



ALGERIA

SELECTED ISSUES

February 2014

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SELECTED ISSUES

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CONTENTS

ENHANCING THE EFFECTIVENESS OF MONETARY POLICY IN ALGERIA	3
A. Algeria's Monetary Policy Framework	3
B. How Effective Are Monetary Policy Transmission Channels?	6
C. Does Monetary Policy Affect its Final Targets?	10
D. Options for Strengthening Monetary Policy Effectiveness	12
References	16
BOXES	
1. Oil Dependency, Excess Liquidity, and Monetary Policy	4
2. Cases of Long-Lasting Low Interest Rates	9
APPENDICES	
I. Effectiveness of Transmission Channels	17
II. Granger Causality between Monetary Policy Instruments and	21
III. Bivariate Analysis of the Impact of Monetary Policy Instrument	22
IV. A Multivariate VAR model to Assess Monetary Policy	24
DESIGNING A FISCAL FRAMEWORK FOR ALGERIA	26
A. Introduction	26
B. Background	26
C. Fiscal Framework Considerations	28
D. Fiscal Rule for Algeria	37
E. Managing Resource Funds	39
F. Conclusion	40

References	42
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FIGURES

1. Price Rules in the Actual Fiscal Framework, 2008–18	27
2. Procyclicality of Fiscal Policy, 1997–2013	27
3. Hydrocarbon Proven Reserves, 1980–2012	30
4. Ratio of Gas Price Over Oil Price, 2000–2012	30
5. Sustainability Assessment Indicators, 2013–2050	32
6. Macroeconomic Implications of the PIH Rule	33
7. Oil Price, 2008–2018	35
8. Managing Volatility Indicators, 2013–2050	36
9. Proposed Fiscal Rule	37
10. Nominal Return of Sovereign Wealth Funds (SWFs) Selected Resources-Rich Countries 2008–2011	40

TABLES

1. Price Rules in Selected Countries	34
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APPENDICES

I. The Extractive Industries Transparency Initiative	43
II. Santiago Principles	44
III. Elements of Fiscal Frameworks in Selected	45

PRICE COMPETITIVENESS IN ALGERIA 46

A. Introduction	46
B. Real Effective Exchange Rate and Nonhydrocarbon Exports	47
C. Labor Costs, Business Start-up Costs, and Taxes	48
D. Cost of Energy, ICT Services, and Transportation	52
E. Conclusions and Policy Recommendations	56
References	58

ENHANCING THE EFFECTIVENESS OF MONETARY POLICY IN ALGERIA¹

1. **This paper explores the monetary policy transmission channels and analyzes available options to strengthen monetary policy effectiveness in Algeria.** Section A describes the monetary framework. Section B examines the effectiveness of monetary transmission channels; Section C assesses the impact of monetary policy changes on its final targets—growth and inflation. Policy options to strengthen the efficacy of monetary policy are outlined in Section D.

A. Algeria's Monetary Policy Framework

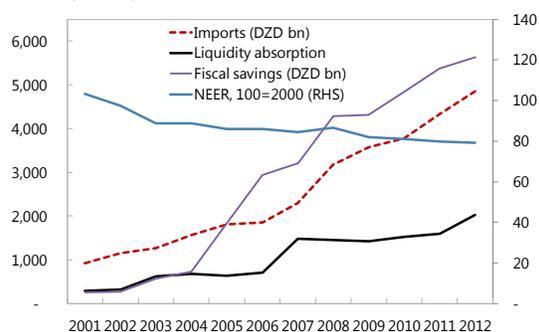
Macroeconomic environment

2. **High liquidity has been the hallmark of the Algerian monetary policy framework for most of the 2000s.** Under current provisions, hydrocarbon resource inflows have to be deposited in dinars in the banking sector. As a result, in the early part of the 2000s, rapid net foreign assets (NFA) accumulation—fueled by large hydrocarbon exports and rising prices—and large public (both current and capital) spending led to a fast rise in liquidity. The interbank market progressively dried out, to the point that only six transactions were recorded in 2012, compared to an average of 184 over 2007–11. With no financing needs in the banking sector, the Banque d'Algérie (BA) progressively shifted its toolkit from interest rates towards liquidity management tools, developing deposit auctions instruments and using required reserves actively to contain the growth in liquidity.

3. **Monetary policy managed to keep inflation under control until 2012.** Increasing volumes of liquidity absorption, together with price controls (26 percent of the CPI basket is made of regulated prices) and a relatively stable exchange rate are likely to have contributed to this outcome. Growing imports also limited pressures on domestic absorption and the associated tension on prices, while a prudent fiscal policy, marked by the accumulation of sizeable fiscal savings, contributed to sterilizing liquidity.

4. **The surge of inflation in 2012, fueled both by sizeable current public spending and large hydrocarbon income, was a challenge to monetary policy.** While the BA increased liquidity

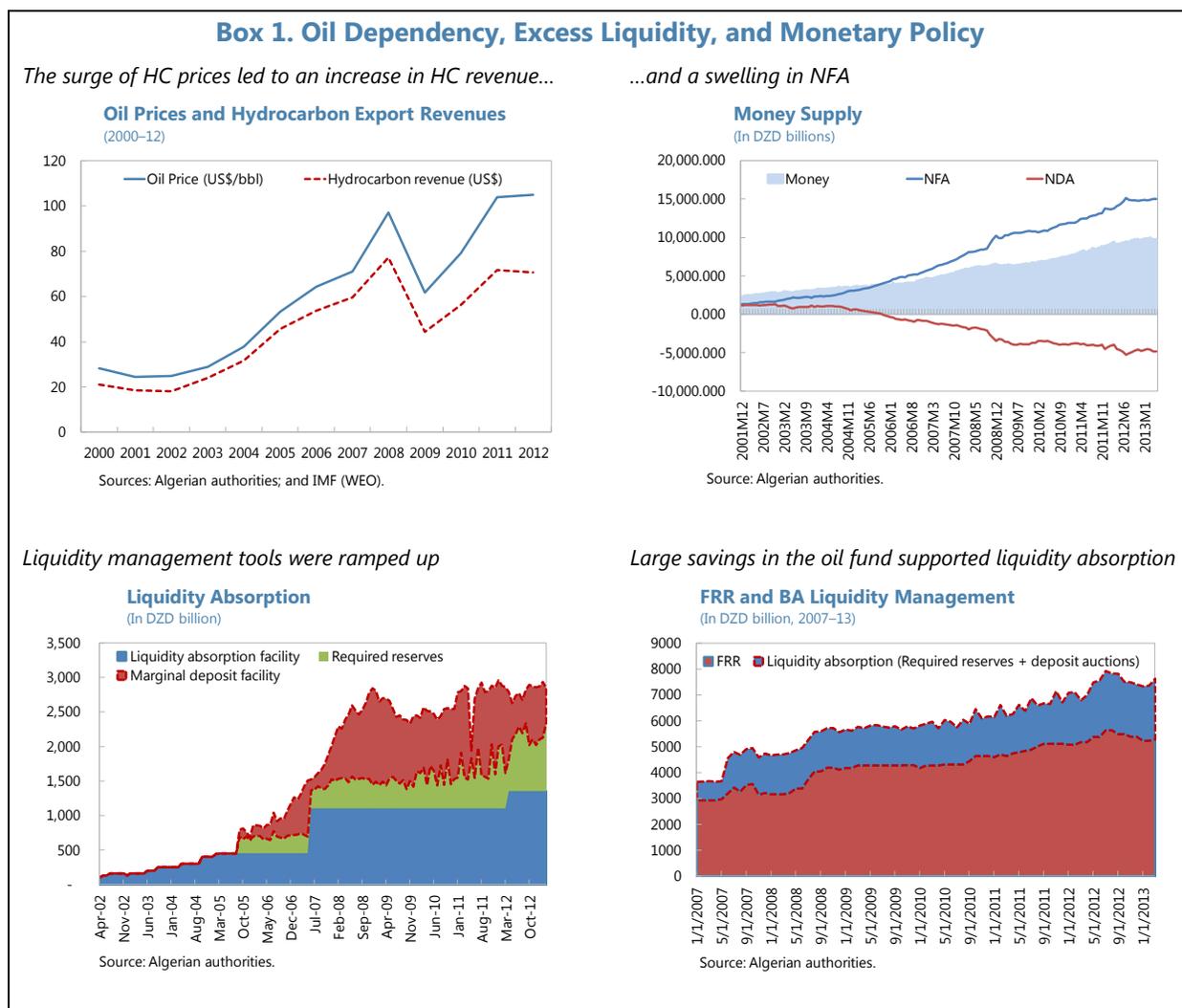
Macroeconomic Sources of Liquidity Absorption (2001–12)



Sources: Algerian authorities; and IMF staff calculations.

¹ Prepared by A. Lahreche (MCD).

auctions and raised the required reserves rate, its reluctance to hike interest rates deprived it of a critical monetary policy instrument. As a result, inflation reached a 15-year high of 8.9 percent. The subsequent fiscal consolidation, combined with subdued imported inflation as international prices remained stable, helped keep inflation in check. More recently, lower hydrocarbon resource inflows also contributed to contain liquidity growth. Nonetheless, the 2012 inflation episode highlighted the challenges facing monetary policy in Algeria.



Monetary policy instruments and transmission channels

5. **The current monetary policy framework was set in 2003, and adjusted over time to reflect the developments of the economic environment.**² The main bodies in charge of monetary policy are the Money and Credit Council (*Conseil de la monnaie et du crédit*), which defines,

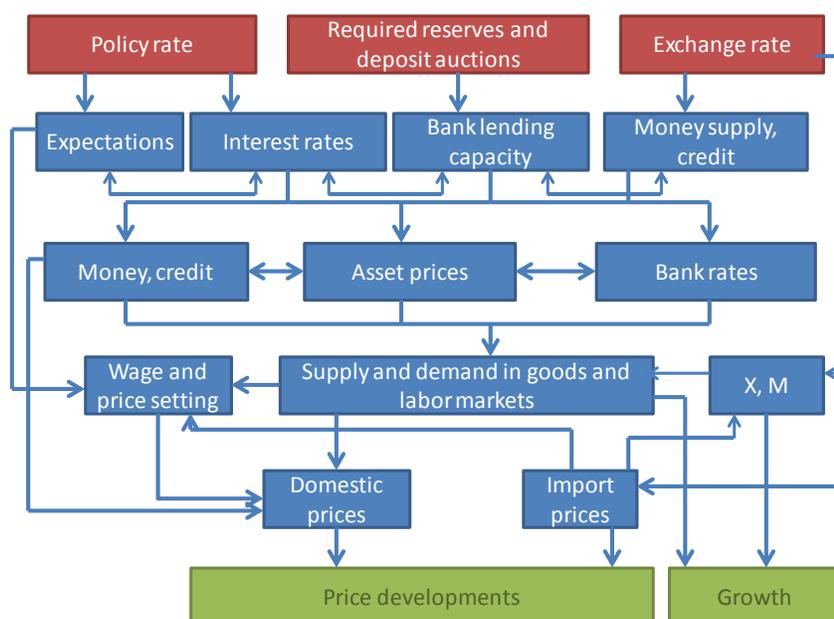
² Ordinance 03-11, August 26, 2003, on money and credit.

monitors, and assesses monetary policy, and the BA, which is responsible for operational implementation. Monetary policy is tasked with targeting both the internal and external stability of the currency, with price stability explicitly established as a policy objective in 2010.³ Base money has been the main intermediate instrument of monetary policy since 2001–03, following years of targeting net domestic assets (NDA) under the structural adjustment period. The exchange rate regime is managed, and exchange rate policy targets a real effective exchange rate in line with its fundamental value.⁴

6. **The BA has three policy instruments:** liquidity management tools (required reserves and deposit facilities), interest rates, and the exchange rate. In a context of ever-increasing liquidity, developments in the monetary policy toolkit have been dominated by the introduction of liquidity management instruments, which have become the main policy tool. In April 2002, the BA introduced a 7-day deposit auction facility; a 3-month deposit auction facility was set up in August 2005; and a remunerated deposit facility was put in place in June 2005. In January 2013, a 6-month deposit auction facility was added to the liquidity management toolkit. The BA has also been using required reserves actively since 2004. The lack of refinancing need in the banking system has led the BA to give up using the discount rate as a signaling instrument, while auction rates have been set at very low and stable levels. The exchange rate is assigned to preserving competitiveness, but has occasionally been used to contain price pressures, a policy that is easily implemented thanks to the price-maker status of the BA on the forex market.

7. **The monetary framework relies on transmission channels of uneven effectiveness.**

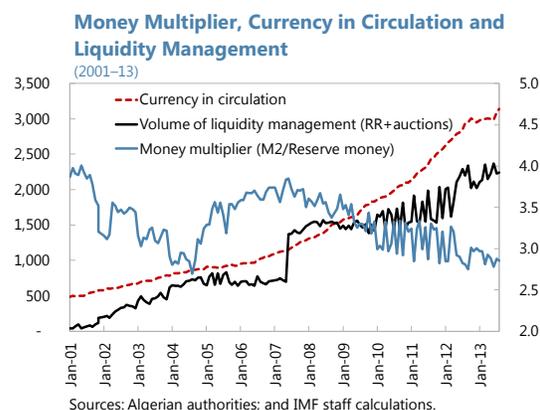
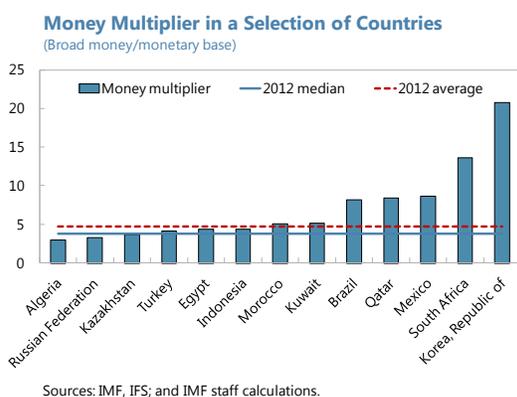
Expectations have probably played a powerful role in the price-setting mechanism in 2012, but their contribution is typically difficult to assess quantitatively. The other three transmission channels are market interest rates, the lending capacity of banks, and money supply.



³ Ordinance 10-04, August 26, 2010, modifying and complementing the Ordinance 03–11.

⁴ The model used to compute the equilibrium exchange rate includes terms of trade, relative productivity and government spending.

- *Money supply transmits shocks to reserve money through reserve requirements.* Higher reserve requirement ratios reduce the volume of deposits for a given level of reserves, reduce the money stock, and raise the cost of credit. The result is lower aggregate demand and alleviated price pressures. Monetary policy in Algeria is marked by large amounts of liquidity absorption and sizeable leakages out of the banking system—as evidenced by the amount of currency in circulation. As a result, the effectiveness of money supply as a transmission channel is constrained, which is reflected in a relatively low and slowly but steadily declining money multiplier.



- *The transmission of policy rates onto market rates gives monetary policy traction through credit, savings, or wealth.* Higher market rates increase the cost of credit, thereby lowering demand for credit; they also reduce the price of existing assets, and lower the wealth of asset holders. Both effects tend to reduce aggregate demand and weigh on inflation.
- *Exchange rate changes are transmitted through their effect on NFA and their impact on domestic prices.* Exchange rate changes affect the money supply, which is largely dominated by net foreign assets. Though limited, the pass-through of exchange rate changes into inflation is positive, and exchange rate changes therefore have the potential to affect aggregate demand through changes in domestic prices.

B. How Effective Are Monetary Policy Transmission Channels?

8. **Empirical analysis suggests that shocks to monetary policy instruments are imperfectly translated through transmission channels.** The empirical analysis assesses the Granger causality between instruments and their main transmission channels, and explores the impact of shocks to instruments on the behavior of the transmission channels using simple bivariate VARs (Appendix 1). The data is quarterly over 2001Q1–2013Q2. The volume of credit, liquidity absorption, and the exchange rate are in log-differences; interest rate series are first-differenced. This ensures that all series are stationary.

- *Required reserves significantly cause credit to the economy, while deposit auctions appear to be*

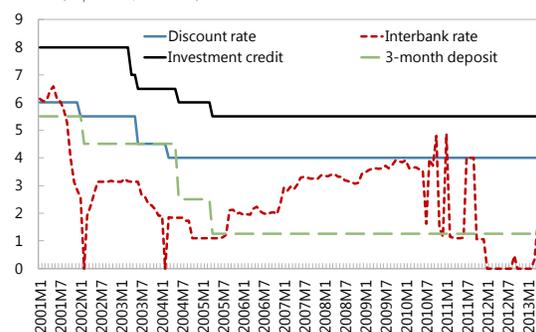
less strongly related to credit. The VAR estimate confirms that increases in required reserves negatively affect credit to the private sector, while credit to the public sector is not affected. The impact is, however, barely significant, reflecting weak transmission.

- *Discount rate changes significantly cause changes to interest rates* (t-bill rates, banks' saving and lending rates). Data gaps (related to the low activity on the market) prevent a statistical analysis of the transmission of policy rate shocks onto interbank rates. There is, however, evidence that policy rate changes did translate into interbank rates until 2004, when policy rates were frozen. The VAR analysis underscores that shocks to the policy rate significantly affected t-bill and bank rates (both lending and saving).⁵
- *The discount rates affect credit to the private sector*, but fail to affect credit to the public sector, and, hence, overall credit; deposit auction rates have no Granger-causal relationship with credit.
- The exchange rate bears a weak causal relationship with NFA, and none with inflation, consistent with Ben Naceur (2013).

9. Structural impediments hinder the transmission of policy rate impulses.

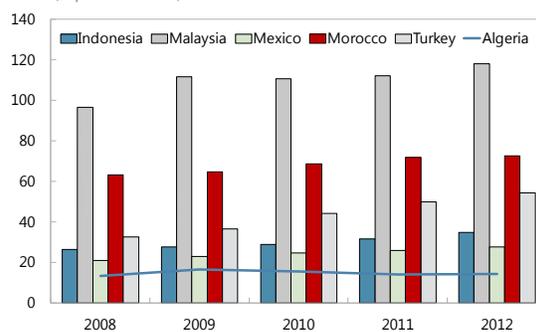
- *While policy rates appear to affect bank lending and saving rates, they fail to affect other market rates.* In a highly liquid environment, the interbank market is very shallow; fluctuation in interbank market rates does not reflect changes in policy rates, but rather episodic tensions in the liquidity of a limited number of banks. In addition, the short supply and large demand for t-bills disconnects interest rates on government securities from policy rates, to the point that t-bill rates episodically drop below deposit rates at the central bank.
- *Credit to the economy is underdeveloped*, reflecting a lack of competition in the

Banking Rates and Discount Rate
(In percent, 2001–13)



Source: Algerian authorities.

Credit to the Private Sector
(In percent of GDP)



Source: World Bank, World Development Indicators.

⁵ The results of the VAR analysis are dominated by the developments during 2001–04, when policy rates were adjusted.

banking sector combined with business climate issues. The financial sector is dominated by state-owned banks that cater largely to state-owned enterprises (SOEs). Private (all-foreign) banks account for only 10 percent of the sector; they do not lend to SOEs and have specialized in trade financing and large private (including foreign) business clients. The 2009 ban on consumer credit has suppressed the growth of household credit. As a result, credit to private sector small and medium-sized enterprises (SMEs) is minimal. In an environment marked by difficulties in setting up a business, paying taxes, or accessing commercial real estate, SMEs tend to develop in the informal sector, where access to finance is virtually impossible, and they struggle to reach a critical mass that would allow them to access bank financing. Against this backdrop, institutions to support the development of credit to SMEs (such as guarantee funds) have yet to catalyze large volumes of credit.

- Wealth effects are limited by the small size of the capital market, the short supply of long-term government securities, and the lack of savings instruments. The lack of competition in the banking sector and ample liquidity has a detrimental effect on the supply of savings instruments, notably on the long-term side. The insurance market remains marginal, and private capital markets are virtually nonexistent, with an outstanding stock of only two corporate bonds, and four enterprises listed on the stock market.

