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**Economic and Social Commission for Western Asia (ESCWA)**

**The Effect of Governance on the Allocation of Expenditure  
and the Distribution of Revenue:  
Evidence from Selected Arab Countries**



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## Executive Summary

The aim of this paper is to analyse the effect of the World Bank Governance Indicators on the distribution of revenues and expenditure in selected Arab countries. The paper examines, analytically and empirically, the effect of the six governance indicators (voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption) on the distribution of different types of expenditure and revenue across time and country grouping (oil exporters and oil importers).

Evidence shows that fiscal rules are virtually absent in most countries in the Arab region, with indicators of governance falling well behind global averages. Consequently, it is important to explore the relationship between fiscal activity and governance performance, as it has critical implications for fiscal sustainability, human capital, development and social protection. The paper reviews literature highlighting the importance of governance for fiscal policy and outcomes. It also looks at trends in governance and fiscal indicators in the Arab countries, and the relationship between them, dividing this examination between the pre- and post-2011 years, and oil exporters/importers, to account for changes in global commodity prices, social unrest and other characteristics.

This study employs Seemingly Unrelated Regressions (SUR) to test the impact of different governance indicators on the distribution of expenditures and revenues in selected countries in the Arab region over the period 1990-2015. We estimate a country-specific system of equations to Egypt, Lebanon and Saudi Arabia, but the lack of available data on public finances means we are unable to apply this model to most countries. The endogenous variable in each equation represents a type of expenditure (health and education, subsidies, social spending) as a share of total spending or type of revenue (taxes, both direct and indirect, as well as non-tax revenues) as a share of total revenues. The list of explanatory variables includes the lagged endogenous variable, the lagged value of real GDP growth and a vector for the six governance indicators; these are in addition to other country-specific variables or control variables, such as inflation, government debt, fiscal balance, the current account balance and the human development index. The list of control variables is not exhaustive, as it is also constrained by lack of data. The choice of explanatory variables is not arbitrary but stem from their potential effects on the endogenous variables, including lagged endogenous variables, to capture the expected autoregressiveness in the different types of government expenditure and revenue.

As expected, results are mixed, although interesting findings do emerge. Shocks to government expenditures and revenues have long-lasting effects on public finance (more prevalent for oil-importing countries). Due to the excessive heterogeneity across countries when it comes to the effect of governance indicators, it would be misleading to determine the effects of the indicators for Arab countries or country groupings (observed in specific country results). Generally, it is observed that improved government effectiveness has a negative effect on different types of expenditure, which can be attributed to the efficiency gains governments tend to experience. As for regulatory quality, results indicated a significant trade-off between private-sector participation and government expenditure for Egypt and Saudi Arabia, with the contrary true in Lebanon. Combating corruption was observed to rationalize expenditure on social protection and subsidies in Egypt, which can be explained by the decrease in transaction costs and inefficiencies. However, the opposite was found in the case of Lebanon and Saudi Arabia. For revenue, many of the indicators were statistically significant but had weak economic significance. Improvement in the rule of law has a strong negative and positive effect on direct tax and non-tax revenues respectively for oil-exporting countries.

## Introduction

Fiscal rules are virtually absent in most countries in the Arab region. This absence comes amid an increased global interest in fiscal policy rules and their ability to limit public deficits and contain government debt. Governance indicators show that the region's figures fall behind global averages (figure 1). Consequently, volatility in global commodity prices, particularly oil, or other supply/demand shocks, or episodes of regional or global economic downturn, could adversely affect the macroeconomic stability and spending patterns of these countries.

The effectiveness of any macro-fiscal framework depends on the adoption of fiscal rules with checks and balances, and other broader governance aspects.<sup>1</sup> Poor governance has been associated with lower effectiveness and productivity of public spending.<sup>2</sup> In this context, our study analyses how different governance indicators could influence the allocation of expenditure and the composition of revenue. Illuminating this important link would enable us to better understand the process of public finance, which, in turn, has critical repercussions for fiscal sustainability, human capital, development and social protection, all areas of critical interest in the Arab region at this moment in time.

This study poses key research questions. For example, what are the trends of the various governance indicators in the Arab countries and how do they relate to fiscal policy patterns? Specifically, does an improvement in the rule of law, government effectiveness or control of corruption affect the revenue base of countries? Does an improvement in political stability, or voice and accountability, affect social spending, or spending on health and education? How do changes in governance indicators affect patterns of fiscal consolidation across the region, at a time when the region continues to be experience political and social turmoil (especially among oil importers) and lower oil prices, adversely affecting the revenue base of oil exporters?

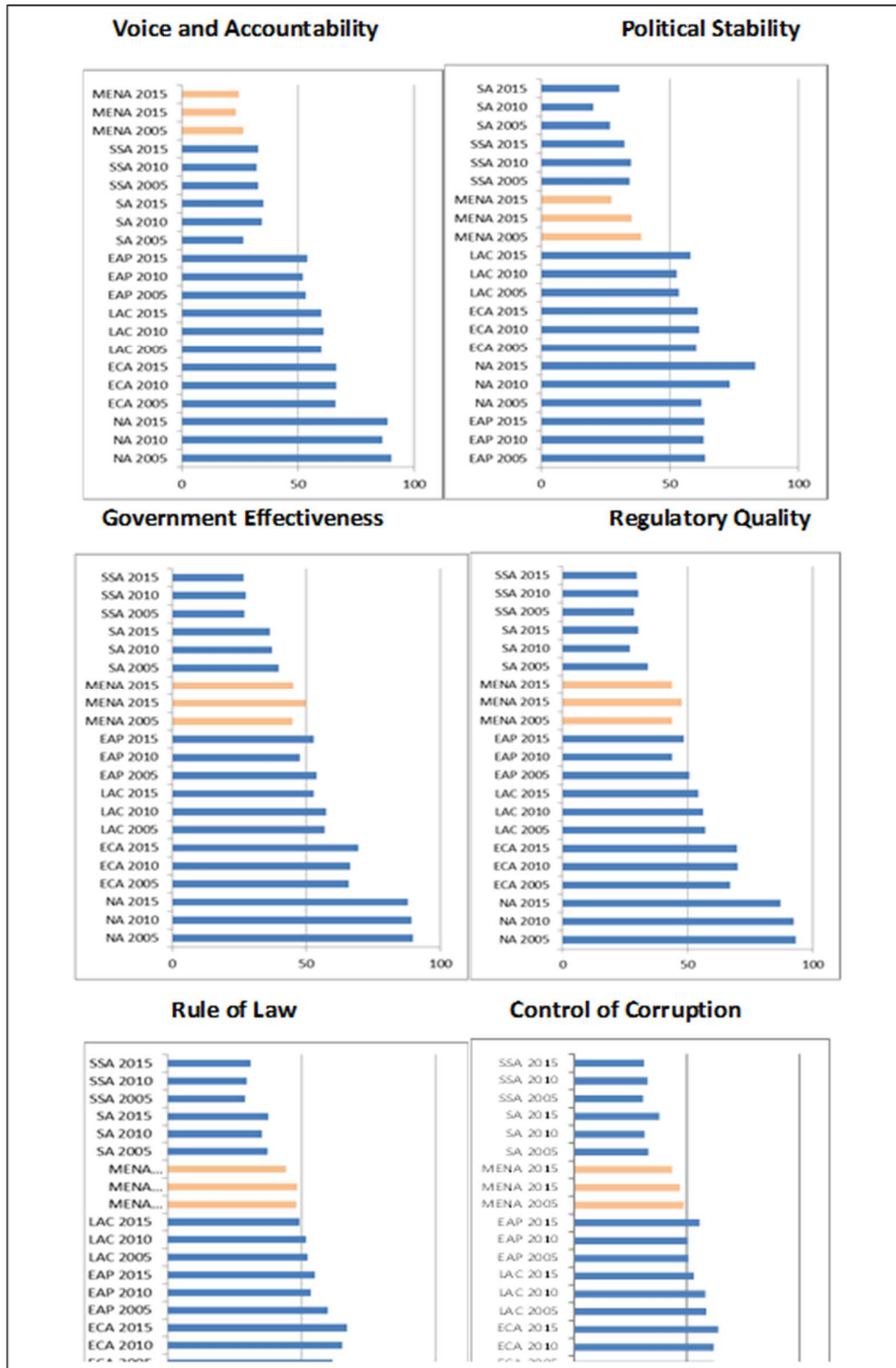
Section II of this paper reviews the literature on why governance matters and its importance to fiscal policy. Section III highlights the trends in governance indicators in the Arab countries and in selected fiscal indicators, and how they relate to each other. Section IV highlights the methodology used in our quantitative analysis, section V presents and discusses the obtained results, and section VI provides conclusions and policy recommendations.

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<sup>1</sup> See annex I for a representation of budget preparation in Egypt, Saudi Arabia, Tunisia and United Arab Emirates.

<sup>2</sup> See Baldacci and others (2003) and Mauro (1998).

Figure 1. Governance indicators: global percentile ranks (2005, 2010, 2015)



Source: World Bank's Worldwide Governance Indicators.

Notes: SSA: Sub-Saharan Africa; SA: South Asia; MENA: Middle East and North Africa; EAP: East Asia and Pacific; ECA: Europe and Central Asia; NA: North America.

Due to the lack of Arab region averages (the region includes Mauritania in our analysis), we apply the MENA average to the other countries.



## I. LITERATURE REVIEW

In this section, we examine the ‘classical’ literature on the impact of governance on economic growth, then briefly review the literature on the impact of public spending before providing a more detailed review of the literature on governance and fiscal policy, the main focus of this study.

Generally, standard literature on governance, and governance indicators, tend to divide the pillars of governance into six main categories: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. We focus our analysis on these World Bank Governance Indicators.

### A. GOVERNANCE MATTERS FOR ECONOMIC GROWTH

Governance could be defined broadly as the “traditions and institutions that determine how authority is exercised in a particular country” (Kaufmann and others, 2000). It tends to include the process of selecting governments, their accountability, monitoring and replacement, as well as their ability to efficiently manage resources and formulate and implement prudent policies and regulations. The literature on governance as a significant determinant of economic growth can be found in the work of Knack and Keefer (1995), Acemoglu and others (2001, and 2002), Rodrik and others (2002), and Dollar and Kraay (2003), who find a positive link between economic growth and the quality of institutions, which is an important component of governance.

With regards to the Arab countries, Emara and Jhonsa (2014) applied two-stage least squares on cross-sectional data for 197 countries in 2009. Their main finding was that an improvement in the quality of governance has a positive and statistically significant impact on per-capita income. For the 22 Middle East and North Africa (MENA) countries in the sample, the authors concluded that despite the low values in governance indicators, the high per-capita incomes in the region, relative to other countries in the sample, point towards fragile standards of living.<sup>3</sup>

### B. IMPACT OF FISCAL POLICY: ECONOMIC GROWTH AND OUTCOMES

The impact of public spending on economic growth has been studied since the 1990s and the literature on endogenous growth has produced various models that linked an economy’s public spending to its long-term growth. Aschauer (1989), Barro (1990, 1991), Levine and Renelt (1992), Easterly and Rebelo (1993), Devarajan and others (1996), Mitnik and Neumann (2003) and De la Croix and Delavallade (2006) are among those who examined such a relationship.

