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Impact of Fiscal Policy on Inequality and Poverty in the Arab Republic of Egypt

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Abstract

Abstract: This study assesses the redistributive impact of fiscal policy—including expenditures and taxation—in the Arab Republic of Egypt. Using a broadly applied methodology, a fiscal incidence analysis is conducted using survey and government data for fiscal year 2015. Evidence shows that Egyptian fiscal policy reduces income inequality, and that among individual fiscal programs, the largest reduction is due to public expenditures on the primary education system. Compared with similar countries, Egypt's overall fiscal policy placed it in the median of the distribution of inequality reduction. Fiscal policies in Egypt also led to a decrease in poverty, mostly from the flagship Tamween program. Poverty and inequality could be reduced more effectively if the country would shift away from spending on untargeted energy subsidies to more targeted transfers. The large gap between the government's expenditures and revenues helps explain the positive outcomes on poverty and inequality but poses challenges in the long term.

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INTRODUCTION

The Arab Republic of Egypt is the most populous country in North Africa and the Arab World, with a population of approximately 95 million inhabitants. It is rich in natural resources, with the oil and gas sector making up approximately 15 percent of the country's gross domestic product (GDP). Its population has been rapidly increasing in recent years—at a pace of 2.6 percent since 2006—and due to the fact that the majority of the country is desert lands, the population density has also been increasing, as most of the population is settled along the Nile.

Egypt experienced a period of robust growth from 2005 to 2009, averaging an annual rate of 4.2 percent in real GDP per capita. The global financial crisis, and the political turmoil experienced in the wake of the Arab Spring in 2011, led to a slowdown of the economic activity and an average growth in real GDP per capita (in 2011 PPP) of 0.66 percent between FY10 and FY13. This rate has picked up since then, reaching 2.18 percent in FY15 and 2.26 percent in FY16.

Economic growth in the past few years has had limited success in lifting the population out of poverty. According to official figures, 27.8 percent of the Egyptian population was considered poor in 2015.[3] Moreover, important disparities in welfare across regions is an enduring feature: in Metropolitan Egypt about 15 percent of the population was considered poor, whereas in rural areas of Upper Egypt this share was almost four times higher. In terms of consumption inequality measured using the Household Income, Expenditure, and Consumption Survey (HIECS), Egypt is among the countries with lowest levels (as measured by the Gini index). It is notable, however, that a slight uptick has been found in the periods 2012 and 2013–15, with the Gini index being 30.8.[4]

The Government of Egypt (GoE) has introduced several flagship economic reforms aimed at correcting macroeconomic imbalances, addressing foreign exchange shortages, and improving the competitiveness of the economy. The package of reforms includes the devaluation of the Egyptian pound in March 2016, the adoption of a floating exchange rate in November 2016, and the implementation of the Civil Service Law. The government has also implemented a fiscal consolidation program, the highlights of which are the streamlining of energy subsidies and the adoption of a value-added tax (VAT) rate to replace the already existing goods and services tax (GST). On the business environment side, an industrial licensing law and a new investment law have been passed, and new insolvency and company laws are currently under discussion in the parliament. These reforms are aimed at improving the business environment to encourage private sector–led growth.

The reforms have had a positive effect on the fiscal accounts and external accounts. On the fiscal accounts side, Egypt's overall deficit decreased in FY17 to 10.9 percent of GDP (preliminary figures) compared to 12.5 percent of GDP a year earlier. Similarly, the primary deficit decreased to 1.8 percent of GDP in

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[3] Official rates follow an adjusted cost-of-basic-needs approach, producing household-specific poverty lines based on the caloric requirements of the household members and region-specific cost per calorie and Engel regressions. The average national poverty line is LE 5,788 per person per year and is equivalent to about US$4 per day in 2011 purchasing power parity (PPP). As a comparison, poverty rates based on the international poverty line of US$1.90/day at 2011 PPP was 1.35 percent.

[4] Estimate refers to the consumption per capita distribution, while official figures use consumption at the household level. It is important to note that distributions estimated using household surveys are typically truncated, as surveys do not adequately cover rich households. For Egypt, "correcting" for this truncation using real estate housing prices (Van der Weid, Lakner, and Ianchovichina 2016) or regional information on wealth, national accounts, and taxes (Alvaredo et al. 2018) suggest the Gini may be higher.

FY14, compared to 3.5 percent of GDP in the previous fiscal year. This improvement in Egypt's fiscal stance is due to both improvements in revenues which recorded 19.0 percent of GDP in FY17 compared to 18.1 percent of GDP in FY16 and a decrease in expenditures which came in at 29.8 percent of GDP in FY17 compared to 30.2 percent of GDP a year earlier. The increase in revenues was mainly driven by an increase in taxes on goods and services (the VAT) while the decrease in expenditure was mainly driven by a decrease in the wage bill.

The government's current fiscal objectives are to continue to address macroeconomic imbalances, including reducing the public debt level and repaying all arrears owed to foreign oil companies, while creating space for social protection programs. The government has started to implement its constitutional mandate of devoting 10 percent of GDP to social spending. To widen the protection granted to the segments of society that are most at risk, the government has increased the monthly amount and coverage of the conditional cash transfer program (Takaful and Karama); the amount was increased by LE 100 for all households in July 2017 and the program currently covers almost 2 million households. Starting in FY18, the government has also increased the allotment on the food ration cards from LE 21 to LE 50 per person per month. Income tax thresholds were increased, state pensions were increased by 15 percent, and an exceptional cost of living bonus was paid to state workers.

Recognizing the challenges faced by the GoE, it is imperative to produce evidence that can inform decisions regarding government allocation for spending across social programs. The GoE is engaged in a new vision that moves away from using universal subsidies as a poverty reduction strategy, while scaling up targeted transfers, engaging the private sector, and encouraging its growth by passing laws that aim to improve the business regulatory environment as well as promote competitiveness.

To contribute to the policy dialogue, this study assesses the redistributive impact of fiscal policy in Egypt using an internationally recognized methodology developed by the Commitment to Equity (CEQ) Institute (see Lustig 2018). The study's objective is to estimate the impact of fiscal revenue collections (taxes) and fiscal expenditures—direct cash and near-cash transfers, in-kind benefits, and subsidies—on household-level inequality and poverty. It then provides evidence to help policy makers and Egyptian stakeholders understand the trade-offs inherent between the government's current fiscal policy priorities (such as energy policy) and other, social goals (such as poverty reduction). The assessment is based on the fiscal policies as of 2015, since that is the most recent year for which a household survey is available and allows for estimating the incidence of all the policies analyzed.

Using the standard approach of the CEQ model, the impact of the fiscal system in the Egyptian population is described via an estimation of prefiscal and postfiscal income measures. The prefiscal measure comprises market income before any transfers (including, for instance, public spending on health and education, farming inputs, fuel and energy subsidies, and unconditional cash transfers) or taxes (including personal income taxes, general sales tax, property taxes, and so forth) of any kind have been received or paid by the household. Postfiscal income[5] takes prefiscal income and adds to it a subset of executed fiscal policies: subsidies and direct transfers received, direct and indirect taxes paid, and in-kind transfers received through use of services.[6] Poverty and inequality measures then are derived under pre- and postfiscal income measures. Thus, by comparing these welfare indicators for the distribution of each

[5] Postfiscal income concepts include net market Income, disposable income, consumable income, and final income. See Figure 7 and accompanying text.

[6] The primary microdata source used for this study is the 2015 Household Income, Expenditure, and Consumption Survey. Administrative and budgetary data are used to determine the magnitude of the fiscal policies allocated.

income measure, the paper shows the poverty (inequality) enhancing or reducing effects of different areas of fiscal policy.

Overall, Egyptian fiscal policy reduces income inequality; many individual fiscal programs also reduce inequality. The largest reduction in inequality is created by public expenditures on the primary education system. Among the comparator countries Egypt's fiscal policies place it in the median of the distribution in terms of inequality reduction. Fiscal policies in Egypt also lead to a decrease in poverty. The poverty headcount ratio falls because, even though poor households capture few of the energy subsidies available, direct transfer spending—coming mostly from the Tamween (food smartcard) and Baladi (bread allowance) programs—*improves* the net cash position of poor households relative to their prefiscal income magnitudes. Fiscal policy could be more effective at reducing poverty if transfers and subsidies were targeted to the less-well off. Finally, while the effects on inequality and poverty reduction of fiscal policies are evident, the large gap between the government's expenditures and revenues helps explain these positive outcomes. A more sustainable approach on fiscal policy (coupled with inclusive growth) will be required to keep promoting poverty reduction in the long term.

The rest of this paper is organized as follows. The next section provides an overview of transfer and taxes in Egypt. Following that is an explanation of the methodology behind the assessment and a description of the data sources. The subsequent section provides an overview of the main findings with international benchmark comparisons. Finally, a conclusion spells out the implications of the results for policy in Egypt.

GOVERNMENT EXPENDITURES AND REVENUES IN EGYPT

The fiscal system in Egypt comprises a large set of social expenditures, subsidies and transfers, and revenues from both direct and indirect taxes. On the expenditure side, government-provided benefits include spending on health and education, conditional and means-tested cash transfers programs, transfers to vulnerable groups (such as widows, children, and the elderly), and pension payments. The food smartcard program includes the distribution of an allotment of bread and a transfer to the beneficiary family to purchase goods at a family store. Energy subsidies in electricity, liquefied petroleum gas (LPG), gasoline, and other fuel products are also a large part of the social protection program the government relies on to support the low-income segment of society. On the tax side, instruments include personal income taxes, corporate income taxes, a property tax, a goods and services tax,[7] and excise taxes on alcohol, tobacco, fuel, and other selected products.

Table 1 provides a snapshot of public expenditures in fiscal year 2015.[8] Social expenditures— defined here as social protection, education, health, and housing and public utilities spending—account for 9.7 percent of GDP, equivalent to 32 percent of total expenditures. Subsidy spending (in specific commodities) accounts for approximately 13.6 percent of total expenditures (and 4.1 percent of GDP). Meanwhile, infrastructure—labeled economic affairs in table 1—accounts for 5.4 percent, and defense and law and order account for approximately 12 percent.

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[7] A new VAT system was adopted in 2016 to replace the GST.

[8] Egypt's fiscal year runs from July 1 to June 30. A similar distribution for FY16 was used to complement the exercise and estimate expenditures for calendar year 2015 (see Assumptions and allocation section). Table 1 presents government expenditures so that a clearer mapping to the CEQ exercise can be done. Thus, some classifications are not perfectly aligned with GoE typical categorizations. These differences are clarified in the table note.

The CEQ assessment aims to incorporate the largest number of policies for which there are data of a certain quality and level of disaggregation. Any fiscal components for which the expenditure categories are too broad, or for which the benefits (or payments) cannot be clearly mapped into the household survey data, are not deemed as informative and are not included in the exercise. Table 1 provides a snapshot of the fiscal expenditures covered by this assessment. Defense spending and infrastructure are not covered, nor are the subsidies destined to farmers or water subsidies. Subsidies on food items and energy products are captured by the exercise. Crucially, a large share of the social protection portfolio is also incorporated, with the exception of the budget line on housing and public utilities. Government expenditures on education are integrated into the analysis, although the level of disaggregation to assign benefits is restricted by the availability of two budget lines only: primary, preparatory, and secondary, on one hand, and tertiary education, on the other. The public service pension fund is included, but, as will be explained, the study treats these expenditures as part of the public sector or civil service wage bill rather than as a tax and transfer program.

