal (2003), the synthetic control method works by combining a set of countries into a single unit based on their similarity to the country of interest. The underlying insight of SCM is that a combination of countries might produce a better comparator than an individual one, and thus provide a better approximation of the counterfactual. With time-series data containing J + 1 number of countries, the first unit (i = 1) undergoes treatment at time T0: all other countries remain untreated over the sample period and constitute the "donor pool" and serve as controls.

Y_{it}^N is the value of Y in country i without policy intervention and Y_{it}^I is its equivalent when an intervention occurs. The impact of the intervention on the treated country is then:

$$(1)\quad \alpha_{1t} = Y_{1t}^I - Y_{1t}^N, t \geq T_0$$

The counterfactual Y_{1t}^N cannot be observed. SCM starts by specifying a factor model for the unobserved Y_{1t}^N. Then, the counterfactual is estimated as a linear combination of realized outcomes in the donor pool of countries:

$$(2)\quad \hat{Y}_{1t}^N = \sum_{i=2}^{J+1} w_i Y_{it}, t \geq T_0$$

The unit weights wi are selected such that the synthetic control unit matches certain characteristics of the treated unit as closely as possible. Below in (4), X1 is a vector containing the average values of pre-intervention variables for the treated unit. These "predictors" should not be affected by the policy intervention itself. The vector X0 collects the same variables for units in the donor pool. The goal now becomes to pick the weights wi such that the resulting synthetic control unit matches the pre-treatment characteristics of the treated unit (X1) as closely as possible. This will be achieved if the vector of weights W* solves the following equation:

$$(3)\quad \min_W \|X_1 - X_0 W\|_V = \sqrt{(X_1 - X_0 W)' V (X_1 - X_0 W)}$$

$$s.t.\ \ w_i^* \geq 0 \text{ for } i=2, \ldots, J+1$$

$$\sum_{i=2}^{J+1} w_i^* = 1$$

Once the weights have been obtained, the counterfactual can be constructed for any $t \geq T_0$ by using equation (2). Subsequently, one can obtain an estimate of the treatment effect at time $t \geq T_0$:

$$\hat{\alpha}_{1t} = Y_{1t}^I - \hat{Y}_{1t}^N$$

The resulting gap is attributed to the effect of the policy intervention.

F. Conclusion

50. Algeria needs to reshape its growth model, which is overly dependent on hydrocarbon revenues and related fiscal spending. Historically, the economy has relied heavily on government redistribution of hydrocarbon revenues, and the state has been the main engine of growth and job creation. This growth model was already unsustainable when oil prices were high. With oil prices durably lower, the need to move towards a private sector-led growth model has become even more pressing.

51. Structural impediments to the emergence of a dynamic private sector are multiple. Important structural issues curb firms' incentives to invest and engage in high-value-added activities, and workers' incentives to acquire the skills needed to obtain private sector employment.

Notable shortcomings include a restrictive business environment, weak institutional frameworks, inadequate access to finance, and high barriers to entry. Other structural issues that hamper private sector employment and improvements in productivity include highly rigid labor markets, significant jobs-skills mismatches, and excessive growth in wages with respect to productivity.

52. Algeria should move forward on several structural fronts, building on recent progress in improving the business environment. To lift the multiple and intertwined impediments for private sector growth, Algeria should implement multifaceted reforms that complement and reinforce each other building on the growing reform momentum. The reform package should include product market, labor, and financial sector reforms, as well as legal reforms to improve the business climate and encourage private investment.

53. Actions should be implemented gradually and carefully sequenced to increase the effectiveness of the overall structural reform package. To maximize the chances of success, Algeria should carefully sequence reforms, accounting for the strength of institutions, reform pre-conditions, and short-term costs. While a sequenced approach implies that reforms should be implemented gradually rather than all at once (as in the "Big-bang" approach), action should not be delayed, and implementation should occur in a reasonably short time frame because structural reforms will take time to bear fruit.

54. Macroeconomic policies can support reforms by alleviating their short-term costs. Given the currently weak macroeconomic environment and the potential for reform resistance, macroeconomic policies can support reforms, including by using available fiscal space to offset the short-term costs of reforms.

55. The potential impact of reforms on growth can be substantial. Reducing the gap in each reform area between Algeria and top performers from the region and other emerging economies could significantly increase potential growth, mostly due to improved productivity.

