III. Oil price shocks and military expenditure

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The relationship between the price of oil and macroeconomic performance is the subject of much debate.[1] The dynamics of this relationship are relevant to military spending as such spending is partially correlated to economic well-being, which in oil exporting countries is driven by the price of oil.[2] Comparisons are often made between oil price shocks and military spending but due to the brevity of historical oil price slumps (e.g. 1998–99 and 2008–2009) and various other factors, it has been difficult to identify a causal relationship. Nonetheless, oil revenues are thought to play a role in determining the level of military spending in oil exporting economies, as highlighted in many African, South American and Middle Eastern countries where the rise in military spending over the past 10 years is correlated with high oil prices.

The effects of oil price shocks on macroeconomic indicators and military expenditure

Questions were raised in *SIPRI Yearbook 2016* about whether the growth in military expenditure in many oil revenue-dependent countries was sustainable, given the sharp fall in oil prices that started in late 2014.[3] A major drop in the price of oil will have wide-ranging macroeconomic impacts and, depending on a country's economic characteristics (e.g. level of oil dependence or fiscal position), it will affect, among other things, the country's real gross domestic product (GDP), current account balance, international reserves, fiscal balance and government debt.[4] The combination of these factors often results in national budget cuts, including military expenditure.[5]

To understand the oil price–military spending relationship, a brief description of how oil prices may affect economic activity, which in turn influences military spending, is needed. Oil dependence based on 'oil rents'—the difference between the value of crude oil production at world prices and total costs of production—as a share of GDP can be categorized into three

[1] See e.g. Husain, A. M. et al., 'Global implications of low oil prices', International Monetary Fund (IMF) Staff Discussion Note, SDN/15/15, Jul. 2015.

[2] Jarzabek, J., 'G.C.C. military spending in era of low oil prices', Middle East Institute Policy Focus 2016–19, Aug. 2016.

[3] Perlo-Freeman, S. et al., 'Military expenditure', *SIPRI Yearbook 2016*, pp. 496–97.

[4] See e.g. Husain et al. (note 1).

[5] Kitous, A. et al., *Impact of Low Oil Prices on Oil Exporting Countries*, European Commission, Joint Research Centre Science for Policy Report (Publications Office of the European Union: Luxembourg, 2016).

groups: high (over 30 per cent of GDP), moderate (10–30 per cent) and low (below 10 per cent) dependence.[6]

The initial impact of a negative oil price shock is a fall in export revenues, which dampens GDP growth. This reduces government revenue, which directly leads to limitations on government spending. Oil exporting countries that are economically more diverse or less oil export-dependent (e.g. Canada, Malaysia or Norway) will potentially be less affected by oil price slumps.

For oil exporters, a typical response to a negative oil price shock is the implementation of a fiscal stimulus (i.e. expansionary) policy to boost total output and maintain GDP growth. A fiscal stimulus package requires the government to either increase public spending or cut taxes, often at the cost of running fiscal deficits and resulting in high government debt as a proportion of GDP.[7]

Algeria and Norway are examples of countries that have managed to mitigate the effects of the oil price slump through a fiscal stimulus, despite having different levels of oil dependence. Such expansionary policies have, in the short term, helped to maintain domestic expenditure at the level it was before the oil price shock, which in turn has meant no reduction in the government budget and thus no evidence of a drop in military spending. These measures were possible due to improvements in the 'fiscal space' of both countries, which was achieved as a direct result of the increased revenues from the oil boom.[8] However, even in countries with ample fiscal space, the sustainability of an expansionary policy can be called into question—as is the case in Algeria—due to the sharp deterioration in both the fiscal and external positions in the years following the initial oil price shock.[9] In a global setting where the oil price remains low, continuous government spending that is funded through debt or foreign reserves (because of the reduction in oil revenue) quickly becomes unsustainable and fiscal consolidation—a

[6] The World Bank World Development Indicators provide data on oil rents as a share of gross domestic product (GDP). Categories are based on average oil rent for the past 5 years. Examples of countries that fall into these categories are: Angola, Iraq, Kuwait and Saudi Arabia for high dependence; Algeria, Azerbaijan, Ecuador, Nigeria, South Sudan, the United Arab Emirates and Venezuela for moderate dependence; and Canada, Colombia, Ghana, Malaysia, Norway and Russia for low dependence. World Bank, 'World Development Indicators', <http://data.worldbank.org/data-catalog/world-development-indicators>.

[7] This situation is worsened during an oil price shock due to decreased government revenue and increased need to borrow in order to fund spending.

[8] 'Fiscal space' refers to the flexibility of a government in its spending choices, which is directly related to the financial well-being of a government (e.g. fiscal deficit as a percentage of GDP or public debt as a percentage of GDP).