It is important to highlight that the CEQ exercise should not be understood as an estimate of all expenditure categories that may have an effect on households' welfare. Some public expenditure elements have private analogues. In certain countries, the existence of private pension funds may allow individuals who do not belong to the public contributory pension system to contribute and receive income from these. Such goods and services are included in measures of income but are not part of the fiscal system and we do not attempt to determine their impact on welfare or inequality. Households may also spend on private education and tutoring for their children. As long as these are not payments or benefits from the public system, they are not part of the exercise.

In what follows, we provide an overview of each of the main fiscal tools and illustrate the policies that are part of the CEQ analysis. Given data limitations, the analysis is based on a snapshot of the Egyptian policy landscape as of 2015. This is because the latest available HIECS is from calendar year 2015, and the crux of the exercise is to be able to map the information from administrative data (government accounts) to the distribution of Egyptian households observed in the survey and estimate the benefits (payments) they receive (make).

Table 1. Egypt Government Expenditures, FY15

	Expenditures Egyptian pounds (billions)	Expenditures Share of expenditures (%)	GDP (%)	Included in analysis?
Total expenditure	733.4	100.0	30.0	
Social spending	236	32.2	9.7	
Social protection	86.1	11.7	3.5	
Pension fund contributions	33.2	4.5	1.4	Yes*
Direct cash transfers	13.5	1.8	0.6	
Takaful[a]	0.5	0.1	0.02	Yes
Karama[a]	0.01	0.0	<0.01	Yes
Grants to the general government	6.2	0.8	0.25	No
Child assistance and monthly allowances[b]	0.096	0.0	<0.01	No
Social solidarity transfers[c]	6.7	0.9	0.27	No
Tamween program[d]	39.4	5.4	1.61	Yes
Education	92.3	12.6	3.8	
Primary, preparatory, and secondary	65.7	9.0	2.7	Yes
Tertiary	20.9	2.8	0.9	Yes
Other educational levels[e]	5.7	0.8	0.2	No
Health	37.2	5.1	1.5	Yes*
Housing and public utilities[f]	20.4	2.8	0.8	No
Subsidies to commodities[g]	99.9	13.6	4.1	
Energy	97.5	13.3	4.0	
Electricity	23.6	3.2	1.0	Yes
Fuel	73.9	10.1	3.0	Yes
Farmers	1.3	0.2	0.05	No
Water	0.9	0.1	0.04	No
Medicine and infant dairy subsidies	0.2	0.0	0.01	No
Economic affairs[h]	39.9	5.4	1.6	No
Defense,[i] public order, safety spending	87.8	12.0	3.6	No
Other[j]	269.8	36.8	11.0	No

Source: Ministry of Finance.

* Expenditures included may not be fully allocated within HIECS 2015 for various reasons. See the methodology section on allocative methods and assumptions.

[a] Takaful and Karama were pilot programs in FY15 and were off budget for that fiscal year, but by the end of calendar year 2015 the programs had reached 165,000 poor households in seven governorates. Today the programs have reached just over 2 million poor households in the 27 governorates of the country.

[b] These transfers are given to families of soldiers, Hala'ib and Shalateen families (border dispute area with Sudan), and other vulnerable groups.

[c] Typically referred to as "social pensions" in GoE documentation, this program is a noncontributory, nonconditional cash transfer that targets certain populations. It is not means-tested, but the beneficiaries are broadly defined to be poor or vulnerable populations (for example, orphans, widows, children of divorced parents, and disabled children).

[d] The program's expenditures are related to three categories: purchases of wheat (small share); spending on loaves of bread that are made available (five loaves per person per day) to all card holders; and the ration card allotment to purchase from a list of basic staples from family stores (allotment was LE 15 per person per month). Each component may be treated differently as part of the CEQ methodology.

[e] Includes expenditures on pre-primary education, as well as spending on education at unspecified level, assistance services, and research and development activities.
[f] Housing and public utilities includes spending on water and wastewater treatment as well as sewerage infrastructure and housing infrastructure with a focus on the development of slums.
[g] Subsidies relate to expenditures specific to the stated categories and do not reflect the government's broader classification of subsidies and grants that are spread across different functional classifications (for example, cash transfers to vulnerable groups and contributions to pensions funds).
[h] Economic affairs encompass all spending on transportation and agricultural infrastructure and to a lesser extent energy infrastructure.
[i] This category does not include spending on the military branch.
[j] The "other" category includes general public service expenditures (of which LE 192.8 billion were spent on debt servicing); expenditures in youth, culture, and religious affairs (public sports clubs, mosques, churches, and so forth); and environmental protection expenditures (environmental assessments, water sanitation units, and so on).

Expenditures

Tamween program (direct transfer)

The Tamween food program consists of two parts: the Baladi bread program (covering around 76.8 million beneficiaries) and the food ration cards (covering 71 million beneficiaries). The bread component alone, which is available to all Egyptians, is the second-largest expenditure item in Egypt's safety net program after fuel subsidies (accounting for around 1.5 percent of GDP in FY17 and 1.7 percent of GDP in FY15). Government spending on ration card allotments, provided only to registered households, comprises about 0.5 percent of GDP. Thus, beneficiaries of the program receive a monthly allowance or transfer for the purchase of food items, as well as a daily allotment of Baladi bread loaves.

The Tamween program, previously commonly referred to the Tamween food subsidy system, was first introduced in the 1940s mostly through price and production controls with the aim of ensuring that basic commodities were available for all Egyptians at a time of high international food prices due to World War II. The first ration cards were introduced in 1945 and came with an allotment of kerosene, sugar, cooking oil, and tea. President Nasser came to power in 1956 and expanded the system, tightening the government's control over prices of different commodities, most notably wheat. The cost burden of the system gradually increased and reached unsustainable levels by the end of the 1970s. President Sadat attempted to reform the system in 1977 and was met with huge social discontent causing him to backtrack on the reforms. In the Mubarak era, two major reforms were introduced: (i) limits on eligibility for subsidies by introducing lower-valued ration cards for relatively better-off beneficiaries and freezing registration for newcomers (children born after 1988), and (ii) cost savings in the provision of food subsidies by reducing the number and weight of subsidized rationed food items. The system continued as is, with minor changes to the quantity and type of subsidized food items and the type and requirements for the Baladi bread until 2014, when the government overhauled the entire system, reforming the ration cards and automating the process.

In 2014, the government introduced changes to the Baladi bread system and the ration food system. In the Baladi bread program, the government improved the supply chain by shifting toward output-based financing. The government no longer subsidized the flour bakeries used to produce the Baladi bread and instead started subsidizing the loaves of bread themselves that are distributed to citizens through a smart card. This has helped eradicate the black market in wheat and thus reduce the cost on the budget. The government also capped the allowed loaves of bread per person per day at five. On the ration food cards, the government moved away from subsidized commodity quotas, through which households were entitled to purchase a predetermined quantity of a list of items at subsidized prices, to an allowance-based system. Under the old system, each beneficiary household was allowed a specific monthly quantity of subsidized

basic food commodities (cooking oil, sugar, rice, and macaroni). The new system provided a monthly allowance of LE 15 per beneficiary (registered in the household's card), and the cardholder is free to buy any product from a basket of 20 food commodities. Regarding the Baladi bread, beneficiaries were no longer able to purchase any quantity of bread at 5 piasters, but were now entitled to 5 loaves per day for each registered member in the household. Moreover, any unused allowance for Baladi bread at the end of each month can be converted into "points" and used to buy other food commodities within the same smart card system. For any unused loaf of bread, credit worth 10 piasters is put on the beneficiary's card for the purchase of items in the family store. This offers an incentive for citizens to ration their use of Baladi bread while allowing them to set their consumption priorities of available food commodities. Changes to the allowance of the card have been introduced, but it is this setup that will be analyzed in the present study.[9]

Takaful and Karama (direct transfer)

Two new cash transfer programs—Takaful (Solidarity Conditional Cash Transfer) and Karama (Dignity Unconditional Cash Transfer for the disabled and old)—were introduced in April 2015. Takaful and Karama are poverty-targeted cash transfer programs that use proxy means testing to identify eligible households. Households are responsible for self-reporting their data so that the Ministry of Social Solidarity can estimate the level of household welfare and then assess eligibility. The program was first implemented in seven governorates across the country and by the end of 2015 had reached just under 170,000 households.[10] Remarkable progress has been made with the expansion of the program nationwide; it exceeded its target of reaching 1.5 million households by reaching just above 2 million households in the 27 governorates (9.4 million individuals), of whom 92 percent were women in the first quarter of FY18. Additionally, the cabinet has recently decided to increase the monthly transfers by LE 100 in July 2017, so the national budget allocated to the program in FY18 reached LE 7.7 billion compared to LE 4.1 billion in FY17, an increase of 89 percent.

Electricity subsidies

Electricity in Egypt has historically been highly subsidized. In 2014, the government embarked on a reform program to slowly phase out subsidies by 2019, leaving only limited support for electricity to benefit low-income households (generally defined as the "lifeline" that reached households in the lowest bracket of consumption). However, the implications of the adoption of a floating exchange rate regime in November 2016 led the GoE to delay the full implementation of the reforms to 2022, although by FY18, four rounds of subsidies removals have already taken place, once a year since 2014. Subsidies are currently still in place for households as well as industrial and commercial consumers. In 2015, Egypt's power supply stood at 13 megawatts (MW),[11] of which approximately 80 percent comes from thermal sources, with the remainder generated from hydro and renewable sources. Following severe power outages in the summer of 2014, the government implemented a fast track plan to build new power plants to meet the needs of a growing population and avoid power outages in the summer of 2015. Currently Egypt does not have any power gaps and can provide for all the electricity needs of the country.

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[9] The monthly allowance was increased to LE 18 in April 2016 to LE 21 in December 2016 and finally to LE 50 in July 2017. The food commodities have been increased from 20 to currently above 50 commodities.

[10] The list of governorates included Assuit, Qena, Sohag, Aswan, Giza, Luxor, and Cairo. Except for Giza and Cairo, these governorates had an estimated poverty rate of 45 percent or more in 2015.

[11] And stands at 18 MW as of July 2017.

About 44 percent of the electricity generated in 2015 was consumed by households, while 26 percent was consumed by the industrial sector and the remainder by the commercial sector, agriculture, and government authorities. The subsidies are delivered to all sectors in the same way: power is sold to consumers at subsidized prices while the Treasury carries the burden of the difference in the cost of production and distribution. The prices (and thus the extent of the subsidy) differ depending on the type of consumer and the amount of consumption. Lower household consumption brackets receive more subsidies than the higher brackets. A high number of brackets, it is argued, allows the government to ensure that the households with the smallest consumption are less affected by the removal of subsidies and the subsequent increases in prices. As such, the government increases the prices for some categories beyond the actual cost so that they can cross-subsidize the rest. For example, some residential segments are currently paying 13–26 percent of the actual cost, while some large consumers are estimated to pay around 129 percent. However, the current prices are still not cost-reflective across the board; the extent of the gap depends on the different sectors as well as the different segments within the sectors. Finally, industrial consumers receive the least amount of subsidies, in an attempt to adjust the incentives energy intensive industries receive.

Fuel subsidies

Egypt is rich in mineral resources, especially natural gas and crude oil. In the past few years, due to the economic difficulties the country was facing, the Ministry of Petroleum and Mineral Resources (and its subsidiaries, notably the Egyptian General Petroleum Company and the Egyptian Natural Gas Holding Company) have had to import both petroleum and natural gas to ensure that the country's needs are met. Fuels have also historically been highly subsidized in Egypt, and in 2014 the government began to implement a reform program to slowly phase out fuel subsidies, leaving only limited support for LPG. Three rounds of subsidy removals have been implemented since. However, subsidies remain in place for all fuel products except Gasoline 95, which is at a price greater than cost recovery.