Others surveyed the link between spending on a sectoral level and outcomes in those sectors. Harbison and Hanushek (1992) surveyed 12 studies on the link between public education spending and educational outcomes, with more than half their findings showing a positive and significant relationship. Pritchett (1996) held that the insignificant, and negative, relationship between public spending and its outcomes could be attributed to variations in the effectiveness of spending or other governance indicators, such as corruption, rather than poor economic policy *per se*. Filmer and Pritchett (1999) surveyed the literature that links public spending with health outcomes and used cross-national data to study the impact of public spending on health and non-health factors in affecting child and infant mortality. They found that increasing public spending on health was associated with lower infant (under five) mortality but the results were small; only one seventh of 1 per cent of the mortality disparities are described by variations in spending. The next section will examine in more detail the link between governance and public spending, or more broadly, fiscal policy.

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<sup>3</sup> The fragility was reflected by the social unrest the region has experienced since 2011.

### C. LINK BETWEEN GOVERNANCE AND FISCAL POLICY: THE EXPENDITURE SIDE

There is significant empirical literature on the link between governance and fiscal policy in developing countries, especially among oil exporters; the literature on MENA region oil importers, however, is rather scanty. We shall highlight some of the main findings of the literature that combines governance and fiscal policy in general, and look at studies that have attempted to examine the effect of governance on fiscal policy outcomes in the MENA region, including the impact of governance on the procyclicality of fiscal policy.

Bayoumi and Eichengreen (1995) found that the response of fiscal deficits to income fluctuations was most prominent in states with less strict budget rules. In states with tough rules, however, the authors found most of the budget adjustments occurred in expenditure, implying that stringent rules help curb spending. Kontopoulos and Perotti (1999) showed that high expenditure and budget deficits occurred under fragmented fiscal authorities. Agénor, MacDermott and Prasad (1999) believed the impact of a country's fiscal multiplier was largely dependent on the country's size, level of development and quality of its institutions. Less developed countries imply a more difficult fiscal policy implementation, including poor tax administration and an unpredictable government revenue basis. The authors linked the effectiveness of fiscal policy to the public expenditure channel, rather than the tax revenue channel.

Seminal works on fiscal policy and governance include those by Alesina and Perotti (1999) and Person and Tabellini (2004), who held that constitutional rules and budgetary institutions were significant determinants of fiscal policy outcomes, particularly having a balanced budget. Alesina and others (2008) found that corruption underpins the procyclicality of fiscal policy, especially in more corrupt regimes. Frankel and others (2011) found that better institutional quality paves the way for countercyclical fiscal policies in developing countries.

There is significant literature on the role of governance and the resource curse (also known as the paradox of plenty) in oil-exporting countries, including the work of Neumayer (2004) and Cavalcanti and others (2011), who held that corruption and political problems arising from resource abundance hindered policymaking and enticed governments to deliver low-quality public goods and services. Related to this is the work of Kolstad and Soreide (2009), who stressed that corruption is an underlying factor behind the meagre economic performance of resource-rich countries.

Rajkumar and Swaroop (2008) examined the link between public spending, governance and human development outcomes. To determine the effectiveness of public spending in enhancing human development outcomes, the authors examined the level of corruption and the quality of bureaucracy.<sup>4</sup> Using ordinary least squares, the authors showed that differences in the efficiency of public spending could be explained to a significant extent by the quality of governance. Public health spending had a stronger impact on lowering child mortality rates in countries with good governance, and similarly, public spending on primary education was more effective in increasing primary education attainment in countries with good governance. In countries with poor governance, public spending had no impact on health and education outcomes.

El Anshasy and Katsaiti (2013) investigated the link between different institutional qualities and fiscal policy, and their impact on growth in resource-rich economies. The authors were particularly interested in unravelling the indirect impact of institutions on growth via a transmission channel that captured the "quality of fiscal performance". Using panel data for 79 resource and non-resource countries over the period from 1984 to 2008, this paper found, among other things, that better governance, stronger democratic institutions and transparent budgets improved fiscal performance, leading to higher growth rates. The role of democratic and budget institutions was significant, mainly through the fiscal channel, but not separately.

The African Development Bank (2013) examined the link between governance, fiscal policy and economic growth in selected fragile African states from 1995 to 2006. Using generalized method of moments (GMM), the

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<sup>4</sup> Two indices used were: corruption within the political system; and the soundness of institutions, and quality of civil service respectively.

authors focused on assessing the role of governance in magnifying the impact of fiscal policy on growth. They found that fiscal spending contraction is normally linked to higher economic growth and that public spending is more effective in supporting economic growth mainly when governance indicators surpass a particular threshold. With the exception of defence spending, all other public spending categories, including health and education, were not effective in promoting economic growth when corruption exceeded the designated threshold.

Country-specific analysis of governance and fiscal policy included several studies on China and India. Zhang and others (2004) used village survey data in rural China and found that elections did not affect the size of revenue but significantly shifted the distribution of taxes from individuals to enterprises. The authors found that elections and power-sharing were conducive to improving the allocation of public expenditures. Meng and Zhang (2011), using village data from rural China, found that village elections enhanced public expenditure and improved the efficiency of public administration through the check and balances that resulted from villager representatives meetings. The question of fiscal centralization was addressed in Jia and others (2014), whereby the authors used Chinese data for the period from 1997 to 2006 to study the impact of fiscal centralization on local expenditure policy. The authors found that expenditure decentralization boosts government spending and results in fund allocation with more emphasis on capital construction and less on education and administration. Revenue decentralization, on the other hand, had little impact on local government expenditures.

Bhanumurthy, Prasad and Jain (2016) studied the relationship between quality of governance, public expenditure and human development outcomes in the state of Madhya Pradesh, the second largest state in India. The role of governance was captured through five dimensions – political, legal and judicial, administrative, economic and social – using a total of 22 indicators. The authors found that at the district level, development expenditure alone was insufficient to achieve the desired human development outcomes, whereas the effectiveness of public expenditures improved with better governance indicators. Governance indicators generally played a significant role in improving development outcomes, while a weak administrative index appeared to be the main constraint in improving the human development outcomes in less developed districts.

MENA-specific studies on governance and fiscal policy are few in number, focusing mainly on oil exporters. Among the most recent is the work of Matallah and Matallah (2016), which aimed to test the impact of oil rents on economic growth among the MENA region's oil exporters. Using pooled ordinary least squares (OLS), fixed effects, random effects and GMM on the region's oil exporters over the period from 1996 to 2014, the authors found that governance is key in these countries' diversification efforts, as it helps mitigate the resource curse, enabling them to boost their economic growth. Eid (2016) examined Saudi Arabia's budgetary and fiscal institutions over the period from 1969 to 2014, using an autoregressive distributive lag approach, and found that the government employs a conservative oil price when projecting government expenditure and oil revenues, while capital expenditure in specific is procyclical.

The question of the cyclicity of fiscal policy has also been addressed within a governance context. Stein and others (1999) found that Latin American countries with specific political traits had a higher tendency to adopt procyclical expenditure policies, and that more transparent and tiered budgetary procedures result in lower deficits and debt. Slimane and Tahar (2010) studied the relationship between countercyclical fiscal policies in MENA countries and the quality of their institutions, the nature of political regime and/or the availability of financial resources. Using OLS and GMM estimators on variables that capture the quality of institutions, corruption, democracy and the voracity effect,<sup>5</sup> they find that government spending in the MENA region is procyclical. They conclude that weak institutions are one of the main obstacles to MENA countries implementing countercyclical fiscal policies, in addition to their limited access to international capital markets and the lack of democratic political regimes.

The impact of governance stretches beyond the distributional impact of fiscal policy, whereby weak institutions or a corrupt government might obstruct prudent fiscal policies. When studying the procyclicality

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<sup>5</sup> A notion that explains "overspending of transitory increases in fiscal revenues". Positive shock results in a more than proportional rise in public spending, even if the shock is temporary, as a result of a weak institutional framework and several decision makers in the fiscal process. (Slimane and Tahar, 2010).

of fiscal policy in 28 developing oil-producing countries over the period from 1990 to 2009, Erbil (2011) found that the quality of institutions and political structure had an impact on the budget structure of these countries, forcing their governments to respond to oil price volatility by implementing procyclical fiscal policies. This has adverse implications especially on low-income oil producers when social safety nets are weak, on poverty, and on long-term growth as governments reduce spending and take away resources from productive projects.

#### D. LINK BETWEEN GOVERNANCE AND FISCAL POLICY: THE REVENUE SIDE

Most of the studies have focused on the link between governance and fiscal policy as regards the impact of governance on expenditures, as outlined above. The literature on the links between governance and the revenue side of fiscal policy is less studied and mainly focuses on corruption. This literature examines the procyclicality of fiscal policy within the revenue context. Early works that examined the role of institutions, political structure and the procyclicality of fiscal policy included those of Tornell and Lane (1999), Fatas and Mihov (2001) and Lane (2003), who highlight how institutions and their underlying structure can explain the extreme spending patterns of government revenues.

Using data from 78 countries, De Mello and Barenstein (2001) showed that fiscal decentralization – the allocation of revenue mobilization and expenditure functions to subnational levels of government – is linked to different governance indicators, including government effectiveness, corruption and the rule of law. Revenue mobilization indicators included tax and non-tax autonomy. The authors showed that the larger the share in total subnational revenues of non-tax revenues, grants and transfers from higher levels of the government, the stronger the link between governance and decentralization. Baldacci and others (2003) held that the composition of government revenue has an impact on growth. Specifically, fiscal consolidation that occurs through increasing the share of tax revenues to total revenue, including grants, is good for growth, whereas grants and non-tax revenue are inversely correlated with tax revenue collection.

Imam and Jacobs (2007) studied the effect of corruption on the revenue-generating capacity of various tax categories in the Middle East. Using GMM, they found that the low revenue collection as a share of GDP in the Middle East relative to other middle-income regions is partly due to corruption, and that particular taxes are more affected than others. Specifically, taxes that entail recurrent interaction between the tax authority and individuals, including taxes on international trade, tend to be more affected by corruption than most other types of taxation. The authors concluded that if governments want to prop up tax revenues while limiting distortions and optimizing social welfare, they should introduce reforms that lower corruption or increase revenues from tax categories that are less prone to corruption. Other papers that reach similar conclusions include Tanzi and Davoodi (1997), Johnson, Kaufmann and Zoido-Lobaton (1999) and Freidman and others (2000).

Using a one-sector endogenous growth model, Kafkalas and others (2014) examine the relationship between tax evasion and the tax rate announced by the government, along with the share of tax revenues allocated to monitoring tax evasion. One of their main findings is that where there are high levels of tax evasion, government efforts aimed at decreasing tax losses are more effective, and that this effectiveness decreases as tax evasion levels fall. Sacchi and Salotti (2015) hold that fiscal rules affect a country's macroeconomic stabilization function by influencing both expenditure and revenue instruments.

Other works studied the role of governance and how it affects the willingness to pay taxes. For advanced economies, Torgler (2005) examined the impact of direct democracy<sup>6</sup> on tax morale in Switzerland, and found that a higher level of direct democracy in a jurisdiction results in a greater willingness to pay taxes. Alm and Torgler (2006) studied tax morale in the United States and in Europe, and found that countries with more democracy are more likely to pay taxes. Bird (2008) employed OLS and two-stage least squares (2SLS), holding that a more legitimate and open state is an indispensable factor for a more suitable level of tax effort in advanced and emerging markets.