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DETERMINANTS OF INFLATION[1]

This paper investigates the determinants of inflation during the period 2003–16. The results suggest that both domestic macroeconomic policy and external factors are important determinants of inflation in the long run. In the short run, inflation is highly persistent and money supply, and money supply appears to drive inflation more than other policy factors, such as the exchange rate and fiscal variables. Strengthening the transmission mechanisms of the monetary policy and implementing structural reforms that help alleviate nominal rigidities would help anchor inflation expectations.

A. Introduction

1. Inflation continued to accelerate in 2016. Starting in early 2012, headline inflation picked up following the ramp-up in public spending in the wake of the Arab Spring. In 2013, inflationary pressures subsided, reflecting in part the impact of fiscal consolidation. Since mid-2014, however, inflation has accelerated again, largely driven by higher food prices and a sustained rise in manufactured goods prices, and stood at 6.4 percent on average in 2016. Against this background, the question arises of whether policy factors such as public spending and exchange rate are the key drivers of inflation in Algeria. An empirical analysis of inflation would help assess the contribution of various factors to recent inflation developments.

2. Identifying the main determinants of inflation helps to inform the appropriate monetary policy response to recent inflation developments. During the oil price boom, monetary policy transmission mechanisms were ineffective, in part due to excess liquidity. Since the onset of the oil price shock, however, bank liquidity has decreased sharply and excess reserves have dried up, offering the central bank the opportunity to regain control over liquidity conditions. Going forward, understanding the key drivers of inflation is important for determining the appropriate stance of monetary policy.

3. This paper provides an empirical investigation of the key determinants of inflation. The paper follows an approach commonly used in the literature for oil-exporting countries. It builds an inflation model that incorporates both external and domestic policy factors. Given the nonstationarity in the variables and the existence of possible long-term relationships, this analysis uses a vector error-correction model (VECM).

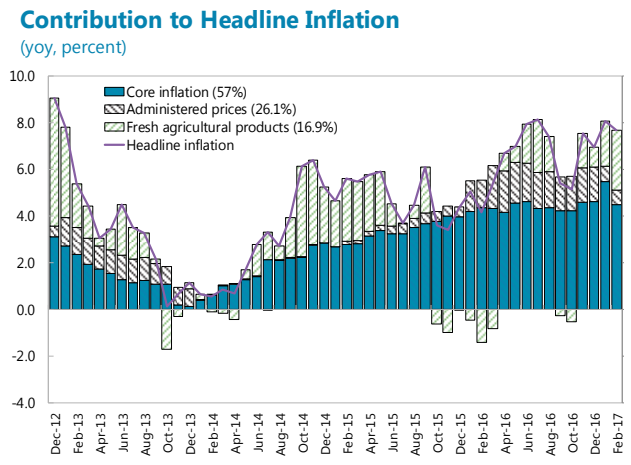
4. The rest of the paper is organized as follows: The next section describes recent inflation developments and some stylized facts. Section C describes the relevant literature and presents the theoretical underpinnings of the inflation model. Section D describes the empirical methodology. Section E presents the results of the VECM. Section F discusses policy implications.

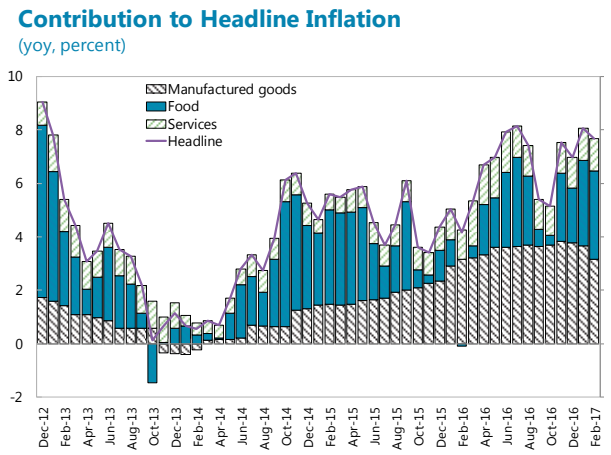
[1] Prepared by Moez Souissi.