Fuels are sold to all consumers, (commercial, industrial, and households) at a subsidized price that is the same across all different consumers. Prices do not adjust to market conditions and are fixed by the government. As a result, the Treasury carries the burden of the difference in cost and the financing gap is covered directly by an on-budget transfer. This burden has varied throughout the past few years, and the decrease in the international price of oil in 2014 helped to reduce the subsidy bill while the devaluation of the Egyptian pound in November 2016 caused the fuel subsidy bill to double to LE 115 billion in FY17 from LE 51 billion in FY16. In FY15, the fuel subsidy bill stood at LE 74 billion.

Education (in-kind transfer)

The importance of the education sector in Egypt has increased in the past four years as the country has become more concerned with human capital development. Articles 10 and 21 of the 2014 constitution mandate that the government spend 6 percent of gross national product on education (both pre-university and university education) by FY17. The government has not yet achieved this target, although it has been increasing the allocation to the education sector to help achieve this goal.[12] In absolute terms, spending on

[12] When calculating the allocation to the sector, the government will use the two years prior GDP and not the expected GDP of the concerned fiscal year. This naturally lowers the amounts allocated. However, even with this accounting adjustment, the allocations are still not what the constitution mandates. This is also the case for health expenditures.

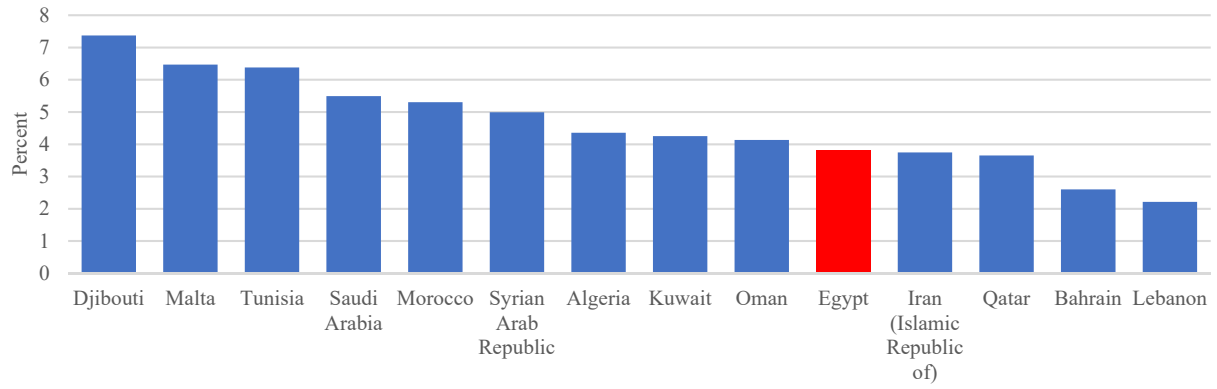
education has almost tripled since FY09 from LE 39.8 billion to LE 92.3 billion in FY15.[13] However, as a percent of GDP the allocation has shown a slight decrease to 3.78 percent in FY15 from 3.83 percent in FY09.

In terms of total government expenditure, the share of education has increased to 12.6 percent in FY15 from 11.3 percent in FY09. In FY15, education was the sector with the third largest share in the budget, preceded by general public services and social protection. Compared to other countries in the region, Egypt ranks on the lower end of spending on education, both as share of total government expenditure and as a share of GDP (Figure 1 and Figure 2) over the period FY05-FY15. It is worth noting that, in this comparison, the Islamic Republic of Iran is the only country with a similar population to Egypt, and although the two rank close in education spending as a share of GDP, the Islamic Republic of Iran ranks much higher as a share of total government spending.

As is common in this sector, the majority of spending goes to the compensation of employees. However, since FY09, the share of compensation of employees in total education spending has grown from 78.7 percent to 83.6 percent in FY15 at the expense of investments in education (which mostly include the construction of new schools) and purchase of goods and services (which cover purchase of school supplies and equipment and maintenance of equipment and school buildings). Both items have each decreased by a little over 2 percentage points in the same period.

The available government expenditure data do not allow for the identification of the amounts spent on primary, preparatory, and secondary education separately, the data available group all expenditures that are in the levels below tertiary education into one figure. As such, the cost, in nominal terms, per student in pre-university education in FY09 was LE 1,408 and has grown to LE 3,125.9 in FY15. The nominal cost per student for university education has reached LE 10,180.1 in FY15 compared to LE 5,057.6 in FY09. In total numbers, spending on pre-university education is more than double the spending on university education. However, only about a tenth of students enrolled in the primary level continue to tertiary education.

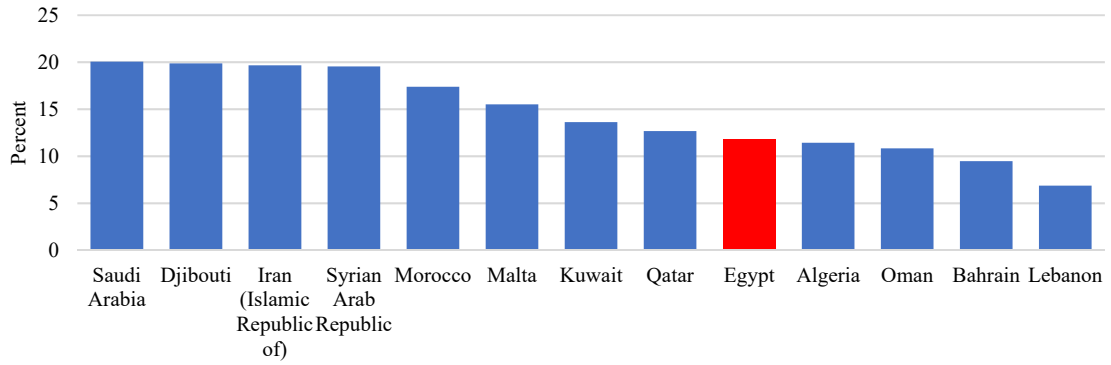
Figure 1. Middle East and North Africa (MENA) Public Education Spending as a Percentage of GDP (FY05–FY14 averages)



Source: UNESCO 2017.
Note: This list excludes the countries in the MENA for which no data was available, notably Iraq, Jordan, Libya and the United Arab Emirates. It is also worth noting that Algeria only had one data point for FY08.

[13] These expenditures encompass all levels of education: preprimary, primary, preparatory, secondary (general and vocational), tertiary, assistance services, education at unspecified level, and research and development activities.

Figure 2. MENA Public Education Spending as a Percentage of Government Spending (FY05–FY15 averages)



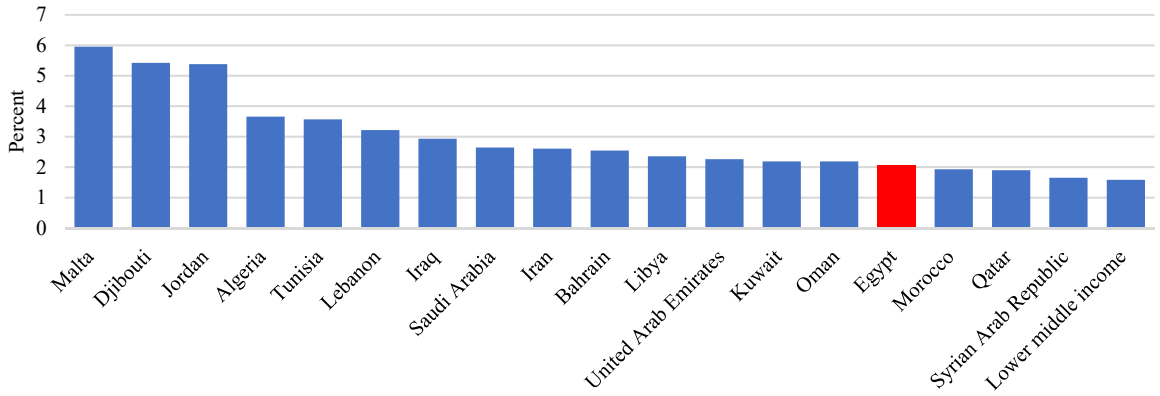
Source: UNESCO 2017.

Health (in-kind transfer)

Similar to education, with the changes taking place in the country since 2011, spending on health has become a priority for the GoE in the past three or four years. Article 18 of the 2014 Constitution mandated that 3 percent of gross national product be spent on health by FY17. Also similar to education, the target has not yet been reached. However, in absolute terms, spending on health doubled from FY09 to FY15, reaching LE 37.2 billion in FY15. As a percent of GDP, spending on health has been stable over the same period at 1.4–1.5 percent. It has, however, increased as a share of total government spending to 5.1 percent in FY15 from 4.5 percent in FY09. Per capita public health spending has also increased in nominal terms, reaching LE 418 in FY15 from LE 400 in FY09. This represented a 4.6 percent increase while the population grew at 15.6 percent during the same period.

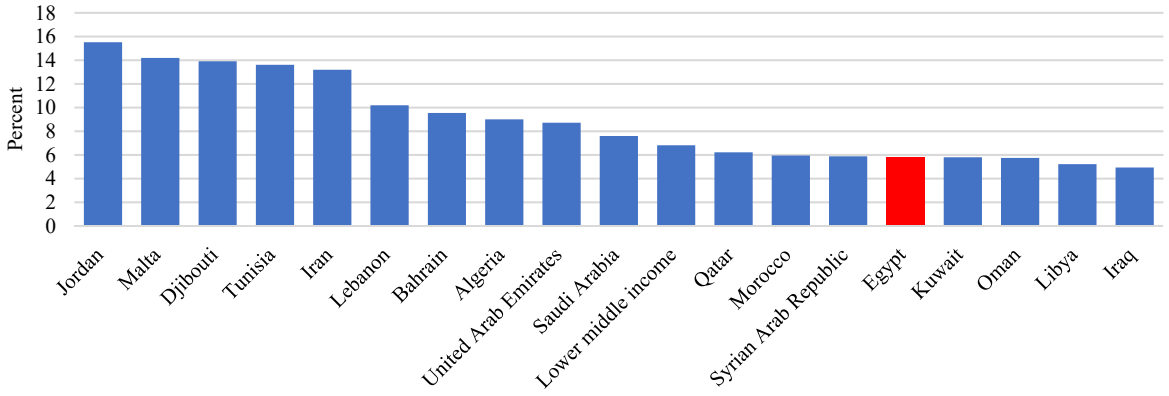
Compared to its MENA neighbors, Egypt is on the lower end of the spectrum in terms of spending on health as a percent of GDP. Egypt fairs better than the lower middle income average (Figure 3), but as a share of total government spending on health, it is lower than the average spending of a lower middle income country (Figure 4).

Figure 3. MENA Public Health Spending as a Percentage of GDP (FY05–FY14 averages)



Source: WDI 2017.

Figure 4. MENA Public Health Spending as a Percentage of Total Government Spending (FY05–FY14 averages)



Source: WDI 2017.

The largest share of the public spending in this sector goes to the compensation of employees, however. Since FY09, the share of compensation of employees in total health spending has grown from 44.6 percent to 60.8 percent in FY15 at the expense of investments in health (which mostly include the construction of new hospitals and health facilities) and purchase of goods and services (which cover purchase of medical supplies and equipment and the maintenance of hospitals and medical equipment). Both of these items have each decreased by a little over 7 percentage points in the same period.