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<sup>6</sup> The notion that the government limits its own powers, promoting the perception that its citizens are responsible, and not ignorant.

## II. TRENDS OF FISCAL POLICY/EXPENDITURES IN SELECTED ARAB COUNTRIES

The role of fiscal policy in the Arab region over the past two decades has been twofold: a means for long-term growth and development, and a stabilizer for terms of trade shocks (Zafar, 2012). The role of fiscal policy has been particularly evident during the boom years in the early 2000s, at the time of the 2008 financial crisis and during the 2011 regional turmoil. Governance indicators, on the other hand, change less, but have been affected by the changes in oil prices and the regional turmoil in noticeable ways among the selected countries under study. This section looks at how governance indicators and fiscal policy have changed over time in the region's oil importers and exporters, as well as how the region's governance indicators compare with other regions, namely North America (NA), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), South Asia (SA) and Sub-Saharan Africa (SSA).

Figure 1 shows the Middle East and North Africa (MENA) region percentile ranking relative to other regions. Given the lack of a breakdown for all Arab countries on the Worldwide Governance Indicators (WGI), we rely on the MENA region's percentile ranking across the various indicators as a proxy for governance in the broader Arab region. Governance in the MENA region consistently lags behind advanced economies (North America and Europe) and Latin America. Among the seven regions listed, MENA is consistently ranked fifth, and its percentile ranking has been consistently below 50 in 2005, 2010 and 2015. The region's percentile ranking for control of corruption, rule of law and political stability slightly deteriorated over the period from 2005 to 2015 period, while the region's ranking for government effectiveness and regulatory quality slightly improved in 2010 but had returned to former levels by 2015. The MENA region's percentile ranking has been the worst for voice and accountability since 2005, a trend that continued even after the regional turmoil.

Our analysis for governance and selected fiscal indicators divides our sample before and after 2011, when global commodity prices – particularly oil – declined, adversely affecting the public finances of the region's oil exporters, and when the oil importers were hit by social unrest and political instability, which also adversely weighed on their public finances.

The global financial crisis started to partially reverse the trend of gains particularly for the oil exporters after the oil boom in the 2000s, while oil importers, particularly Egypt and the Maghreb countries, were hit by weaker external demand from their main trading partners, especially the Eurozone. Lower commodity prices since 2014 have added to the woes of the region's oil exporters, further weakening their hydrocarbons revenues. The slowdown in economic activity in many of the region's oil importers – particularly Egypt, Jordan, Lebanon and Tunisia – in the wake of the regional turmoil increased the need for these countries to prioritize fiscal reform. The subsequent lower oil prices and lower revenues also forced the region's oil exporters to reform their subsidy schemes, especially on fuel, to support the region's public finances. With regards to social spending and social protection, Arab countries have since the 2000s acknowledged the importance of social protection and gradually increased it over time. This has been particularly the case after the turmoil in 2011 to curb the region's unrest. Expenditure on health and education has remained largely unchanged across the board. The following section shows the trend of expenditures across selected Arab countries on the main variables of interest to us.

### A. OIL EXPORTERS PRE-2011

In the preceding decade to 2011, high oil prices helped the Arab region's oil exporters maintain large fiscal surpluses and high growth rates. This also allowed them, especially the Gulf Cooperation Council (GCC) countries, to deliver robust social and economic outcomes, with increased spending on health, education and infrastructure, as well as increased public sector spending. The higher oil prices and stronger economic performance were reflected in improved governance indicators in several countries. Political stability, control of corruption, and voice and accountability improved in Algeria, and its tax revenue as a share of total revenue was increasing from about 84 per cent in the period from 2000 to 2004, to almost 92 per cent from 2010 to 2015.

Figure 2 displays scatter plots of the average share of subsidies in total expenditures and the different governance indicators (y-axis) for the periods 2000-2004, 2005-2009 and 2010-2015. Across all indicators, higher governance indicators were associated with a higher share of subsidies in total expenditure, both before and after 2011.

**Figure 2. Share of subsidies in total expenditure and governance indicators for oil-exporting countries**



Source: Worldwide Governance Indicators (for governance indicator values); IMF and national statistics (for country expenditure/revenue data).



**Figure 3. Share of social spending in total expenditure and governance indicators for oil-exporting countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data; OECD for OECD averages.

**Figure 4. Share of health and education spending in total expenditure and governance indicators for oil-exporting countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data; OECD for OECD averages; World Bank for developing and developed countries averages (averages for period 2010-2015 exclude 2015).



**Figure 5. Share of wages in total spending and governance indicators for oil-exporting countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data.

Figure 6. Share of taxes in total revenue and governance indicators for oil-exporting countries



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data; OECD for OECD averages; IMF World Revenue Data for developing and developed countries averages.

Figure 3 links social spending as a share of total expenditure with the governance indicators but the results are not as straightforward. During the boom years, especially until 2004, higher voice and accountability implied more social spending among the oil exporters, especially in Kuwait, the one country in the GCC with an established parliamentary system. Control of corruption was also best in Kuwait, with the highest share of

social spending among the region's oil exporters. This positive trend was apparent across all governance indicators over the period from 2000 to 2004, and an improved rule of law and regulatory quality in Bahrain was associated with higher social spending. Political stability had less of a positive relationship, and this is partly attributed to the fact that most of the region's oil exporters are monarchies, so political stability is implied irrespective of their spending patterns. During the period from 2005 to 2009, with the global financial crisis in full force, the trend reversed for most indicators, except for voice and accountability. Only higher scores of voice and accountability were associated with more social spending, while the trend line almost flattened across the rest of the governance indicators, signifying no clear relationship between social spending and governance. We included the Organisation for Economic Co-operation and Development (OECD) averages for comparative purposes, and across the various indicators and time periods, the OECD countries stand out; better governance indicators are accompanied with higher social spending relative to the region's oil exporters.

Expenditure on health and education has been particularly weak among the region's oil exporters, especially in Kuwait, Oman and Saudi Arabia, a trend that could be observed in the scatterplots in figure 4. Kuwait and Oman, with the highest indicator values for voice and accountability, had the lowest shares of spending on health and education. On the other hand, Qatar had the lowest governance values for government effectiveness and political stability while having the highest level of spending on health and education; 30 per cent of total expenditure. This trend remained consistent until 2009. We include the regional averages for the OECD countries as well as those for developed and developing countries in figure 4, and once again, the OECD countries stand out, with a clear and positive relationship between governance and spending on health and education. Developed countries on average also score better on governance indicators and spend more on health and education. Developing countries, on the other hand, have had lower governance indicators – lower than some of the region's oil exporters – but tend to allocate more of their expenditures to health and education relative to the oil exporters.

In the boom years, improved governance indicators were associated with a higher wage bill in oil exporters, reaching almost 50 per cent of total expenditure in Bahrain, which possessed the highest government effectiveness indicator. The performance of Bahrain tends to drive our trends in figure 5, in the scatterplots displaying the link between the various governance indicators and the wage bill. Given the GCC countries mostly have not been taxing their residents, there can be no conclusive results on the link between governance and tax revenues, evident in figure 6, although among oil importers, a more effective government boosted tax revenues. In comparison with the OECD countries, higher governance indicators were coupled with a higher share of taxes, as a share of total revenues, as shown in figure 6.

## B. OIL EXPORTERS POST-2011

Since 2011, the Arab region has experienced social unrest and political instability, adversely affecting governance indicators across the board and causing both oil importers and exporters to expand their fiscal stimulus packages to control unrest. For oil importers, this meant wider fiscal deficits; this, in countries that should have been prioritizing fiscal consolidation. For oil exporters, it meant lower fiscal surpluses, further affected by global oil prices declining by more than 70 per cent to about \$40 a barrel since mid-2014. This turned some of the region's fiscal surpluses into mounting deficits<sup>7</sup> as hydrocarbons revenues declined by \$390 billion in 2015 (7.5 per cent of GDP) (IMF, 2016b). By 2015, Saudi Arabia announced an unprecedented budget deficit of 16 per cent of GDP, for the second consecutive year, up from just 3.4 per cent in 2014 (IMF, 2016c). The persistently low oil prices adversely affected the growth prospects of the region's oil exporters,<sup>8</sup> causing them to embark on an unprecedented wave of fiscal reforms, especially in Oman and Saudi Arabia (IMF, 2016d). The majority of fiscal adjustments focused on spending cuts, especially capital spending (IMF, 2016b). Additional measures included raising fuel and electricity prices (in all GCC countries), introducing

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<sup>7</sup> Projected to average 12.7 per cent of GDP in 2016 for the GCC countries and 7% for the region's exporters who diversified from oil.

<sup>8</sup> The GCC grew by 3.2 per cent in 2015 compared with 3.9 per cent the previous year after being hit by low oil prices (World Bank, 2015).

VAT (to be implemented across the GCC in 2018) and the potential sale of state-owned enterprises, such as Saudi Arabia's Aramco (IMF, 2016c). Algeria, on the other hand, hiked fuel, electricity and natural gas prices, though they still remain below market levels across the region. In the face of fiscal reform, the region has been trying to increase social spending and find new sources of revenue (IMF, 2016b).

As for governance indicators, they have varied by country among the oil exporters since 2011. Political stability indicators have worsened across the region's oil exporters, even though no regime change has occurred, while government effectiveness was seen to improve in Bahrain, Qatar, Saudi Arabia and the UAE with the implementation of fiscal reforms. When examining the scatterplots of the oil exporters from 2010 to 2015, interesting results appear. Figure 2 shows the trend of stronger governance was associated with a higher share of subsidy spending among the oil exporters over that period. With the onset of the Arab Spring, and the ensuing regional turmoil, oil exporters boosted their fiscal spending, and the weakening of selected governance indicators, particularly political stability and voice and accountability, reflected the fiscal trends observed. With the recent wave of fuel price hikes and subsidy reforms, various governments among the oil exporters are trying to increase their effectiveness and direct more of the subsidy bill to other sources of spending, such as social protection.

### C. OIL IMPORTERS PRE-2011

The boom years of the early 2000s reflected positively on the economies of the region's oil importers, with higher economic growth that normally reflects increased government revenues. In the period from 2000 to 2004, countries with higher voice and accountability, but still lagging behind other regions globally, had higher taxes as a share of total revenues, a trend particularly noticeable in Lebanon and Morocco as seen in figure 7. On the other hand, countries with higher political stability, or higher levels of rule of law, did not necessarily register higher taxes as a share of total revenues. Interestingly, higher levels of government effectiveness, control of corruption and regulatory quality were positively related to a higher share of taxes to total revenues in the period from 2000 to 2004. In comparison with the oil importers, the OECD countries stood out as having higher governance indicators across the board, as well as relatively high taxes, although Morocco was notable for having lower governance indicators but a higher shares of taxes relative to total revenues.

In the period from 2005 to 2009, policymakers in oil-importing countries reacted to the global financial crisis by enacting expansionary fiscal policies, which further strained their already ailing public finances, especially in Egypt, Jordan and Lebanon (World Bank, 2010). Egypt and Tunisia's fiscal stimuli focused on propping up infrastructure and job creation (ILO, 2010). Some countries, notably Egypt, increased their food subsidies and expanded the number of beneficiaries receiving support (OECD, 2010b).

As regards revenue, and especially during the boom years, it is observed that higher voice and accountability, government effectiveness, regulatory quality, rule of law and control of corruption were all associated with higher taxes as a share of total revenue. Once again, political stability played virtually no role in affecting government revenues.