B. Recent Inflation Developments and Stylized Facts

5. Prices began to rise rapidly in mid-2014. After a period of sharp inflationary pressures in 2012, average inflation started to decrease in 2013 and remained well below the central bank's 4 percent central target until the end of 2014. However, beginning in mid-2014, inflation again accelerated gradually, reaching 6.9 percent year on year in December 2016. The acceleration in inflation reflects in large part the sustained rise in manufactured goods prices, which contributed more than 55 percent on average to overall inflation. Core inflation, measured as overall inflation excluding fresh agricultural products and products with regulated prices, also accelerated significantly, rising from 0.4 percent in January 2014 to 4.7 percent in December 2016.

6. In 2016, significant fluctuations in food prices led to a great volatility in overall inflation. Inflation peaked at 8.1 percent in July before subsiding momentarily, then accelerated once again toward the end of the year. The variation in headline inflation was generated by significant fluctuations in food prices. The contribution of food prices to overall inflation peaked at 41 percent in July, declined sharply in following months, reaching 7.5 percent in October, and then increased again to 34 percent in December.

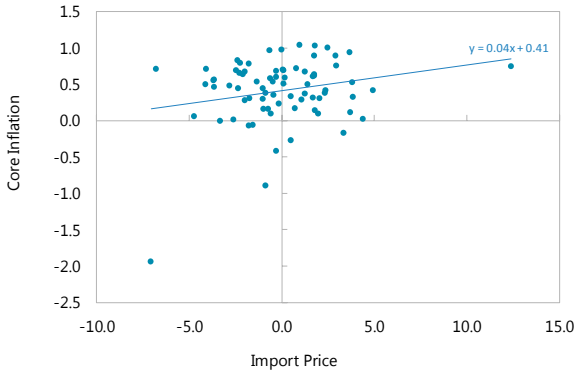




Sources: Algerian authorities; and IMF staff calculations.

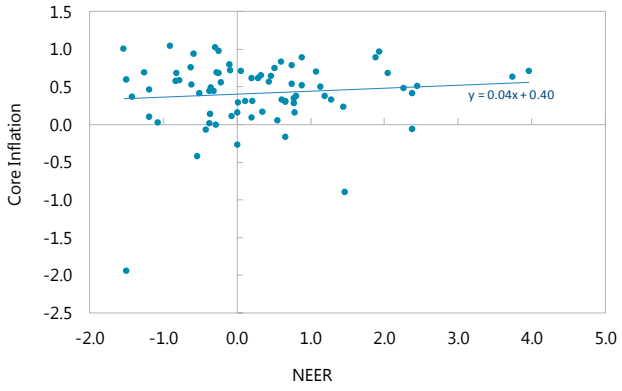
7. Simple scatter plots illustrate that domestic prices do not seem to be highly sensitive to changes in import prices, exchange rate, and monetary conditions in the short run. The charts illustrate the evolution of monthly import prices, the nominal effective exchange rate and broad money, and their impact on core inflation during the 2010–16 period. The slope of each chart depicts the relationship between core inflation and the change in each of the three factors. According to the chart, the short-term pass-through of import prices and the exchange rate are not large, and short-term variations in real money has little impact on core inflation.

Core Inflation and Changes in Import Prices 1/
(2010-16, m/m, percent)

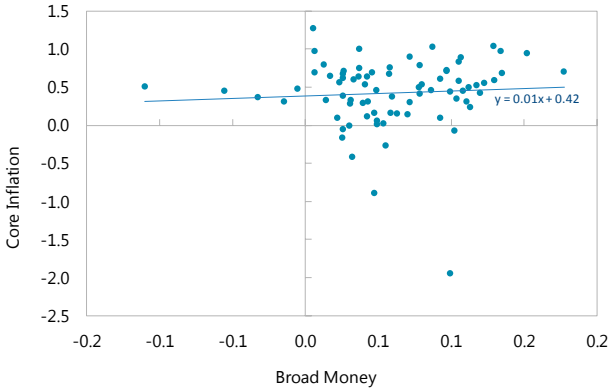


Sources: Algerian authorities; and IMF staff calculations.
1/ Import prices are computed as the weighted average of export price indices of Algeria's main trading partners (denominated is U.S. dollar).

Core Inflation and Changes in NEER 1/
(2010-16, m/m, percent)



Core Inflation and Changes in Money 2/
(2010-16, m/m, percent)



Sources: Algerian authorities; and IMF staff calculations.
1/ The nominal effective exchange rate (NEER) is measured by the logarithm of the dinar's average exchange rate against the main currencies used to pay for Algerian imports, i.e. the US dollar and the euro.
2/ Real money is computed as the ratio between broad money (i.e., M2 excluding Sonatrach's deposits) and the consumer price index.