10. **Real sector constraints affect the effectiveness of transmission channels.**

- *Goods and services markets are insufficiently competitive*, resulting in price-setting behaviors that do not respond to monetary policy impulses. Simultaneously, the control of prices for what is still a large number of goods and services (accounting for 26 percent of the CPI) prevents a solid assessment of the underlying inflationary pressures in the economy, complicating policy decisions.
- *The informal economy is large*. With almost 27 percent of money supply in the form of cash in circulation, Algeria is in an exceptional situation given its level of development. Existing proxy indicators suggest that the informal sector may be as large as 30 percent to 40 percent of the economy, de facto limiting the traction of transmission channels.

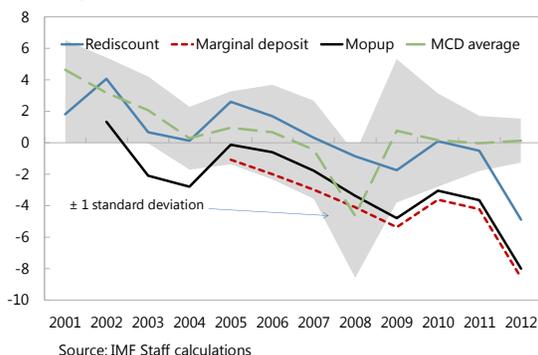
11. **A number of policy decisions put downward pressure on interest rates**, to the point that real policy rates and some market rates have been consistently negative in real terms.

- *Since 2004, the discount rate has ceased to signal the monetary policy stance*. It has been stable for record time in the MCD region (Box 3), while rates on liquidity absorption facilities were set at very low levels as the BA sought to not discourage credit. The combination of capital controls and high liquidity has also contributed to putting downward pressure on interest rates.
- *The recent development of subsidized rates bears negative effects for the effectiveness of monetary policy*. Since 2011, an increasing number of instruments have been introduced to provide interest-free or low-interest-bearing credit to both households and businesses. Incentives range from the housing sector to credit to SMEs, credit to young entrepreneurs,

investment credit, or credit to the agriculture sector. As a result, the monetary policy stance has been further loosened. This development puts monetary policy under political pressure, as policy rate changes may be countervailed by demands for more subsidies from the government.

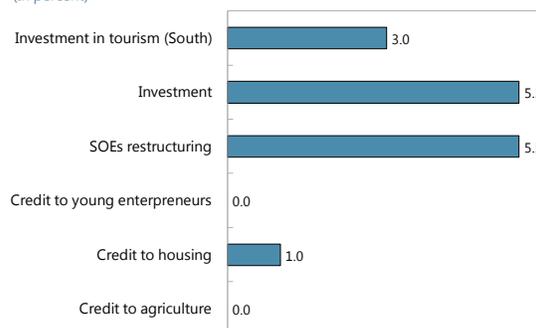
Real Interest Rates in Algeria and MCD

(In percent, 2001–12)



Subsidized Interest Rates

(In percent)



Source: IMF Staff calculations, based on a commercial average rate of 7.5 percent.

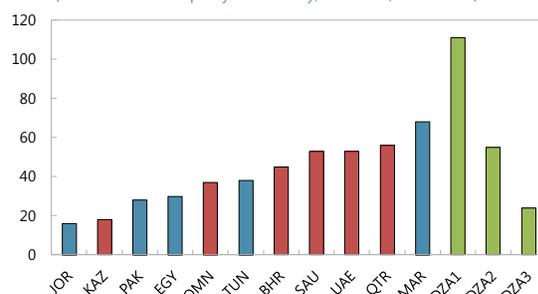
Box 2. Cases of Long-Lasting Low Interest Rates

Depending on the institutional framework, tensions on liquidity, and the development of the financial market, the policy rate can be used either actively (as in Jordan) or less so (notably in oil-exporting countries). During 2000–13, policy rates were adjusted on average every 46 months in MCD countries, and every 53 months in oil-exporting countries (where de facto or de jure pegs can explain long periods of interest rate stability if monetary policy in the anchor country itself is stable). In Algeria, however, they have remained stable for a record 111 months, reflecting the lack of use of monetary policy interest rates in the country, compared to others.

Deposit auction rates have been more flexible, providing potentially more traction to monetary policy; however, the discount rate remains the rate that anchors banks' interest-setting behavior, and as such it is the one framing the transmission of interest rates through credit.

Policy Rate Stability in MCD

(Maximum duration policy rate stability, in months, 2000–13m6)



Note: DZA1: rediscount rate; DZA2: marginal deposit facility; DZA3: liquidity absorption.

Source: IMF staff calculations.

12. **Although the assignment of exchange rate policy to preserving competitiveness is appropriate, its potential for liquidity mop-up may have been underused.** Over the past

decade, a relatively stable nominal effective exchange rate has contributed little to absorbing excess liquidity. More recently, the exchange rate has been on the strong side, therefore contributing below its potential to liquidity absorption. More generally, the dominance of the BA as the price maker on the foreign exchange market limits the availability of the exchange rate as a market mechanism for liquidity absorption.

C. Does Monetary Policy Affect its Final Targets?

13. **The relationship between monetary policy and macroeconomic variables is explored over 2001Q1–2013Q2 on quarterly data.**⁶ The analysis assesses the impact on inflation and real nonhydrocarbon growth of the following monetary policy instruments (all series are stationary):

- *Liquidity management tools*: required reserves (changes in log-differences: dlrr), deposit auctions (change in log-differences: dlmpup) and the sum of required reserves and deposit auctions (changes in log-differences: dlrtotmpup);
- *Interest rates*: changes in the discount rate (dpolicyir) and interest rate on deposit auctions (dirmopup);
- *The exchange rate*: changes in log differences of the nominal bilateral exchange rate against the US\$ (dler) and effective nominal (dlneer) exchange rate.⁷

14. **A bivariate analysis suggests that liquidity management instruments only have a weak impact on GDP or inflation** (Appendix 2). Granger causality tests suggest that interest rates and the exchange rate do not cause inflation or nonhydrocarbon GDP growth; liquidity management instruments, however, (both required reserves and deposit auctions) cause GDP growth and inflation. Bivariate VARs on those pairs for which causality was identified suggest that liquidity management instruments only have a weak impact on GDP and inflation. An increase in liquidity absorption, through either required reserves or the sum of required reserves and deposit auctions, does have a negative impact on GDP, although non-significant. Required reserves seem to be the most powerful instrument. A more active use of liquidity management also has the expected long-term effect on inflation, with total liquidity absorption (required reserves and deposit auctions) having the largest—though not significant—effect.

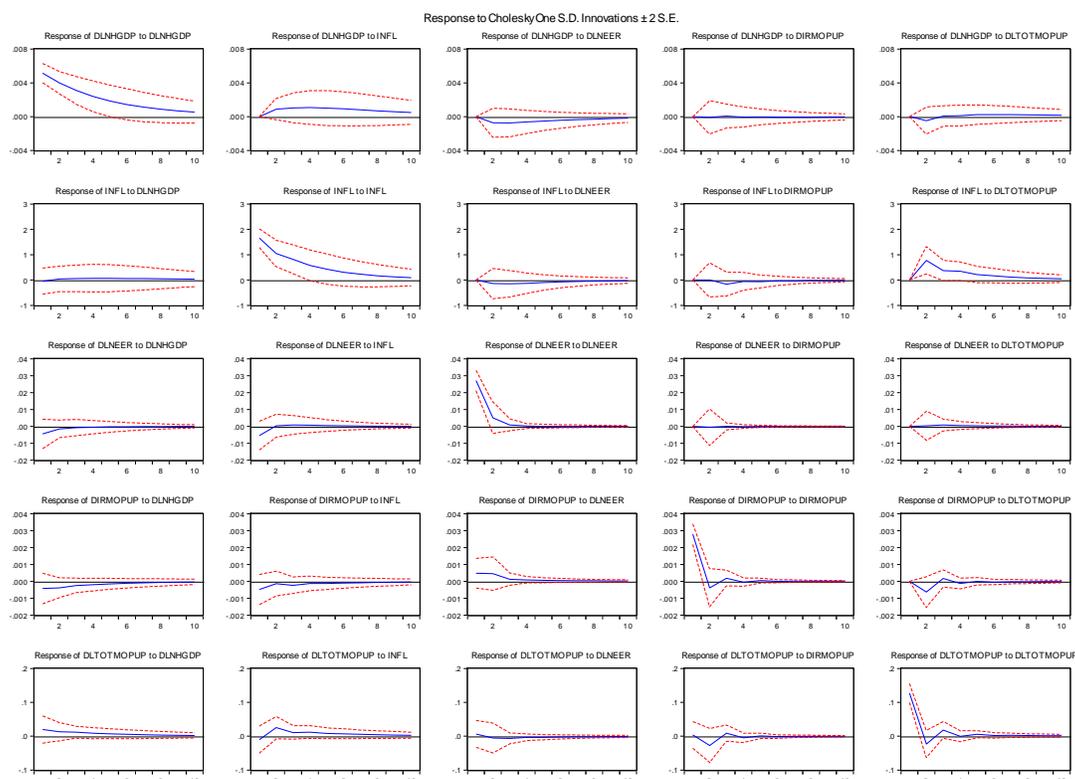
15. **A multivariate VAR model is used to examine the impact of monetary policy shocks on CPI and the GDP simultaneously.** Following the literature review in Mishra and Montiel (2012), the model includes monetary policy instruments—the total volume of liquidity management (dlrtotmp),

⁶ Nonhydrocarbon growth data are only available on an annual basis and have been interpolated into quarterly data.

⁷ The BA discount rate is excluded from the list of monetary instruments as (1) it has remained unchanged since April 2004 and (2) the central bank has not been a provider of credit since the start of the 2000s. Although the exchange rate is supposed to target competitiveness in the current macroeconomic framework, its impact is tested as this variable is commonly used de facto as a monetary policy instrument in a number of countries.

the interest rate on deposit auctions (dirmopup) and the nominal effective exchange rate—inflation, and nonhydrocarbon growth (NHGDP). It also includes lagged public spending as an exogenous variable, as this is the main source of liquidity increase and NHGDP growth in Algeria.⁸ Because of the limited length of the time series, the estimation only includes one lag. Impulse response functions are computed using a Cholesky decomposition where variables are ordered from the most to the least endogenous (real growth, inflation, nominal effective exchange rate, interest rate on deposit auctions, and total volume of liquidity absorption). Various combinations of the available monetary policy instruments are tested, and provide similar results to the main model (Appendix 4).

16. The model confirms that shocks to monetary policy instruments fail to have a strong impact on either growth or inflation, even though the direction of the impacts is broadly consistent with expectations. An appreciation of the dinar is associated with lower inflation and slower growth. Higher interest rates on deposit auctions have no discernible impact on GDP but tend to lower inflation. And higher liquidity absorption, while it seems to slow down aggregate nonhydrocarbon demand, has a paradoxical impact on inflation. However, the impacts are consistently non-significant, pointing to a general lack of effectiveness of monetary policy.



⁸ See Appendix for a description of variables and additional results.

17. **Monetary policy is generally expected to be of limited effectiveness in middle-income economies such as Algeria.** For instance, Mishra and Montiel (2012) survey the existing literature in a number of low- and middle-income countries, and conclude that:

- *In Sub-Saharan Africa*, limited international financial market integration, poorly developed domestic bond and stock markets, small formal financial sectors, and relatively uncompetitive banking systems all contribute to weaken the bank lending channel. Excess liquidity conditions are also detrimental to the effectiveness of monetary policy transmission (Saxegaard, 2006).
- *In Eastern European countries*, though there seems to be evidence of transmission through the bank lending channel, the impact on aggregate demand appears to be missing (Egert and MacDonald, 2009); price or exchange rate puzzles are also frequent.
- *In transition economies of Central Asia*, monetary policy effectiveness is also limited, with interest rate impulses failing to systematically affect prices and output.
- *In MENA countries*, monetary policy frameworks are dominated by limited capital account openness, relatively fixed exchange rates, and limited financial sector development—though national country experiences are to some extent diversified. As a result, available empirical analysis finds limited evidence of the effect of monetary policy on exchange rates or asset prices—reflecting the dominance of relatively inflexible exchange rate regimes as well as low financial sector development. Interest rate shocks are often found to transmit onto bank rates and bank lending, but monetary policy generally fails to significantly affect real output.

D. Options for Strengthening Monetary Policy Effectiveness

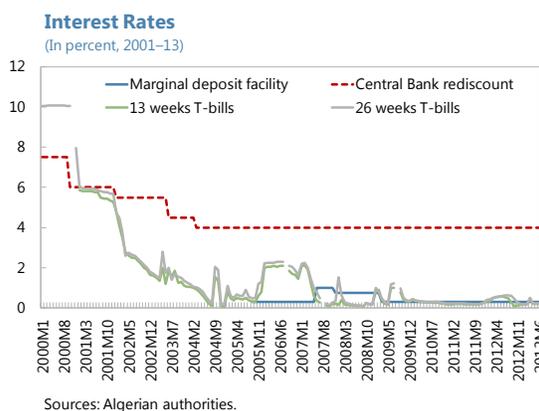
Adapting the Macroeconomic Policy Framework to an Environment of Large Liquidity Shifts

18. **The high liquidity of the past decade reflects the hydrocarbon price cycle, and changes in trend remain possible.** Decade-high prices were largely responsible for the increase in export revenues of the recent past, and although prices are expected to remain broadly stable over the medium term, other forces are at play that could affect liquidity conditions in Algeria. On the one hand, spending in the hydrocarbon sector has already started to reduce hydrocarbon sector deposits, while consolidation in current spending is leading to a decline in household deposits. The domestic demand for hydrocarbon products, sustained by large subsidies that make their price well below international levels, already weighs on export volumes and reduces export revenues. Periods of tighter liquidity are therefore possible in future. Monetary policy will need to be ready to tackle both excess demand and supply for money. There is considerable policy room with the required reserves ratio, which is currently at a relative high level and could be used to adjust a tightening in monetary conditions. Similarly, the exchange rate can be used, when this is consistent with the main objective of ensuring external competitiveness. A preemptive and gradual tightening, supported by a more ambitious liquidity absorption by the Treasury, could also help monetary policy to progressively return to a more normal stance, and would give monetary policy some buffers.

19. **In the short to medium term, the major impediment to monetary policy effectiveness lies in the combination of high liquidity and a lack of savings instruments.** Addressing this issue would require further adapting the monetary framework, and enhancing the fiscal policy support to liquidity management.

20. **The current legal framework, whereby the national oil company is not allowed to hold resources in foreign exchange, could be reviewed.** Under the current provisions, hydrocarbon sector resource inflows have to be deposited in dinars in the banking sector, which is then faced with a liquidity that does not reflect the underlying state of money demand in the nonhydrocarbon sector. Because the BA liquidity auction is universal and does not specifically address the oil sector deposits, overall liquidity management is complicated. This framework

could be adjusted to provide for some of the deposits to be held in foreign exchange, which would sterilize part of the resource inflow. Alternative options—such as holding deposits overseas—also warrant consideration, with proper attention given to the investment strategy of this resource.



21. **The Ministry of Finance could provide further support to the BA in sterilizing liquidity.**

- *A large share of the liquidity in the economy comes from the sizeable public spending, which is partly financed by monetary emission through the drawdown of government deposits at the central bank. As a result, the financing need of the government is marginal, and liquidity absorption through t-bill and t-bond issuances is virtually nonexistent, as the Ministry of Finance issuance policy is limited to rolling over the existing stock of standard bills. The structural excess demand for government paper drives interest rates down to negligible levels—even lower than money market rates—which in turn discourages savings and encourages the holding of cash.⁹ This also likely shifts savings towards bubble-prone assets such as real estate.*
- *Against this background, a more proactive Ministry of Finance borrowing policy is warranted. Such a policy would be instrumental in absorbing excess liquidity, supporting the development of financial markets, bringing liquid resources back to the financial sector, and unclogging the interest rate transmission channel. The cost to the budget should not be overstated, as it would be offset by (1) the remuneration on a larger FRR and (2) larger dividends from the BA as the cost of liquidity absorption would decrease.*

⁹ Excess demand for government paper is high, owing notably to regulatory requirements for insurance companies to hold t-bill, but also by the scarcity of saving instruments outside of government debt.

- Such an adjustment in the macroeconomic policy framework would require tighter coordination between the Ministry of Finance and the BA to ensure that liquidity management models are supplied with up-to-date information on government outlays and borrowings.

Creating the Conditions for Financial Sector Deepening

22. **Interest subsidies should be reviewed, the performance of subsidized credits carefully monitored, and provision should be made for existing schemes to lapse.** With low rates of credit to the private sector, Algeria does have a lot of room to increase credit, but the current approach leads to a further loosening of the monetary policy stance, at a time when monetary conditions are already soft.¹⁰ This in turn prevents financial sector deepening, as enterprises are discouraged from financing themselves outside of the banking sector. In addition, there is a risk that lower interest rates could increase the average risk of banks' portfolios. In the case of an economic slowdown, this would impact nonperforming loans (NPLs) and ultimately have a cost to the public finances if the once-used practice of writing off NPLs by shifting them onto the State's balance sheet were to reappear. A careful monitoring of subsidized credit, with strict application of the provisions for guarantees and collateral repossession, is needed. These schemes would need to be reviewed to assess their effectiveness in supporting growth and unemployment, and measures should be taken to avoid their institutionalization.

23. **Financial sector deepening will require wide-ranging structural reforms.**

- *Institutions are needed to support private sector credit.* The establishment of a full-fledged credit bureau is a sustainable long-term solution; in the shorter term, the abolition of the ban on consumer credit could be accompanied by well-defined prudential rules to encourage credit while containing the risks to financial stability; options include higher prudential ratios or specific loan-to-value ratios on consumer credit.
- The existing credit guarantee system needs to be consolidated and its efficiency improved.
- *The use of cash in the economy needs to be curbed.* Beyond measures to contain the informal sector, which may be a relatively long-term objective, first steps include implementing the required use of checks for large payments, or a systematic recourse to check payments for transactions with public services and administrations, such as customs or the tax administration. A higher level of competition in the banking sector would also likely support the development of non-cash payment systems.
- *To develop capital markets, the capital of large SOEs and state-owned banks should be opened.* Corporate bond issuances by large SOEs could also be encouraged, as a complement to banking credit, to finance large investment.

¹⁰ The situation creates a risk of conflicting objectives between the BA—which may need to tighten monetary policy to meet its stability objectives—and the government—if it wants to encourage credit.

24. **Ultimately, a well-functioning monetary policy will need a better-balanced economy.** To develop the nonhydrocarbon sector, the competitiveness of the economy needs to be preserved, notably by maintaining the real exchange rate close to its fundamental value. Existing analysis suggests that a number of wide-ranging structural reforms would help in supporting the diversification of the economy, particularly measures geared at supporting knowledge accumulation.¹¹

¹¹ See Albertin and Lahreche (2013).