For expenditures, substantial subsidy spending has been an inherent characteristic of the region's oil importers, with countries subsidizing various items, including food and fuel. However, the subsidies were not necessarily directed to those most in need. For instance, in 2008, the poorest 40 per cent of Egypt's population received only 3 per cent of gasoline subsidies. Thus, there have been calls to reform the region's subsidies for at least a decade due to their inefficiency, the burden they place on public finances and the fact they discourage investment in the energy sector and limit "growth-enhancing public spending" (IMF, 2014). With the easing of the global financial crisis, and the Arab Spring thereafter, subsidies in many of the region's oil importers were used to curb social unrest and discontent among citizens. Higher voice and accountability was not necessarily linked to higher subsidies as a share of total expenditures, as shown in figure 8. However, increased political stability, government effectiveness, regulatory quality, rule of law and control of corruption were associated with a larger subsidy bill in the period from 2000 to 2004. From 2005 to 2009, this trend dissipated

and countries with lower governance indicators, particularly lower control of corruption and lower rule of law, were the ones associated with a higher subsidy bill. This indicates that the subsidy bill increased irrespective of the performance of governance indicators.

**Figure 7. Share of taxes in total revenue and governance indicators for oil-importing countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data; OECD for OECD averages; IMF World Revenue Data for developing and developed countries averages.

**Figure 8. Share of subsidies in total expenditure and governance indicators for oil-importing countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data.



**Figure 9. Share of social spending in total expenditure and governance indicators for oil-importing countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data; OECD for OECD averages.

**Figure 10. Share of health and education spending in total expenditure and governance indicators for oil-importing countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data; OECD for OECD averages; World Bank for developing and developed countries averages (averages for period 2010-2015 exclude 2015).



**Figure 11. Share of wages in total spending and governance indicators for oil-importing countries**



Source: Worldwide Governance Indicators for governance indicator values; IMF and national statistics for country expenditure/revenue data.

As fiscal policy continued its expansionary path for social spending, represented in figure 9, countries with higher governance indicators, with the exception of voice and accountability, all had higher social spending as a share of total expenditure from 2000 to 2004 and also from 2005 to 2009. Relative to the OECD, the oil importers had lower governance indicators but higher social spending before and after 2011, so

irrespective of governance, the majority of oil importers had social spending patterns quite similar to those of the OECD. As shown in figure 10, countries with higher governance indicators also had higher expenditure on health and education as a share of total spending across all indicators, except for political stability, where the relationship was inconclusive in the period from 2000 to 2004. From 2005 to 2009, the same trend is observed, and even higher political stability was associated with higher spending on health and education, more so than in the OECD countries with higher governance indicators. This trend was most notable in Jordan and Morocco.

For the wage bill, figure 11 shows that higher governance indicators were associated with an increase in wages as a share of total spending during the early 2000s. The region's oil importers have a large public sector. Tunisia, for example, has one of the world largest wage bills (about 14 per cent of GDP in 2016), while Egypt, in the wake of the global financial crisis, increased its spending on wages by 30 per cent and on pensions by 20 per cent (OECD, 2010b). From 2005 to 2009, as governments resorted to fiscal policy to boost their macroeconomic performance to offset waning external demand, this trend was reversed. A higher wage bill was associated with countries with poorer governance indicators, particularly voice and accountability and regulatory quality. The positive relationship between wages and governance was maintained for the control of corruption, rule of law and political stability, although the relation was weaker for the latter. Government effectiveness had no clear link to the size of the wage bill during that time.

#### D. OIL IMPORTERS POST-2011

The major change after 2011 has been a deterioration of governance indicators amid the regional turmoil. The deterioration of government effectiveness, control of corruption, rule of law and regulatory quality were no longer being associated with increases in taxes as a share of total revenue, as indicated in figure 7. While fiscal stimulus packages continued after 2011 to curb social unrest, the lower oil prices provided temporary relief for the oil importers' public finances and provided some room to support their expansionary fiscal policies.

After the 2011 turmoil, voice and accountability deteriorated and no longer affected the wage bill of the region's oil importers. Higher political stability, government effectiveness, regulatory quality, rule of law and control of corruption were all associated with a higher wage bill. This is an important observation as countries in the region embark on their respective fiscal consolidation paths and could imply that an improvement in governance brings about the necessary prudence in addressing the government's public finances without jeopardizing the well-being of public-service employees. Assessing the effectiveness of public services is beyond the scope of this analysis, but an increase of social safety nets and higher social spending moving forward as part of fiscal reform will support this notion; that is, improved governance brings financial prudence without hurting public-service employees. This is true especially for government effectiveness and regulatory quality.

Some countries, including Egypt, have in their quest for reform tried to reduce their wage bill as a share of total spending while increasing social safety nets to ensure a better allocation of resources. Tunisia has pledged to reduce its wage bill and the size of the public sector in the period from 2016 to 2020, and increase social spending (IMF, 2017). The deterioration of the governance indicators also weighed on the subsidy bill; countries with lower governance indicators were associated with a higher subsidy bill.

With regard to social spending (figure 9), countries with lower voice and accountability and regulatory quality had higher social spending as a share of total expenditure from 2010 to 2015. Countries with better control of corruption, rule of law, government effectiveness and political stability were associated with higher social spending. Since the region's political turmoil, with the exception of voice and accountability, improved governance indicators were associated with higher spending on health and education as a share of total expenditure (figure 10), a trend that should continue, especially in Egypt and Tunisia given their pledge of fiscal reform.

### III. SAMPLE AND METHODOLOGY

This study employs Seemingly Unrelated Regressions (SUR) to test the impact of governance indicators on the distribution of expenditures and revenues in selected Arab countries – both oil exporters and importers – over the period from 1990 to 2015.<sup>9</sup> To perform such analysis, the following SUR specification is used:

$$EXP_{i,t} = \alpha + \rho EXP_{i,t-1} + \beta GDPGR_{i,t-1} + \delta GOV_{i,t} + \lambda Other_{i,t} + \varepsilon_{i,t}(1)$$

$$i = 1, 2, \dots, N, t = 1990, \dots, 2015$$

For our sample countries, we first estimate country-specific system of equations where the endogenous variable (EXP) in each equation represents a type of expenditure (health and education, subsidies, social spending) as a share of total spending. The list of explanatory variables are the same for each equation and includes the lagged endogenous variable, the lagged value of real GDP growth (GDPGR), a vector for the six governance indicators (GOV) – voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption – along with other country-specific variables or control variables (other), such as inflation, government debt, fiscal balance, the current account balance or the human development index.

In addition to estimating a system of equations for expenditure, we also estimate a system of equations for revenues (direct and indirect taxes and non-tax revenues, all as a share of total revenue) for the different countries, with a similar set of explanatory variables and the lagged value of revenues as a share of total revenues.

$$REV_{i,t} = \alpha + \rho REV_{i,t-1} + \beta GDPGR_{i,t-1} + \delta GOV_{i,t} + \lambda Other_{i,t} + \varepsilon_{i,t}(2)$$

$$i = 1, 2, \dots, N, t = 1990, \dots, 2015$$

We use annual data for the period from 1990 to 2015, obtaining this from the IMF for most countries and using national statistics for a select number where data availability is problematic. The availability, or lack thereof, of public finance data is an especially severe problem. This constraint has limited our ability to apply the model to the majority of countries.

The choice of explanatory variables is not arbitrary but stem from their potential effects on the endogenous variables. The lagged endogenous variable is included to capture the expected autoregressiveness in the different types of government expenditure and revenue. The growth in output is expected to play an important role in government expenditure and revenue. Most types of government expenditure would benefit from a high level of output, whereas certain types of revenue, such as tax revenue, would closely follow the trend in output. In addition to the list of governance indicators, we experiment by adding a number of explanatory variables to the two system of equations (1) and (2) to control for other factors that may affect the endogenous variables, such as oil price, inflation and the level of human development proxied by the human development index (HDI). Again, this list of control variables is not exhaustive, but rather, is constrained by data availability.

Most of the cross-country empirical studies surveyed in the literature review have used a panel data model that takes into consideration time series and cross-section variation in the data. Despite its usefulness, one of the main drawbacks to this model is the assumption of slope homogeneity. Applying this model in our case implies that the estimated effect of, say, voice and accountability, or corruption, on a certain type of

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<sup>9</sup> Sample countries: Algeria, Bahrain, Iraq, Kuwait, Libya, Oman, Qatar, Saudi Arabia, Yemen, United Arab Emirates (oil exporters); Egypt, Lebanon, Morocco, Mauritania, Syria and Tunisia (oil importers). See annex II for list of variables and respective sources.

government expenditure or revenue would be the same across all the countries in our sample. In other words, the estimated slope coefficients represent the ‘average’ effects of the explanatory variables on the endogenous variables. In our exercise, and even with a good list of control variables, which is not satisfied in our case, it is implausible to assume the effects of governance indicators on the different types of government expenditures and revenues are common across countries.

In addition, for any given country, it is safe to assume that different types of expenditure (revenue) are subject to the same shocks, but the effect of shocks would be different from one type of expenditure (revenue) to another. Statistically, this means that errors across different types of expenditure (revenue) should be correlated but the variance of errors would be different across different types of expenditure (revenue).

From the above discussion, it is evident that estimating a separate equation for each country is a more viable option than running a panel data model. Also, the estimation procedure should take into account the contemporaneous errors across (1) and (2) and their heteroscedasticity within different equations in each system. For these considerations, the ideal is to apply SUR estimation method on (1) and (2) for each country separately.

#### IV. RESULTS

Given the paucity of the time series dimension for most countries, only Egypt, Lebanon and Saudi Arabia could be estimated as independent systems. To gain a picture of the factors that ‘on average’ affect the distribution of expenditure and revenue, we estimate systems (1) and (2), taking in one sample the oil-importing countries, and in the other sample the oil-exporting countries. This division stems from the premise that the factors potentially affecting the distribution of expenditure and revenue do not have the same impact in oil-importing countries as they do in oil-exporting countries. Hence, system (1) is estimated using SUR for oil-importing and oil-exporting subsamples.

The results of the estimation are depicted in table 1. Several interesting points can be drawn from these. First, all included types of expenditure (health and education, social protection, subsidies and wage bill) are highly positive autoregressive, evident by the statistical and economic significance of the estimated coefficients. This indicates that all these expenditures have high memory, which points to the sluggishness of government expenditures in general. Hence, failing to consider this autoregressive nature of government would distort and produce bias in the obtained results.