C. Relevant Literature

8. The theoretical literature on the determinants of inflation considers both demand and supply side factors. The determinants of inflation are discussed widely in the literature. Fluctuations in the inflation rate are often interpreted as partial adjustment of the actual price level towards a long-term (or equilibrium), which can be analyzed based on a three theories:

- The *monetary theory*, which is typically associated with Friedman and Schwartz (1963) and views inflation as a purely monetary phenomenon: An increase in the money stock would be followed by an increase in the general price level in the long run, with no effects on real variables such as consumption or output;

- The *purchasing power parity* (PPP) theory, which stipulates that, over the long term, the price of domestic goods equals the price of foreign goods expressed in the domestic currency; and,

- The *markup theory*, which goes back to Duesenberry (1950) and assumes that the equilibrium price level is set as a markup on input prices.

9. An extensive body of empirical studies investigated the determinants of inflation for oil-producing countries. Researchers have employed various techniques to investigate the determinants of inflation in individual countries or regions. These studies have found that inflation can be driven by domestic and external factors in both the short and long run.

- Ben Naceur (2012) analyzes the short- and long-run determinants of inflation in Algeria between 2002 and 2011 using a VECM. The results suggest that only non-oil GDP gap explains inflation in the short run, while money supply and real GDP growth are the most important determinants of inflation in the long run. Sultan (2011) explores the determinants of inflation in Saudi Arabia using an error-correction model (ECM) covering 1980-2008. It finds that world inflation, money supply, and the nominal exchange rate explain inflation in both the short and long run. Klein and Kyei (2009) explores the factors that affect inflation in Angola using a VECM, and finds that domestic prices are mainly affected by the nominal exchange rate. Alavirad and Athwale (2005) looks at the impact of budget deficit on inflation in Iran using a univariate ECM, and finds a significant and positive relationship in the long run between prices and government budget deficit.

- Basher and Elsamadisy (2012) explores the main sources and transmission of inflation in the GCC countries over 1980-2008 using a nonstationary panel data model. Findings suggest that money, foreign prices, and the nominal effective exchange rate are the key determinants of inflation in the short run, while only money affects inflation in the long run. Kandil and Morsy (2009) also investigates the determinants of inflation in GCC countries between 1970 and 2007 using a VECM. The results suggest that prices in major trading partners represent the most important foreign factor affecting inflation, while public capital spending eases inflationary pressures in the long run. In the short run, excess demand appears to be an important determinant of inflation for a number of GCC countries.

D. Empirical Methodology

10. To determine what drives inflation in Algeria, this study incorporates both external and domestic factors. This study follows the general empirical approach used in the literature described above, reflecting the theoretical underpinnings of the link between domestic inflation and its key determinants, and taking into account the features of Algeria's economy as well as data availability. It uses quarterly data covering 2003-2016.

11. The inflation model is based on the monetary and PPP theories. The general price level is defined as a weighted average of tradable and non-tradable goods' prices. The price of non-tradable goods depends on the imbalance between the supply and demand of money. When the

supply of money outstrips demand, inflationary pressures emerge and the price of non-tradable goods increases. The supply of money is a policy variable, while money demand depends on real GDP levels and interest rates. In Algeria's case, the data available cover a period of excess liquidity during which interest rates were relatively low and flat. In addition, apart from the oil and gas sector, public spending was the main driver of economic activity. Public spending can therefore be used to reflect changes in the demand for money. Furthermore, as suggested by the law of one price, the price of tradable goods depends on the price of goods produced abroad and the exchange rate. An increase in either the exchange rate (i.e., depreciation) or the price of foreign goods in foreign currency leads to an increase in the price of domestic tradable goods.

12. This study uses a VECM. This type of model can be used to identify the main determinants of inflation in the long run, and to simultaneously analyze the factors underlying its fluctuations in the short run. It also allows for analysis of the contribution to inflation dynamics of the various shocks in the model. Such a model requires a long dataset given the relatively high number of parameters to be estimated.