Two aspects of the health sector are important to note. The first point relates to the funding of the sector. The spending on budget as described above represents only about half of spending on public health services and hospitals.[14] Since the amount allocated in the budget is too little to cover the expenses of the sector, hospitals, health facilities, and health units have created other ways to fund the sector. They have three streams of income outside the amount allocated in the budget:

1. *Special funds* are a revenue stream that is not represented in the official budget, although governed by ministerial decree. These funds come from four main sources:
    a. The private wing inside the hospitals is for people who require special services or who want a specific doctor; they pay a fee for the services provided to them. This fee is smaller than the private sector but greater than the public-sector fee.
    b. Small fees that all citizens pay when they are at a hospital, tickets to visit sick relatives, and small fees for x-rays or blood tests: a portion of the revenue from these fees goes into the special funds.
    c. Donations from private citizens go directly into the special funds.
    d. Revenues also come from the Citizens Treatment at the Expense of the State program.[15]

[14] The spending figures relate to both contributory (for employees whose employers contribute to the health system) and noncontributory health systems.

[15] The program is affiliated with and operated by the Ministry of Health and Population, though not completely autonomous as the Health Insurance Organization and of a smaller scale (1.9 million in 2008/09). A special discretionary fund, the program constitutes a safety net to cover the uninsured (and poor) population and help pay for a certain package of services (with services provided in Egypt or abroad).

2. *The Health Insurance Authority* is an economic authority and so independent of the budget sector. This institution funds services in public hospitals for the people paying insurance under the authority. Additional funds are obtained from certain fees levied on individuals receiving care. In certain occasions, the authority has received budget transfers to cover operating losses.

3. *Direct out-of-pocket spending* is sometimes done by private citizens. These amounts differ depending on the coverage of the person seeking treatment and the type of treatment.

A second important aspect of the health care system in Egypt is the coverage and the pricing of services and consequently the out-of-pocket expenses. Coverage of health insurance follows distinct rules for children and adults:

- Newborn babies are automatically covered at birth until they reach school age. Once they reach school age, they have to be enrolled in school for the coverage to continue. If they are not enrolled, they lose their coverage. (This is a way to try to incentivize mothers to send their children to school). Once the children graduate high school they are no longer covered.
- As an adult, you are only covered if you are employed and your employer makes a 3 percent health insurance contribution from the basic salary (currently the system covers 58 percent of the population). Employers can opt out of the public health insurance system if they can offer a private alternative. If an employed individual is covered, his or her family is not. This means that a man who is employed will be covered but his unemployed wife will not be covered.

Pricing of services is correlated with insurance coverage, but the pricing system has other nuances:

- Anyone covered by the health insurance system will most likely not make any payments when receiving health services.
- An individual who is not covered will pay very minimal fees if they visit a public hospital. Anecdotal evidence suggests that if an individual has a fever, for instance, and is going for a check-up at a clinic, he or she will only have to pay LE 1 to LE 5 for the check-up and a small portion of the medicine required. (Medicine is already subsidized so any payment will be very small). In comparison, a private clinic visit costs anywhere between LE 250 and LE 400. If, on the other hand, an individual is admitted to the hospital for surgery he or she will pay somewhere in the range of LE 100 to LE 500 depending on the type of surgery. A natural birth costs LE 100 as opposed to it costing LE 8,000 to LE 10,000 in a private hospital. A Cesarean-section will cost LE 350 as opposed to LE 12,000 to LE 15,000 in a private hospital.

The third option is an individual who is not covered by health insurance and requests to be treated in the private wing (which the government labels "economic treatment"). The amount paid will be slightly higher than the amounts described just above. The individual will obtain a slightly better service in terms of waiting time and accommodation facilities. However, the doctors, nurses and clinic and operating rooms are the same.[16]

[16] Individuals can also access health services through hospitals that are affiliated to mosques, churches and charities. These services, as they are not part of the government's fiscal activity, are not taken into account in this exercise.

Other

There are other subsidy expenditures in the FY14/15 budget: for example, subsidy expenditure that delivers loans at concessional rates or transportation subsidies. However, these expenditures are minor compared to energy subsidy spending and these additional subsidies are not allocated in the CEQ.

Revenues

Egypt's revenue system is comprised of direct and indirect taxes as well as nontax revenue streams like property and asset income (for example, from the Suez Canal and other public sector economic authorities). Table 2 provides a snapshot of public revenue sources in FY15. Income taxes account for approximately two-fifths of tax revenue, and corporate income tax makes up approximately 70 percent of income tax revenue. Personal income taxes and real estate transaction taxes represent approximately 9 and 6 percent of tax revenues, respectively.

Table 2. Government of Egypt's Revenue Sources, Fiscal Year 2015

	Revenues			
	EGP (billions)	Share of revenues (%)	GDP (%)	Included in analysis?
Total revenue and grants	465.2	100.0	19.0	
Revenue	439.8	94.5	18.0	
Tax revenue	305.9	65.8	12.5	
Direct taxes	150.9	32.4	6.2	
Personal income tax[a]	38.2	8.2	1.6	Yes*
Corporate income tax	91.6	19.7	3.7	No
Taxes on property	21.1	4.5	0.9	No
Indirect taxes	155.0	33.3	6.3	
Sales tax (goods and services)[b]	65.5	14.1	2.7	Yes*
Excise taxes[c]	41.4	8.9	1.7	Yes*
Customs duties (stamp taxes)	7.7	1.7	0.3	No
Taxes on exports	21.9	4.7	0.9	No
Other taxes[d]	18.53	4.0	0.8	No
Nontax revenue	133.8	28.8	5.5	
Sales of goods/services	26.5	5.7	1.1	No
Property income/ fines, penalties/ voluntary transfers	83.2	17.9	3.4	No
Miscellaneous revenues	24.2	5.2	1.0	No
Grants[e]	25.4	5.5	1.0	No

Source: Ministry of Finance.

*Revenue collections included may not be fully allocated within the HIECS 2015 for various reasons. See the section on methodology for detail on the allocative methods and assumptions.

[a] Personal income tax includes taxes from employment, other activity, and capital gain taxes.

[b] Sales of goods represent 53.4 LE billion.

[c] Includes 39.7 LE billion of excise taxes on domestic goods.

[d] Other taxes include an 8.3 EGP billion discrepancy in MoF accounts.

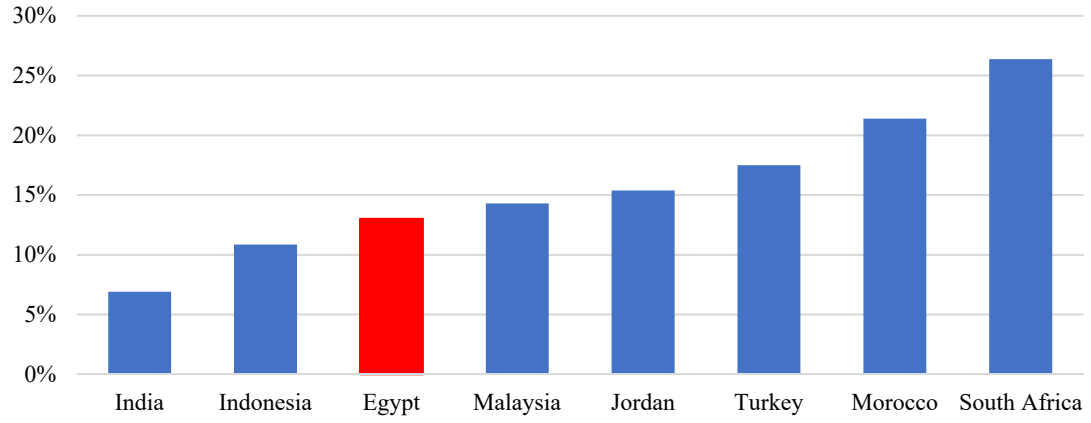
[e] Include grants from foreign governments (LE 24.9 billion), international organizations (LE 0.3 billion), and others.

Indirect taxes on the purchase of (non-real-estate) goods and services also contribute approximately two-fifths of all tax revenues. In FY15, there was a general sales tax system that applied to goods and services alike as well as a set of customs duties applying to certain imported goods. Public revenues from nontax sources—for example, property and asset income or income from sales of goods and services or grants—represents just under 30 percent of all revenue in FY15. Property income, which includes rents generated by public control of economic enterprises like the Suez Canal and petroleum royalties (among others), accounts for the largest share (61 percent) of all nontax revenues.

At 13 percent in FY16,[17] Egypt's tax revenues as a percent of GDP (or tax ratio) could be higher. Compared to other lower-middle income economies, Egypt fairs better than India and Indonesia (Figure 5), but lags behind Morocco (21.4 percent) and Jordan (15.4 percent)—countries with lower GDP per capita in 2016.[18] Egypt suffers from a large informal economy that shrinks the tax base and makes tax collection efforts difficult. Tax implementation and collection processes are also not effectively enforced by the tax authority, making reaching the taxable base difficult.

To address some of these issues, Egypt moved from the GST to a VAT law in September 2016, and increased its rate from 13 to 14 percent in July 2017 compared to a GST that was 10 percent. This new law, like its predecessor, has many exemptions, including many food products such as dairy products, breads, meats, and fish. Health and education, insurance services, broadcasting services, some transportation services, butane and natural gas, and banking transactions are also exempt, causing an erosion of the tax base. In FY13 the effective tax rate on the GST was 7.1 percent.[19]

Figure 5. Tax Revenues as a percent of GDP, Egypt and Comparison Countries



Source: IMF International Financial Statistics Database (http://data.imf.org/?sk=4C514D48-B6BA-49ED-8AB9-52B0C1A0179B&sId=1390030341854)

The income tax suffers from problems of its own. It is also affected by the informal sector and low tax collection. In 2015, the government implemented some reforms to the income tax, increasing the

[17] And 12.5 percent in FY15.
[18] Measured in PPP (constant 2011 international $). Source: WDI, accessed August 9, 2018.
[19] Due to limited data, this is the most recent estimate.

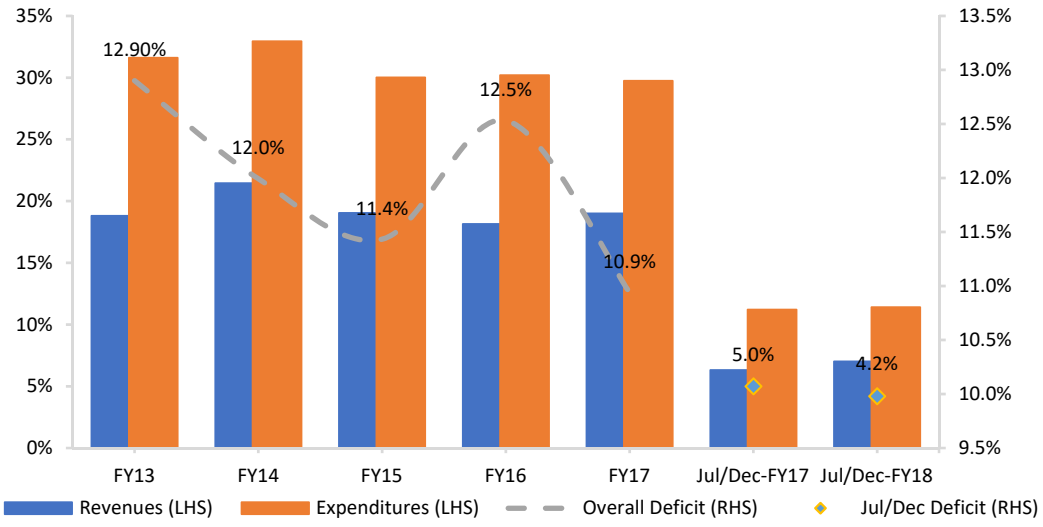
exemption threshold from LE 5,000 in annual income to LE 6,500 in annual income, while also increasing the number of tax brackets with the aim of encouraging individuals to formalize by somewhat decreasing the tax burden. However, tax revenues from the personal income tax remain low, averaging 1.4 percent of GDP from FY11 to FY16. The corporate income tax rate was decreased from 25 percent to 22.5 percent also in 2015 to help with higher tax collection but the base is limited, and taxes collected have been declining since FY10, reaching 3.8 percent of GDP in FY16 from 5.0 percent of GDP in FY10. Egypt recently implemented a property tax. However, very few tax revenues have been collected under the property tax due to very low compliance.