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Appendix I. Effectiveness of Transmission Channels

Required reserves and credit

Liquidity Management: Pairwise Granger Causality Tests

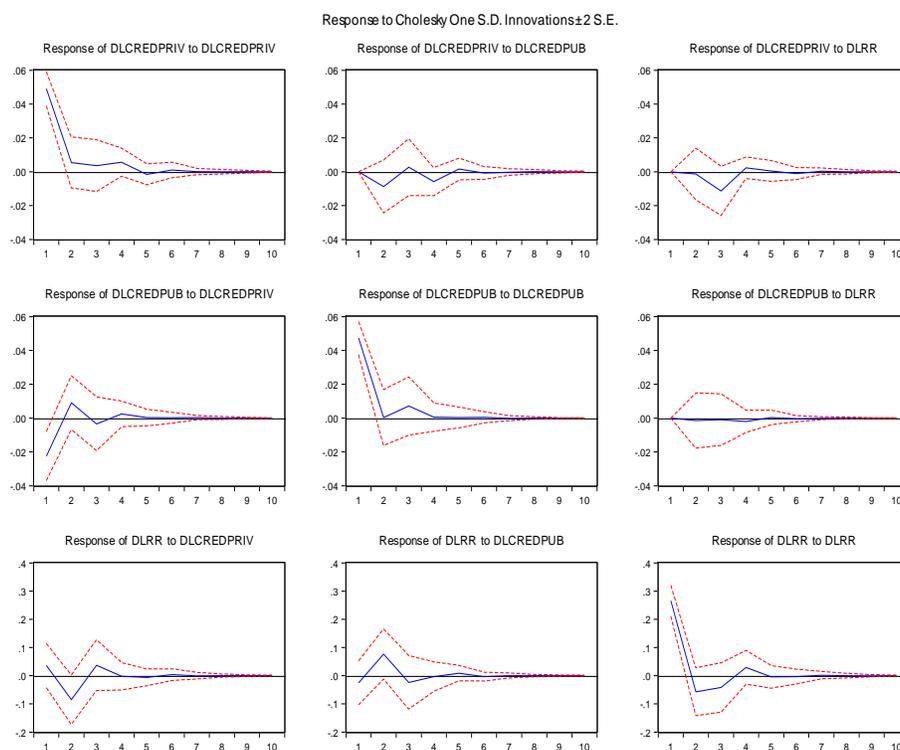
Sample: 2001Q1 2013Q2

Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
DLCREDECO does not Granger Cause DLRR	45	0.39651	0.8098
DLRR does not Granger Cause DLCREDECO		1.97812	0.1187
DLCREDPRIV does not Granger Cause DLRR	45	1.2815	0.2954
DLRR does not Granger Cause DLCREDPRIV		5.50103	0.0015
DLCREDPUB does not Granger Cause DLRR	45	1.81137	0.148
DLRR does not Granger Cause DLCREDPUB		0.23873	0.9146
DLCREDECO does not Granger Cause DLMOPUP	40	1.03718	0.4039
DLMOPUP does not Granger Cause DLCREDECO		0.12857	0.9709
DLCREDPRIV does not Granger Cause DLMOPUP	40	0.31166	0.868
DLMOPUP does not Granger Cause DLCREDPRIV		0.39355	0.8116
DLCREDPUB does not Granger Cause DLMOPUP	40	0.88805	0.4826
DLMOPUP does not Granger Cause DLCREDPUB		0.07719	0.9887

Source: IMF staff calculations.

Note: DLCREDECO: (log difference of) credit to the economy; DLCREDPRIV: (log difference of) credit to the private sector; DLCREDPUB: (log difference of) credit to the public sector; DLRR: (log difference of) required reserves volume; DLMOPUP: (log difference of) deposit auction volume.



Policy rates and credit

Interest Rates: Pairwise Granger Causality Tests

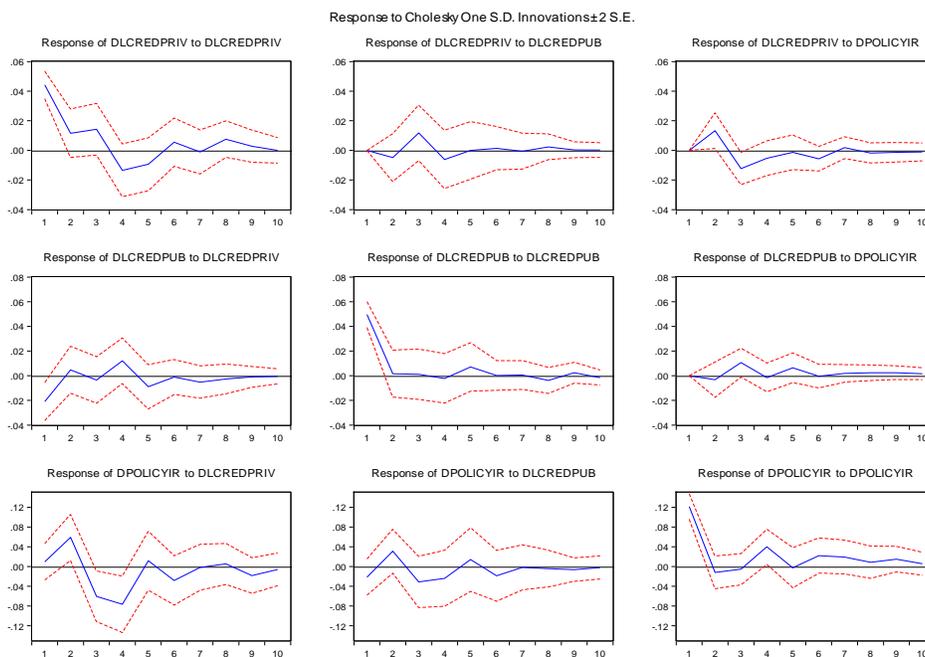
Sample: 2001Q1 2013Q2

Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
DLCREDECO does not Granger Cause DPOLICYIR	45	3.19733	0.024
DPOLICYIR does not Granger Cause DLCREDECO		1.70459	0.17
DLCREDPRIV does not Granger Cause DPOLICYIR	45	7.90536	1E-04
DPOLICYIR does not Granger Cause DLCREDPRIV		5.16016	0.002
DLCREDPUB does not Granger Cause DPOLICYIR	45	0.44869	0.773
DPOLICYIR does not Granger Cause DLCREDPUB		1.34109	0.274
DLCREDECO does not Granger Cause DIRMOPUP	40	0.87779	0.489
DIRMOPUP does not Granger Cause DLCREDECO		0.87959	0.487
DLCREDPRIV does not Granger Cause DIRMOPUP	40	1.90187	0.135
DIRMOPUP does not Granger Cause DLCREDPRIV		0.53177	0.713
DLCREDPUB does not Granger Cause DIRMOPUP	40	0.58642	0.675
DIRMOPUP does not Granger Cause DLCREDPUB		0.64304	0.636

Source: IMF staff calculations.

Note: DLCREDECO: (log difference of) credit to the economy;
 DLCREDPRIV: (log difference of) credit to the private sector;
 DLCREDPUB: (log difference of) credit to the public sector; DPOLICYIR:
 change in the discount rate; DIRMOPUP: change in the deposit auction rate.



Policy rates and interest rates**Pairwise Granger Causality Tests**

Sample: 2001Q1 2013Q2

Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
DTBILL13 does not Granger Cause DPOLICYIR	42	0.99612	0.4235
DPOLICYIR does not Granger Cause DTBILL13		4.96992	0.003
DTBILL26 does not Granger Cause DPOLICYIR	42	0.90736	0.471
DPOLICYIR does not Granger Cause DTBILL26		7.84988	0.0001
DSAVING does not Granger Cause DPOLICYIR	42	0.68012	0.6107
DPOLICYIR does not Granger Cause DSAVING		24.4075	2.00E-09
DLENDING does not Granger Cause DPOLICYIR	42	61.2069	8.00E-15
DPOLICYIR does not Granger Cause DLENDING		2.56919	0.0561
DTBILL13 does not Granger Cause DIRMOPUP	37	1.50268	0.2283
DIRMOPUP does not Granger Cause DTBILL13		5.95004	0.0014
DTBILL26 does not Granger Cause DIRMOPUP	37	1.38501	0.2645
DIRMOPUP does not Granger Cause DTBILL26		3.96741	0.0113
DSAVING does not Granger Cause DIRMOPUP	37	1.31067	0.2902
DIRMOPUP does not Granger Cause DSAVING		2.39662	0.0741
DLENDING does not Granger Cause DIRMOPUP	37	0.91826	0.4671
DIRMOPUP does not Granger Cause DLENDING		1.12192	0.3661

Source: IMF staff calculations.

Note: DPOLICYIR: change in the discount rate; DIRMOPUP: change in the deposit auction rate; DTBILL13: change in the 13 weeks t-bill rate; DTBILL26: change in the 26 weeks t-bill rate; DSAVING: change in the 1-year saving rate; DLENDING: change in the investment lending rate.

Exchange rate, NFA and inflation

Pairwise Granger Causality Tests

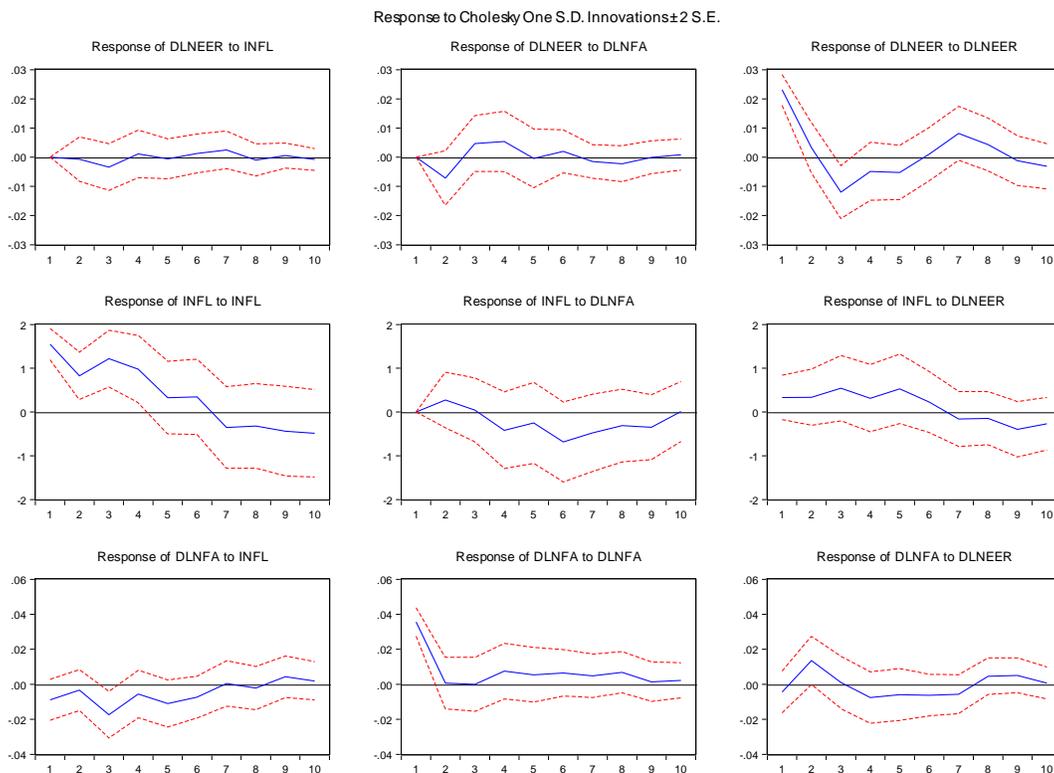
Sample: 2001Q1 2013Q2

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DLNEER does not Granger Cause DLNFA	47	3.04265	0.058
DLNFA does not Granger Cause DLNEER		4.1224	0.023
INFL does not Granger Cause DLNFA	40	4.16267	0.024
DLNFA does not Granger Cause INFL		0.33184	0.72
INFL does not Granger Cause DLNEER	40	0.22338	0.801
DLNEER does not Granger Cause INFL		0.14465	0.866

Source: IMF staff calculations.

Note: DLNEER: (log difference of) nominal effective exchange rate; INFL: CPI change in percent; DLNFA: (log difference of) net foreign assets.



Appendix II. Granger Causality between Monetary Policy Instruments and Final Targets

Appendix Table 1. Pairwise Granger Causality Tests

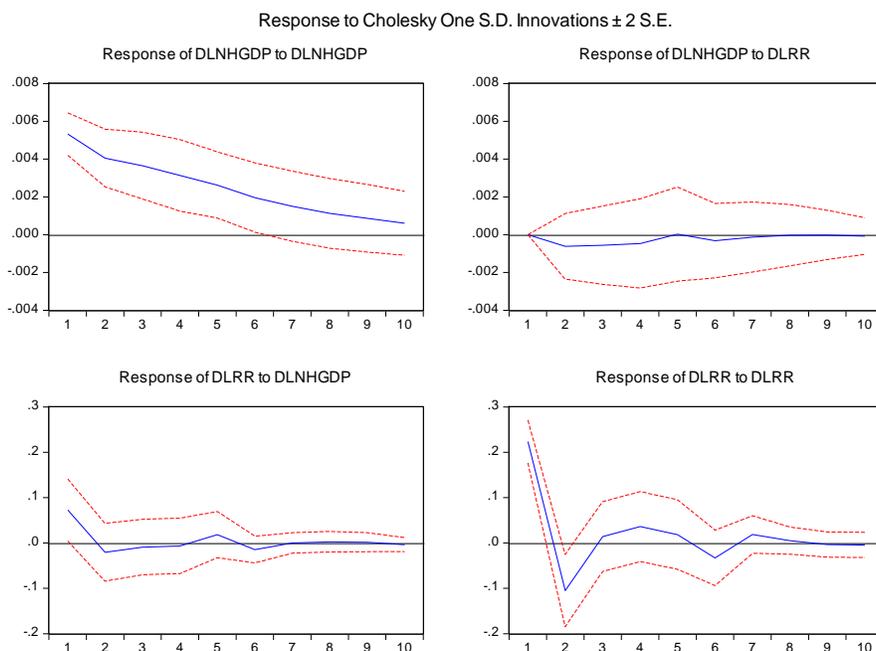
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DIRMOPUP does not Granger Cause DLNHGDP	42	0.36026	0.6999
DLNHGDP does not Granger Cause DIRMOPUP		2.91081	0.067
DPOLICYIR does not Granger Cause DLNHGDP	47	0.22521	0.7993
DLNHGDP does not Granger Cause DPOLICYIR		2.56615	0.0888
DLMOPUP does not Granger Cause DLNHGDP	42	0.10467	0.9009
DLNHGDP does not Granger Cause DLMOPUP		2.61617	0.0866
DLRR does not Granger Cause DLNHGDP	47	4.37801	0.0187
DLNHGDP does not Granger Cause DLRR		0.02484	0.9755
DLTOTMOPUP does not Granger Cause DLNHGDP	47	9.08057	0.0005
DLNHGDP does not Granger Cause DLTOTMOPUP		1.00529	0.3746
DIRMOPUP does not Granger Cause INFL	40	0.12973	0.8788
INFL does not Granger Cause DIRMOPUP		0.87163	0.4272
DPOLICYIR does not Granger Cause INFL	40	0.05921	0.9426
INFL does not Granger Cause DPOLICYIR		0.30098	0.742
DLMOPUP does not Granger Cause INFL	40	0.55966	0.5764
INFL does not Granger Cause DLMOPUP		0.40838	0.6679
DLRR does not Granger Cause INFL	40	2.8316	0.0725
INFL does not Granger Cause DLRR		5.07621	0.0116
DLTOTMOPUP does not Granger Cause INFL	40	2.91815	0.0673
INFL does not Granger Cause DLTOTMOPUP		0.76795	0.4716
INFL does not Granger Cause DLNHGDP	40	0.67903	0.5137
DLNHGDP does not Granger Cause INFL		2.02783	0.1468
DLNEER does not Granger Cause DLNHGDP	47	0.46404	0.6319
DLNHGDP does not Granger Cause DLNEER		6.78609	0.0028
DLER does not Granger Cause DLNHGDP	47	0.3651	0.6963
DLNHGDP does not Granger Cause DLER		2.08815	0.1366
DLNEER does not Granger Cause INFL	40	0.14465	0.8658
INFL does not Granger Cause DLNEER		0.22338	0.8009
DLER does not Granger Cause INFL	40	0.22861	0.7968
INFL does not Granger Cause DLER		0.32609	0.7239

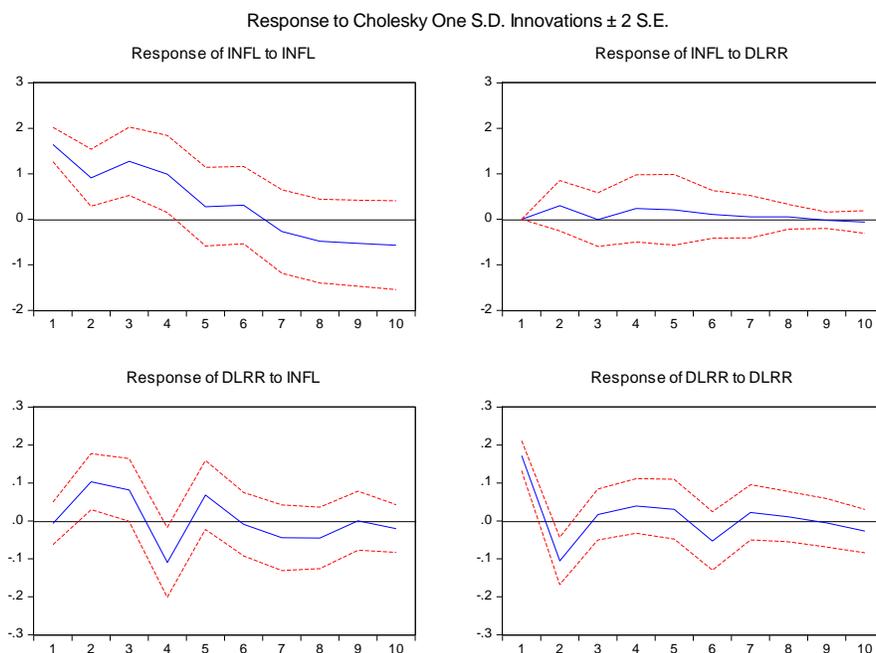
Source: IMF staff calculation.

Appendix III. Bivariate Analysis of the Impact of Monetary Policy Instrument on Growth and Inflation