13. Estimating long-term relationships requires cointegrated variables. The variables used to estimate the VECM must be integrated of order 1 or I(1) (i.e., non-stationary due to the presence of a single unit root) and cointegrated (i.e., there is at least one linear combination of these variables that is stationary). To analyze the stationarity of the variables, several tests can be employed, including the augmented Dickey-Fuller test. Then, the Johansen and Juselius (1990) cointegration test is used to identify possible cointegration relationships. Based on the theories described above, long-term price levels can be represented as follows:

$$p = f(m2, e, pimport, deppub) \quad (1)$$

where p represents the core price level (measured by the consumer price index excluding the price of fresh agricultural and regulated products), $m2$, which captures money supply (measured by broad money excluding the national oil and gas company's deposits[2]), e is the nominal effective exchange rate (measured by the dinar's weighted average exchange rate against the main currencies used to pay for imports, i.e. the US dollar and the euro), $pimport$ represents the import prices (measured by the weighted average of export prices in foreign currency of Algeria's main trading partners) and $deppub$ represents the level of total real public spending. All variables are log-transformed and seasonally adjusted.

[2] Algeria's national oil and gas company (Sonatrach) surrenders 100 percent of its hydrocarbon exports proceeds to the central bank, which credits Sonatrach's account with one public bank in dinars. The large deposits of Sonatrach contribute significantly to broad money and, in theory, could fuel excess liquidity. However, Sonatrach's deposits typically carry conservative placement requirements as they serve to finance the heavy investment plans of the company. And the authorities consider that these requirements are effective in preventing the bank which receives the deposits from expanding credit.

14. Short-term deviations from this long-term relationship can be explained by changes in the exchange rate, money supply, import price levels, public spending levels and the output gap. The following equation analyzes the determinants of core inflation in the short term:

$$\Delta p_t = \beta_1 + \beta_2 EC_{t-1} + \sum_k \beta_{2k}\Delta p_{t-k} + \sum_k \beta_{3k}\Delta e_{t-k} + \sum_k \beta_{4k}\Delta pimport_{t-k} + \sum_k \beta_{5k}\Delta m2_{t-k} + \sum_k \beta_{6k}\Delta deppub_{t-k} + \sum_k \beta_{7k}\Delta outputgap_{t-k} + \epsilon_t \quad (2)$$

where Δ represents the first difference, EC is the error correction term (i.e., $p_t - f(m2_t, e_t, pimport_t, deppub_t)$) used to assess the speed of convergence towards the long term level, $outputgap$ represents the nonhydrocarbon output gap that can be used to measure the impact of the position in the cycle on inflation[3], ϵ_t is the error term, and k is the number of lags included to minimize the information criteria (e.g., the Akaike information criterion). As explained above, due to limited data availability, this specification covers mainly factors affecting demand, and with the exception of imported goods prices, it does not include structural factors on the supply side due to the lack of sufficiently long and high-frequency time series, including for the cost of factors of production.

E. Results

15. Unit root tests suggest that all variables are I(1). Table 1 displays the results of the augmented Dicky-Fuller unit root test that indicate that all variables are non-stationary is levels but stationary in their first difference.

Table 1. Augmented Dicky-Fuller Unit Root Tests

Variable		Description	I(1)	I(2)
-	p	Logarithm of core price index	-1.59	-4.72***
-	$m2$	Logarithm of broad money excluding Sonatrach's deposits	-0.56	-4.01***
-	e	Logarithm of the nominal effective exchange rate	-1.28	-5.88***
-	$pimport$	Logarithm of imports price index	-2.48	-5.69***
-	$deppub$	Logarithm of real total public spending	-2.72	-9.58***

*. ** and *** denote rejection of the presence of a unit root test at the 10, 5 and 1 percent significance level, respectively.

[3] Output gap is approximated by the deviation of real nonhydrocarbon GDP from its trend, which is obtained using HP filter.

16. There is a unique long-run relationship between domestic core inflation, broad money, total real public spending, NEER and import prices. The Johansen and Juselius (1990) test indicates the existence of a unique co-integration relationship between these variables. The results of the maximum eigenvalue and trace statistics are reported in Table 2.