As part of the most recent wave of economic reforms, the personal income tax threshold was again increased in July 2017 to LE 7,200 and all brackets apart from the highest one now have tax breaks. This is not expected to continue in the medium term, as the government seeks to increase its revenues, and is only a short-term measure to alleviate the burden of the reforms aimed at macrostabilization. The medium-term goal of the government is also to encourage the formalization of small and medium enterprises to also widen the tax base; a law on the taxation of small and medium enterprises is on the government's agenda but has not yet been released.

This study covers the majority of indirect taxes and the personal income tax. The team was able to obtain information on Egypt's personal income tax. The property tax is not included in the study as it was not in effect in 2015. We now turn to the description of the CEQ methodology.

There is one final point worth noting. The results obtained from the application of the CEQ methodology for Egypt in terms of inequality and poverty reduction follow closely the overall structure of expenditures and revenues of the government. In the Egyptian context, this means that the positive effects on inequality and poverty reduction of the fiscal policies are partly explained by the large deficit ran by the government. In fact, the overall budget deficit was 11.4 percent of GDP in FY15 (Figure 6). This unsustainable imbalance should be kept in mind as a frame to interpret the long-term ability of Egypt's fiscal policies in addressing inequalities.

Figure 6. Total Revenues, Expenditures, and Overall Budget Deficit (percent of GDP)



Source: Based on data from Ministry of Finance.

Note: LHS = left-hand side; RHS = right-hand side

METHODOLOGY, DATA, AND ASSUMPTIONS

Taxes, transfers, and fiscal policy more generally are powerful corrective instruments the state has at its disposal for reducing extreme forms of material deprivation and narrowing the gap between economic elites and the rest of the populace. These policies can also help equalize opportunities, through public education for example, and thus increase social mobility and the productive potential of the underprivileged. To assess whether governments are using these tools effectively, it is important to be able to quantify how inequality and poverty change from before to after the application of these fiscal instruments. In this study, the impact of fiscal policy on microlevel welfare indicators is estimated by allocating fiscal policy elements, programs, expenditures, or revenue collections to individuals and households appearing in the HIECS 2015. The framework for allocations and postallocation analysis follows the methodology developed by the CEQ Institute to assess fiscal policy (Lustig 2018).

Methodology

To quantify the impact that fiscal policies have on income (or purchasing power or welfare), the first step is to estimate a (counterfactual) income state that would be experienced *before* the transfers, benefits, and burdens generated by the fiscal system are received or imposed. As a proxy for this state, the concept of *prefiscal income* (I_h) is applied as the cumulative income received from wages and salaries (that is, from labor market transactions) plus the market value of consumption of own production; from capital (including real estate); and from private transfers (such as remittances from family members working abroad);[20] and finally from pensions (whether private or public). The h subscript indexes a set of households (but equally could index individuals).

To note is that government policies may appear to have greater or lesser impacts depending on what is included in the variable describing the prefiscal income state. Egypt provides a good test case as rental market regulations create two different—and plausible—valuations of the value of housing services consumed; therefore two different distributions of prefiscal income over which fiscal policy can then be allocated; and finally two different distributions of postfiscal income (at each postfiscal income concept).

Next, the set of taxes and transfers T_i to be examined is defined: for example, T_i in Egypt might include the sales tax and the Takaful and Karama social assistance programs. For each household h found in the microdata *shares* (S_{ih}) of each program, $i = 1,\ldots I$ in T_i are allocated.

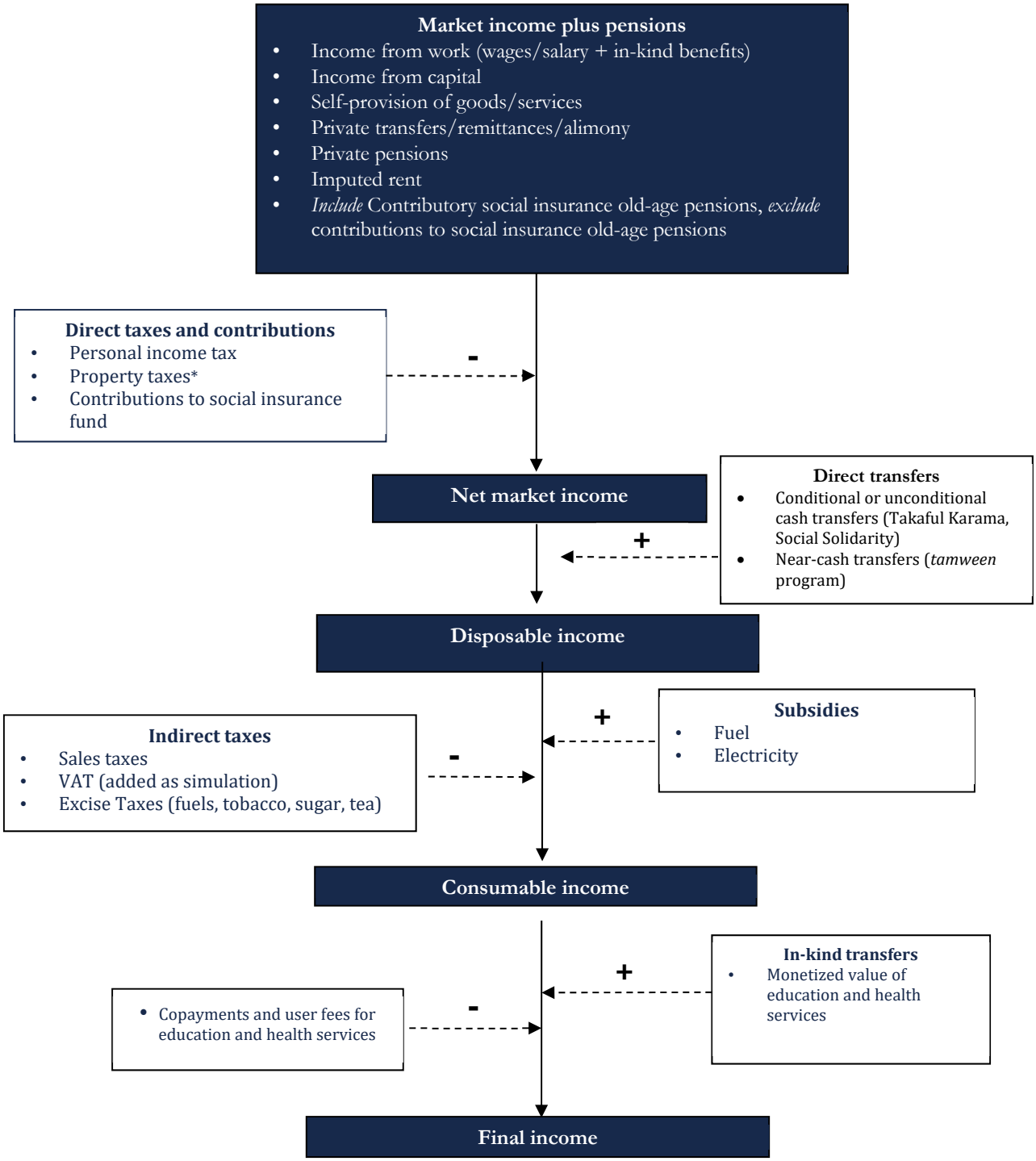
With the estimated shares, an estimate of *postfiscal income* is created at the household level Y_h such that

$$Y_h = I_h - \Sigma_i T_i S_{ih} \qquad (1)$$

[20] A CEQ assessment typically includes two scenarios for contributions to, and income received from, the public contributory pension system. The first, which we call the Pensions as Deferred Income (PDI) scenario, treats contributions to and income from the public contributory pension system as compulsory savings and deferred income (respectively). The alternative, which we call the Pensions as Government Transfer (PGT) scenario, treats contributions and income as a tax and a transfer (from the fisc) respectively. We could not identify public contributory pension income received in the HIECS 2015 nor did we have access to budget or administrative reporting that summarized total public contributory pension income distributed, so we did not estimate the PGT scenario.

Figure 7 provides a schematic of the equation above. Figure 7 contains only one prefiscal income concept (market income) and several postfiscal income concepts (disposable income, consumable income, and final income).

Figure 7. Definition of CEQ Income Concepts



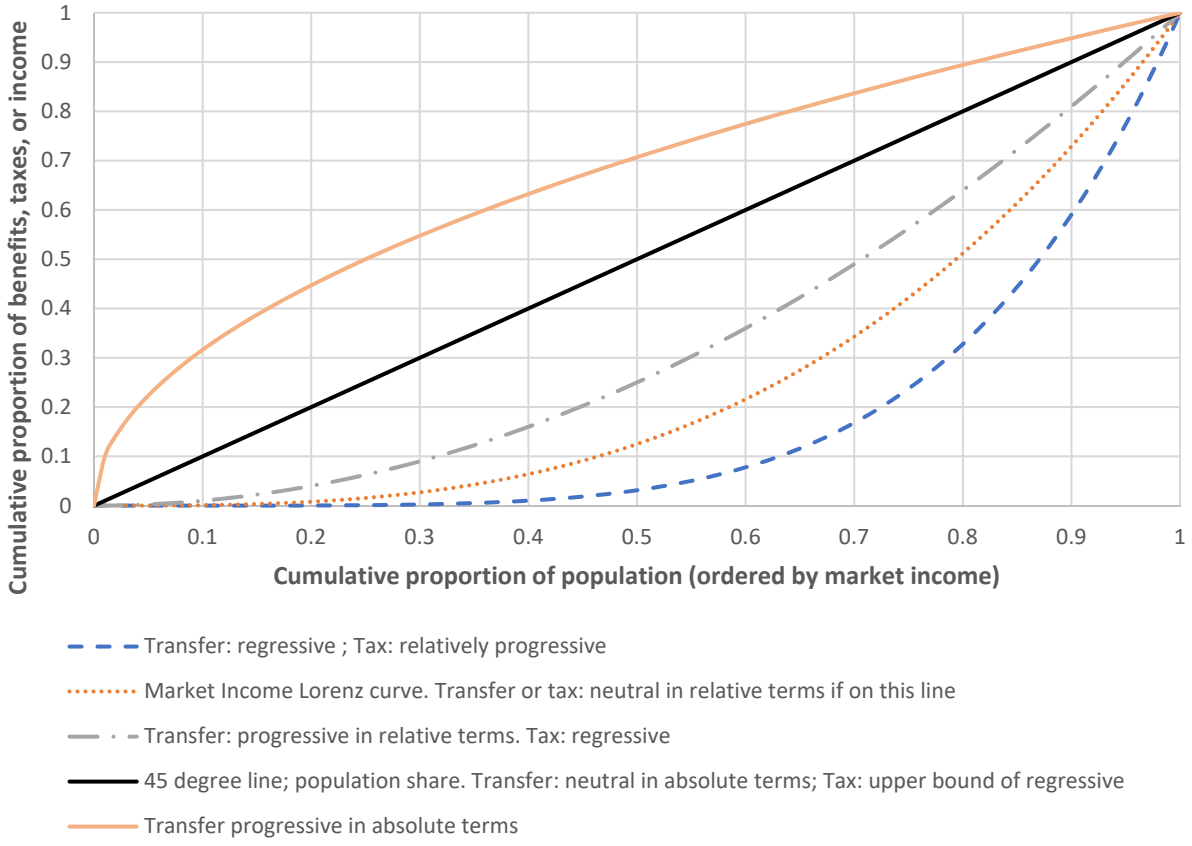
Source: Adapted from Lustig 2018. * Not effective in 2015.