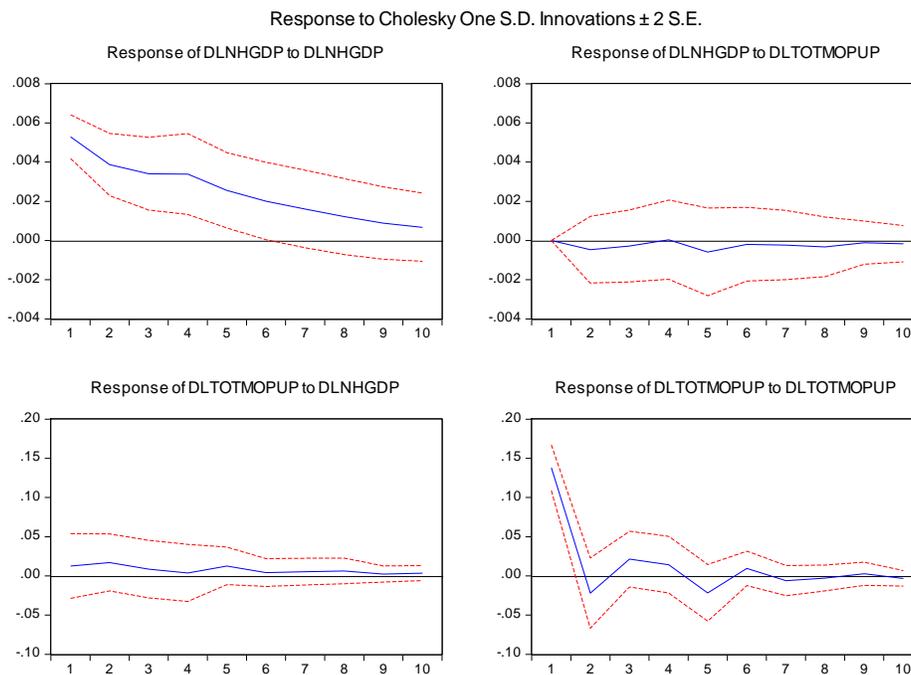
Required reserves and GDP



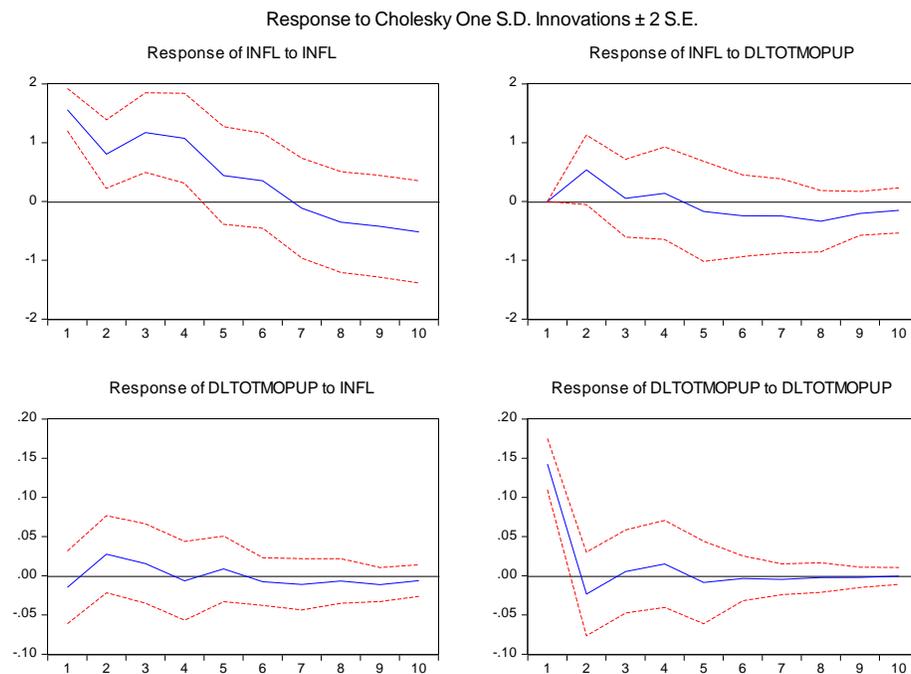
Required reserves and inflation



Overall liquidity absorption and GDP



Overall liquidity absorption and inflation



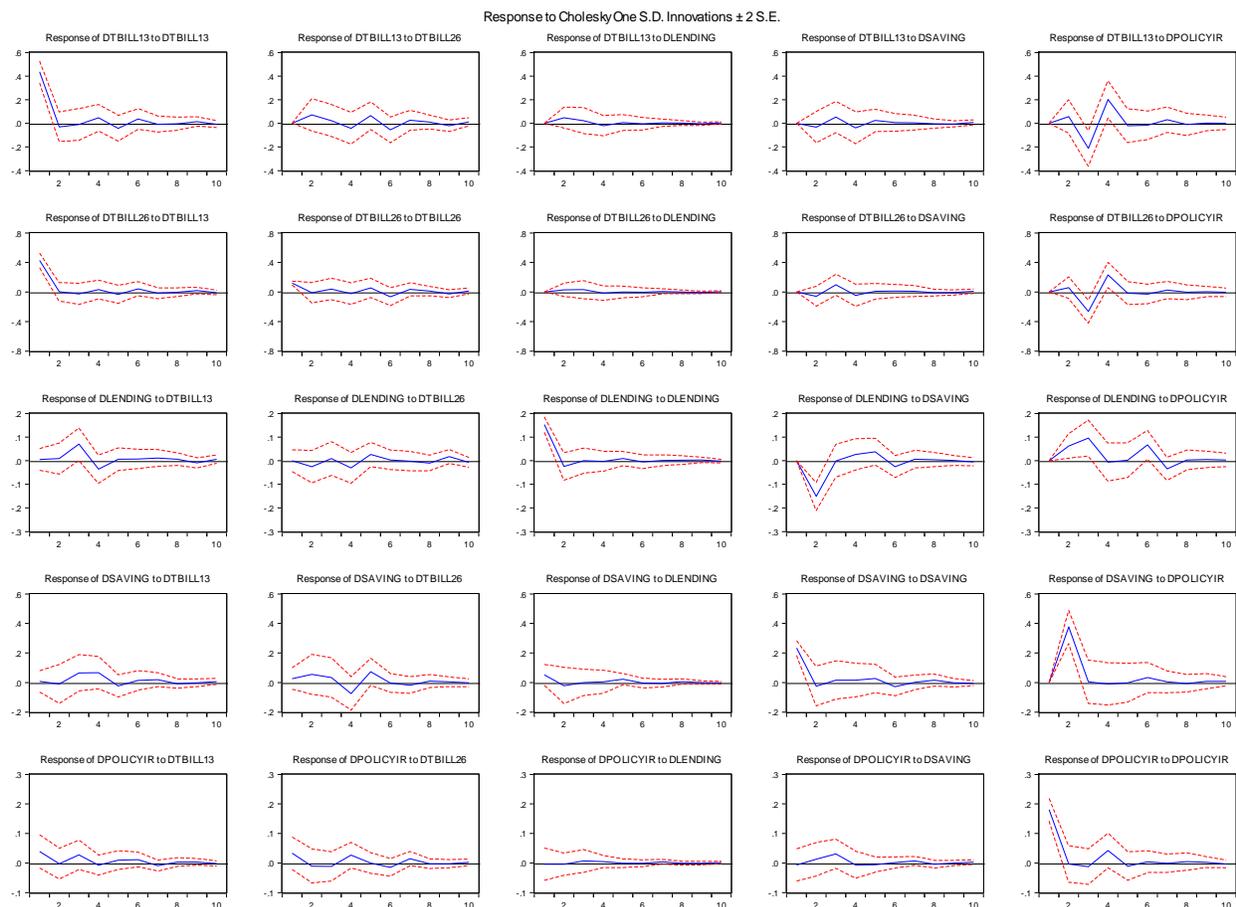
Appendix IV. A Multivariate VAR Model to Assess Monetary Policy Transmission

Appendix Table 2: Vector Autoregression Estimates

	DLNHGDP	INFL	DLNEER	DIRMOPUP	DLTOTMOPUP
Sample (adjusted): 2003Q2 2013Q2					
Included observations: 41 after adjustments					
Standard errors in () & t-statistics in []					
DLNHGDP(-1)	0.767735 -0.09682 [7.92973]	-15.42549 -31.0946 [-0.49608]	-0.159642 -0.52703 [-0.30291]	-0.049655 -0.05463 [-0.90899]	2.481081 -2.42891 [1.02148]
INFL(-1)	0.00042 -0.00037 [1.14436]	0.646402 -0.1178 [5.48741]	0.000754 -0.002 [0.37762]	-8.77E-05 -0.00021 [-0.42391]	0.011264 -0.0092 [1.22416]
DLNEER(-1)	-0.025781 -0.03231 [-0.79782]	-6.541464 -10.3783 [-0.63030]	0.188443 -0.17591 [1.07128]	2.02E-02 -0.01823 [1.10553]	0.011465 -0.81068 [0.01414]
DIRMOPUP(-1)	-2.87E-02 -0.35345 [-0.08128]	-8.540767 -113.518 [-0.07524]	-0.192727 -1.92406 [-0.10017]	-0.131428 -0.19943 [-0.65902]	-9.745102 -8.8673 [-1.09899]
DLTOTMOPUP(-1)	-0.003717 -0.00626 [-0.59379]	6.117881 -2.01037 [3.04316]	0.002645 -0.03407 [0.07762]	-0.005032 -0.00353 [-1.42472]	-0.183531 -0.15704 [-1.16871]
C	-0.002395 -0.00213 [-1.12357]	0.859082 -0.68467 [1.25474]	-0.008973 -0.0116 [-0.77324]	-0.000109 -0.0012 [-0.09094]	-0.038997 -0.05348 [-0.72916]
DLGSPEND(-2)	-0.016013 -0.02787 [-0.57453]	11.82824 -8.9512 [1.32141]	0.069766 -0.15172 [0.45984]	-1.86E-03 -0.01573 [-0.11815]	1.250604 -0.69921 [1.78860]
R-squared	0.727854	0.56537	0.057223	0.151711	0.170196
Adj. R-squared	0.679828	0.488671	-0.10915	0.002013	0.02376
Sum sq. resids	0.000901	92.97083	0.026709	0.000287	0.567281
S.E. equation	0.005149	1.653613	0.028028	0.002905	0.129169
F-statistic	15.15549	7.371248	0.343943	1.013448	1.162254
Log likelihood	161.6904	-74.96011	92.21834	185.1545	29.57321
Akaike AIC	-7.545874	3.998054	-4.156992	-8.690464	-1.101132
Schwarz SC	-7.253312	4.290615	-3.864431	-8.397903	-0.808571
Mean dependent	-0.003686	4.497658	-0.003345	-0.000671	0.040819
S.D. dependent	0.009099	2.31251	0.026613	0.002908	0.130732
Determinant resid covariance (dof adj.)		6.68E-15			
Determinant resid covariance		2.62E-15			
Log likelihood		397.4109			
Akaike information criterion		-17.67858			
Schwarz criterion		-16.21578			

Source: IMF staff calculations.

Monetary policy, growth and inflation; alternative model



DESIGNING A FISCAL FRAMEWORK FOR ALGERIA¹

A. Introduction

1. **The Algerian economy is heavily reliant on hydrocarbons, which account for about 30 percent of GDP, 95 percent of export earnings and 60 percent of budget revenues.** Thanks to high oil prices and prudent macroeconomic policies in recent years, Algeria has built comfortable external and fiscal buffers. These have enabled the economy to weather the global financial crisis and regional uncertainties well. Fiscal policy is not on a sustainable trajectory while—with hydrocarbon resources expected to be depleted within the next 50 years—it should be geared toward the preservation of wealth for future generations. The present study examines options and strategies for designing a fiscal framework for Algeria to achieve this objective, building on the recent IMF guidance papers on fiscal frameworks for resource-rich countries.² The note is organized as follows. Section II takes stock of Algeria’s current fiscal framework. Section III discusses options and strategies for a revised fiscal framework. Section IV discusses the proposed framework. Section V summarizes key principles for managing natural resource funds, and Section VI concludes.

B. Background

2. **Algeria’s fiscal framework is based on a saving rule based on the current oil price: above the threshold of US\$37 per barrel,** oil revenue is saved into the oil stabilization fund (*Fonds de Régulation des Recettes, or FRR*). The FRR can be freely drawn upon for budget support, so that expenditure is disconnected from the saving rule.

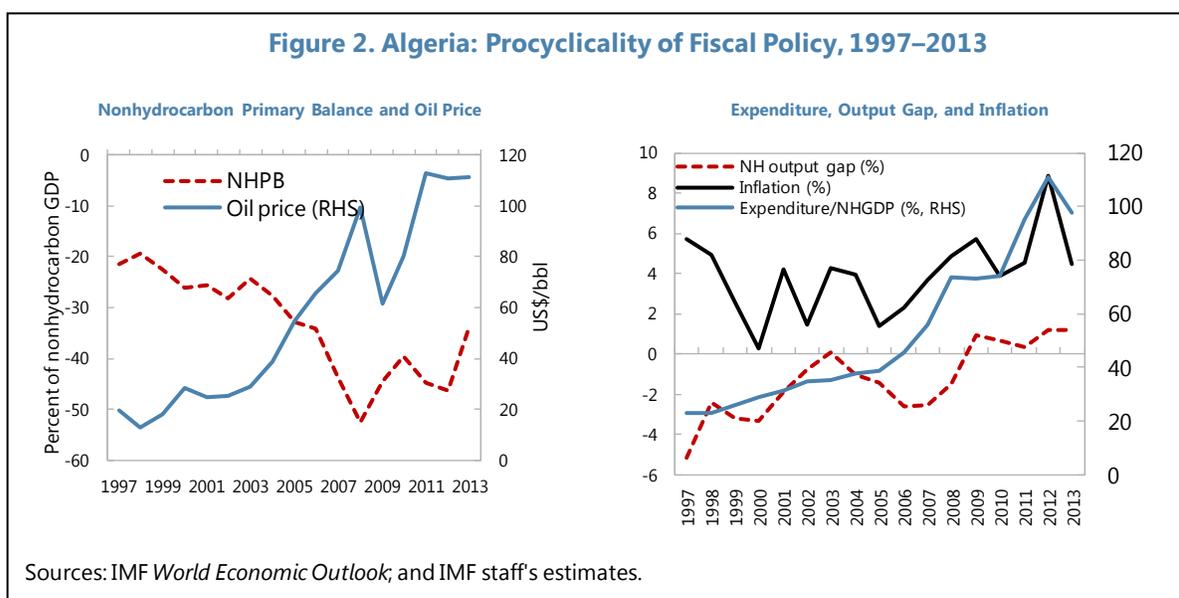
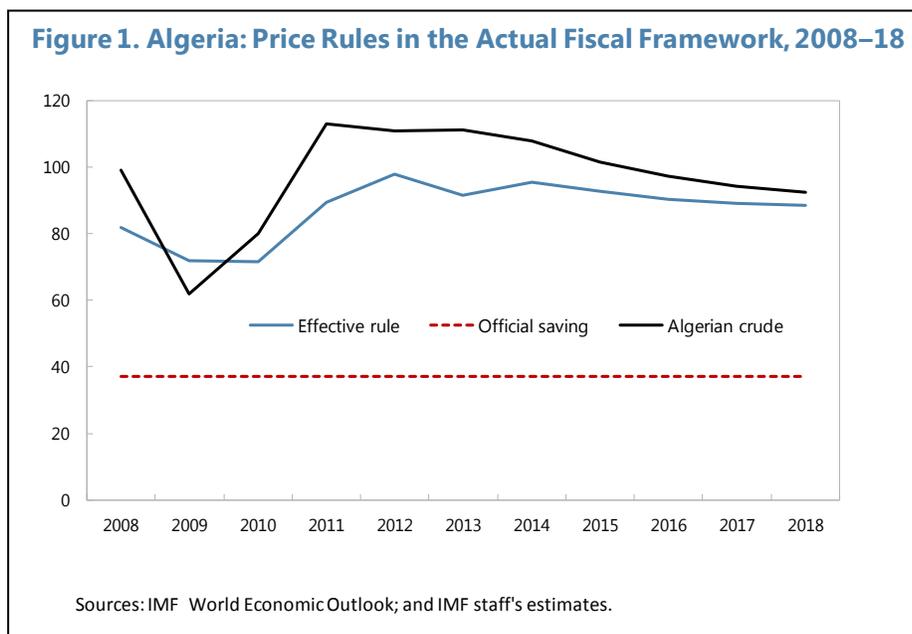
3. **The framework lacks credibility in many respects. The effective price is more than twice the reference saving price;** this, however, is not binding because of the uncapped annual drawdown from the FRR (Figure 1). Moreover, the FRR—which is housed at the central bank—yields low effective returns by international standards.

4. **The long-term trajectory of fiscal accounts is unsustainable. The medium-term nonhydrocarbon deficits, though narrowing,** cannot maintain real wealth in the long run (see 2012 Article IV report). In addition, Algeria’s fiscal stance has been heavily influenced by hydrocarbon prices (Figure 2). The nonhydrocarbon primary deficit (NHPD) and spending have been highly correlated with oil price during the past 15 years, widening during good times and contracting in bad times. Finally, a long-lasting period of low hydrocarbon prices could set the

¹ Prepared by S. A.-J. Tapsoba (FAD).

² IMF (2012). “[Macroeconomic Policy Frameworks for Resource Rich Developing Countries](#),” IMF Policy Paper. Washington, DC: IMF.

country on an unsustainable fiscal trajectory even in the short term.¹ With such challenges, revamping the fiscal framework and setting fiscal policy on a more sustainable foundation are essential.



¹ In the 2012 report, staff estimate that a drop in oil prices of one standard deviation (over 1998–2012) from 2013 onwards would push the current account balance into negative territory, and the FRR reserves as a percentage of GDP would shrink rapidly.

C. Fiscal Framework Considerations

5. **A fiscal framework for resource-rich countries should provide a set of tools to achieve two interrelated objectives:** (i) ensure long-term sustainability and intergenerational equity, and (ii) manage revenue volatility and uncertainty.

Assumptions

6. **Before examining options for a revamped fiscal framework in Algeria, it is necessary to discuss key macroeconomic assumptions.** The analysis is conducted through 2050.

- The resource horizon for crude oil and gas follows the projections in British Petroleum.¹ Accordingly, crude oil reserves would be depleted by 2032, gas reserves by 2068. This assumption is conservative; proven reserves have been revised upward over the two past decades (Figure 3).²
- The oil price path is projected with a similar level of volatility to that experienced over the past 10 years. The natural gas price is held constant at 10½ percent of the oil price. This is based on the average, for the past five years, of the ratio of natural gas price to oil price, which has been hovering at about 10 percent during 2000–12 (Figure 4).
- For nonhydrocarbon activities, long-term real growth is assumed to be around 4.3 percent.³ This reflects the average long-term growth projected for non-OECD countries for the period 2011–60 (3.7 percent). There is an additional 0.6 percent for long-term growth of the population as estimated by the United Nations.
- The real rate of return on financial assets in dollar terms is assumed to be around 6.6 percent. This is based on the typical breakdown of a savings fund, as follows: 91 percent is invested in fixed-income assets, 5 percent in cash holdings, and 4 percent in global equities.⁴ The rate of return of each class of assets is as follows: 5.2 percent for fixed-income assets, 1.8 percent for cash-based assets, 7½ percent for global equity, and 7 percent for other assets (see J.P.

¹ See the [2013 British Petroleum Statistical Review of World Energy](#).

² In October 2013, an important shale oil field was discovered that could potentially lift Algeria's oil reserve base by an additional 10 percent which corresponds to two additional years of production (based on the current extraction rhythm). Such an upside scenario does not change the results presented below.

³ OECD (2012), "Looking to 2060: A Global Vision of Long-Term Growth", *OECD Economics Department Policy Notes*, No. 15 November 2012.

⁴ IMF (2012), "[Macroeconomic Policy Frameworks for Resource-Rich Developing Countries—Background Paper 1—Supplement 1](#)," IMF Policy Paper, p. 61, Washington, DC: IMF.

Morgan 2013).⁵

- **On the fiscal sector, the following specific assumptions are postulated.** Based on the medium-term projections of the Algerian economy (2013-18), it is assumed that till 2032 the share of hydrocarbons in government revenues in the hydrocarbon sector is constant, at about 55 percent.⁶ Afterward, only gas extraction will continue and corresponding remittances in the budget will represent approximately 26 percent of total fiscal revenues. Based on staff estimates, the steady-state multiplier of public investment in Algeria is estimated to be around 1.3. The tax revenue multiplier is set to $\frac{1}{2}$.⁷ Because of the lack of a longer time series for Algeria, the elasticity of investment with respect to the real nonhydrocarbon output for Algeria is calibrated to around 0.19, in line with the work done on Central African oil-wealthy states.⁸

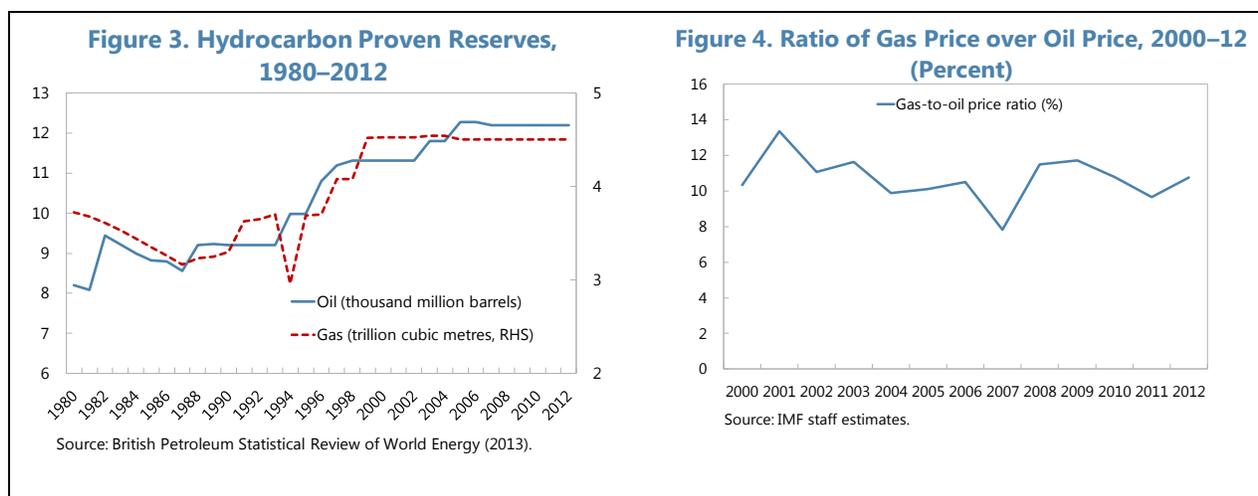
7. **In the medium term (2013–18), the baseline assumes that real GDP is driven by a recovery in the hydrocarbon sector following higher investment,** and by stronger external demand as Europe’s outlook improves. Nonhydrocarbon growth is projected to stabilize at 4.3 percent, reflecting a slowdown in construction and government services. Inflation is projected to fall to 4 percent in the medium term as the government withdraws fiscal stimulus, food prices soften, and monetary policy remains prudent. Algeria is projected to run a small current account deficit by 2016, on the assumption of lower oil prices and continued growth in domestic hydrocarbon consumption. The baseline also assumes that fiscal consolidation is on track over the medium term. The nonhydrocarbon overall deficit is expected to slowly improve, from about 34 percent of nonhydrocarbon GDP (NHGDP) in 2013 to about 27 percent of NHGDP by 2018.