**Table 1. Expenditure on health and education, social protection, subsidies and wages (total)**

Explanatory variables	System	
	Equation 1: expenditure on health and education/total expenditure	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	0.02673**	0.04713**
Expenditure on health and education/total expenditure $t-1$	0.87729***	0.78882***
Growth in real GDP $t-1$	-0.04116	0.07516
Voice and accountability	-0.01175	0.00318
Political stability and absence of violence/terrorism	0.00200	-0.00309
Government effectiveness	-0.00622	0.01600
Regulatory quality	0.00483	-0.00109
Rule of law	0.00808	-0.00345
Control of corruption	0.00256	-0.01641**
Crude oil Brent	-0.00012*	-0.00010
Diagnostic statistics		
R <sup>2</sup>	0.935	0.794
Adjusted R <sup>2</sup>	0.926	0.754
D-W <sub>stat</sub>	2.074	2.689

Table 1 (continued)

Explanatory variables	System	
	Equation 1: expenditure on health and education/total expenditure	
	<i>Oil importing</i>	<i>Oil exporting</i>
N (observations)	70	57
Explanatory variables	System	
	Equation 2: expenditure on social protection/total expenditure	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	0.02908*	0.04192
Expenditure on social protection/total expenditure $t-1$	0.93864***	0.75300***
Growth in real GDP $t-1$	-0.47564***	-0.07138
Voice and accountability	-0.01868	0.08162*
Political stability and absence of violence/terrorism	0.00084	0.00154
Government effectiveness	-0.00461	-0.05734
Regulatory quality	0.01485	0.04159
Rule of law	0.00394	-0.02654
Control of corruption	-0.00012	0.01503
Crude oil Brent	-0.00007	0.00081***
AR (1)	-	-0.71049***
Diagnostic statistics		
R <sup>2</sup>	0.898	0.789
Adjusted R <sup>2</sup>	0.884	0.717
D-W <sub>stat</sub>	2.646	2.831
N (observations)	74	40
Explanatory variables	System	
	Equation 3: expenditure on subsidies/total expenditure	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	0.01408	0.00784
Expenditure on subsidies/total expenditure $t-1$	0.66042***	0.79371***
Growth in real GDP $t-1$	0.07620	-0.00598
Voice and accountability	0.00111	0.01180
Political stability and absence of violence/terrorism	0.00988	0.00880
Government effectiveness	-0.02442	-0.03037
Regulatory quality	-0.00824	0.00021
Rule of law	-0.04928**	0.01895
Control of corruption	0.04050	-0.00680
Crude oil Brent	0.00056**	0.00031**
Diagnostic statistics		
R <sup>2</sup>	0.757	0.841
Adjusted R <sup>2</sup>	0.723	0.812
D-W <sub>stat</sub>	1.883	3.109
N (observations)	75	59
Explanatory variables	System	
	Equation 4: wage bill/total expenditure	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	0.06536**	0.05679*
Wage bill/total expenditure $t-1$	0.78731***	0.85054***
Growth in real GDP $t-1$	-0.19672	-0.09237
Voice and accountability	-0.01043	0.01609
Political stability and absence of violence/terrorism	0.00307	-0.01238
Government effectiveness	-0.00388	0.07485***

**Table 1** (continued)

Explanatory variables	System	
	Equation 1: expenditure on health and education/total expenditure	
	<i>Oil importing</i>	<i>Oil exporting</i>
Regulatory quality	-0.01501	-0.02296
Rule of law	0.03711	-0.00724
Control of corruption	-0.00682	-0.01715
Crude oil brent	0.00007	-0.00005
Diagnostic statistics		
R <sup>2</sup>	0.776	0.897
Adjusted R <sup>2</sup>	0.749	0.880
D-W <sub>stat</sub>	2.285	2.777
N (observations)	84	66

Notes: \* Significant at 10%; \*\* significant at 5%; \*\*\* Significant at 10%.

Second, as regards other control variables and their effect on different expenditures, results are varied. Lagged output growth has a significant effect on expenditure on social protection only in oil-importing countries, where an increase in such growth would lead to a reduction in the expenditure on social protection relative to other types of expenditure. This is intuitive; in cases of recession or negative shocks in output, the average government in an oil-importing country would expand its social protection coverage to reduce the adverse effect of economic downturn. Oil price was found to have a negative effect on expenditure on health and education in both oil-importing and oil-exporting countries but only slightly so in the case of the former group. However, an increase in oil price seems to have a significant positive effect on social protection for oil-exporting countries. Similarly, oil price is found to have a highly significant and positive effect on subsidy expenditure. By way of explanation, an increase in the price of oil would necessitate the allocation of more funds to cover the difference between the usually fixed domestic price of oil/energy and the international price. This is true for both groups of countries as the price of oil is highly subsidized in almost all countries.

Third, consistent with our prediction, most governance indicators have no significant effect on the two groups of countries across the different types of expenditure, although a few exceptions are worthy of mention. An improvement in the control of corruption seems to reduce expenditure on health and education as a share of total expenditure in oil-exporting countries, while enhancing voice and accountability would seem to increase expenditure on social protection. For oil-importing countries, only the rule of law indicator seems to have a significant effect on subsidy expenditure; that is, a reduction in the rule of law in general would increase the portion of expenditure directed to subsidies.

In order to reduce the aggregation bias resulting from grouping together the observations of several countries, in so much as the data permitted this, system (1) was estimated for a number of countries; mainly Egypt, Lebanon and Saudi Arabia. Results of these three countries' estimation are summarized in table 2.

**Table 2 Expenditure on health and education, social protection, subsidies and wages (Egypt, Lebanon, Saudi Arabia)**

Explanatory variables	System		
	Equation 1: expenditure on health and education/total expenditure		
	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
Constant	0.21975***	0.10280***	-0.18176**
Expenditure on health and education/total expenditure <sub>t-1</sub>	0.27166**	0.10656	0.88996***
Growth in real GDP <sub>t-1</sub>	-1.04546	0.01532	0.33314***

**Table 3** (continued)

	<b>System</b>		
	Equation 1: expenditure on health and education/total expenditure		
Explanatory variables	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
Voice and accountability	-0.01856	-0.03827	-0.12651***
Political stability and absence of violence/terrorism	0.04571*	-0.01486	0.03931*
Government effectiveness	0.10162	-0.01455	-0.05672**
Regulatory quality	-0.12661***	0.05636**	-0.06894*
Rule of law	0.01335	0.09102*	0.08112*
Control of corruption	0.09217**	-0.01781	0.01659
Crude oil Brent	0.00062*	-0.00014	-0.00025
Diagnostic statistics			
R <sup>2</sup>	0.920	0.663	0.923
Adjusted R <sup>2</sup>	0.816	0.158	0.807
D-W <sub>stat</sub>	3.276	1.819	3.829
N (observations)	17	16	16
	<b>System</b>		
	Equation 2: expenditure on social protection/total expenditure		
Explanatory variables	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
Constant	-0.37906***	0.01871	-0.60468**
Expenditure on social protection/total expenditure <sub>t-1</sub>	0.20054*	0.20262	1.37709***
Growth in real GDP <sub>t-1</sub>	4.03743*	-0.08035	0.46065***
Voice and accountability	-0.05133	-0.01846	-0.26412***
Political stability and absence of violence/terrorism	-0.11502	-0.04307***	0.05742
Government effectiveness	-0.58227**	0.10163***	-0.11614
Regulatory quality	0.20506*	-0.03894	0.08987
Rule of law	0.25060	0.00119	0.19585
Control of corruption	-0.33763**	0.00737	-0.00854
Crude oil Brent	-0.00155	-0.00047***	-0.00025*
	<b>System</b>		
	Equation 2: expenditure on social protection/total expenditure		
Explanatory variables	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
AR (1)	-	-	-0.90959***
Diagnostic statistics			
R <sup>2</sup>	0.910	0.871	0.979
Adjusted R <sup>2</sup>	0.795	0.677	0.768
D-W <sub>stat</sub>	3.431	2.312	3.336
N (observations)	17	16	12
	<b>System</b>		
	Equation 3: expenditure on subsidies/total expenditure		
Explanatory variables	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
Constant	-0.10823	0.00411	-0.09824***
Expenditure on subsidies/total expenditure <sub>t-1</sub>	0.03758	-0.5294***	0.29135***
Growth in real GDP <sub>t-1</sub>	0.60303	0.06868	-0.02227***
Voice and accountability	-0.13885	0.21709***	-0.02626***
Political stability and absence of violence/terrorism	0.00657	0.0196***	-0.06852***
Government effectiveness	-0.22189	-0.20704***	-0.12089***
Regulatory quality	0.27292***	-0.05036***	-0.06487***
Rule of law	-0.14921	-0.31043***	0.24749**



**Table 4** (continued)

Explanatory variables	System		
	Equation 1: expenditure on health and education/total expenditure		
	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
Control of corruption	-0.25578**	0.08172***	0.11362***
Crude oil Brent	-0.00023	0.00132***	0.00007***
AR (1)	-	-	-0.71439***
Diagnostic statistics			
R <sup>2</sup>	0.937	0.988	0.999
Adjusted R <sup>2</sup>	0.856	0.970	0.995
D-W <sub>stat</sub>	3.256	2.329	2.781
N (observations)	17	16	13
Explanatory variables	System		
	Equation 4: wage bill/total expenditure		
	<i>Egypt</i>	<i>Lebanon</i>	<i>Saudi Arabia</i>
Constant	0.26032***	0.18541***	
Wage bill/total expenditure <sub>t-1</sub>	-0.08953	0.27922	
Growth in real GDP <sub>t-1</sub>	-0.28257	0.03345	
Voice and accountability	0.04380	0.07437***	
Political stability and absence of violence/terrorism	-0.00147	0.02061**	
Government effectiveness	-0.08709	-0.00864	
Regulatory quality	-0.11462***	-0.01764	
Rule of law	0.22291***	-0.03141	
Control of corruption	-0.06868	0.01797	
Crude oil Brent	-0.00003	0.00011	
Diagnostic statistics			
R <sup>2</sup>	0.867	0.665	
Adjusted R <sup>2</sup>	0.695	0.162	
D-W <sub>stat</sub>	2.635	2.855	
N (observations)	17	16	

Notes: \* Significant at 10%; \*\* significant at 5%; \*\*\* Significant at 10%.

Notably, many more governance indicators appear to significantly affect the allocation of expenditure within these three countries. Furthermore, the magnitude and direction of the effect vary across countries. Such results confirm that governance indicators have heterogeneous effects across countries and aggregation would distort the results. Below, we explore how the six indicators of governance affect the endogenous variables, which are health and education, social protection, subsidies and wage bill, all as a percentage of total expenditure for the aforementioned three countries. It is worth noting, though, that there is a problem of consistency in these country-specific estimations due to the limited sample size.

#### A. VOICE AND ACCOUNTABILITY

Voice and accountability seems to have a negative effect on expenditure on health and education, although only in Saudi Arabia is such an effect highly significant. Similarly, improvement in voice and accountability would seem to reduce government funds allocated to social protection. Again, the direction is the same for the three countries but only for Saudi Arabia does the effect seem highly significant. Expenditure on subsidies seems to be relatively and slightly reduced with improvement in voice and accountability in Saudi Arabia, but in Lebanon, such an improvement has a strong positive and significant effect on funds allocated for subsidies, and a moderate but significant effect on funds allocated to wages.



## B. POLITICAL STABILITY AND ABSENCE OF VIOLENCE/TERRORISM

Results show that a higher level of stability has a salutary effect on government expenditure directed to health and education in Egypt and Saudi Arabia. Interestingly, political stability and absence of violence/terrorism reduce the percentage of funds allocated for social protection in Lebanon. It is true the effect is not sizeable in terms of magnitude, but it is still highly statistically significant. As regards expenditure on subsidies for Lebanon, improvements in political stability and reduced violence/terrorism would seem to increase this type of expenditure relative to other government expenditure. For Saudi Arabia, however, it has the opposite effect. Again, estimated coefficients are highly statistically significant but in terms of magnitude, they are modest. Continuing this theme of positive effect, political stability and absence of violence/terrorism seems to increase the share of wages in total expenditure.