To determine the impact of the fiscal system on either poverty or inequality, we estimate the difference between its preferred measures of poverty or inequality over the pre- and postfiscal distributions. Naturally, the extent of the fiscal system under consideration limits the team's choice of the postfiscal income concept. The impact of a fiscal system that includes only two elements must be estimated over a postfiscal income concept that includes only these two elements.

To determine the impact of single tax or transfer (or a subset of taxes and transfers), we take the difference in inequality (or poverty) at the postfiscal income concept *excluding* the item in question (but including everything else in the team's fiscal system) and the postfiscal income concept *including* the item in question (and also including everything else in the team's fiscal system).

A single tax or transfer (or a fiscal system) is *inequality reducing* when the addition of the fiscal item in question to an income concept reduces measured inequality. A transfer is *absolutely progressive* if, when households are ranked by prefiscal income levels, the cumulative household shares of the transfer are greater than cumulative population shares. In a Lorenz curve figure, an absolutely progressive transfer's concentration curve would lie above and to the left of the 45 degree line (Figure 8). A transfer (tax) is *relatively progressive* if, when households are ranked by prefiscal income levels, the cumulative household shares of the transfer (tax) are greater (less) than the cumulative household shares of prefiscal income. In a Lorenz curve figure, a relatively progressive transfer's (tax's) concentration curve would lie above and to the left (below and to the right) of the Lorenz curve for prefiscal income.

Figure 8. Diagram Representing the Progressivity of Taxes and Transfers



Source: Adapted from Lusting (2018).

A transfer is considered to be *pro-poor* when the transfers received, measured as a share or fraction of pretransfer income, decline with income. Notice that this definition of pro-poor includes cases in which the absolute transfer level declines with income. For example, if a transfer is targeted to poor households, and non-poor households do not receive the transfer, then, algebraically, transfers received are declining in income level. Because taxes always reduce purchasing power, we do not label taxes "pro-poor," although when taxes paid (measured as a share of pretax income) increase with income levels, they are by definition progressive. In everyday usage, for example, a marginal income tax rate schedule that has increasing marginal rates by taxable income bracket will be considered a "progressive" income tax.

Two indicators we use to understand how a fiscal policy element is progressive or regressive are the *concentration shares* and the *incidence* of a fiscal policy. Concentration shares show the share of the value of fiscal policy captured by (or imposed on) a subset of the population such as the poorest 10 percent of individuals or the richest 10 percent of individuals. For example, if the richest 10 percent of Egyptians pay 75 percent of the total personal income taxes collected in a given year, then the richest decile's concentration share of personal income taxes is 75 percent (and that, in turn, implies that the other 90 percent of Egyptians pay *no more than* 25 percent of total personal income tax revenues). The incidence of a fiscal policy element calculates the value of a benefit captured (or a tax imposed) *relative* to the value of income *before* the benefit was received or before the tax was imposed.

While a pro-poor transfer is always progressive, the reverse is not necessarily true. Likewise, in a fiscal system with more than one element, a pro-poor or progressive transfer (or a progressive tax) is not necessarily inequality reducing. This study incorporates every type of fiscal policy element listed in Figure 7 using consumption expenditure recorded in HIECS as the measure of *primary* income. The team assumes that total consumption expenditures—including the value of imputed rent for those living in owner-occupied housing as well as the implied value of any auto-production/auto-consumption—are equal to the CEQ disposable income concept (approximately in the middle of the flowchart in Figure 7). The team then works "backward" and "forward" from disposable income to other CEQ income concepts to arrive at pre- and postfiscal measures.[21]

Egypt's prefiscal income measure includes income received from the public pension system. Market income reflects income before any transfers (including public spending on health and education, fuel and energy subsidies, and unconditional cash transfers) or taxes (including personal income taxes and GST) have been added. In treating contributory pensions, the CEQ methodology treats pension contributions and pension income received as deferred income. Egypt's contributory pension system functions much as a nonwage salary payment; therefore, the team's prefiscal income measure becomes Market Income + Pensions (top box in Figure 7).[22]

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[21] Consumption expenditure is the team's primary income measure. Moreover, all other income concepts. including market income. are derived from consumption expenditure. For these reasons, the team does not create a *taxable income* concept. Other CEQ assessments do produce this income concept when relevant. Creating a taxable income concept requires knowledge of the composition of market income. An Egyptian household's expenditure profile in the HIECS cannot provide any information on the composition of its income. For the same reason, the team is unable to say anything about the savings or current asset profiles of HIECS households: a current consumption expenditure profile provides no information on either investment spending or on the returns accruing to any household assets.

[22] While a CEQ Assessment typically includes an alternative scenario where public contributory pensions are treated as a government transfer (rather than deferred income), information regarding total pension payouts (in

Data sources

The primary data set providing the individual- and household-level information necessary to allocate fiscal policy elements is the HIECS 2015.[23] This survey includes modules covering health, education, economic and labor market activity, household consumption expenditure, agricultural production, and rent (or, for owner-occupied housing, imputed rent). HIECS also provides a roster per household that provides individual, demographic, and dwelling characteristics. HIECS 2015 uses an updated frame from the 2006 population census as its sampling frame and is representative at the national level, by urban and rural areas and by governorate. The survey was administered to approximately 24,000 households. For this analysis, the Central Agency for Public Mobilization and Statistics (CAPMAS) granted access to a representative 50 percent sample of the survey microdata covering 11,988 households and about 52,254 individuals.

The source for total revenues collected by the government from households—via the personal income tax and GST— during FY15 is the Ministry of Finance. To impute "effective" or actual prevailing rates (which may differ from statutory rates), we first scale down the expected tax take from HIECS households. Scaling is done so that the ratio of tax revenues in final or audited budget reports to Private Final Household Consumption Expenditure in Egypt National Accounts data are equivalent to the ratio of VAT collections from HIECS households to the value of cumulative HIECS household consumption expenditure.

Program administrative data from the Ministry of Social Solidarity on the Takaful and Karama programs were also used. The data included the total number of beneficiaries and benefits distributed by governorate. The estimated electricity and fuel subsidies received by households were generated directly within the HIECS using reference price and subsidy rate information provided by the Ministry of Petroleum and data from World Bank (2017).

Assumptions and allocation overview

When and where possible, the study allocates fiscal policy elements to individuals or households based on direct observation. For example, when an individual queried in a socioeconomic survey is asked to recall how much she has paid in sales taxes on all her purchases in the past seven days, or is asked to provide receipts detailing sales tax payments, we directly observe the total sales tax collection from her. These sales tax payments recorded by individuals then are assumed to be the same sales tax revenues listed in the executive, administrative, and other budget reporting for the same year.

In the HIECS 2015, however, very few fiscal policy elements could be allocated via direct observation.[24] Instead, we use imputation and simulation (sometimes in combination with direct observation). *Imputation* is used when a survey unit's benefit recipient (taxpayer) status must be inferred (rather than directly identified), or the amount received (paid) is retrieved from administrative records or program (tax) rules (rather than directly recorded in the survey), or both. *Simulation* is available when neither

2015) was not available while the HEICS (2015) survey data did not allow us to identify public contributory pension recipients.

[23] The allocations—including the assumptions and choices implicit in them—are described in the following section.

[24] Access to publicly delivered health and education services is observed directly, as is the purchase of subsidized fuels and electricity. However, the subsidy received for transactions in these goods must be imputed.

direct identification nor imputation can be used, so that the beneficiaries (taxpayers) and the amount received (paid) are simulated based on the program (tax).[25] The following subheadings provide a summary of allocation assumptions and decisions for various fiscal policy elements in this study.

We are allocating approximately 25 percent of public revenue and approximately 30 percent of public expenditures (tables 1 and 2). In general, allocating fewer taxes and more expenditures *might* bias estimates of the impact of fiscal policy (and individual fiscal instruments) on poverty and inequality.[26] However, note that in Egypt (in 2015), total fiscal expenditures were approximately 10 percentage points higher (as a share of GDP) than total public revenues, which gives us some confidence that we have not *willingly* biased our results away from the actual, on-the-ground impact of Egypt's unbalanced fiscal policy. CEQ Assessments typically allocate a larger share of total revenues and total expenditures, and we fully recognize this as a limitation of the present exercise as we cannot unambiguously sign the potential effects of the categories not analyzed. It is worth noting, however, that in the case of revenues, approximately one-third is produced from non-tax revenues (such as the sale of goods and services) which are typically not allocated and thus limit the potential coverage of the exercise.

Personal income taxes

Direct (personal income tax) taxpayer status is imputed based on an individual's participation in the social security system through contributions. For HIECS households with at least one individual identified as a taxpayer, total household income from wages and salaries is calculated and then divided up equally among all individuals who report earning income from wages.[27] Then, for individuals imputed to be taxpayers, we take their wage income (which is assumed to be net wages, that is, after taxes), create *minimum* gross income by scaling up wage income by one plus the minimum marginal personal income tax rate, and then apply the statutory marginal rates to all gross income among all imputed taxpayers.

We then scale down the personal income tax burden for each individual by the ratio of cumulative personal income taxes we expect to allocate in HIECS divided by the cumulative estimated personal income tax taken from HIECS as estimated above. The cumulative personal income taxes we expect to allocate in HIECS is equivalent to LE 10.29 billion. This amount is obtained by multiplying the personal income tax total found in the 2015 budget for taxes on income from employment (approximately LE 26.8 billion) by the ratio of the value of cumulative household consumption expenditure in HIECS to total final household consumption expenditure in the national accounts (approximately 0.384). The goal in generating this scaling is that the total personal income tax burden allocated to HIECS households relative to the total value of consumption expenditure in the HIECS is made equivalent to cumulative total personal income tax collections in budget documents relative to the value of total final household consumption expenditure in the national accounts.

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[25] For a detailed description of these and other allocation methods, see Lustig, ed. 2018.

[26] The direction of the potential bias cannot be determined a priori, as each instrument's welfare impact depends on the set of instruments included (Lambert 2001).

[27] Due to data limitations, we can identify only the total annual wages and salaries by household and the number of household members who are working for a wage. We assign individual wages by dividing the former by the latter. No further corrections are made. This caveat should be kept in mind in interpreting the results.

Social Insurance Fund contributions

Social Insurance Fund contributor status is directly observed in the HIECS (for all those individuals who answer the module capturing their labor market participation). We attribute to each individual making pension contributions a share of total household income from wages that is equivalent to total household income from wages divided by the total number of wage earners in the household. We create from each individual's wage income a "basic wage" variable equivalent to 25 percent of total wage income.[28] Basic wages (so defined) are then multiplied by statutory contribution rates (40 percent) to estimate individual pension contributions. The goal is to attribute the right magnitude of pension contributions to each household with at least one contributor.