[9] International Monetary Fund (IMF), 'Algeria: 2016 Article IV Consultation Report', IMF Country Report no. 16/127, 18 May 2016.

policy aimed at reducing government deficits and debt accumulation—soon becomes a reality.[10]

For oil exporting countries without this fiscal space (e.g. Angola, Ecuador, Mexico, South Sudan and Venezuela) expansionary policies are not possible, which exposes the economy to falls in government revenue and GDP.[11] The choice for these governments is thus either to cut public expenditure to offset revenue shortfalls and contain fiscal deficit or to continue at current levels of public spending and increase the public debt to GDP ratio. Angola and Ecuador chose to make substantial planned expenditure cuts starting in 2015, including in military spending.[12] For Mexico, the planned fiscal consolidation—due partly to the time lag between falling revenues and budget decisions—only started in 2016 and so public spending in 2015 remained at levels similar to those before the oil crisis began. This created an urgent need to cut public spending in 2016, especially in the 'security and defence' sector.[13] Mexico's budget for the military, in current local prices, decreased by 8.4 per cent in 2016.

A negative oil price shock affects more than just GDP growth, fiscal accounts, public debt and government expenditure, because there are often the knock-on effects of currency depreciation and rising inflation.[14] High inflation and a weak currency result in lower real purchasing power for the country, and hence a need to increase government spending to offset this loss. South Sudan and Venezuela had very high rates of inflation in 2016 (running into hundreds of per cent) and also suffered heavy depreciation in their currencies. Thus, even though military spending in South Sudan and Venezuela increased in local current prices by 76 and 158 per cent respectively in 2016, in real constant United States dollar terms this equated to a 54 and 56 per cent decrease respectively.[15] In other cases, the decrease in military spending, in constant US dollars, was due to the combination of cuts

[10] Baffes, J. et al., 'The great plunge in oil prices: causes, consequences and policy responses', World Bank Group Policy Research Note, PRN/15/01, Mar. 2015.

[11] Various 2016 International Monetary Fund (IMF) Article IV Consultation Reports (e.g. Algeria, Mexico, Norway, Venezuela). For further detail see the IMF website, <http://www.imf.org/external/country/>.

[12] Patrick, M., 'Angola cuts 2016 spending by 20%', *Wall Street Journal*, 14 Mar. 2016; and Rumney, E., 'Angola passes revised budget as falling oil prices hit economic forecast', *Public Finance International*, 17 Aug. 2016; Alvaro, M., 'Ecuador cuts fiscal budget for 2015 by 4%', *Wall Street Journal*, 5 Jan. 2015; and Andes, 'Ecuador's budget proposal for 2016 cuts investment for strategic sectors but not for social development', 31 Oct. 2015.

[13] Agencia EFE, 'Mexican gov't cuts 2016 budget by $13 bn amid slumping oil prices', 9 Sep. 2015; and Harrup, A., 'Mexican government plans more budget cuts for 2017', *Wall Street Journal*, 1 Apr. 2016.

[14] Baffes et al. (note 10).

[15] The same trend was seen in Angola, albeit to a lesser extent. Venezuela has numerous exchange rates based on the purchase of goods and services as well as a black-market exchange rate. Disilvestro, E. and Howden, D., 'Venezuela's bizarre system of exchange rates', Mises Wire, Ludwig von Mises Institute, 1 July 2016.

Table 9.6. Military expenditure in selected oil export dependent countries, 2014–16

Military expenditure, US$ m. at constant 2015 prices and exchange rate.

Country[a]	Military expenditure			Change (%)		Oil rent as share of GDP (%)
	2014	2015	2016	2014–16	2015–16	
Algeria	9 953	10 413	10 654	*7.0*	*2.3*	*16*
Angola	6 182	3 608	3 232	*–48*	*–10*	*32*
Azerbaijan	2 770	3021	1 932	*–30*	*–36*	*23*
Ecuador	2 897	2 449	2 130	*–27*	*–13*	*11*
Iran	10 067	10 589	12 383	*23*	*17*	*..*
Iraq	7 012	9 604	6 188	*–12*	*–36*	*42*
Kazakhstan	1 988	2 046	1 660	*–17*	*–19*	*12*
Kuwait	5 694	5 503	6 370	*12*	*16*	*54*
Mexico	7 464	7 740	6 893	*–8*	*–11*	*4.0*
Nigeria	2 118	2 066	2 091	*–1.3*	*1.2*	*11*
Norway	5 858	5 815	6 080	*3.8*	*4.5*	*5.7*
Russia	61 622	66 419	70 345	*14*	*5.9*	*9.0*
Saudi Arabia	82 527	87 186	61 358	*–26*	*–30*	*40*
South Sudan	1 410	1 152	525	*–63*	*–54*	*23*
Venezuela[b]	11 692	5 265	2 336	*–80*	*–56*	*14*

GDP = gross domestic product.