Table 2. Johanson and Juselius (1990) Co-integration Tests

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.629980	90.00975	69.81889	0.0006
At most 1	0.352496	41.29405	47.85613	0.1795
At most 2	0.273610	19.99717	29.79707	0.4230
At most 3	0.083263	4.333393	15.49471	0.8749
At most 4	0.001501	0.073606	3.841466	0.7861

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.629980	48.71571	33.87687	0.0004
At most 1	0.352496	21.29688	27.58434	0.2587
At most 2	0.273610	15.66377	21.13162	0.2451
At most 3	0.083263	4.259787	14.26460	0.8310
At most 4	0.001501	0.073606	3.841466	0.7861

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

17. The resulting long-run relationship is as follows:

$$p = \underset{}{0.35} * m2 + \underset{[2.98]}{1.19} * e + \underset{[3.08]}{0.63} * pimport - \underset{[2.33]}{0.49} * deppub \quad (1)$$
$$[-4.53]$$

Equation (1) passed all the specification tests.[4] All coefficients are statistically significant and have the expected signs.[5] The results indicate that external factors are the most important driving forces of inflation in the long run. Exchange rate shifts would be fully reflected in domestic prices, while an increase of 1 percent in import prices would translate into an increase of 0.6 percent in domestic prices in the long run. The results also suggest that money supply is another important factor explaining changes in domestic prices in the long run. An increase of 1 percent in the money supply would result in about 0.4 percent increase in the price level. The coefficient of money is much lower than unity (as required by the homogeneity condition[6]), reflecting the extent of price controls in the economy. The results also show that public spending is negatively and significantly associated with domestic prices in the long run. An increase in public spending of 1 percent is associated with a 0.5 percent decline in long-term prices, pointing to potential productivity gains from public spending that support price stability in the long run.

18. Inflation is highly persistent in the short run. The short-term inflation equation can be written as follows:

$$\Delta p_t = \underset{[-0.19]}{-0.00} - \underset{[-1.60]}{0.03} * EC_{t-1} + \underset{[2.36]}{0.36} * \Delta p_{t-1} + \underset{[1.04]}{0.15} * \Delta p_{t-2} + \underset{[1.62]}{0.08} * \Delta e_{t-1} + \underset{[0.81]}{0.04} * \Delta e_{t-2}$$

$$+\underset{[2.85]}{0.17} * \Delta m2_{t-1} + \underset{[1.86]}{0.11} * \Delta m2_{t-2} + \underset{[0.64]}{0.02} * \Delta pimport_{t-1} - \underset{[-2.87]}{0.11} * \Delta pimport_{t-2} + \underset{[2.39]}{0.03} * \Delta deppub_{t-1} \quad (2)$$

$$+\underset{[0.51]}{0.01} * \Delta deppub_{t-2} + \underset{[2.25]}{0.24} * \Delta outputgap_{t-4} + \epsilon_t$$

There is a negative and statistically significant error correction term (EC_{t-1}), which confirms the existence of a co-integration relationship between domestic prices and their determinants. When inflation is 1 percent below its equilibrium level in a given quarter, it would increase by about 0.03 percent in the following quarter, suggesting that the speed of adjustment is fairly low. This is

[4] The errors are uncorrelated and homoscedastic.

[5] Note that the sign of the coefficient associated with government spending can either be negative or positive. If public spending yields productivity gains of capital and/or labor, then a larger public spending would be associated with lower inflation and would contribute to price stability in the long run. In contrast, if productivity gains do not materialize, then larger fiscal deficits driven by higher levels of public spending would lead to situations of excess demand, which in turn could fuel inflation expectations and rise inflation in the long run.

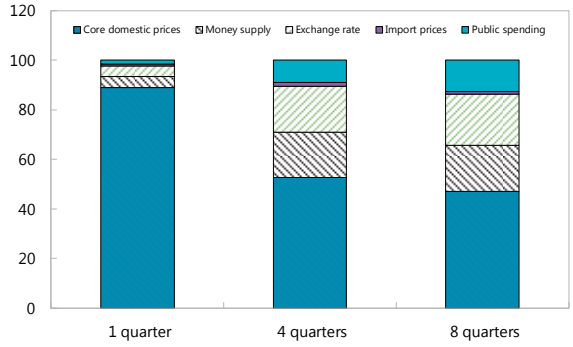
[6] Price homogeneity (of degree one) in the money demand function implies that changes in the stock of money in the long run would translate into proportional changes in the price level. This condition is crucial for long-run monetary neutrality.

consistent with the high persistence of inflation in the short run, which confirms that inflation tends to move slowly towards its long-run value following a shock.