⁵ See the [2013 edition of J.P. Morgan Asset Management’s long-term Capital Market Return Assumptions](#).

⁶ This assumption is conservative and requires a constant cost-to-profit ratio in the hydrocarbon industry as well as streamlined domestic consumption.

⁷ MCD staff estimates.

⁸ Based on Tabova and Baker (2012). “Non-oil Growth in the CFA Oil-Producing Countries: How Is It different?” In Akitoby and Coorey (Eds.), *Oil Wealth in Central Africa: Policy for Inclusive Growth*.



Sustainability Analysis

8. **With the expected depletion of hydrocarbon resources over the next 50 years, preserving this wealth for future generations should be the top priority in Algeria’s fiscal framework.** The IMF has developed a new toolkit for designing fiscal rules that aim to smooth revenue volatility and ensure long-term fiscal sustainability in resource-rich countries. The toolkit includes intergenerational equity and price-based rule models.⁹

9. **The starting point of the long-term sustainability analysis is the permanent income hypothesis (PIH).**¹⁰ The PIH assumes that a country maintains a constant ratio of the nonhydrocarbon primary balance (NHPB) to NHGDP, equal to the implicit return on the present value of future natural resource revenue plus accumulated net financial savings. The computation basically transforms resource wealth on the ground into “virtual” financial wealth and uses an implicit rate of return. Total resource wealth is then computed as the sum of existing financial wealth and future resource revenues, measured in net present value. A shortcoming of the PIH, however, is that it is strictly a consumption-smoothing theory that does not address the need for investment.

10. **Alternative approaches have been proposed in the literature to account for temporary investment needs**—and thus lower accumulation of fiscal savings than the PIH, in at least some periods. In such cases, the PIH is combined with temporary escape clauses to accommodate temporary modifications of public spending. These are the Modified PIH (MPIH) and the Fiscal

⁹ IMF (2012). “[Macroeconomic Policy Frameworks for Resource-Rich Developing Countries](#),” IMF Policy Paper.

¹⁰ This approach has several variants (e.g., infinite or finite horizon; spending constant in real, per capita, or as share of nonresource GDP; and using the perpetuity or annuity value of the financial wealth of the resource revenue windfall) which can determine the sustainable path for the nonresource primary deficit.

Sustainability Framework (FSF).¹¹ First, the MPIH accommodates front-loaded investment by allowing financial assets to be drawn down during the scaling-up period; the drawdown would then be offset by fiscal adjustment in the future to rebuild financial assets to the same level as under the traditional PIH. This approach does not explicitly account for the potential impact of the scaling up on growth and nonresource revenues. Over time, if the scaling up of investment is yielding “fiscal returns” (i.e., increasing nonresource revenues), the need for fiscal adjustment to compensate for the initial scaling up would be lower, and could be eliminated. Unlike the MPIH, the FSF explicitly accounts for the impact of investment on growth and non-resource revenues. The FSF is consistent with an NHPD that allows a drawdown of resource wealth to build human and physical capital. In this context, it stabilizes resource wealth at a lower level than the PIH models. Lower financial wealth will generate a lower stream of income to the budget than in the PIH-based frameworks, which will result in a lower NHPD consistent with fiscal sustainability; however, fiscal spending can still be stabilized at a higher level because higher growth will have “fiscal returns” in the form of larger nonresource revenues.

11. In line with the Algeria’s need to build its capital stock to overcome infrastructure gaps and help support the diversification of the economy and the growth of a robust private sector (see 2012 Article IV), public investment is assumed to increase at the recently observed pace for the next Algerian development plan (2015–19).¹² For Algeria, public investment has been strong over the past decade, averaging about 15.5 percent of GDP between 2007 and 2013.

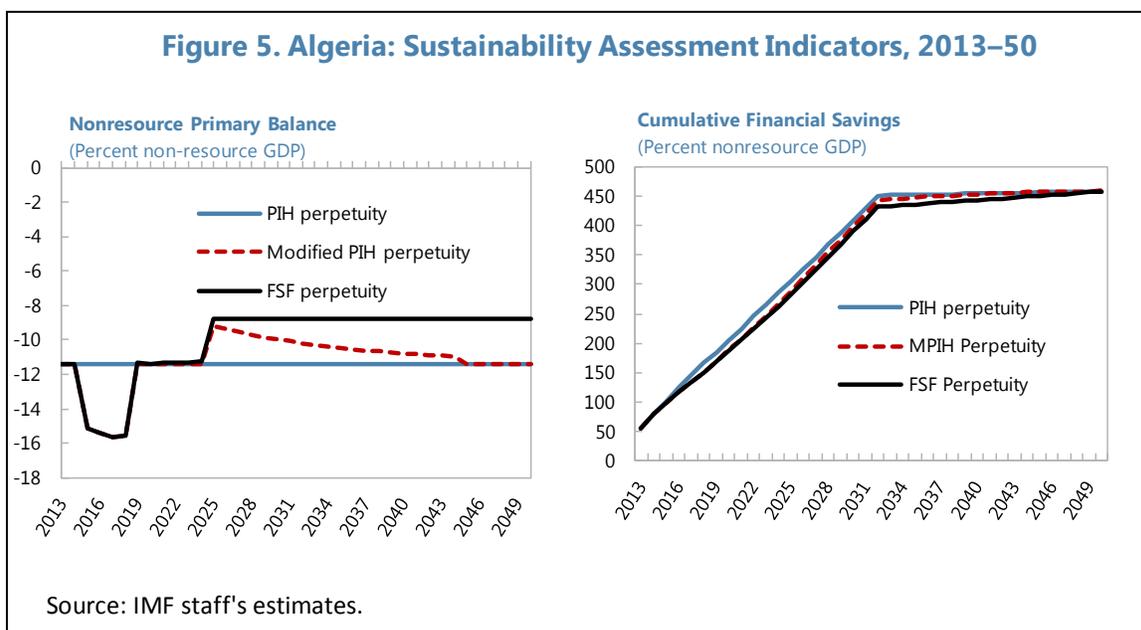
12. Simulations indicate that the NHPD consistent with the PIH rule would be 11 percent of NHGDP (Figure 5).^{13, 14} This benchmark is derived by accounting for the actual saving in the FRR. In fact, unless a country starts with a high level of debt, the PIH exercise will deliver a deficit. Cumulative savings would stand at around 458 percent of NHGDP by 2050. Under the MPIH, the target for the NHPD-to-NHGDP ratio would temporarily be 15 percent, to accommodate an investment increase. This should be compensated by a long period of lower deficits until around 2040, and thereafter should stabilize at the PIH benchmark. In this case, cumulative savings would converge to the PIH level after 2040. Under the FSF, the NHPD-to-NHGDP ratio closely tracks with

¹¹ These tools can be used either for investment scaling-up or scaling-down scenarios.

¹² These approaches could include social spending, which might impact growth as public investment does.

¹³ For long-term sustainability analysis in resource-rich countries, the nonresource primary balance (NRPB) is a good measure of the macro-fiscal stance. The NRPB identifies the impact of government operations on domestic demand, because resource revenues typically originate abroad.

¹⁴ A more stringent PIH benchmark could be derived by using the stabilization funds strategy. The breakdown of such a fund is as follows: 25 percent is invested in fixed-income assets, 4 percent in cash holdings, 56 percent in global equities, and the rest is investment in other types of asset. The aggregated interest rate is estimated at about 5.1 percent. In this case, the NHPD-to-NHGDP benchmark is estimated at 4 percent.



the MPIH outcome, though it would stabilize at 8 percent in the long term. Lower deficits reflect the positive impact of higher investment.¹⁵

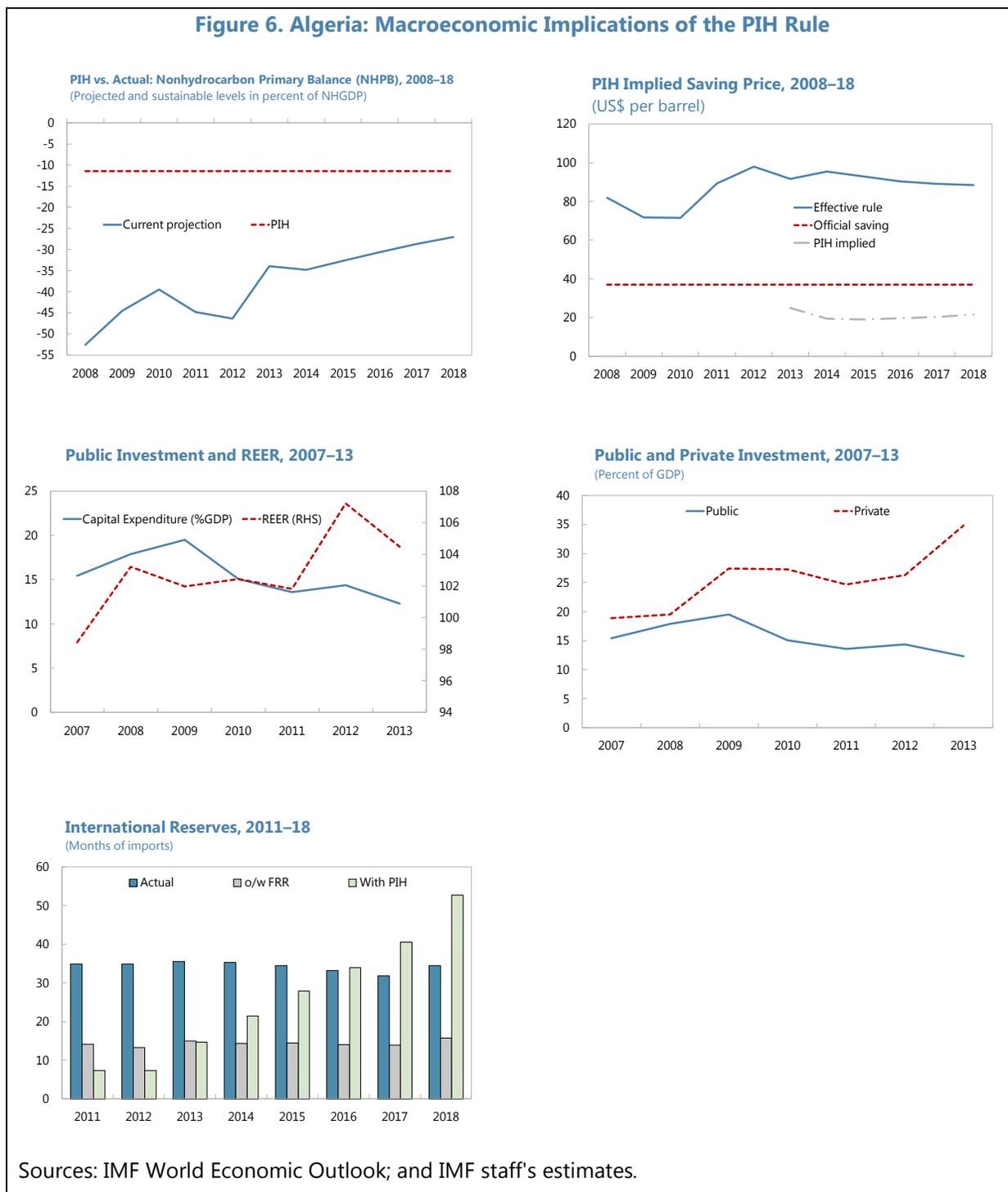
13. Below we discuss some macroeconomic implications of scaling up public investment in Algeria:

- In 2013, the NHPD-to-NHGDGP ratio is estimated to be about 34 percent higher than the PIH benchmark (Figure 6, Panel 1). The gap narrows to about 15½ percent by 2018. Significant fiscal consolidation, 20 percent of NHGDGP, would therefore be necessary to bring fiscal policy onto a sustainable footing.
- The PIH implied reference saving price rule could be between US\$25 and US\$21½ more stringent levels than the current one (Figure 6, Panel 2).
- Scaling up investment will have a macroeconomic impact through several channels. Scaling up investment domestically could raise potential non-resource growth and create a virtuous cycle of increased fiscal space; however, the increase of investment could crowd out private investment or lead to a “Dutch disease” phenomenon. For Algeria, these risks are somewhat limited in the near term (Figure 6, Panel 3). Indeed, recent trends suggest that private and public investments are mostly complementary rather than substitutable. In the same vein, the real effective exchange rate proved marginally sensitive to the recent scaling up of public investment (Figure 6, Panel 4).

¹⁵ The fiscal target could be a higher deficit if investment turns out to be less efficient than postulated here (that is, an elasticity of investment with respect to the real nonhydrocarbon output of 0.19). Testing for lower efficiency does not dramatically change our findings.

- The application of the PIH-type rule would strengthen Algeria’s financial position. As a result of a saving rule preserving resource wealth for future generations, the reserves coverage will increase significantly in the medium term and would surpass the current projections by almost 18 months of imports coverage (Figure 6, Panel 5).

Figure 6. Algeria: Macroeconomic Implications of the PIH Rule



Volatility Analysis

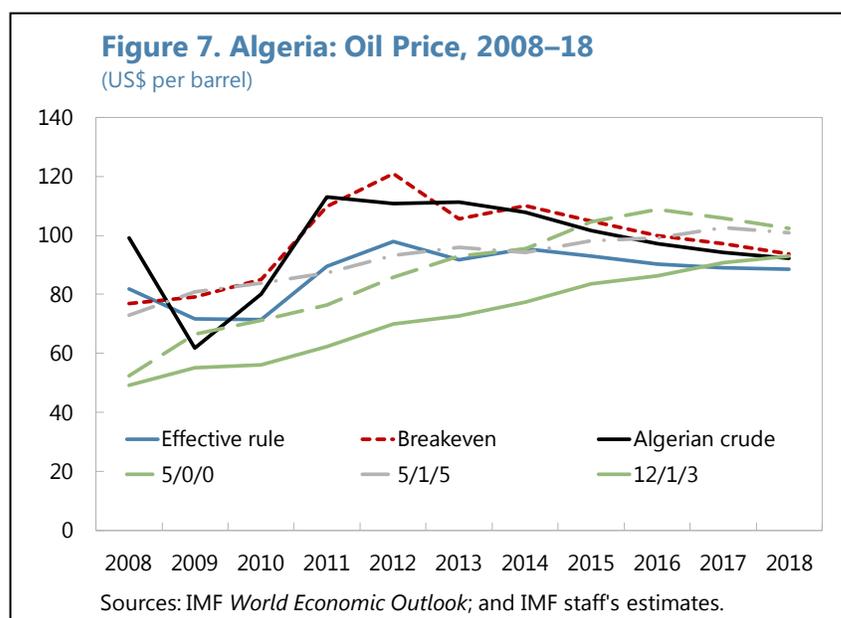
14. **As shown previously, the medium-term deficit remains far from the PIH benchmark,** which would imply fiscal consolidation of an unrealistic magnitude; however, a price-based rule could provide a transitional anchor toward the PIH benchmark. Price-based rules are a good approach for managing price volatility. Under the price based-rules, the expenditure envelope is based on a smoothed price of the resource, protecting the budget from volatility. The smoothing formula may use backward-looking and/or forward-looking prices. In practice, international experiences suggest the choice of price-smoothing formula depends on countries' characteristics (Table 1). With price-based rules, windfall revenues are saved and drawn upon during difficult times.

Rule	Description	Country
5/0/0	5-year rolling average of historical oil prices	Ghana
10/0/0	10-year rolling average of historical copper prices	Chile
5/1/5	Average of past 5 years, current year, and future 5 years	Trinidad & Tobago
10/1/3	Average of past 10 years, current year, and future 3 years (weighted 25/50/75)	Mexico
12/1/3	Average of past 12 years, current year, and future 3 years	Mongolia

Source: IMF (2012). "Macroeconomic Policy Frameworks for Resource Rich Developing Countries—Analytic Frameworks and Applications," IMF Policy Paper. Washington, DC: IMF.

15. **For Algeria, three smoothing rules are simulated: the price rule 5/0/0, the price rule 5/1/5, and the price rule 12/1/3.**¹⁶ Figure 7 shows a simulation of the realized oil price that Algeria would receive as well as reference prices implied by the three price rules. All three rules smooth prices. The price rule 5/0/0 tracks closely with the effective price. The rule 12/1/3, with its reliance on a long historical price series, provides for the most smoothing of prices.

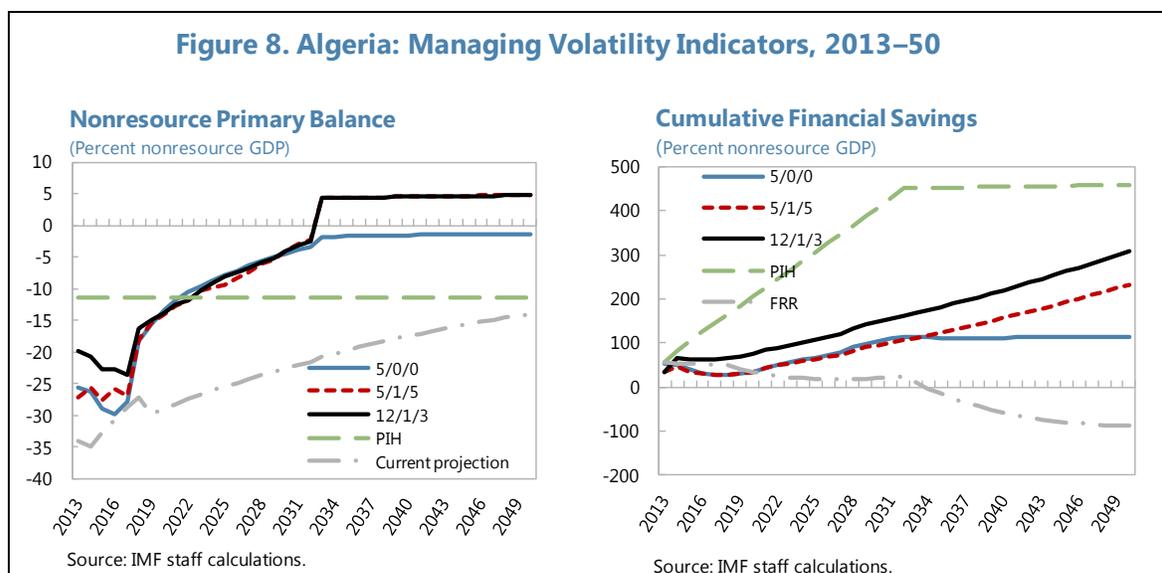
¹⁶ The numbers in the price rule refer, in order, to the number of years in the past, present, and future used to calculate the expenditure path. Thus, the 5/0/0 price rule uses oil prices for the past five years only to calculate the smoothed resource revenue. A 12/1/3 price rule uses prices for the past 12 years, the current price, and prices forecast for the following three years.