## C. GOVERNMENT EFFECTIVENESS

In general, improvement in government effectiveness has a negative effect on different types of expenditure. Results show that better government effectiveness reduces expenditure on health and education in Saudi Arabia, on social protection in Egypt, and on subsidies in Lebanon and Saudi Arabia. In addition, this negative effect seems to be most prominent in magnitude for Egypt on social protection followed by Lebanon and Saudi Arabia for subsidies. Government effectiveness is found to have a positive effect on social protection only in Lebanon. It is possible to explain this generally dampening effect of government effectiveness on expenditures in terms of efficiency gain; as governments become more effective and hence efficient, they are able to produce the same level of service at a reduced cost.

## D. REGULATORY QUALITY

The effect of regulatory quality seems to vary widely across types of expenditure and countries. It is important to remember that the regulatory quality indicator is related to the ability of government to formulate policies and regulations that enable private-sector development. Hence, one can think of the relationship between regulatory quality and government expenditure as closely related to the potential trade-off or complementarity between private-sector involvement in a given sector and government expenditure in the same sector. Results show there is a significant trade-off between private-sector participation and government expenditure in the health and education sectors. The same association, though to a lesser extent, exists in Saudi Arabia. In Lebanon, however, there is some sign of complementarity between private-sector and government expenditure in these sectors. This complementarity is found also in Egypt for social protection and subsidies, whereby effectively promoting private-sector development would induce more government expenditure on social protection and subsidies. For Lebanon and Saudi Arabia, there are signs of a trade-off between government policies promoting private-sector and government expenditure on subsidies as a share of total expenditure. Despite its high statistical significance, however, this trade-off relationship is not strong economically for either country. Lastly, promoting private-sector development would seem to have a significant dampening effect on government expenditure on wages in Egypt. This is quite intuitive, given the large number of the government and public-sector employees, who could potentially be retrenched as a result of private-sector development and more private-sector job opportunities.

## E. RULE OF LAW

In a similar manner to regulatory quality, the rule of law indicator has a varied effect, depending on the type of expenditure and country in question. Results show that enforcing the rule of law has a positive, moderately significant effect on expenditure on health and education for Lebanon and Saudi Arabia. The more prominent effect from enhancing the rule of law is on expenditure on subsidies in Saudi Arabia and wages in Egypt. In both cases, the rule of law indicator came out positive and highly significant. Interestingly, enhancing the rule of law has a negative effect on expenditure on subsidies as a share of total expenditure in Lebanon.

## F. CONTROL OF CORRUPTION

Results indicate that improving the control of corruption in Egypt seems to increase government funds allocated to health and education. Most interesting, however, is the evidence that limiting and combating corruption in Egypt dramatically reduces government expenditure on social protection and subsidies. This result is consistent with the popular belief that widely prevalent social and subsidy schemes in Egypt are often plagued by corrupt practices. Hence, combating corruption would decrease the waste and other unnecessary transaction costs, leading to a significant reduction in government expenditure on social protection and subsidies. In the case of Lebanon and of Saudi Arabia, the opposite result is obtained, whereby controlling corruption would lead to an increase in the share of government expenditure directed to subsidies.

Before turning our attention to the revenue side, it is important to provide a caveat to the above analysis. The estimation results for applying system (1) on individual countries (Egypt, Lebanon and Saudi Arabia) suffer from limited observations, which reduce the power of test statistics. This problem is more acute for Saudi Arabia given the limited time span of available data.

For government revenue, system (2) is estimated using two subsamples: oil-importing and oil-exporting countries. The endogenous variables in the system are direct taxes, indirect taxes and non-tax revenue, all as a percentage of total revenue. Estimating system (2) for individual countries was not attempted given the short time span for each. By examining table 5, one can draw the following points.

First, including the lagged endogenous appears to be a correct specification given the highly significant level of its coefficient in all three equations in system (2) and for the two subsamples. The only case where lagged endogenous is not significant is in the case of the indirect tax equation for oil-exporting countries. What is worth noting is the large magnitude of the estimated coefficients, ranging between 0.52 and 0.97. This indicates most types of government revenue are highly persistent and follow an autoregressive process with high memory.

Second, for the equation of direct tax for oil-importing countries, most of the governance indicators appear to be statistically significant. Their point estimates, however, are small in magnitude. Improvement in political stability and absence of violence, regulatory quality and control of corruption appear to reduce the share of direct taxes as a ratio of total revenue, whereas government effectiveness and rule of law have the opposite positive effect on direct taxes. For oil-exporting countries, only the rule of law appears to have a significant effect on direct taxes. Interestingly, the effect is negative and quite large in magnitude. More in-depth analysis should be carried out to unravel the source of this strong negative relation between rule of law and the ratio of direct taxes to total revenue in oil-exporting countries.

**Table 5. Direct, indirect and non-tax revenues for oil-importing and oil-exporting countries**

Explanatory variables	System	
	Equation 1: direct tax/total revenue	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	-0.01129	0.07619
Direct tax/total revenue $t-1$	0.92871***	0.71838***
Growth in real GDP $t-1$	0.18685	0.25191
Voice and accountability	0.01165	0.05270
Political stability and absence of violence/terrorism	-0.03355	0.03413*
Government effectiveness	0.08289***	0.17751*
Regulatory quality	-0.04245*	-0.06202
Rule of law	0.02776**	-0.2678***
Control of corruption	-0.04468**	0.05668
Crude oil Brent	0.00007	0.00074*
AR (1)	-0.42727***	-0.58804***

**Table 3 (continued)**

Explanatory variables	System	
	Equation 1: direct tax/total revenue	
	<i>Oil importing</i>	<i>Oil exporting</i>
Diagnostic statistics		
R <sup>2</sup>	0.930	0.891
Adjusted R <sup>2</sup>	0.909	0.857
D-W <sub>stat</sub>	2.313	2.857
N (observations)	64	43
Explanatory variables	System	
	Equation 2: indirect tax/total revenue	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	0.1592***	0.30829
Indirect tax/total revenue <sub>t-1</sub>	0.70452***	-0.06517
Growth in real GDP <sub>t-1</sub>	-0.02043	-0.32967
Voice and accountability	0.03781	-0.35978
Political stability and absence of violence/terrorism	-0.00326	0.24256*
Government effectiveness	0.00024	-0.14049
Regulatory quality	0.04356	0.24686*
Rule of law	0.02267	-0.60804**
Control of corruption	-0.00005	-0.09843
Crude oil Brent	-0.00008	0.00284**
AR (1)	0.03317	0.15522
Diagnostic statistics		
R <sup>2</sup>	0.927	0.840
Adjusted R <sup>2</sup>	0.913	0.756
D-W <sub>stat</sub>	2.313	1.582
N (observations)	64	30
Explanatory variables	System	
	Equation 3: non-tax revenue/total revenue	
	<i>Oil importing</i>	<i>Oil exporting</i>
Constant	0.10069***	0.28314**
Non-tax revenue/total revenue <sub>t-1</sub>	0.74094***	0.52367***
Growth in real GDP <sub>t-1</sub>	0.04669	0.12695
Voice and accountability	-0.02734	0.16055
Political stability and absence of violence/terrorism	0.0071	-0.07485
Government effectiveness	-0.06068	0.03155
Regulatory quality	0.04024	-0.02184
Rule of law	-0.07635***	0.36509**
Control of corruption	0.0576*	0.00100
Crude oil Brent	-0.00012	0.00106***
Explanatory variables	System	
	Equation 3: non-tax revenue/total revenue	
	<i>Oil importing</i>	<i>Oil exporting</i>
AR (1)		-0.30303**
Diagnostic statistics		
R <sup>2</sup>	0.883	0.990
Adjusted R <sup>2</sup>	0.862	0.984
D-W <sub>stat</sub>	2.868	2.279
N (observations)	60	27

Notes: \* Significant at 10%; \*\* significant at 5%; \*\*\* Significant at 10%.

Third, in contrast to direct taxes, indirect taxes seem to be less affected by governance indicators. Only voice and accountability and rule of law have a significant impact on indirect taxes for oil-importing countries. Both indicators have positive but weak economic effect. None of the governance indicators has a significant effect on indirect taxes for oil-exporting countries.

Fourth, few governance indicators appear to affect the ratio of the non-tax revenues to total revenue. For oil-importing countries – and consistent with the positive and significant effect of the improvement in the rule of law on tax revenues (both direct and indirect) – the share of non-tax revenue appears to decrease with improvement in the rule of law. Again, similarly to the two tax equations, the effect of rule of law is rather small in magnitude. As for the subsample of oil-exporting countries, and contrary to the case of oil-importing ones, improvement in the rule of law effects an increase in the share of non-tax revenue; the effect, however, appears to be much more prominent.

Lastly, as expected, the price of oil has no effect on all types of government revenues for oil-importing countries, but for oil-exporting countries the situation is different. According to the obtained results, the coefficient of oil price is significant in all three estimated equations in system (2). Higher oil prices correspond with higher shares of direct taxes and non-tax revenues, and with a lower share of indirect taxes. This is intuitive, as higher oil prices would result in a boom in oil-exporting countries. During boom periods, incomes increase and the share of income tax would rise accordingly. For non-tax revenue, the situation is more straightforward as a higher oil price would directly result in a proportional increase in oil revenues, which constitute almost all non-tax revenue for oil-exporting countries.

## V. CONCLUSIONS AND POLICY IMPLICATIONS

The aim of this paper was to explore the effect of governance indicators on the distribution of revenues and spending in selected Arab countries. Specifically, we were interested in how improvements in various indicators would affect government expenditure on health, education, other social spending and subsidies, and the impact on different types of revenues. The paper has examined analytically and empirically the effect of governance indicators on the distribution of different types of expenditure and revenue across time and across country grouping (oil exporters and oil importers). It is worth noting that each type of expenditure (revenue) is taken as a ratio of total expenditure (revenue). Consequently, a significant effect of a certain governance indicator on a given type of expenditure (revenue) means that an improvement in this governance indicator would alter the distribution towards or away from this type of expenditure, depending on the sign of the coefficient.

Results, as expected, are mixed, but some interesting stories emerge. First, most types of expenditure and revenue have strong memories, implying that shocks to government expenditure and revenue have long-lasting effects on public finance. This observation is more prevalent for oil-importing Arab countries than oil-exporting ones. Second, it would be misleading to determine and gauge the effect of governance indicators on the allocation of government expenditure and revenue for all Arab countries or even for oil exporters and oil importers subsamples. This is because there is excessive heterogeneity across countries as regards the effect of governance indicators on expenditure and revenue. This was observed by examining empirically the impact of governance indicators on different types of expenditure and different sources of revenues for three countries: Egypt, Lebanon and Saudi Arabia. Third, even for a certain grouping of countries or for a specific country, the impact of governance widely varies across governance indicators and across types of expenditure and source of revenue. This implies that, all other things being equal, a general improvement in governance would not make Arab countries ‘converge’ to a certain distribution of government expenditure and revenue. Nevertheless, it is possible to intuitively explain most of these results given country-specific characteristics and circumstances.