[a] Country selection based on data availability (budget for military spending, healthcare and education) and the heterogeneous nature of oil dependence to capture high, moderate and low oil dependence based on oil rents as a share of GDP. Oil rent as a share of GDP is based on the 5-year average between 2010 and 2015; no data was available for 2016. The World Bank World Development Indicators provide data on oil rents as a share of GDP. World Bank World Development Indicators, <http://data.worldbank.org/>.

[b] Data on oil rents as a share of GDP for Venezuela was only available for the period 2010–13.

Sources: SIPRI Military Expenditure Database, <https://www.sipri.org/databases/milex>; and World Bank World Development Indicators 2016, <http://data.worldbank.org/>.

in the military budget, rising inflation and currency devaluation. Azerbaijan and Kazakhstan, for example, cut their respective military budgets by 28 and 8.3 per cent; however, in real constant dollar terms this equated to a decrease of 36 and 19 per cent respectively (see table 9.6).

The relationship between military expenditure, conflict and oil

The effect of an oil price shock on the military spending of an oil export-dependent country in conflict is very difficult to determine, mostly due to the issue of causality between these three variables.[16] In some cases the

[16] D'Agostino, G., Dunne, J. P. and Pieroni, L., 'Military expenditure, endogeneity and economic growth', Munich Personal RePEc Archive (MPRA) Paper no. 45640 (28. Mar. 2013); and Dunne, J. P. and Perlo-Freeman, S., 'The demand for military spending in developing countries', *International Review of Applied Economics*, vol. 17, no. 1 (2010), pp. 23–48.

impact of the oil price shock on military spending seems evident, as in Saudi Arabia, in other cases, such as Iraq, it is less clear-cut. Saudi Arabia, which is engaged in conflicts in neighbouring Yemen and Syria, allocated 28 per cent of its budget to military spending in 2016. This figure, while substantial, is 12 percentage points lower than the 40 per cent of government budget allocated in 2014 before the oil crisis began. In real US dollar terms, Saudi Arabia's military spending fell by 26 per cent between 2014 and 2016, highlighting the budgetary effects of a prolonged negative oil price shock on an oil exporting country, even when it is engaged in regional conflicts.

For Iraq, it is far more difficult to disentangle whether the cuts to the government budget, and thus military spending, since 2014 were due to the ongoing armed conflict (e.g. the loss of oil fields captured by the Islamic State) or the oil price shock. Moreover, countries in the Middle East, including Iraq, generally have a poor record for budget transparency. Nonetheless, based on the information that is available, military expenditure in real US dollar terms has decreased in Iraq by 36 per cent since 2015. Whether this reduction in the military budget was caused by the 58 per cent fall in the price of oil since 2014, the loss in revenue caused by the armed conflict or both is an empirical debate that requires greater attention.

Trends in military expenditure in oil export-dependent countries, 2014–16

Overall, the impact of the oil price shock and the continued price slump could reflect a new global equilibrium of lower oil prices. Since 2014 military expenditure, in real US dollars, has decreased for the vast majority of oil exporting countries. This reflects the severity of the shock and highlights the need for sectoral reform to foster the diversification of oil exporters' economies (see table 9.6). Most countries with undiversified, oil export-dependent economies and poor fiscal buffers have seen their military spending fall since 2014. This includes countries such as Angola, Azerbaijan, Iraq, South Sudan and Venezuela, which reduced their respective military spending totals by 48, 30, 63 and 80 per cent between 2014 and 2016. A minority of oil exporting countries are better equipped economically to deal with oil price shocks (e.g. Algeria, Kuwait and Norway) and continued with their existing spending plans, and marginally increased their spending in 2016. These are countries that either have very diversified economies (e.g. Norway) or have built up strong oil reserves (e.g. Algeria and Kuwait) and have used them as a form of countercyclical policy to boost the economy. However, as mentioned above, questions have been raised as to the sustainability of such a policy, given the possibility of continued low oil prices.