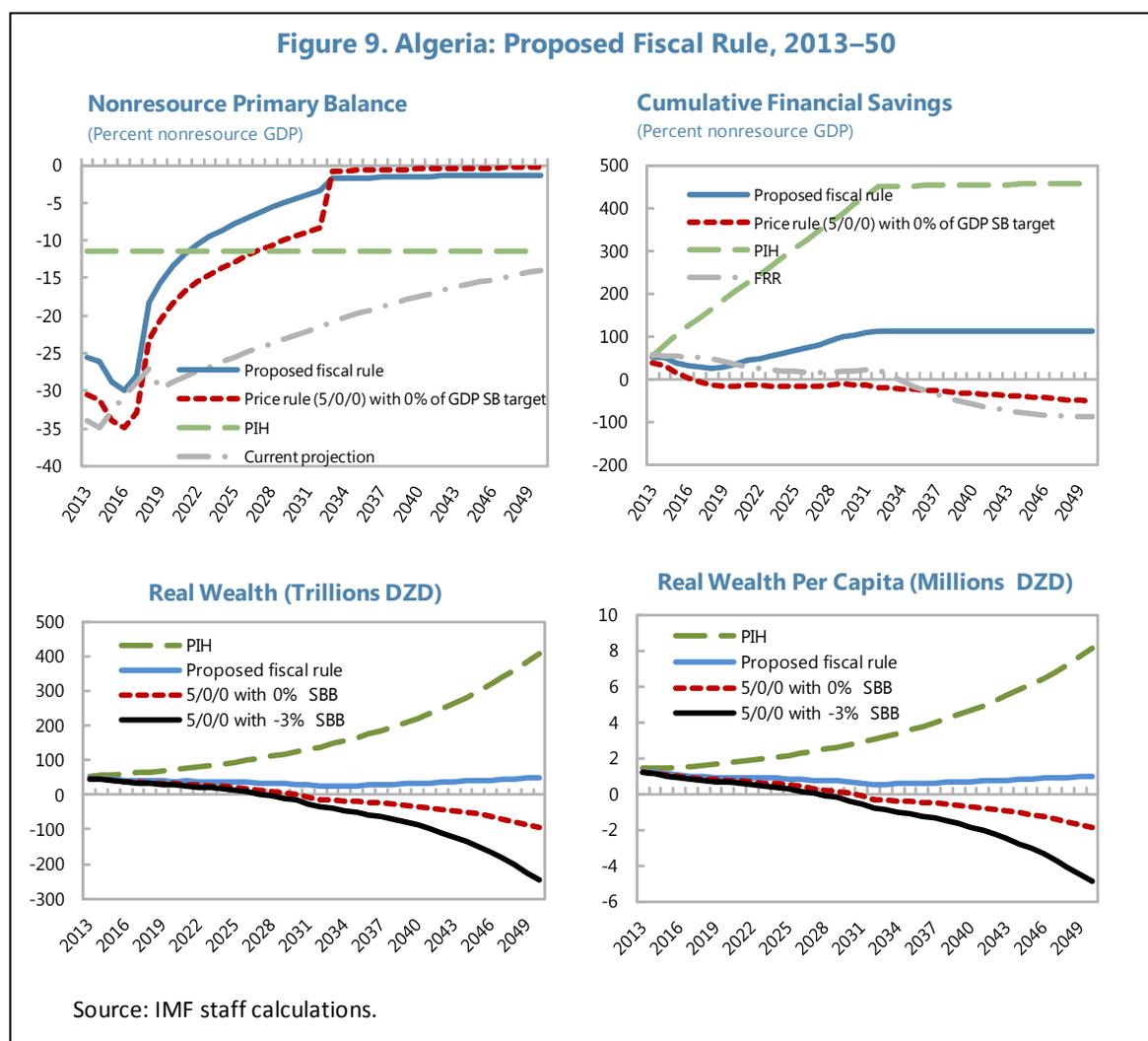
16. **Under all scenarios, the realized NHPD-to-NHGD ratio converges to the PIH benchmark by 2022** (Figure 8). This contrasts with the current observed trend of Algeria's fiscal policy. Price-based rules lead to higher saving than the current projected FRR level. The price rule 12/1/3, with a longer backward-smoothing rule and the future price, performs well and generates the highest savings. The price rule 5/1/5, with short smoothing windows for both past and future prices, leads to higher volatility with lower but still sizeable financial savings. The price rule 5/0/0 yields somewhat similar volatility to that of the 5/1/5 formula but is consistent with financial savings.

17. **Backward-looking price rules tend to be adequate for Algeria from a practical standpoint.** The price rule 5/0/0 presents the advantage of not requiring any forecasting exercise, contrary to the price rule 5/1/5, and incorporates changes in price trends with shorter lags than in the price rule 12/1/3. In particular, the price rule 5/0/0 scores well by reining in volatility and by leading to a strong financial position. These rules are indicative and ultimately depend on the policy objective. Budget prices relying on a shorter past horizon will better track changes in realized prices but may be associated with more volatile and procyclical expenditure. In contrast, budget prices with longer backward-looking horizons would have smoother expenditure paths, but might systematically under- or over-shoot actual revenues if price trends change. Forward-looking formulas anchor spending to oil markets' expectations but remain challenging in countries with limited forecasting capacity or lacking well-established independent fiscal agencies.

Figure 8. Algeria: Managing Volatility Indicators, 2013–50



18. **The price-based rule could be further supplemented with a structural balance (SB) rule.** For Algeria, two different structural primary balance rules are simulated using the price rule 5/0/0, with the constraint of preserving the size of the FRR. Accordingly, we simulate a structural balance rule that preserves real wealth until 2033. This requires a structural surplus of 5 percent. In addition, we also display in Figure 9 the previous 5/0/0 rule that corresponds to a structural equilibrium of the budget (strictly structural surplus). The realized NHPD-to-NHGDP ratio varies across different structural balance targets. The 5 percent SB rule would anchor fiscal policy to the PIH benchmark by 2026. With the end of oil, the target has to be adjusted to -1 percent to ensure smoothed spending profile. Cumulated financial saving will stand at comfortable levels at about 112 percent of NHGDP by 2050, with real wealth increasing after 2033. At the other extreme, a rule that targets a structurally balanced budget would delay the convergence toward the long-term anchor and lead to negative financial saving (about -52 percent of NHGDP by 2050). Real wealth tapers off will be rapidly in a negative territory. Likewise, under the current policy course, the return to the long-term sustainability level is further delayed and leads to financial dissaving and negative real wealth. This will lead Algeria to accumulate debt of about 88 percent of NHGDP by 2050.



D. Fiscal Rule for Algeria

19. **Because Algeria is faced with the depletion of its crude oil reserves in two decades,** the Algerian fiscal framework should be mostly geared toward the preservation of financial wealth for future generations. Hence the PIH benchmark should remain the anchor of fiscal policy; it gives a stable and clear anchor for policymakers.¹⁷ However, it requires substantial fiscal consolidation that is difficult to implement (20 percent of NHGDP per annum on average in the medium term). Therefore, while the PIH would be the first-best rule to ensure intergenerational equity, a more practical approach is needed.

¹⁷ Several countries apply a non-PIH rule to anchor fiscal policy (see Appendix III).

20. **As previously shown, backward-looking price rules tend to be appropriate for Algeria.**

In particular, the price rule 5/0/0 scores well by tempering spending volatility, mitigating fiscal profligacy, and, importantly, by securing comfortable fiscal savings.¹⁸ In particular, such a rule helps preserving real wealth over time when combined with a 5 percent structural balance (that will be adjusted to -1 percent at the end of oil production, supposedly in 2032). Such an approach would help Algeria manage revenue volatility stemming from fluctuating commodity prices, secure comfortable financial savings for the long term, and preserve real wealth per capita. Compared to the current macroeconomic framework, the proposed rule would require an additional consolidation of 3 percent per year over the medium term and continued fiscal consolidation in compliance with the fiscal rule over the long term.

21. **Compared with the actual situation, the proposed rule implies a more credible and flexible saving rule that includes a clear replenishment and drawdown principles.** The FRR will increase in good times (realized price above the reference level) and be drawn upon in bad times (realized price below the reference level).

22. **The fiscal framework also needs to be supported by an adequate institutional arrangement.** Fiscal responsibility laws or independent fiscal agencies, as implemented in other countries, enforce the rule-based framework, strengthening the credibility, transparency, and accountability of fiscal policy decisions. Algeria could follow a similar approach.

- *Fiscal Responsibility Law (FRL)*. Most countries opt to codify the rules and institutional arrangements for natural resource management in some form of legislation, generally an FRL.¹⁹ The scope of the FRL could cover activities related to determining and presenting the saving price according to the rule, and submission and approval of a medium-term fiscal framework. The FRL could include details regarding the calculation of resource revenues; and could specify permissible and temporarily deviations, and the eventual corrections.
- *Organic Budget Law (OBL)*. A transitional approach would be the inclusion of clear rules along the lines developed above in the OBL. The budget law needs to incorporate the new fiscal rule and define the way to enforce it.
- *Extractive Industries Transparency Initiative (EITI)*. By ensuring disclosure of the financial transactions surrounding natural resources extraction, the EITI principles could help increase transparency and accountability in revenue collection (see Appendix I).

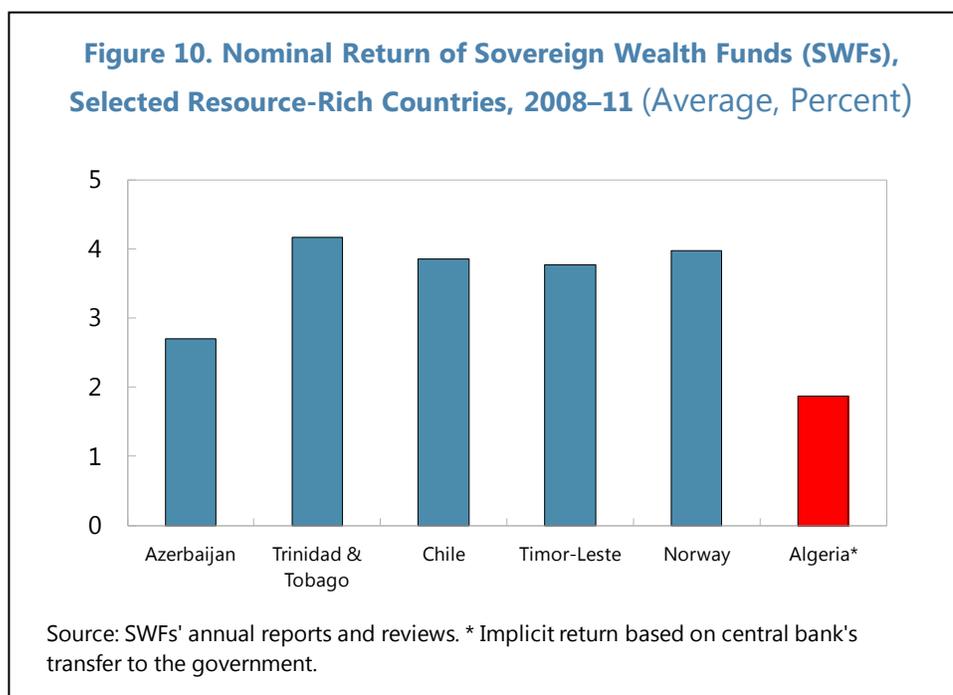
¹⁸ As capacity develops, a combination of past and future prices in the smoothing rule could be envisaged. With uncertainty surrounding oil prices and limited institutional capacity, high reliance on forward-looking prices may be risky.

¹⁹ However, this depends mostly on the circumstances and the legal and administrative traditions of the country.

E. Managing Resource Funds

23. **The management of financial wealth should be overhauled in Algeria.**²⁰ As shown in previous sections, revamping Algeria’s fiscal framework is necessary to achieve sizeable financial saving since its current framework is incomplete.
24. **In the context of the revamped fiscal framework proposed, the FRR should be transformed into a full-fledged sovereign wealth fund (SWF)** with a clear investment strategy able to yield market-based return. The goals, the deposits, and the drawdown rules should be clearly defined, consistent with the proposed rule (see section IV). Furthermore, the goals of the FRR could be broadened to include the saving motive and secure financial wealth for future generations.
25. **Moreover, the creation of a SWF could help ground the management of fiscal reserves on a market footing.** In the current arrangement, the effective return on the FRR is low by international standards. During the 2008–11 period, the implicit return, based on dividend payments from the central bank to the government, was less than 2 percent—well below the returns for most resource-rich countries (Figure 10).
26. **In addition, adhering to international best practices may help the governance structure of SWFs.** Recently, the Santiago Principles were established: these are a voluntary code of conduct governing investment policies, disclosure rules, and other parameters of SWF activity (see Appendix II).
27. **Overall, the reserves management capacity should be strengthened.** For the sake of smooth transition, the management of the SWF should be the responsibility of the central bank, which already has the capacity and experience in reserves management.

²⁰ This section draws heavily on IMF (2012). “[Macroeconomic Policy Frameworks for Resource-Rich Developing Countries—Analytic Frameworks and Applications](#),” IMF Policy Paper.



F. Conclusion

28. **Revisiting Algeria's fiscal framework is of the essence:** fiscal policy needs to be set on a sustainable course and the current fiscal framework in Algeria is incomplete in many respects: the reference saving price is not binding because drawdown from the oil fund is uncapped; and the oil fund yields low returns by international standards, and remains vulnerable to sizeable oil shocks.

29. **This study has explored options and strategies for a revamped fiscal framework.** It concludes that given the expected lifetime of hydrocarbon reserves, ensuring long-term sustainability and saving for future generations should be the priorities of fiscal policy. Simulations indicate that the PIH would provide a stable anchor and clear guidance for policymakers but would require an unrealistic adjustment of 20 percent of NHGDP on average. Under these circumstances, backward-looking price rules would be appropriate for Algeria. In particular, the price rule 5/0/0, combined with a structural surplus target of 5 percent NHGDP (that will be adjusted to -1 percent at the end of oil production, supposedly in 2032), scores well by tempering spending volatility, mitigating fiscal profligacy, and, importantly, securing comfortable fiscal savings and preserving real wealth over time. With the current macroeconomic framework, the necessary fiscal consolidation under the proposed rule is about 3 percent per annum in the medium term, which is more realistic.

30. **In addition, the oil fund should be managed on a market basis.** A SWF scheme could be explored and the reserve management capacity of the central bank should be strengthened. Finally, the fiscal framework needs to be supported by suitable institutions, including those affecting the capacity to produce long-term forecasts, establish a medium-term orientation of the budget,

implement efficient public investment projects, and manage resource funds. A first step may be incorporating the proposed rule in the organic budget law.

31. **Finally, extending the time horizon for hydrocarbon production, and increasing exports, will improve the prospects for Algeria's oil wealth.** This will require more foreign investment in the oil and gas industry, together with steps to curb domestic hydrocarbon consumption.

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Appendix I. The Extractive Industries Transparency Initiative

1. **The Extractive Industries Transparency Initiative (EITI) is a global standard established in 2003 to promote and support improved governance in resource-rich countries.** The EITI brings together various parties with a stake in improving the economic outcome of the utilization of extractive industries (EI) revenues—governments of resource-rich countries who opt to participate; governments of other countries who decided to support, politically, financially, and with technical assistance; EI companies and industry groups; financial investors; civil society; and international institutions which share the EITI objective. Adhering to the EITI involves the full publication and verification of payments by companies and revenues to government from the oil, gas, and mining sectors.¹
2. **The key task of the EITI is to publish independent reports on resource revenues.**² Their wide dissemination and discussion create opportunities for public accountability. EITI reports compare company information on payments related to the exploitation of oil, gas, and mining with government information on revenues. If the two reconcile, the public will be assured of the integrity of official data, and confidence in the government will benefit.
3. **The EITI requires governments to strengthen transparency of their EI revenues.** First, the regular provision of quality information enables checks-and-balances institutions—within and outside government—to hold the agencies that collect EI revenues accountable. Moreover, governments also have to engage directly with civil society, broadening the public debate on EI revenues. Finally, once an EITI country report is out, there will be questions on how its data compare to budget execution data the government has submitted to parliament. The anticipation that EI revenues shown in budget execution reports will be scrutinized by the next EITI report should impose discipline. Once the public is confident that it knows the full size of EI revenues, it is likely to direct more of its attention to how they are spent. That falls outside the EITI framework but is critical to full accountability for EI revenues.
4. **The EITI is not a silver bullet for achieving good governance in resource revenue management.** There are serious potential weaknesses it does not address. Notably, the EITI report will not detect whether companies—aided by weak auditing by the government or perhaps even collusive government officials—do not pay what they are supposed to under the contracts. Nor will the EITI uncover whether EI contracts and fiscal regime were poorly designed—perhaps fraudulently so—and as a result do not produce optimal revenue flow for the country. More generally, the EITI does not address the transparency of a broader set of arrangements relevant to the prudent management of resource revenues such as depletion rates, policies that ensure fiscal sustainability, the design of taxes and contracts that are efficient, competitive licensing procedures, and optimal asset management.

¹ The EITI preserves the confidentiality of company payments and contracts.

² Since the EITI's launch in 2002, 35 countries have produced EITI reports.

Appendix II. Santiago Principles

1. **The Santiago Principles are a set of 24 codes for Sovereign Wealth Fund (SWF) operations.** Proposed in 2008 through a joint effort between the IMF and the international working group of SWFs, the principles are voluntary and aim to promote global financial stability and free cross-border capital and investment flows; to ensure adequate operational controls and risk management; to ensure compliance with applicable regulatory and disclosure requirements in host countries, and to guarantee economic and financial risk and return-related investments. So far 19 nations have signed on to the principles.¹

2. **The principles are divided into three distinct blocks:**

- The first block requests SWFs to disclose their legal framework and define and disclose their policy purpose. SWFs also are asked to publicly disclose their funding and withdrawal arrangements.
- **The second block covers SWFs' institutional frameworks and governance structures.** Specifically, they stipulate that each SWF should have a sound governance framework that clearly and effectively divides roles and responsibilities among its constituents. The SWF owner's influence should be limited to setting the fund's objectives, appointing the members of the governing bodies, and overseeing the SWF's operations. The governing bodies should have a clear mandate to set the strategy and policies aimed at achieving the SWF's objectives and should carry ultimate responsibility for the fund's performance. The operational management should be tasked with implementing the strategies set by the owner and the governing bodies independently and in accordance with clearly defined responsibilities.
- **The third block requests that SWFs employ appropriate investment and risk management frameworks.** It asks funds to disclose their investment policies, including information about investment themes, investment objectives and horizons, and strategic asset allocation. They should disclose investment decisions that are subject to non-economic and non-financial considerations and whether they execute ownership rights to protect the financial value of investments. The SWF should have a framework that identifies, assesses, and manages the risks of its operation and measures to track investment performance employing relative and/or absolute benchmarks.

¹ Australia, Azerbaijan, Bahrain, Botswana, Canada, Chile, China, Equatorial Guinea, Iran, Ireland, Korea, Kuwait, Libya, Mexico, New Zealand, Norway, Qatar, Russia, Singapore, Timor-Leste, Trinidad and Tobago, United Arab Emirates, and the United States.

Appendix III. Elements of Fiscal Frameworks in Selected Resource-Intensive Countries

Country	Framework	Resource Fund	Description
Azerbaijan	PIH	R	A non-oil balance guideline (2004) consistent with constant real consumption out of oil wealth. Never observed. More recently reliance on ad-hoc balanced budget oil price. Complemented by state oil fund.
Chile	Non-PIH	F	Structural balance guideline (institutionalized in 2006 fiscal responsibility law). Adjustment by long-term price of copper and molybdenum (10-year forecast) as determined by an independent committee. Targets have been changed over time. Supported by two funds (stabilization and savings).
Equatorial Guinea	Non-PIH	R	Current expenditures should be limited to non-oil revenue. CEMAC convergence criteria: include various fiscal targets (e.g., a non-oil balance target). It has a fund for future generations.
Mongolia	Non-PIH	R	A ceiling on the structural deficit with structural mineral revenues estimated using a 16-year moving average of mineral prices. Combined with a ceiling on expenditure growth defined by the non-mineral GDP growth rate (useful when structural revenue is growing fast). The structural balance target can be changed every four years. Flows to a stability fund linked to difference between actual and structural revenues.
Nigeria	Non-PIH	R	3 percent of GDP deficit ceiling for federal govt. computed at budget oil price (not strictly followed). Budget oil price set every year in political negotiations, including with sub-national governments. Excess crude account receives "windfall" revenues; ad-hoc withdrawals.
Norway	PIH	F	"Bird-in-hand" fiscal guideline: the cyclically adjusted non-oil central government deficit as 4 percent (the expected long-run real rate of return) of the SWF assets. Guidelines are flexible: temporary deviations permitted over business cycle or if large changes in SWF value.
Russia	PIH	R	Annual budgets underpinned by rolling three-year medium-term fiscal frameworks. Two oil funds (stabilization and savings).
Timor-Leste	PIH	F	Fiscal guideline based on PIH framework (constant in real terms). Non-oil balance set in line with estimated sustainable income (ESI), which is calculated annually as 3 percent of the sum of the petroleum fund balance and the present value of expected future petroleum receipts. Deficits can exceed the ESI if properly justified and approved by Parliament. More recently, government has scaled up public investment so that total spending amounts to more than twice the level of the ESI.