In general, improvement in government effectiveness has a negative effect on different types of expenditure. This negative effect seems quite prominent in magnitude for Egypt on social protection, and in Lebanon and Saudi Arabia on expenditure on subsidies. It is possible to explain this inhibiting effect of

government effectiveness on different types of expenditure on the basis of efficiency gain; as governments become more efficient, they are able to produce the same level of service but at a reduced cost. This result has important implications. Reallocating funds away from certain types of expenditure may not affect the ability of the government to deliver if this rationing of expenditure is accompanied by an increase in government effectiveness. This is extremely relevant to most countries in the Arab region who are undertaking fiscal consolidation.

As for regulatory quality, which closely linked the ability of government to formulate policies that enable private-sector development, results point to a significant trade-off between private-sector participation and government expenditure in the health and education sector in Egypt, and to a lesser extent in Saudi Arabia, whereas the opposite is found in Lebanon. Additionally, promoting private-sector participation has a significant dampening effect on wages in Egypt. This result is intuitive, given the large government and public-sector workforce, which could potentially be reduced with the private sector's active engagement. One caveat that may slightly dampen the buoyancy of this result is that in some countries, especially poor ones, the active participation of the private sector should not crowd out government expenditure in critical sectors such as health and education. The reason is simple. Private-sector engagement, say in health and education, is directed to serve only affluent segments of the population. Hence, should public expenditure on human capital be rationalized, poor segments of the population would be made worse off.

Results for the rule of law are mixed. Spending on subsidies in Saudi Arabia and wages in Egypt react positively to improvements in the rule of law but negatively for subsidies in Lebanon. Combating corruption, on the other hand, has a strong impact on social protection and subsidies in Egypt, rationalizing these two important types of expenditure. By way of explanation, combating corruption decreases waste and other unnecessary transaction costs, leading to significant reduction in government expenditure. This result has crucial implications for Egypt as it experiences tough austerity measures in the domain of subsidies.<sup>10</sup> Combating corruption would result in significant savings in subsidies and social protection expenditures, enabling the government to achieve often contradictory objectives: cutting expenditure and establishing effective subsidy and social protection systems. Interestingly, the opposite effect is found in the case of Lebanon and Saudi Arabia.

For revenue, it is found that many governance indicators have statistically significant effects on direct taxes, although almost all of them have rather weak economic significance. For oil-exporting countries, only the rule of law appears to have a significant and negative effect on direct taxes and a significant positive effect on non-tax revenue. Further analysis should be carried out to reveal the origin of this strong relationship. The most prominent result is the effect of the rule of law in oil-exporting countries, where improvement in this indicator seems to have a strong negative effect on direct tax and a strong positive effect on non-tax revenues. As expected, the price of oil has no effect on all types of government revenue for oil-importing countries, but for oil-exporting countries, a higher oil price corresponds with higher shares of direct taxes and non-tax revenues, and with a lower share of indirect taxes. This is intuitive; during boom periods, incomes increase and the share of income tax rises accordingly. For non-tax revenue, the situation is more direct, with higher oil prices resulting in an increase in oil revenues, which constitute almost all non-tax revenue for oil-exporting countries.

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<sup>10</sup> Cutting subsidies entails expanding social protection measures to dilute the effect of these cuts.

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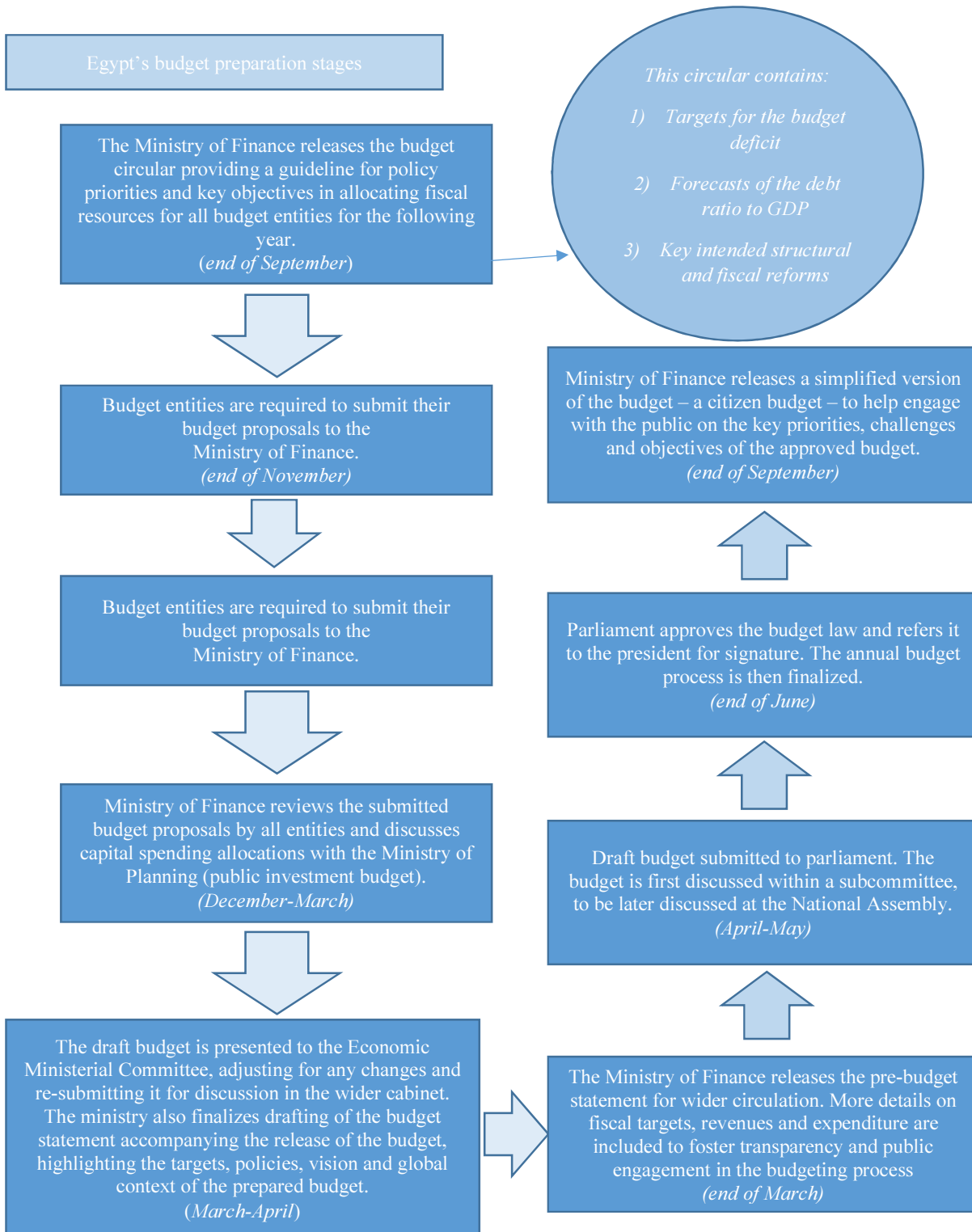


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## Annex I

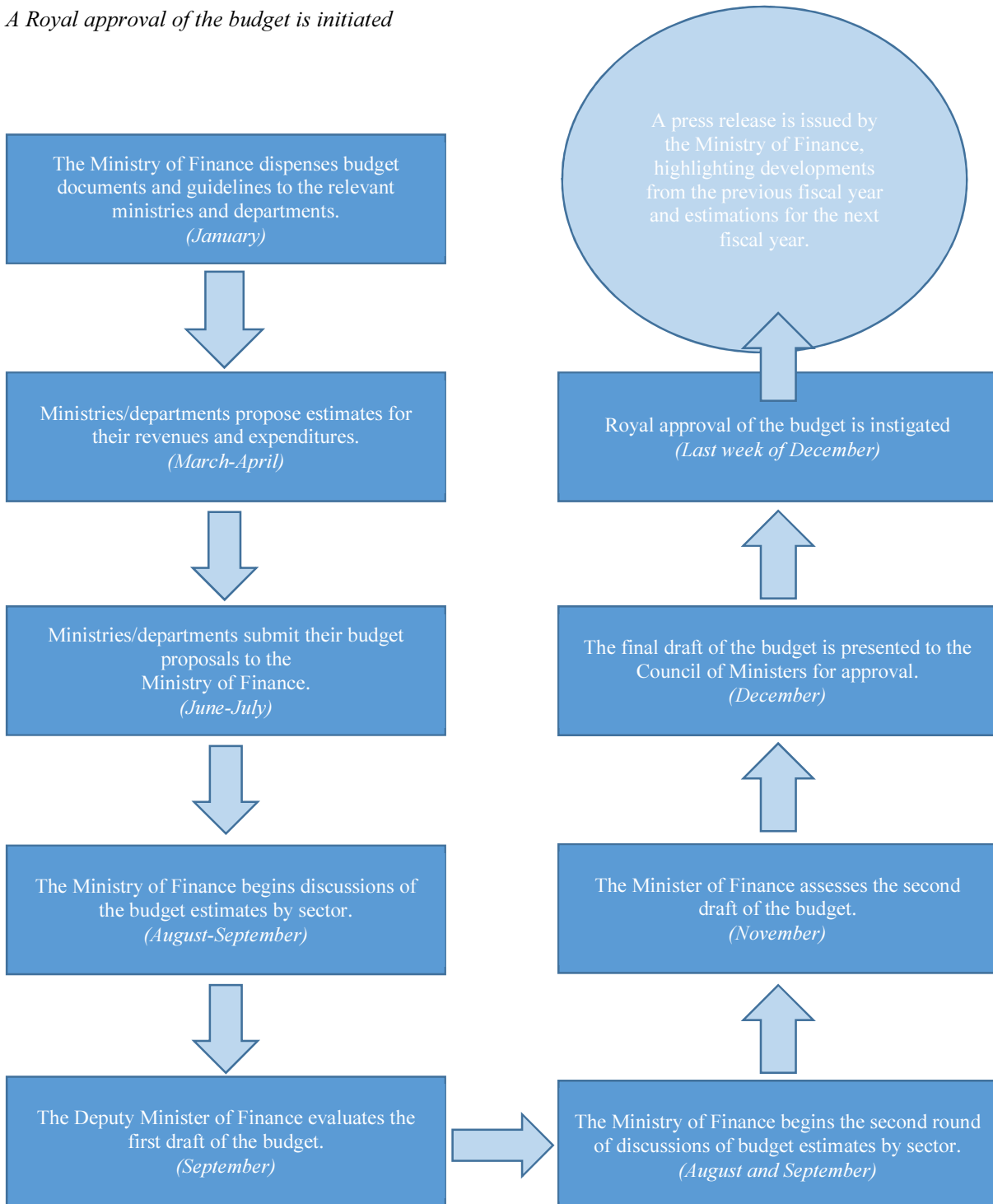
### Case studies: budget preparations in Egypt, Saudi Arabia, Tunisia and the United Arab Emirates



Source: Ministry of finance, Egypt (internal documents).