19. While inflation seems to be driven in part by changes in money supply, structural factors on the supply side could also be important determinants of inflation in the short run. The variables of macroeconomic policy do not seem to be important determinants of inflation in the short run, except for money supply. A 1 percent increase in the money supply would result in a price increase of about 0.2 percent, while a similar shock to public spending would increase inflation only marginally by 0.03 percent. As well, exchange rate fluctuations are estimated to have a very limited impact on price levels over the short run (less than 0.1 percent). Changes in import prices seem to also have a marginal impact on domestic prices in the short run. Finally, a positive nonhydrocarbon output gap contributes to prices increases with a certain lag. A positive output gap of 1 percent is associated with an increase of 0.2 percent in the level of prices. The fact that macroeconomic policy variables appear to play only a limited role in the development of inflation over the short run seems to indicate that other factors, not captured in this equation, are in play. These would be primarily of a structural nature linked to supply, such as imperfections in the market for goods and services and real wage rigidities that hold wages above market clearing levels.

20. However, variance error decomposition of domestic prices indicates that the contribution of macroeconomic policy shocks to the variability of inflation increases over time. Variance error decomposition indicates the proportion of the forecast error in a given variable that is accounted for by innovations (i.e., shocks) in each endogenous variable. The results of variance decomposition suggest that the direct effect of domestic price variable on itself is high in the beginning and declines slowly as the forecast horizon expands, reaching 47 percent after eight quarters. This confirms the large inertia in inflation, pointing to some nominal rigidities and the challenges it could pose for anchoring inflation expectations. Innovations in M2 and nominal exchange rate increasingly explain the variance of domestic prices over time, reaching about 40 percent after eight quarters. Consistent with the results of the VECM analysis, a marginal proportion of the variance of domestic prices is explained by the price of imported goods, which remains lower than 1 percent after eight quarters.

Variance Decomposition of Core Inflation
(Percent)



Sources: Algerian authorities; and IMF staff calculations.

21. An error-correction model (ECM) estimation confirms the results described above. Estimating a single-equation model allows for a more parsimonious specification than the heavily parameterized VECM. Because of the relatively small number of available observations, and in order to check the robustness of the VECM results, we estimated a ECM. This approach is widely used to help interpret the interactions between variable on the short- and long-run (Juselius, 1992; Diouf, 2007). It consists in first estimating two cointegration relationships: (1) a first relationship, based on monetary theory, which reflects the correlation between prices and the money supply, and; (2) a

second relationship, based on the PPP, which expresses price levels as a linear combination of the exchange rate and the price of imported goods. The deviations from the long-run equilibrium (i.e., the error correction terms) are then integrated into a short-run model to specify a single-equation inflation model. The results of the ECM estimation are reported in Appendix 1.

F. Policy Implications

22. This analysis highlights several points related to the making of policies that would contribute to price stability in Algeria:

- *Fluctuations in the exchange rate do not appear to have a significant impact on inflation in the short term.* Separate from its implications for competitiveness (given the significant overvaluation of the dinar in real terms), a policy of anchoring the dinar to the currencies of Algeria's main trading partners may not be helpful to guide and stabilize the expectations of economic agents in the short term.

- *Monetary policy should provide a solid anchor for medium and long-term inflation expectations.* Fluctuations in the exchange rate seem to be reflected fully in long-term inflation. Given that money is also a determining factor of long-term inflation, the central bank needs to quickly reestablish its control over domestic liquidity conditions and interest rates to strengthen monetary policy's transmission channels and help anchor inflation expectations around the inflation target.

- *Fiscal consolidation must be conducted in a strategic manner to contribute to stable inflation over the medium and long run.* In the short term, a drop in fiscal spending reduces inflationary pressures. However, in the long term, fiscal spending appears to contribute to price stability via gains in the productivity of capital (e.g., through improved infrastructure) and of labor (e.g., by improving access to health and education). If these long-term gains are to be assured, fiscal consolidation should be approached in a way that improves the effectiveness of public investment and preserves funding for education, health, and research and development.

- *The pace of structural reforms should be stepped up to reduce nominal (wage) rigidities and create an environment of healthy competition.* Structural factors on the supply side seem to be important determinants of inflation in Algeria. In particular, it is important to reduce nominal rigidities by implementing reforms that support labor market flexibility. It is also important to improve the functioning of the markets for goods and services and to strengthen competition

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Appendix I. The Results of the ECM

We estimate an ECM to assess the robustness of the VECM results. Because we have only a small number of observations, we estimate an ECM that allows for a more parsimonious specification than the heavily parameterized VECM. First, we investigate each of the two equilibrium relationships resulting from the monetary and PPP theories. Then, we examine the relative importance of deviations from these relationships and other potential determinants of inflation in the short run. As explained above, the implications of the mark-up theory are not analyzed due to the unavailability of long time series for the cost of the factors of production.