Cumulative HIECS Social Insurance Fund contributions are then scaled down—individual by individual—by the same ratio of cumulative *personal income taxes* we expect to allocate in HIECS divided by the *cumulative estimated personal income tax* taken from HIECS as estimated above. Budgeted Social Insurance Fund contributions were not available, so we scaled total Social Insurance Fund contributions based on our overestimate of another revenue-side fiscal instrument. The goal in generating this scaling—as before, for personal income taxes—is to estimate a cumulative Social Insurance Fund contributions pool in HIECS that is commensurate with the amount of disposable income in HIECS (relative to national accounts).

Direct transfers

Takaful and Karama were pilot programs in 2015; HIECS 2015 does not directly identify beneficiaries of either program. Instead, the team implemented a proxy-means test based on a means function directly within HIECS 2015 that replicated as closely as possible the actual means function and proxy means test used in the field to identify Takaful and Karama beneficiaries.[29] The implementation of the proxy means test within HIECS was calibrated so that each governorate represented in HIECS absorbs the same number of beneficiaries and benefits as confirmed in administrative totals.[30]

Tamween program

Egypt's food ration program delivers to each beneficiary household a cash credit in the amount of LE 15 per person per month that can be used at family stores for the purchase of 21 basic food necessities. Food ration beneficiary status in the HIECS 2015 is directly observed through the module that records purchases using the food ration card made by households: any household purchasing any positive amount of any good available for purchase with the food ration card is assumed to receive a transfer in the amount of LE 15 per household member per month.

The food benefit received by the households is expanded to include an estimate of the value of the Baladi bread (and bread points for unconsumed bread) that the household receives. From the expenditure data in the HIECS 2015, we use a 5 piaster per loaf transformation to estimate the number of loaves of Baladi

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[28] The estimate was obtained from discussions with the Ministry of Finance. There are no other data available that could allow estimating a basic wage share of total wages at further disaggregated levels.

[29] Following the programs' application form, the predictive eligibility model in the HIECS used the following predictors of household consumption: number of members, number of rooms in the residence and dwelling characteristics (access to water, sanitation, construction materials, and so forth); ownership of food smart card; access to electricity; and ownership of assets (cars, smartphone, internet access, refrigerator, and so forth).

[30] Takaful and Karama Program Progress Summary June 17, 2017.

bread consumed by the households. Next, following Abdalla and Al-Shawarby (2018), we assume a 30 piaster per loaf of subsidy received by households. Finally, HIECS 2015 also provides information on the items purchased using bread points.[31] Using an estimate of the value of the items purchased using a market reference price, we also impute such value as a transfer of the food program to the beneficiary household.

Energy subsidies and indirect taxes

Energy subsidies for electricity and fuels and indirect taxes (sales taxes) are imputed based on household consumption expenditure records. In other words, when households record purchases of energy or goods or services that attract the sales tax, the subsidy or indirect tax payment implicit in this purchase is imputed based on the relevant subsidy or tax schedule. For example, if a household records US$50 in kerosene expenditures over a month, and the known subsidy rate on kerosene is 10 percent, the household is imputed to have purchased US$55.55 of kerosene, US$5.55 of which was actually an expenditure made by the government (via its subsidy policy) on behalf of the household.

The electricity subsidy (and the electricity tariffs) in Egypt is worth describing in further detail. In FY15, electricity tariffs were based on seven consumption brackets (Table 3). Using a cost-recovery rate estimate obtained from the Ministry of Petroleum, we first simulate for each bracket what would have been the corresponding "full recovery" or no subsidy tariff. The difference between the two provides an estimate of the per kilowatt hour (kWh) subsidy received by the household. Next, using HIECS 2015 data it is possible to estimate the electricity consumption volume from household expenditure records and the imposition of Egypt's 2015-era block-tariff structure. For each household we have information on the bimonthly expenditure on electricity. After subtracting connection fees, we can estimate the corresponding volume that would be feasible based on the potential tariffs faced by households. Finally, we multiply the per-kWh subsidy to the corresponding estimated electricity consumption to get at the total benefits received by the households.

Table 3. Electricity Tariffs Faced by Households, by Consumption Bracket

Residential (PT/kWh)	FY15 tariffs
up to 50	7.5
51–100	14.5
0–200[a]	16
201–350	24
351–650	34
651–1,000	60
above 1,000	74

Source: FY15 Ministry of Petroleum.
Note: Tariffs in piasters per kWh (PT/kWh) of bimonthly consumption. For instance, a household consuming 80 kWh would pay 50 kWh at a rate of 7.5 piasters and 30 kWh at 14.5 piasters.
[a] This tariff applies to all kWh consumed when households consume more than 100 kWh and less than 200.

[31] The unconsumed allotment of bread is transformed into points that can be used to purchase items in family stores.

Rates of sales taxation are taken directly from the statutory rate schedule.[32] Rates of subsidization for energy products are taken from the Ministry of Petroleum and the World Bank (2017). When applied to purchases recorded in the HIECS, cumulative totals of energy subsidies and sales taxes (on goods) allocated in HIECS reach 34 percent, 42 percent, or 56 percent of the *scaled-down* budget totals for those items, where the scaled-down budget totals are created by multiplying actual budget totals by the ratio of cumulative household consumption expenditure in HIECS to cumulative final household consumption expenditure in the national accounts.

Energy subsidies are also available to firms and industries using energy goods and services as inputs into production; other production inputs may attract sales taxes. Lower or higher input prices that result from subsidies or taxes, respectively, may be passed on to final prices for goods and services created using the subsidized or taxed inputs. This study estimates these indirect effects of energy subsidies and the sales tax regime and includes the indirect benefit (or burden) via the same imputation procedure based on consumption expenditure records described above.[33]

Excise taxes

The GST was in effect in FY15 and includes provisions for the taxing of goods and services with a standard tax rate of 10 percent.[34] Certain commodities were taxed at 5 percent, and selected services were taxed at 5 percent or 15 percent. Some particular commodities are exempted from the GST, and others are assigned a special tax rate. For the purposes of this exercise, we refer to excise taxes as those goods assigned a special tax rate according to the table 1 of GST law. Goods included in this category are tea, sugar, beer, tobacco, and petroleum products (gasoline, kerosene, and so forth).[35] The CEQ exercise covers only a subset of these as the HIECS provided limited information for mapping them to households' expenditures (diesel, lubricating oils) or the products could not be identified in the data (wheelchairs and so on).

We include the following products as part of the estimation of excise taxes: tea (with a differential tax for that distributed by ration cards or not), sugar (with a differential tax for that distributed by ration cards or

[32] Note that by applying *statutory* rather than *effective* sales tax rates to purchases recorded in the HIECS 2015, this CEQ assessment does not take a stance on indirect tax evasion or, for example, actual rates of taxation in informal markets.

[33] This study follows the methodology developed in the *Commitment to Equity Handbook* (Lustig 2018), chapter 7, to allocate the *indirect impact* of indirect taxes on the prices of goods and services acquired in the private market. The handbook suggests solving a price-shifting model—with an input-output matrix as the empirical description of price determination in the production side of the economy—assuming *inelastic* demand for all goods and services and fixed technologies of production. That is, producers "push" any input taxes paid (subsidies received) onto the final price of the goods and services, thereby raising prices (lowering prices) relative to a no-tax (no subsidy) counterfactual.

[34] Law No 11 of 1991 and subsequent amendments.

[35] Other items listed in the law are automatic wheel chairs, artificial human organs, vegetable oils, and hydraulic cement.

not),[36] tobacco (assuming a 50 percent rate corresponding to molassed tobacco), and gasoline (assuming the highest quality is consumed).[37]

In-kind transfers

Receipt of in-kind benefits is based on directly identified utilization of the public education or public health care systems. The HIECS 2015 records how many household members are enrolled in the public education system (and at what levels) and whether any household members recently visited a public health care facility. The monetized value of the in-kind transfer is based on the "government cost" approach. For example, total education expenditures are divided by the total number of users (students) to get a uniform per-user cost of producing and delivering the service. This per-user cost then is defined as the value of the transfer received. This cost represents what the utilizing household would have to pay to acquire the service at the government's cost.

We used disaggregated administrative data (by facility type) to guide our estimation of the government cost of a health care or education service acquired. For health, we used budgetary data to allocate specific expenditures to hospital and clinical care providers. For example, the public expenditures transferred to public hospitals for personnel and medical goods (including medicines) is not equivalent overall or on a per-facility basis to public expenditures for the same items for public clinic-based health care.[38] Off-budget, special fund expenditures for these services are known to be substantial.

Note that for both public health and education services, the estimate of the value of the benefit we allocate is limited by the information available. For example, we do not have complete information on the government's cost of a secondary school student-year or a primary/preparatory school student-year. We assumed the former was twice as expensive (for the government) as the latter two.[39] With that assumption, and with the overall shares of publicly enrolled primary/preparatory and secondary students as taken from CAPMAS (2017), the actual government cost can be calibrated. That is, we let actual numbers of publicly enrolled students (by level) and our assumption that a public secondary school student costs the government twice as much as a primary school student determine the imputed government cost for a student at both the primary and secondary levels.

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[36] For households' consumption of tea and sugar not distributed by ration cards, we apply the lowest GST rate: *gomhoria* tea and unsubsidized crystallized sugar.

[37] The gasoline is labeled "super" in the law. Furthermore, we use a weighted excise tax rate where 1/3 of the weight is based on the rate for imported products and 2/3 for the local products. This, using as guidance the energy balance table by the International Energy Agency, noting that Egypt's net imports of oil products account for 32.6 percent of the country's total consumption in 2015 (including industry own use during the refinery process and use for electricity production).

[38] Anecdotally, the Ministry of Health's budget is perhaps only 50 percent of total public expenditure on the delivery of health care services. Therefore, we are allocating a total, as well as a per-patient cost and a per-patient benefit, that is too low. Our baseline values assume the missing special funds are allocated to services and regions in exactly the same proportions as the on-budget expenditures.

[39] We recognize the arbitrariness of this assumption. Other CEQ exercises have shown that the ratio of the cost of a secondary level student to a primary level one can fall in the range of 1.5 and 10.

Similarly, in health, we can separate clinic-level visits from hospital visits in the microdata,[40] and we can separate clinic-level public expenditures from hospital-level expenditures, but we cannot further determine exactly which service was received at either clinic or hospital. So instead we assume that the amount by which the government cost of a per-inpatient day at a public hospital exceeds the government cost of providing per-patient outpatient services at a public hospital is 2.7. This ratio is equivalent to the amount by which the per-patient government cost at public hospitals exceeds the per-patient government costs at public clinics. We also cannot determine *precisely* how much less those without the National Health Insurance card pay at public hospitals and clinics than they pay at private health care providers. In consultation with those familiar with public health care service delivery in Egypt, we decided to assume those without a card who visit a public health care facility pay 90 percent of the *government cost* for the service they acquire. This gives us the factor by which the benefit that a patient without a card receives is *lower* than the benefit received by those with a card, which together with the data on which individuals have cards, can be used to generate the benefits provided to those without cards at public health care facilities.

As we are unable to describe the variation in the value of the services provided at any level, we cannot estimate the distributional impact of higher expenditures for more complicated procedures (for example) at any level. A "public health care service, clinic-level" benefit can be considered an average value across all services provided at the clinic level.