Table 9.7. Spending as a share of total government budget in selected oil export-dependent countries, 2014–16

	Spending as % of total government budget						Change, 2014–16 (%)		
	Military		Health		Education		Military	Health	Education
Country[a]	2014	2016	2014	2016	2014	2016	Change % 2014–16	Change % 2014–16	Change % 2014–16
Algeria	20	23	7.8	7.9	15	16	15	1.7	7.5
Angola	9.3	7.2	4.4	5.3	6.2	7.7	–23	20	24
Azerbaijan	14	12	3.6	4.5	8.3	9.9	–17	26	19
Ecuador	7.5	6.6	5.8	7.7	13	15	–12	32	18
Iran	11	13	1.3	3.2	8.2	9.3	18	148	14
Iraq[b]	9.4	7.0	4.5	4.8	6.2	7.3	–26	6.8	19
Kazakhstan	6.4	4.2	10	11	7.1	18	–34	7.9	152
Kuwait	7.3	11	7.7	9.6	8.0	9.1	51	25	14
Mexico	2.6	2.4	11	11	13	14	–7.7	0.0	7.7
Nigeria	8.0	7.3	5.6	4.1	11	7.9	–8.0	–27	–25
Norway	2.9	3.1	8.3	9.6	3.0	3.5	6.9	16	16
Russia	23	29	3.4	3.0	4.4	3.5	24	–14	–21
Saudi Arabia	35	28	13	12	25	23	–20	–1.2	–7.1
South Sudan	42	22	4.7	1.5	6.5	3.7	–48	–68	–43
Venezuela	6.3	5.5	5.4	5.6	15	16	–13	3.7	6.7

[a] Country selection based on data availability (budget for military spending, healthcare and education) and the heterogeneous nature of oil dependence to capture high, moderate and low oil dependence based on oil rents as a share of gross domestic product (GDP). Oil rent as a share of GDP is based on the 5-year average between 2010 and 2015; no data was available for 2016. The World Bank World Development Indicators provide data on oil rents as a share of GDP. World Bank World Development Indicators, <http://data.worldbank.org/>.

[b] Healthcare and education data for Iraq in 2014 was unavailable, all figures are from 2015.

Sources: SIPRI Military Expenditure Database, <https://www.sipri.org/databases/milex>; All healthcare and education information comes from government sources, various country budget speeches, statements and execution reports, Various dates, 2014–16.

Indeed, the International Monetary Fund has already suggested the need for fiscal consolidation in Algeria.[17]

Prioritization of resources during an oil price slump

Since many oil exporting countries rely on oil revenue as their main source to fund government expenditure, when budgets need to be cut, the issue of relative resource prioritization becomes a prime concern. In these oil-rich countries, there is often a fine line between military spending, to protect or retain control of the oil resource against threats (both perceived and actual), and social expenditure (e.g. education, healthcare and infrastructure). This

[17] International Monetary Fund (note 9).

leads to an inevitable trade-off in choosing between military and social expenditure.

The data from state budgets of various oil exporting countries for 2014–16 suggests that, perhaps contrary to expectations, the budget re-evaluation caused by the oil price slump has in many cases resulted in a prioritization of education and healthcare spending over military spending (see table 9.7). A number of oil-rich countries, including Angola, Azerbaijan, Mexico and Venezuela, reduced their respective shares of total government expenditure dedicated to the military between 2014 and 2016 and, due to lower falls in social spending relative to military expenditure, their spending shares dedicated to education and health actually increased over that period. In Angola, for example, the share of military spending in total government expenditure decreased from 9.3 per cent in 2014 to 7.2 per cent in 2016; by comparison, the spending share for healthcare increased from 4.4 to 5.3 per cent and the share for education rose from 6.2 to 7.7 per cent.[18]

This resource prioritization in favour of education and healthcare is particularly marked in countries where conflict and security are not major concerns. In countries involved in active conflicts, or that are located in regions affected by war and tension (e.g. Algeria, Iran, Kuwait, South Sudan and Saudi Arabia), military spending remains the largest budget recipient. While the proportion of military expenditure to total government budget in many oil-rich countries has decreased since 2014, it has risen in some countries. Algeria, Kuwait, Norway and Russia all increased military spending as a share of their total government budget in 2014–16. Nonetheless, the overall trend suggested by the data for 2014–16 is that when government budgets needed to be cut, military spending saw relatively greater decreases than education and healthcare. Whether this resource prioritization is part of a long-term trend explained by other factors, or is due to the oil price shock, is difficult to determine in the absence of a longer time series.

While it is hard both to demonstrate a causal relationship between the price of oil and military expenditure and to identify the precise reasons for the shift in resource prioritization in oil-rich countries in 2014–16, SIPRI data does indicate a correlation between military spending and the price of oil in oil export-dependent countries. Since the start of the oil price slump in late 2014, military spending has decreased in many oil export-dependent countries. In some cases, the decrease has been so severe that it has affected the regional trend (e.g. in Africa and in South and Central America and the Caribbean).

[18] McClelland, C., 'Angola at peace is sub-Saharan Africa's top defense spender', Bloomberg, 12 June 2015; and Angolan Ministry of Finance, 'Resumo da despesa por função' [Summary of expenses by function], Various years.