We estimate a money demand model that establishes a relationship between broad money, public spending and opportunity costs of holding money. The demand money model is used to determine the equilibrium in money market. The determinants of money demand have been well investigated in the empirical literature. Typically, money demand can be written as a function of a scale variable, proxied by income, and a vector of rate of returns that measure the opportunity costs of holding money. Available data cover a period of excess liquidity during which interest rates were relatively low and flat. Hence, we use the nominal effective exchange rate as a measure of the opportunity cost of money. We also use real public spending as a scale variable given that public spending is the main driver of growth in Algeria over the sample period.

The results of the broad money regression are broadly consistent with the VECM analysis. Based on the Johansen and Juselius (1990) test, there is at least one long-run relationship between domestic prices (p), the nominal effective exchange rate (e), broad money excluding Sonatrach's deposits ($m2$) and real public spending ($deppub$). The results shown in Equation (3) suggest a positive and statically significant long-run relationship between domestic prices and broad money. An increase of 1 percent in broad money would increase the price level by 0.3 percent, a similar magnitude to that found with the VECM. We also find a negative relationship between public spending and domestic prices in the long run, but the impact on domestic prices of higher fiscal spending would be lower (0.1) than that estimated with the VECM[1]

$$p = \underset{[7.04]}{0.30} * m2 + \underset{[8.44]}{0.53} * e - \underset{[-2.14]}{0.11} * deppub \qquad (3)$$

We also estimate PPP that relates domestic prices to external factors. We find a unique co-integration relationship between domestic prices (p), nominal effective exchange rate (e) and import prices ($pimport$).

$$p = \underset{[5.97]}{0.46} * pimport + \underset{[9.59]}{1.41} * e \qquad (4)$$

[1]The sign of the coefficient associated with NEER implies a negative relationship between money demand and NEER. This suggest that economic agents tend to replace broad money holdings by foreign assets (i.e., US$ the value of which are not affected by exchange rate depreciation.

As shown in Equation 4, the sign and size of the coefficients are similar to those obtained with the VECM. Exchange rate shifts would be fully reflected in domestic prices, while an increase of 1 percent in import prices would translate into an increase of 0.6 percent in domestic prices in the long run.

We estimate an ECM that incorporates the deviations from the above-mentioned long-run relationships and other potential short-run inflation drivers. A parsimonious model is derived using a general-to-specific model selection procedure. Various tests were performed to analyze the properties of the model, including for the absence of autocorrelation and heteroscedasticity, and regression misspecifications. Furthermore, the robustness of the model was analyzed using tests for omitted variables and coefficient stability. The inflation equation is the following:

$$\Delta p_t = \underset{[-2.71]}{-0.5} \underset{[-0.51]}{- 0.03} * ECM_{t-1} \underset{[2.60]}{- 0.05} * ECE_{t-1} \underset{[2.08]}{+ 0.29} * \Delta p_{t-1} \underset{[1.62]}{+ 0.29} * \Delta p_{t-1} \underset{[1.78]}{+ 0.07} * \Delta e_{t-1}$$

$$\underset{[1.78]}{+0.07} * \Delta m2_{t-1} \underset{[1.77]}{+ 0.04} * \Delta pimport_{t-1} \underset{[2.50]}{+ 0.04} * \Delta deppub_{t-1} \underset{[2.24]}{+ 0.10} * \Delta outputgap_{t-4} \quad (5)$$

This analysis confirms that inflation is persistent and that macroeconomic policy variables are not the key drivers of inflation in the short run. Consistent with the results of the VECM, the speed of adjustment towards the long-run value of inflation is low. For example, when inflation is 1 percent below its PPP equilibrium level, it would increase by only 0.05 percent in the following quarter. Also, money supply and exchange rate fluctuations do not appear to contribute significantly to inflation in the short run. A 1 percent increase in the money supply or fiscal spending would result in a price increase of less than 0.1 percent. External factors have also very small impact on inflation in the short run. A 1 percent depreciation of the exchange rate or increase in import prices would be associated with an increase of less than 0.04 percent in inflation. Finally, a positive nonhydrocarbon output gap contributes to prices increases with a certain lag. A positive output gap of 1 percent is associated with an increase of 0.1 percent in the level of prices.