## Egypt's budget preparation

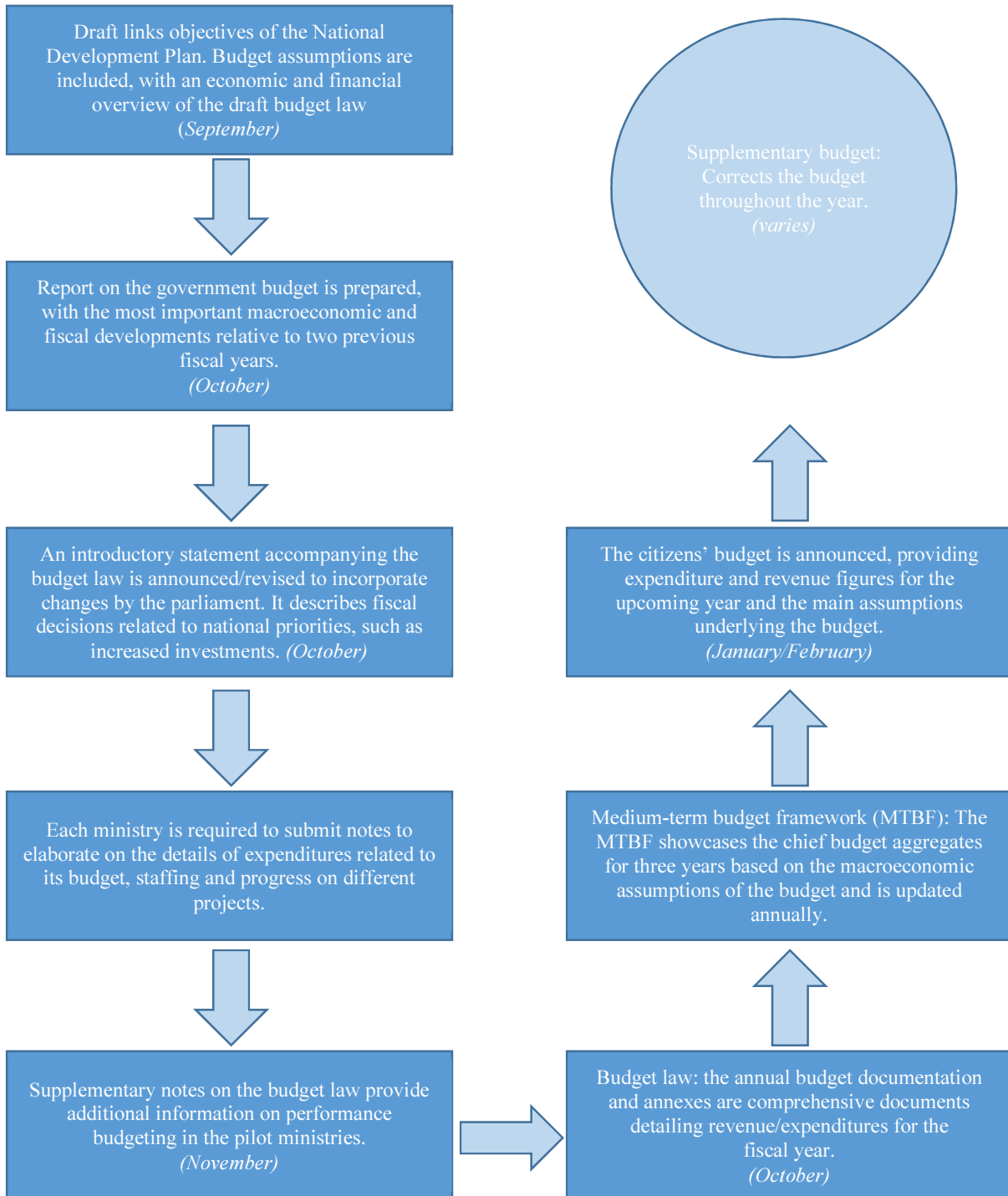
*A Royal approval of the budget is initiated*



Source: Eid (2016).

## Tunisia's budget preparation

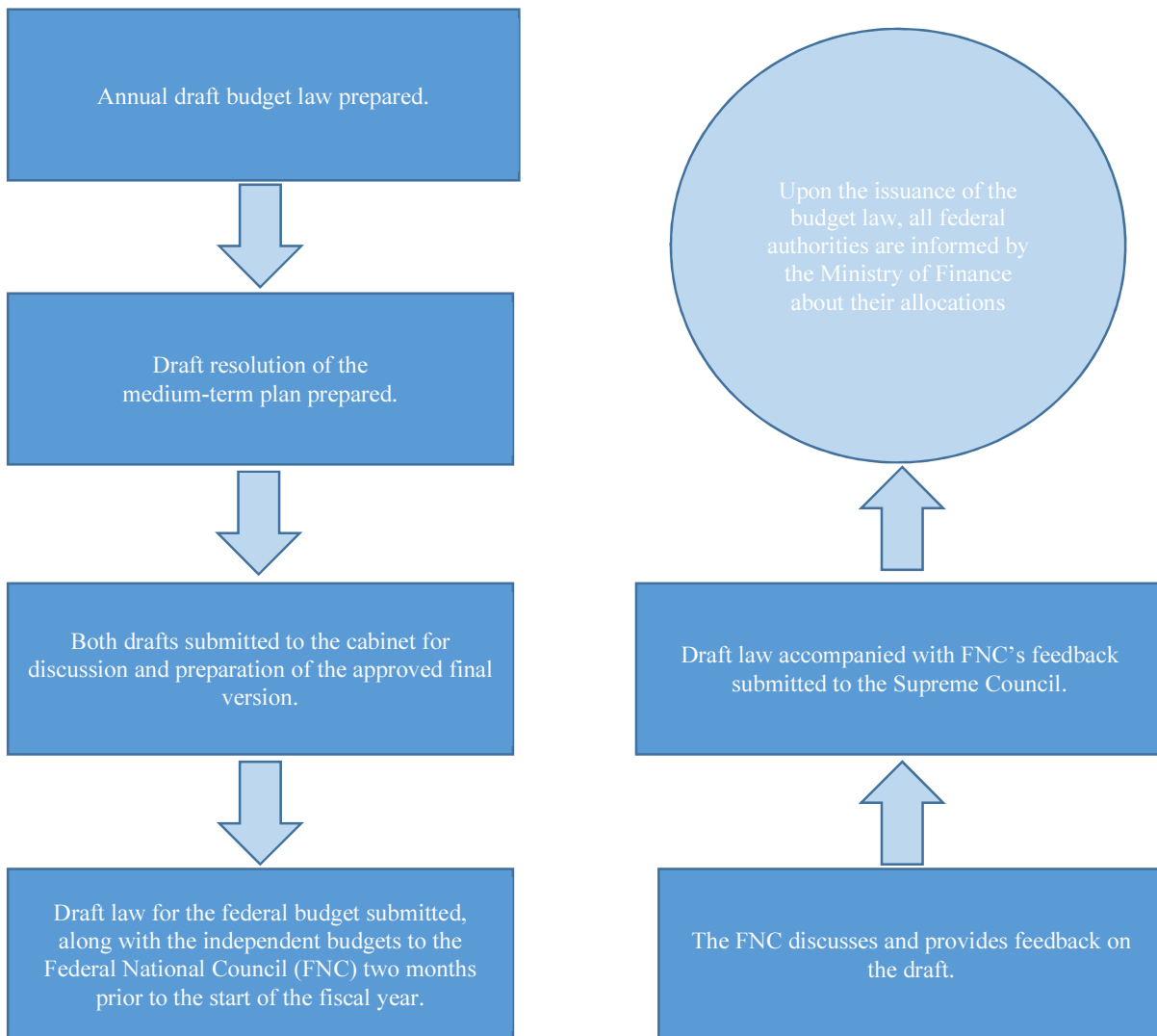
*A Royal approval of the budget is initiated*



Source: IMF (2016a).

## The United Arab Emirates' budget preparation

*A Royal approval of the budget is initiated*



Source: United Arab Emirates Ministry of Finance (b).

## Annex II

### Variables included and source

Revenue IMF GFS	IMF/national statistics
Taxes IMF GFS	IMF/national statistics
Individual taxes IMF GFS	IMF/national statistics
Corporate taxes IMF GFS	IMF/national statistics
Taxes on goods and services IMF GFS	IMF/national statistics
Taxes on international trade and transactions IMF GFS	IMF/national statistics
Taxes on property IMF GFS	IMF/national statistics
Grants IMF GFS	IMF/national statistics
Revenue (excluding grants) IMF GFS	IMF/national statistics
Total expenditure IMF GFS	IMF/national statistics
Current expenditure	IMF/national statistics
Capital expenditure	IMF/national statistics
Compensation of employees	IMF/national statistics
Subsidies expense	IMF/national statistics
Social benefits expense	IMF/national statistics
Subsidies + social benefits	IMF/national statistics
Grants	IMF/national statistics
Interest expense	IMF/national statistics
Use of goods and services	IMF/national statistics
Net lending (i.e. fiscal balance)	IMF/national statistics
Primary net lending/borrowing (i.e. primary balance)	IMF/national statistics
Total expenditure (excl. defence expenses)	IMF/national statistics
Total expenditure (excl. defence and public order and safety expenses)	IMF/national statistics
Expenditure on health	IMF/national statistics
Expenditure on education	IMF/national statistics
Expenditure on social protection	IMF/national statistics
Expenditure on housing and community amenities	IMF/national statistics
Social spending (according to IMF GFS)	IMF/national statistics
Expenditure on defence	IMF/national statistics



Expenditure on defence and public order and safety	IMF/national statistics
Expenditure on economic affairs	IMF/national statistics
Expenditure on economic, commercial and labour affairs	IMF/national statistics
Expenditure on agriculture, fishing, forestry and hunting	IMF/national statistics
Expenditure on fuel and energy	IMF/national statistics
Expenditure on mining, manufacturing and construction	IMF/national statistics
Expenditure on transport	IMF/national statistics
Expenditure on communication	IMF/national statistics
Expenditure on other industries	IMF/national statistics
Expenditure on economic affairs R&D	IMF/national statistics
Expenditure on economic affairs	IMF/national statistics
GDP current- estimate in red WEO	IMF
GDP deflator; estimate in red WEO	IMF
GDP deflator 2010 calculated	IMF
GDP constant 2010 base year calculated	IMF
Output gap (percentage of potential GDP) WEO	IMF
Total investment (percentage of GDP) WEO	IMF
Gross national savings (percentage of GDP) WEO	IMF
Inflation, average consumer prices (index)	IMF
Inflation, average consumer prices (percentage change) WEO	IMF
General government revenue (percentage of GDP) WEO	IMF
General government total expenditure (percentage of GDP) WEO	IMF
General government net lending/borrowing (percentage of GDP) WEO	IMF
General government primary net lending/borrowing (percentage of GDP) WEO	IMF
General government net debt (percentage of GDP) WEO	IMF

<b>General government gross debt (percentage of GDP)</b> WEO	IMF
<b>Current account balance (percentage of GDP)</b> WEO	IMF
<b>Voice and accountability</b>	World Bank World Governance Indicators
<b>Political stability and absence of violence/terrorism</b>	World Bank World Governance Indicators
<b>Government effectiveness</b>	World Bank World Governance Indicators
<b>Regulatory quality</b>	World Bank World Governance Indicators
<b>Rule of law</b>	World Bank World Governance Indicators
<b>Control of corruption</b>	World Bank World Governance Indicators
WEO real GDP	IMF
<b>Growth in real GDP</b>	IMF
<b>Expenditure on health and education/total expenditure</b>	IMF
<b>Expenditure on social protection/total expenditure</b>	IMF
<b>Expenditure on communication and transport/total expenditure</b>	IMF
<b>Expenditure on subsidies/total expenditure</b>	IMF
<b>Direct tax/total revenue</b>	IMF
<b>Indirect tax/total revenue</b>	IMF
<b>Non-tax revenue/total revenue</b>	IMF