Note: Resource funds can be an account or a statutory legal entity. R = contingent (i.e., linked to threshold values) or revenue-share (i.e., flows in proportion to total revenue) funds. F = flexible (i.e., financing, linked to the overall fiscal position) funds.

Source: Baunsgaard, Villafuerte, Poplawski-Ribeiro, and Richmond (2012). "Fiscal Frameworks for Resource Rich Developing Countries", IMF Staff Discussion Note 12/04.

PRICE COMPETITIVENESS IN ALGERIA¹

A. Introduction

1. **Improving Algeria's competitiveness is critical for developing a strong nonhydrocarbon sector and decreasing the economy's vulnerability to fluctuating commodity prices.** Despite efforts to diversify, Algeria's economy remains heavily reliant on the hydrocarbon sector. In 2012, hydrocarbons accounted for 65 percent of budget revenues, 34 percent of GDP, and 98 percent of exports. Although Algeria has succeeded in maintaining growth and stability by effectively managing its natural resource endowment, the dominant role of the hydrocarbon sector has left the economy exposed to terms of trade shocks and has failed to generate enough jobs to address high levels of unemployment. A competitive, private sector-led nonhydrocarbon sector is therefore essential for creating new sources of growth and jobs.
2. **Reforms to enhance competitiveness would lead to higher levels of investment and faster growth.** Since 2000, real GDP growth in Algeria has averaged 3.7 percent—well below the average for oil exporters and emerging markets. Growth has been driven mostly by the accumulation of factors of production, especially labor, while total factor productivity growth (TFP) has been negligible. Staff simulations suggest that Algeria's growth could have been as high as 6 percent per year if capital accumulation and TFP growth had been in line with international averages.² Reforms aimed at creating a more open and competitive business environment would encourage private investment and support productivity gains.
3. **Lackluster investment levels are due not to inadequate savings but rather to a poor investment climate.** Algeria has recorded consecutive current account surpluses since 1998, reflecting ample savings relative to investment levels. Over the past decade, national savings have averaged nearly 50 percent of GDP per year. At end-2012, gross official reserves amounted to nearly three years of imports of goods and services, while savings in the oil stabilization fund represented 35 percent of GDP. Physical capital accumulation, however, has lagged. Although physical capital accumulation accelerated in the 2000s, it remained significantly below international averages.
4. **Algeria has traditionally ranked low in survey-based measures of competitiveness and the investment climate.**³ In the World Economic Forum's *Global Competitiveness Report 2013–2014*, Algeria ranked 100 out of 148 economies. Since the first report was issued in 2007, Algeria has fallen from the 63rd to the 68th percentile among all countries covered. In the 2014 *Doing Business* rankings, compiled by the World Bank, Algeria placed 153rd out of 189

¹ Prepared by A. Jewell (MCD).

² See "Algeria: Selected Issues Paper," IMF Country Report No. 13/48.

³ The survey-based reports noted here derive their results in part from price indicators, some of which are cited in this paper.

economies, slightly worse than the previous year. The Heritage Foundation's 2013 *Index of Economic Freedom* ranked Algeria 145th worldwide, and 14th out of 15 in the MENA region, with a score of 49.6 out of 100—the country's lowest score since the index's inception in 1995. Algeria's poor marks in these surveys reflect a number of factors, including the high cost of doing business (the focus of this paper), excessive government regulation, corruption, underdeveloped financial markets, and inefficient goods and labor markets.

5. **This paper will assess Algeria's competitiveness by looking at a variety of price indicators that affect the country's export performance and ability to attract foreign investment.** Section B looks at the evolution of Algeria's real effective exchange rate and the performance of nonhydrocarbon exports. Section C examines three basic costs to businesses: labor costs, start-up costs, and taxes. Section D considers the cost of key infrastructure services: energy, information and communication technology (ICT) services, and transportation. Section E concludes and offers policy recommendations.

B. Real Effective Exchange Rate and Nonhydrocarbon Exports

6. **The net depreciation of Algeria's real effective exchange rate (REER) over the past decade has implied some gains in competitiveness compared to the country's trading partners.**⁴ The REER depreciated 21 percent from 2001–07, in tandem with a depreciation of the nominal effective exchange rate. Since 2007, the REER has been on a modest upward trend, in contrast to a downward trend in neighboring Morocco and Tunisia. In 2012, a spike in inflation fueled by expansionary fiscal policy led to a 4.5 percent appreciation of the REER, raising Dutch Disease concerns. Staff estimates that the dinar is currently somewhat on the strong side compared to its equilibrium value.⁵

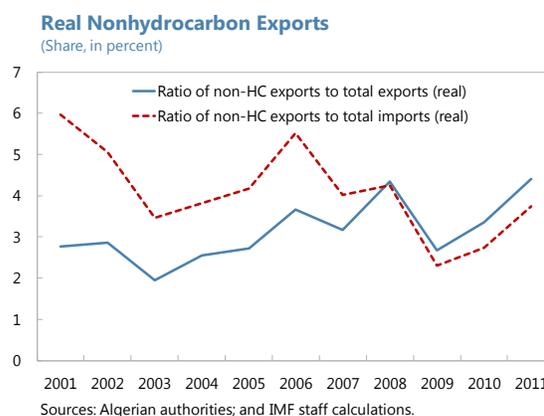
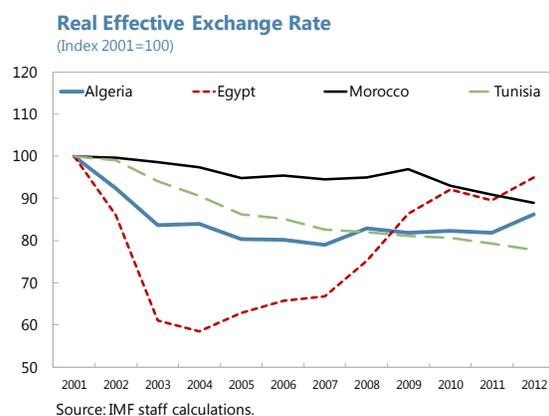
7. **Despite the increase in competitiveness stemming from the real depreciation of the dinar over the past decade, nonhydrocarbon exports remain marginal.** From 2001 to 2011, the ratio of nonhydrocarbon exports to total exports, in real terms, increased from 2.8 percent to just 4.4 percent. As a share of real imports, real nonhydrocarbon exports fell from 6.0 percent to 3.7 percent. Moreover, Algeria's exports have become less diversified, as indicated by a decline in the number of product types exported and by an increase in the Herfindahl index.⁶ That the

⁴ The real effective exchange rate is a frequently used indicator of international competitiveness that measures relative prices and/or costs, expressed in a common currency. The REER referenced here is CPI-based: it is computed as a trade-weighted geometric average of the level of consumer prices in Algeria relative to its trading partners.

⁵ The equilibrium REER is calculated as a function of (1) government spending as a percent of GDP, (2) Algeria's terms of trade, and (3) output per worker relative to Algeria's trading partners. In 2012, a sharp increase in government spending relative to GDP led to an increase in the estimated equilibrium REER.

⁶ According to UN COMTRADE data, the number of different types of products exported by Algeria fell from 1,143 in 2002 to 789 in 2012. The Herfindahl index is another measure of export diversity, ranging from 0 (many types of exports with small market shares) to 1 (a single type of export with complete market share). Algeria's Herfindahl index increased from 0.24 in 2002 to 0.28 in 2012, indicating a decrease in diversity.

nonhydrocarbon export sector remains small in size and has failed to diversify, despite the government's stated intention to decrease the economy's reliance on hydrocarbons, suggests that factors related to competitiveness may play a role.



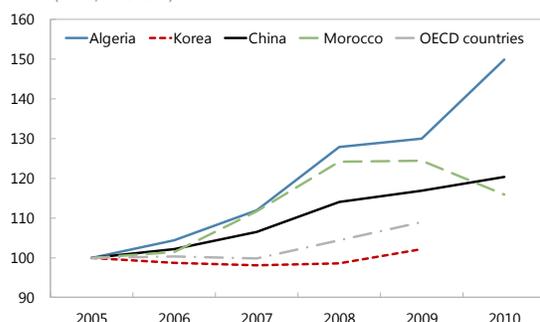
8. **Although the REER is widely used as a measure of competitiveness, the results presented here should be interpreted with caution.** For Algeria and most other countries, the IMF constructs REER series based on consumer price indexes (CPIs). While CPI-based REERs are quite common, it is not necessarily straightforward to derive conclusions on international competitiveness solely on the basis of the evolution of a CPI-based REER. The remainder of this paper will go beyond the REER and explore other indicators of price competitiveness.

C. Labor Costs, Business Start-up Costs, and Taxes

9. **Unit labor costs have increased sharply in Algeria, as growth in wages has surpassed productivity gains.⁷** Over the period 2005–10, Algerian unit labor costs increased by 50 percent, exceeding gains in OECD countries (on average) and in selected emerging markets. Real wages increased by nearly 50 percent over this period while productivity increased by 18 percent. Although wage data beyond 2010 are not yet available, the divergence between real wage and productivity growth is likely to have continued as a result of successive increases in civil servant wages and an increase in the minimum wage.

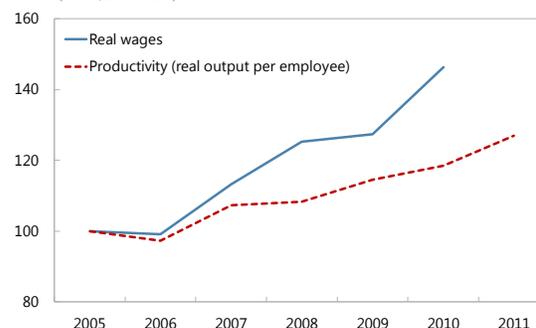
⁷ Data limitations prevent a direct comparison of unit labor costs in Algeria to costs in other countries. Instead, this analysis compares the *growth* in unit labor costs since 2005, with the caveat that the construction of the unit labor cost index differs across comparator countries.

Unit Labor Costs
(Index, 2005=100)



Sources: Algerian authorities, OECD; and IMF staff calculations.

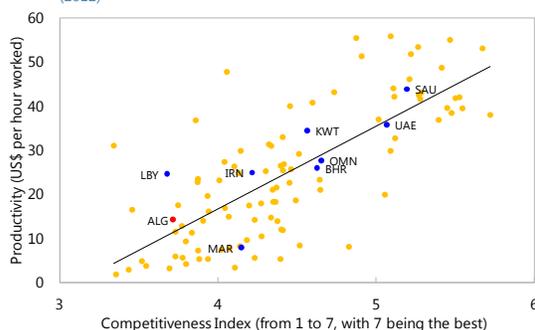
Wages vs. Productivity
(Index, 2005=100)



Sources: Algerian authorities; and IMF staff calculations.

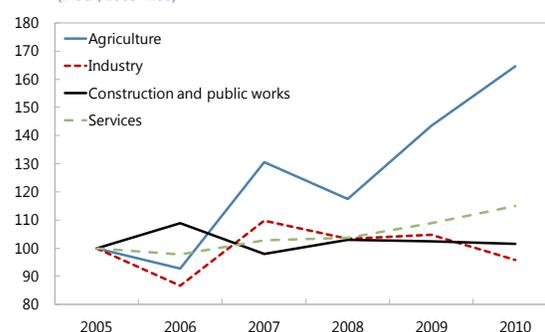
10. **Productivity in Algeria is low by regional and global standards.** In an analysis of 104 countries, Algeria's productivity (i.e., output per capita) ranked in the bottom third and was the lowest among MENA oil exporters.⁸ Low productivity levels coincided with low overall competitiveness, as assessed by the World Economic Forum. Productivity gains in the Algerian economy have been limited mainly to the agricultural sector and, to a lesser extent, to the service sector. The *Global Competitiveness Report 2013–2014* ranked Algeria 140th out of 148 countries in the category "pay and productivity" and next to last worldwide in overall labor market efficiency.⁹

Productivity vs. Competitiveness
(2012)



Sources: World Economic Forum; and IMF staff calculations.

Productivity by Sector
(Index, 2005=100)



Sources: Algerian authorities; and IMF staff calculations.

11. **To address rapidly increasing unit labor costs, the government should avoid further wage increases absent a commensurate increase in productivity.** Recent public sector wage increases and back payments resulted in a significant increase in compensation in real terms. Further increases in public sector wages would reduce incentives for seeking private sector jobs,¹⁰

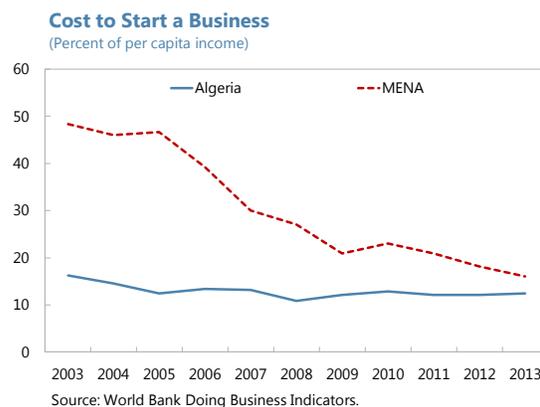
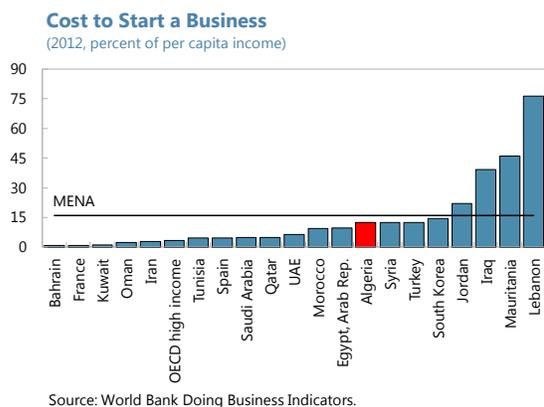
⁸ IMF 2013.

⁹ The pay and productivity ranking is based on the question, "In your country, to what extent is pay related to worker productivity?" The labor market efficiency category comprises pay and productivity as well as other labor market indicators.

¹⁰ The average monthly salary in the public sector is 45,500 dinars compared to 25,700 dinars in the private sector.

exacerbate skills mismatches (by encouraging skills acquisition geared to the public sector), and contribute to a deterioration of the nonhydrocarbon fiscal deficit. Algeria should also avoid minimum wage increases that outpace productivity gains.¹¹ Increasing productivity will require more competition and more flexible labor markets, as well as investments in infrastructure, education, training, and health.

12. **The cost of starting a business in Algeria is higher than in most countries in the region and has not improved over time.** The procedures necessary to legally start and operate a company in Algeria cost an estimated \$541. As a percent of income per capita, this represents more than double the average in OECD countries and is higher than the median in the region (though lower than the MENA average, which is skewed by extremely high costs in a few countries). Also noteworthy is the fact that the cost of starting a business in Algeria (as a percent of per capita income) has remained flat over the past decade, whereas it has been falling across the region, and the number of procedures required to start a business in Algeria (14) has not changed since the World Bank began tracking this indicator in 2003. In addition to start-up costs, businesses face other high costs. Dealing with construction permits requires 19 procedures, takes 241 days, and costs 60.1 percent of income, placing Algeria 147th out of 189 economies. Registering property involves 10 procedures, takes 63 days, and costs 7.1 percent of the property value, leaving Algeria in 176th place.

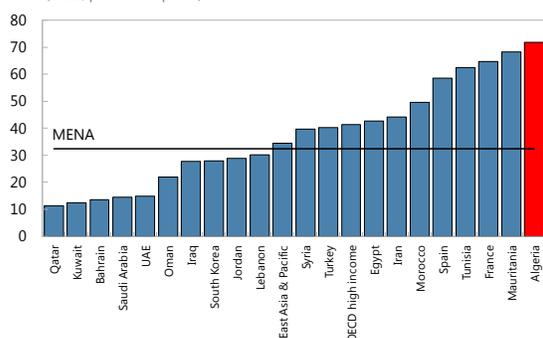


13. **Taxes on businesses are exceptionally high.** Businesses in Algeria pay four types of taxes: (1) a tax on professional activity (*taxe sur l'activité professionnelle*, or TAP), equal to 2 percent of turnover; (2) social security contributions, equal to 26 percent of gross salaries; (3) a corporate income tax, equal to 19 percent of taxable profit; and (4) an apprenticeship tax, equal to 1 percent of net salaries. Together, these taxes amount to 72 percent of profit—the highest rate in the region, more than double the MENA average, and higher than the total tax rates in OECD countries and in East Asia and Pacific. The TAP and social security contributions constitute

¹¹ Adjustments to Algeria's minimum wage are negotiated by a tripartite group comprising representatives from government, business, and labor. The minimum wage was last raised in January 2012, from 15,000 to 18,000 dinars (US\$219) per month.

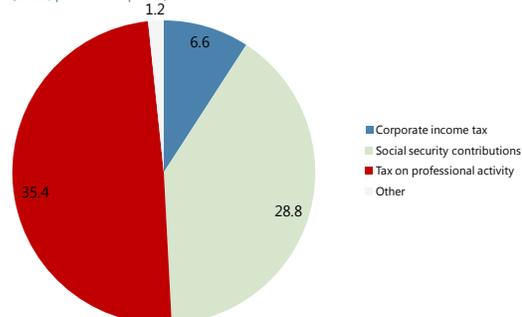
nearly 90 percent of the total tax burden on businesses operating in Algeria. Notwithstanding a reduction in the corporate income tax rate in 2009 (from 25 percent to 19 percent for certain activities), Algeria's total tax rate as a percent of profits is little changed since the World Bank began tracking this indicator in 2008.

Total Tax Rate on Businesses
(2012, percent of profit)



Source: World Bank Doing Business Indicators.

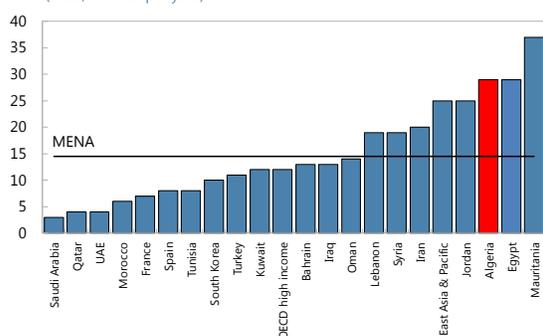
Total Tax Rate in Algeria, by Category
(2012, percent of profit)



Source: World Bank Doing Business Indicators.

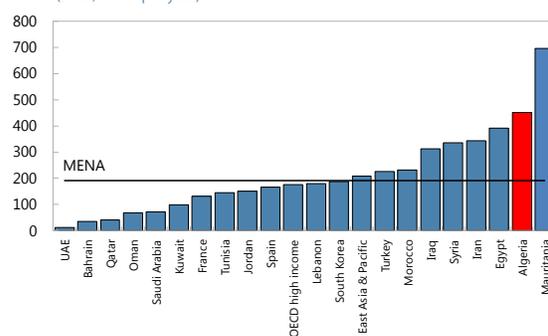
14. **Heavy administrative costs add to the tax burden on businesses.** On average, companies in Algeria make 29 tax payments per year and spend 451 hours a year filing, preparing, and paying taxes. Both of these figures are well above the respective MENA averages. Taking into account the tax rate as well as the administrative burden of paying taxes, *Doing Business* ranked Algeria 174th in the category of paying taxes.

Tax Payments
(2012, number per year)



Source: World Bank Doing Business Indicators.

Time to File Taxes
(2012, hours per year)



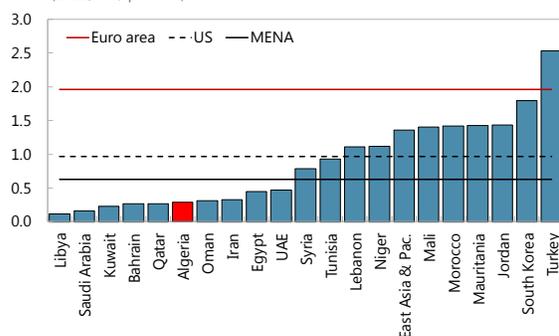
Source: World Bank Doing Business Indicators.

15. **To improve the business climate, the government needs to lower the cost of doing business.** To reduce start-up costs, the government should streamline procedures for starting a business and improve the efficiency of one-stop shops. The government should also reform the TAP business tax. Because revenues from the TAP are critical for the financing of local governments, alternative sources of revenues would need to be found. Reform options include broadening the tax base (for example, by rationalizing tax exemptions), imposing excise taxes on high-rent sectors, expanding property taxes, and strengthening tax collection.

D. Cost of Energy, ICT Services, and Transportation

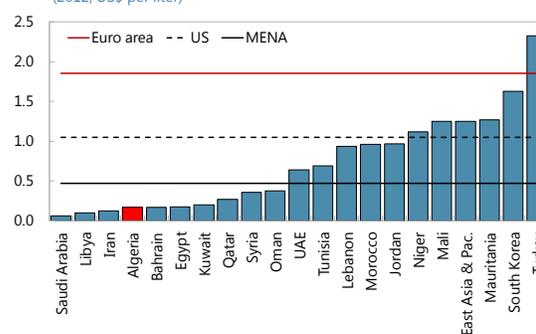
16. **The domestic prices of hydrocarbon products are very low by both regional and global standards.** As part of a policy to share the country's natural resource wealth, the Algerian government has kept the prices of hydrocarbon products at levels below international market prices. This policy of implicit subsidies has resulted in some of the lowest prices for hydrocarbon products in the world. Gasoline prices in Algeria are below the MENA average and much lower than the prices found in Europe and the United States. The price of diesel fuel is lower than the subsidized prices found in other oil-exporting countries such as Bahrain, Kuwait, and the United Arab Emirates. Algerian natural gas, which fuels 98 percent of power and water generation, is the cheapest in the region after Libya. Retail prices have been frozen since 2005 and are now below operational costs.

Gasoline Prices
(2012, US\$ per liter)



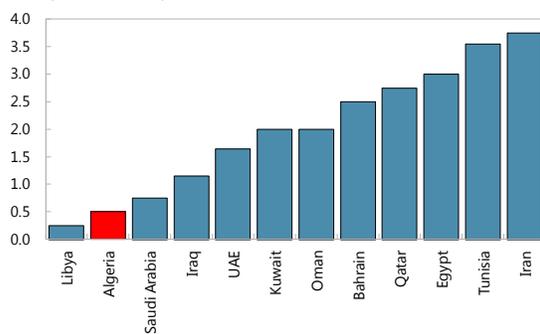
Source: World Development Indicators.

Diesel Fuel Prices
(2012, US\$ per liter)



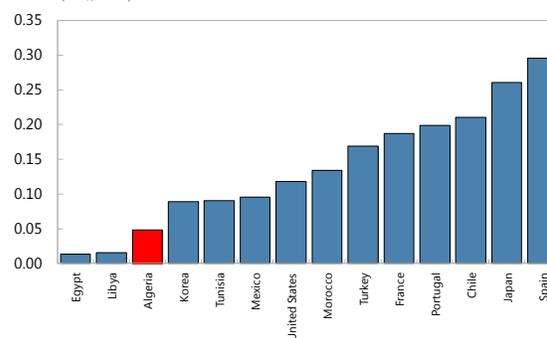
Source: World Development Indicators.

Wholesale Gas Prices
(2013, US\$/Mbtu)



Source: APICORP Research.

Electricity Tariffs
(US\$/kWh)



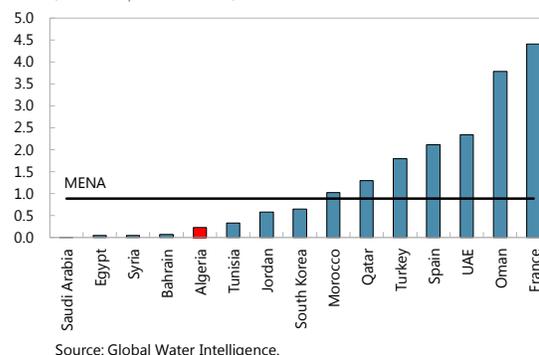
Sources: Association of Power Utilities of Africa; and International Energy Association.

17. **Electricity prices are also very low, but getting access to electricity is costly.** Almost all of Algeria's electricity generation comes from natural gas. Like natural gas prices, electricity prices have been frozen since 2005 and are much lower than in most other emerging and advanced economies for which data are available. Low tariffs, however, mask other costs. Obtaining an electricity connection is time-consuming and expensive, involving five procedures that take 180 days and cost the equivalent of 1,563 percent of per capita GDP. Taking these factors together, *Doing Business* ranked Algeria 148th in terms of the ease of getting electricity.

Moreover, Sonelgaz, the public utility company, has seen its debt rescheduled on multiple occasions by the government as a consequence of supplying services at below-market prices.

18. **Water prices have also been frozen at very low levels.** By decree, water tariffs in Algeria are supposed to evolve in line with costs of production and distribution. Nevertheless, water prices have not changed since 2005, and are currently below the MENA average and well below the price of water in most advanced economies. Like hydrocarbon products, the water sector receives significant public subsidies.

Water and Waste Water Costs
(2011, US\$ per cubic meter)



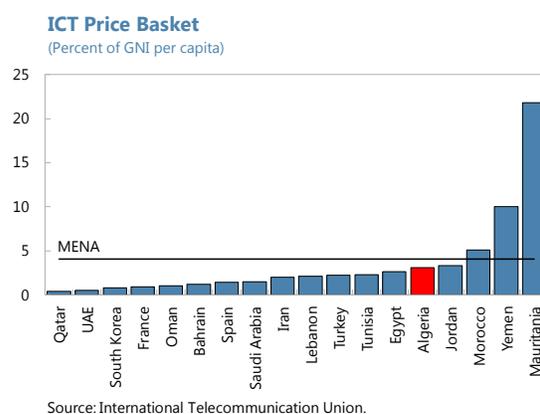
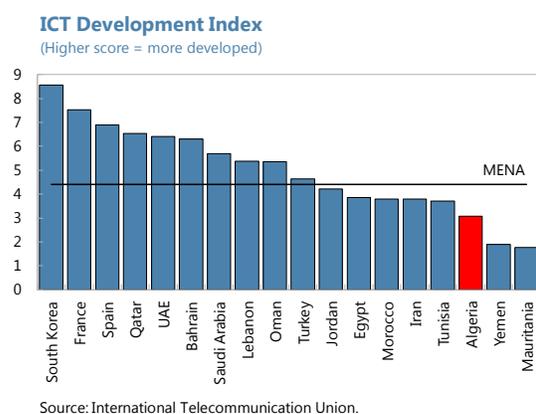
19. **The advantages of cheap energy for private business must be weighed against the hidden costs.** These include:

- **Large fiscal costs.** Implicit subsidies on hydrocarbon products crowd out spending on infrastructure, education, health care, and other essential public goods that impact costs and productivity. Staff estimates that implicit subsidies on diesel, gasoline, liquefied petroleum gas and natural gas (final consumption), and natural gas (intermediate consumption) amounted to US\$22.2 billion in 2012, or 10.7 percent of GDP. Implicit subsidies also give rise to episodic and costly bailouts of public companies that supply services at below-market prices.
- **Increased domestic energy consumption.** Since prices were frozen in 2005, domestic electricity consumption has grown at an average annual rate of 6 percent, including a 20 percent increase in 2010. To keep up with demand, the government has brought additional capacity on line and at times has imposed rationing. Domestic consumption of petroleum and natural gas products has nearly doubled over the past decade while production has declined since 2005, squeezing exports and putting pressure on budget revenue. Algeria's overall energy intensity (measured in kilograms of oil equivalent per capita) is on par with that of middle-income countries and has been growing at a rate of 2.8 percent over the last decade.¹²
- **Smuggling.** Large price differentials with neighboring countries create incentives for smuggling. The price of gasoline in Algeria is three times less than in Tunisia and nearly five times less than in Mali, Mauritania, and Morocco. The authorities estimate that 1.5 billion liters of gasoline and diesel fuel were smuggled into neighboring countries in 2012, equal to a quarter of domestic production.

20. **Algeria's ICT sector is relatively underdeveloped and costly by regional standards.** The International Telecommunication Union (ITU) ranked Algeria 106th out of 157 economies in

¹² Source: World Bank, *World Development Indicators*.

its 2012 ICT Development Index.¹³ Within the MENA region, Algeria's ICT development score of 3.07 is one of the lowest. In terms of costs, Algeria ranked 84th out of 161 economies according to the ITU's ICT Price Basket, which measures the consumer prices of a basket of ICT services as a percent of per capita income.¹⁴ Within the MENA region, Algeria's ICT costs are among the highest. Privatization of the telecommunications sector began in 2000. The sector is currently dominated by three companies: Algeria Telecom, a state-owned entity, and two private operators, Orascom Telecom Algeria and Wataniya Telecom Algeria.



21. **Notwithstanding Algeria's advantageous location on the Mediterranean Sea, export and import costs are high.** The cost to export a standard container in Algeria is \$1,270—one of the highest costs in the region (though only slightly higher than the MENA average), and much higher than the averages in OECD countries and across East Asia and Pacific.¹⁵ The bulk of this cost relates to the preparation of documents, inland transportation, and port and terminal handling fees. The cost of preparing documents, at \$460, is more than three times that in Morocco and eight times that in South Korea. The number of documents that must be prepared—eight—is two more than the MENA average and double the average in OECD countries. With respect to imports, the cost to import a standard container is \$1,330, higher than in most MENA countries (but in line with the MENA average), and well above the averages in East Asia and Pacific and in OECD countries. Similar to the case with exports, most of the cost of importing relates to the preparation of documents, inland transportation, and port and terminal

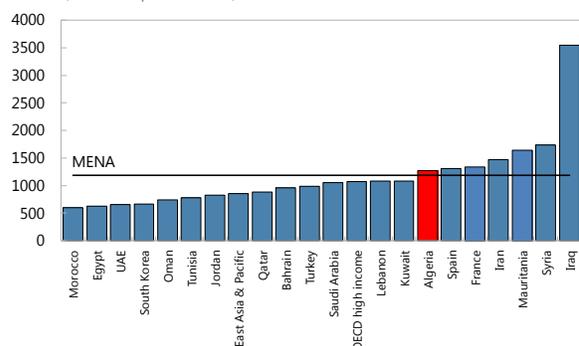
¹³ The ICT Development Index comprises 11 indicators: (1) fixed-telephone subscriptions per 100 inhabitants, (2) mobile-cellular telephone subscriptions per 100 inhabitants, (3) international internet bandwidth (bits/s) per internet user, (4) percentage of households with a computer, (5) percentage of households with internet access, (6) percentage of individuals using the internet, (7) fixed (wired)-broadband subscriptions per 100 inhabitants, (8) wireless-broadband subscriptions per 100 inhabitants, (9) adult literacy rate, (10) secondary gross enrollment ratio, and (11) tertiary gross enrollment ratio.

¹⁴ The ICT Price Basket is a composite basket that includes three sub-baskets: (1) fixed telephone, (2) mobile cellular, and (3) fixed broadband. The value of the overall basket is calculated as the sum of the price of each sub-basket (in U.S. dollars) as a percent of a country's monthly GNI per capita, divided by three.

¹⁵ The figure captures the cost necessary to complete all official procedures for exporting the goods. The cost of sea transport is not included. The same methodology is used for calculating the cost to import.

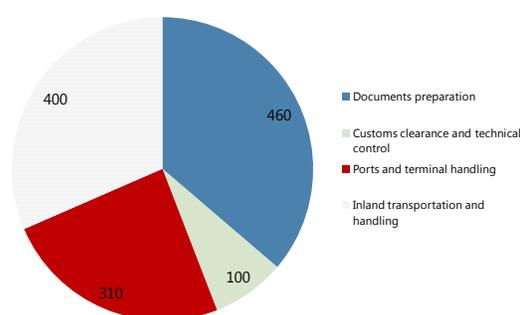
handling fees. A total of nine documents must be completed—one more than the MENA average and more than twice the average in OECD countries. Port and terminal handling fees, at \$400, are more than twice those in the United Arab Emirates and four times those in South Korea. Despite the competitive disadvantage that these administrative costs place on Algeria, the government has not implemented any reforms in recent years to reduce these costs, according to the World Bank. Indeed, export and import costs have increased slightly since 2007.

Cost to Export
(2013, US\$ per container)



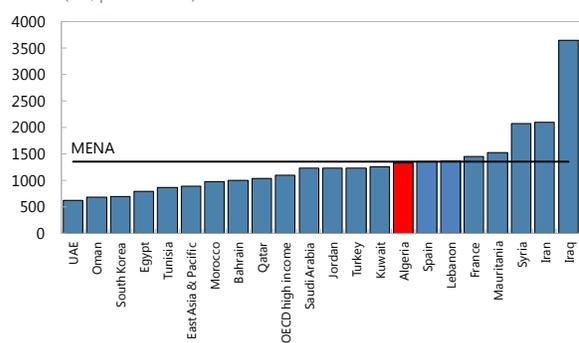
Source: World Bank Doing Business Indicators.

Cost to Export in Algeria, by Category
(2013, US\$ per container)



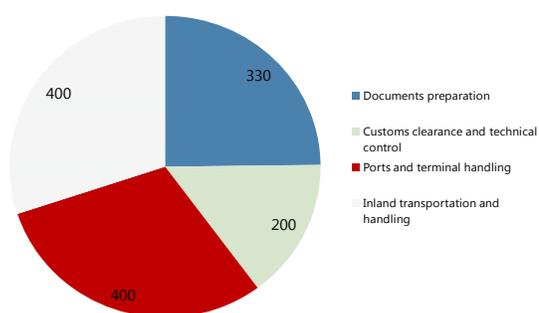
Source: World Bank Doing Business Indicators.

Cost to Import
(US\$ per container)



Source: World Bank Doing Business

Cost to Import in Algeria, by Category
(2013, US\$ per container)



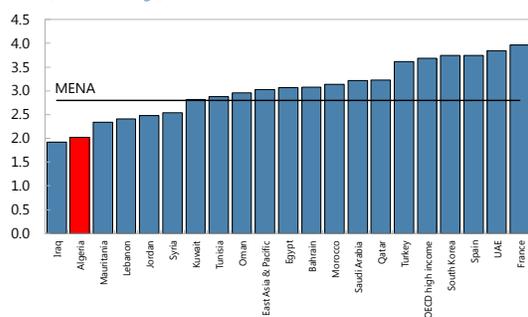
Source: World Bank Doing Business.

22. **To reduce export and import costs, the government should streamline administrative procedures and take steps to reduce port and terminal handling fees.** Egypt offers a useful example. In 2006, the cost to export a standard container of goods was \$1,014—comparable to the cost in Algeria today. Thanks to a series of reforms implemented by the Egyptian government, including creating one-stop shops for import and export, streamlining regulations, and reorganizing customs, the cost to export today stands at \$625, one of the most competitive levels in the region.

23. **Other indicators point to shortcomings in Algeria's transportation infrastructure, adding to costs, stunting productivity, and further weighing on competitiveness.** Algeria has the second-worst trade and transport-related infrastructure in the MENA region, according to an index developed by the World Bank. The country has just 4.8 kilometers of road per 100 square kilometers of land area, less than half the road density in Tunisia and Morocco, and

far less than in more advanced countries.¹⁶ In terms of air transportation, Algeria is one of the few markets in the world with almost no presence of low-cost carriers. Indeed, low-cost carriers account for less than 1 percent of scheduled seats flown to and from Algeria.¹⁷ By contrast, in Morocco, low-cost carriers have a 35 percent market share on international routes. Together, these factors could explain in part why tourism plays a relatively minor role in Algeria compared to other countries in the region.

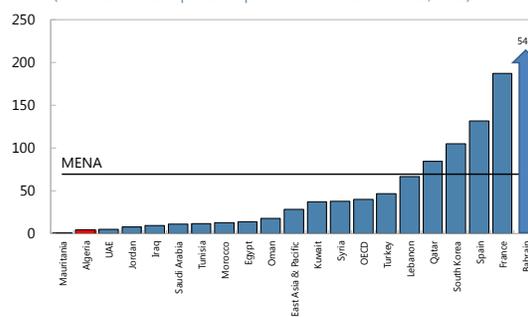
Quality of Trade and Transport-Related Infrastructure
(1=low to 5=high)



Source: World Development Indicators.

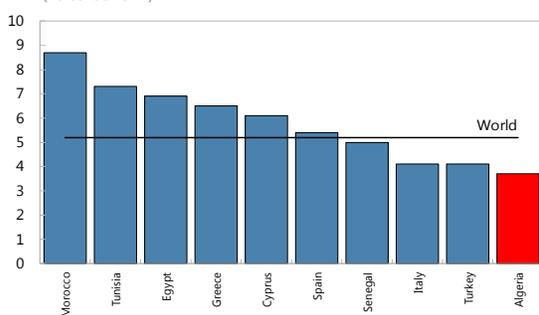
Road Density

(Kilometers of road per 100 square kilometers of land area, 2010)



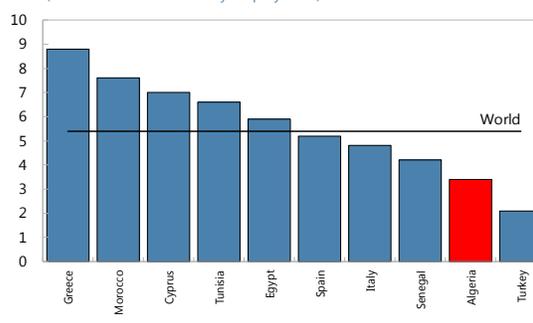
Source: World Development Indicators.

Travel and Tourism Receipts
(Percent of GDP)



Source: World Travel and Tourism Council.

Travel and Tourism's Contribution to Employment
(Percent of whole economy employment)



Source: World Travel and Tourism Council.

E. Conclusions and Policy Recommendations

24. **The range of indicators presented above paint a mostly unfavorable picture of price competitiveness in Algeria.** The price of basic energy inputs—gasoline, diesel fuel, natural gas, electricity, water—are very low by both regional and global standards, providing a distinct

¹⁶ It should be noted, however, that more than four-fifths of Algeria's surface area is desert.

¹⁷ Source: CAPA Centre for Aviation.

advantage to businesses and potential investors, but at a high cost. Meanwhile, unit labor costs are rising rapidly as wage increases outpace productivity gains, starting a business is time-consuming and expensive, taxes and other administrative costs are the most onerous in the MENA region, the ICT sector is relatively underdeveloped and costly, and transportation costs are elevated.

25. **Algeria will need to take measures to enhance its price competitiveness.** Reforms in the following areas should be pursued:

- To enhance overall external competitiveness and support growth in the nonhydrocarbon sector, the authorities should continue to target a real effective exchange rate that is consistent with economic fundamentals.
- To address the high cost of energy subsidies, the government should gradually roll back these subsidies and allow energy prices to move closer to market prices. This would provide a strong incentive to modernize and reduce energy intensity, and could be accompanied by the measures indicated below to reduce other costs of doing business.
- To address rising unit labor costs, the government should anchor further wage increases—including minimum wage increases—to improvements in productivity.
- To reduce the cost of starting and operating a business, the government should streamline administrative procedures, improve the efficiency of one-stop shops, and reform the TAP business tax. The TAP should be replaced by excise taxes, particularly in high-rent sectors.
- To accelerate development and reduce costs in the ICT sector, the government needs to attract more foreign investment, generate more competition, and increase public awareness.
- To reduce export and import costs will require reforms to lower port and terminal fees and streamline administrative procedures, including by creating one-stop shops.

26. **Beyond these specific measures, Algeria should target broader reforms that attract foreign investment and foster private sector development.** Foreign direct investment (FDI) levels in Algeria are among the lowest in the region, contributing to an underdeveloped private sector that is performing far below its potential. Deterrents to FDI include tight foreign exchange controls, corruption, and cumbersome government regulations, including the requirement of at least 51 percent Algerian ownership of foreign investments. Reforms aimed at enticing more foreign investors would help jumpstart the private sector. A more dynamic private sector would create new jobs and allow the government to channel more resources to investments in infrastructure, education, training, and health, which in turn would strengthen the country's competitiveness.

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