RESULTS

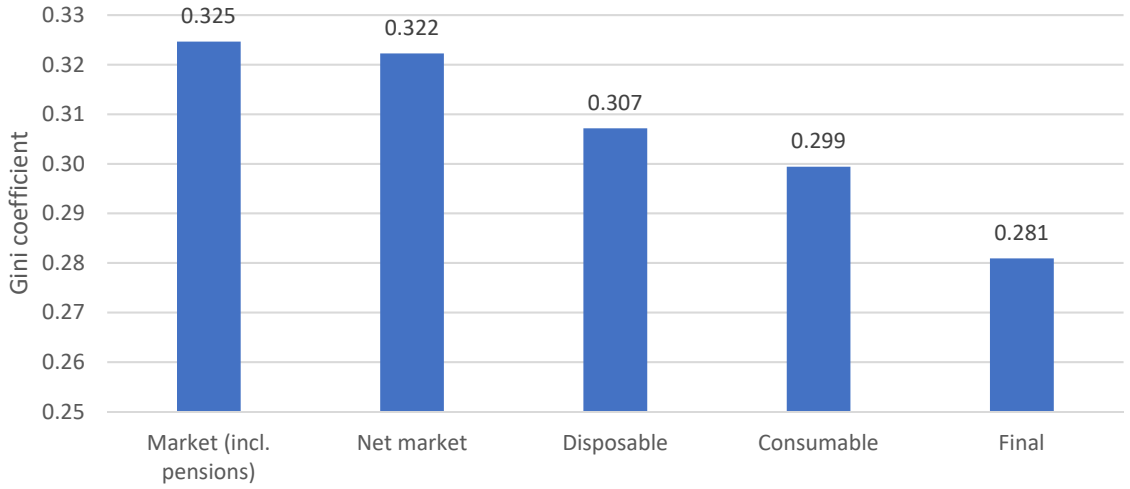
Redistributive effects of Egypt's fiscal system

Egypt's fiscal system reduces inequality. Figure 9 summarizes inequality at different income measures and demonstrates that inequality (as measured by the Gini coefficient) is reduced between market income plus pensions (henceforth market income)[41] and (the postfiscal) final income. Two significant reductions are observable: between net market and disposable income and between consumable and final income. This indicates that the instrument classes contributing the most to overall inequality reduction (from fiscal policy) are direct transfers, sometimes called "social assistance transfers," and access to in-kind public services in health and education. Overall, the Gini coefficient falls from 0.33 at market income to 0.28 at final income.

[40] It should be noted that the method for allocation of health spending implies that households who received medical attention (due to a certain illness) were "better off" than households that did not. We recognize this as a caveat of the approach.

[41] A CEQ assessment usually estimates two "extreme" scenarios: contributory pensions as pure deferred or replacement income or as a pure government transfer. In the first scenario, income from contributory pensions is counted as part of the prefiscal income by which households are ranked while in the latter not. For more details, see Lustig, ed. (2018).

Figure 9. Fiscal Policy's Impact on Inequality, 2015



Source: Based on HIECS 2015 and budget figures.

The redistributive effect[42] of fiscal policy in Egypt is about mid-range when compared to other countries in the region or those with similar levels of development (Figure 10).[43] This is due primarily to a relatively low impact of direct transfer spending on inequality. Egypt's main cash transfer program, the food ration program, is approximately a universal transfer, so richer households receive the transfer approximately as frequently as poorer households; untargeted transfers often do not generate large impacts on inequality. Figure 10 also demonstrates that prefiscal inequality in Egypt is quite low.[44]

Fiscal policy is also poverty reducing. As discussed in Lustig (2018), to measure the impact of fiscal policy on poverty, the indicator of choice—usually the poverty headcount rate or the poverty gap—is calculated for market income, disposable income, and consumable income. Poverty statistics are not typically measured for final income, which includes the government-cost value of health and education services (see Figure 7).

Figure 11 indicates that in the absence of the taxes and expenditures in this CEQ assessment, the poverty headcount rate at prefiscal income (market income including pensions) would be about 35 percent. At

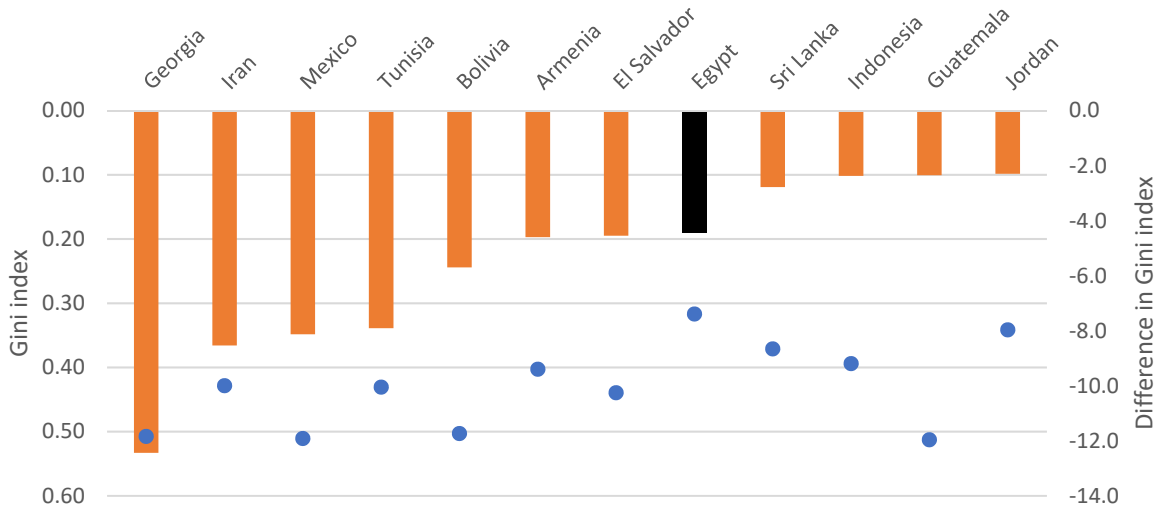
[42] The redistributive effect is measured as the absolute difference between the Gini for market income, including pensions and the Gini for consumable income. The CEQ Institute's data archive, from which Figure 10 is drawn, uses the 2005 PPP conversion factor and the $1.25 PPP per-capita, per-day poverty expenditure level as those were conventional standards when earlier CEQ country case study results were generated. The Data Archive is currently being updated to reflect the newer 2011 PPP conversion factors and the $1.90 US$ per-capita, per-day poverty expenditure level.

[43] Based on the lower-middle income economies of the World Bank. See World Bank, World Bank Country and Lending Groups, database, Washington, DC, accessed May 25, 2018. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups,

[44] The estimated low Gini in Egypt has been studied extensively. See, for example, Verme et al. (2014), Van Der Weiede and Ianchovichina (2016), Lara Ibarra et al. (2017), or Alvaredo et al. (2018).

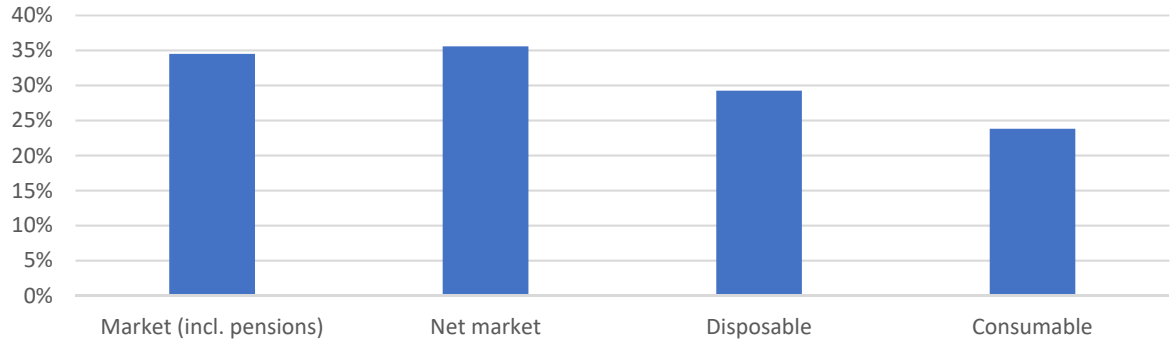
consumable income, after all taxes (direct and consumption taxes), *cash or near-cash* transfers and subsidies have been accounted for, the estimated poverty rate drops to just less than 24 percent. [45]

Figure 10. Fiscal Policy's Impact on Inequality (bars and right axis) and Prefiscal Inequality (dots and left axis), Select Countries/Years



Sources: Egypt: based on HIECS 2015 and budget figures from FY14/15 and FY15/16. Georgia: Cancho and Bondarenko 2017. Iran: Enami, Lustig, and Taqdiri 2017. Mexico: Scott 2014. Tunisia: Jouini, Lustig, Moummi, and Shimeles 2018. Armenia: Younger and Khachatryan 2017. El Salvador: Beneke, Lustig, and Andres Oliva 2018. Sri Lanka: Arunatilake and Lustig 2017. Indonesia: Jellema, Wai-Poi, and Afkar 2017. Guatemala: Icefi. 2017a. Jordan: Alam, Inchauste, and Serajuddin 2017.
Note: Fiscal impact on inequality is plotted with bars and on the right-hand axis as the difference in Gini Index of the market income distribution and the consumable income distribution. Prefiscal inequality is plotted with dots and measured as the Gini index on the left-hand axis.

Figure 11. Fiscal Policy's Impact on the Poverty Headcount Ratio



Source: Based on HIECS 2015 and budget figures.
Note: The poverty headcount ratios in this figure are based on poverty lines based on the methodology described in Lara Ibarra (2018). The average value is LE 5,748 per person per year, or US$3.98 per day in 2011 PPP.

[45] When the government-cost value of in-kind services is added to Consumable Income, the poverty headcount rate drops to approximately 12 percent. However, a monetized value of an in-kind service received does not *directly* produce an increase in purchasing power (over all goods and services).

Egyptian fiscal policy (in 2015) is nearly unique in that it has positive impacts on both inequality reduction *and* poverty reduction without an emphasis on targeted expenditures or revenue collections.[46] In other words, households at any rank in the income distribution can expect to pay some direct and indirect taxes, but they can also expect to receive an even greater amount (in absolute magnitude) in cash or near-cash transfers. Figure 12 shows the net cash position of poor, vulnerable, middle-class, and rich households after direct transfers and subsidies are received and direct and indirect taxes are paid. While the pilot direct cash transfer programs (Takaful and Karama) are clearly targeted to poor and vulnerable households, the other expenditures (the food credit and energy subsidies) are universally available. The estimated net position of households is a result reflective of the GoE's documented gap between expenditures and revenues. This approach is not fiscally sustainable in the long run. In the short run, the GoE has financed it through the emission of bonds, typically held domestically.

In other fiscal settings, a lack of emphasis on targeted expenditures and revenue collections can mean that poor and vulnerable households do not capture the most valuable benefits (for example, because they buy few subsidized energy products directly) while remaining liable for some portion of the most significant tax instruments (or example, VAT). In such a setting, fiscal impoverishment, or the extent to which poor and vulnerable households suffer *net losses* from the fiscal system, can be quite high.[47] Figure 13 shows the extent of fiscal impoverishment (at US$1.90 per day [2011 PPP] international poverty line) in a set of 11 low- and middle-income African countries between the years 2010 and 2015 and Egypt in 2015: only South Africa and Namibia avoid egregious fiscal impoverishment among the populations at large. In Egypt, meanwhile, fiscal impoverishment is essentially zero.[48]

Egypt's fiscal profile—nontargeted expenditures that create cash or near-cash benefits that are larger (in absolute magnitude) for all individuals than the direct and indirect taxes collected from the same individuals—is rare. In other country and fiscal contexts, such a mismatch would be fiscally unsustainable. In Egypt (in 2015), however, the revenue shortfall was approximately 10 percent of GDP. The funding gap in FY15, as well in other years has been typically funded through government bonds.

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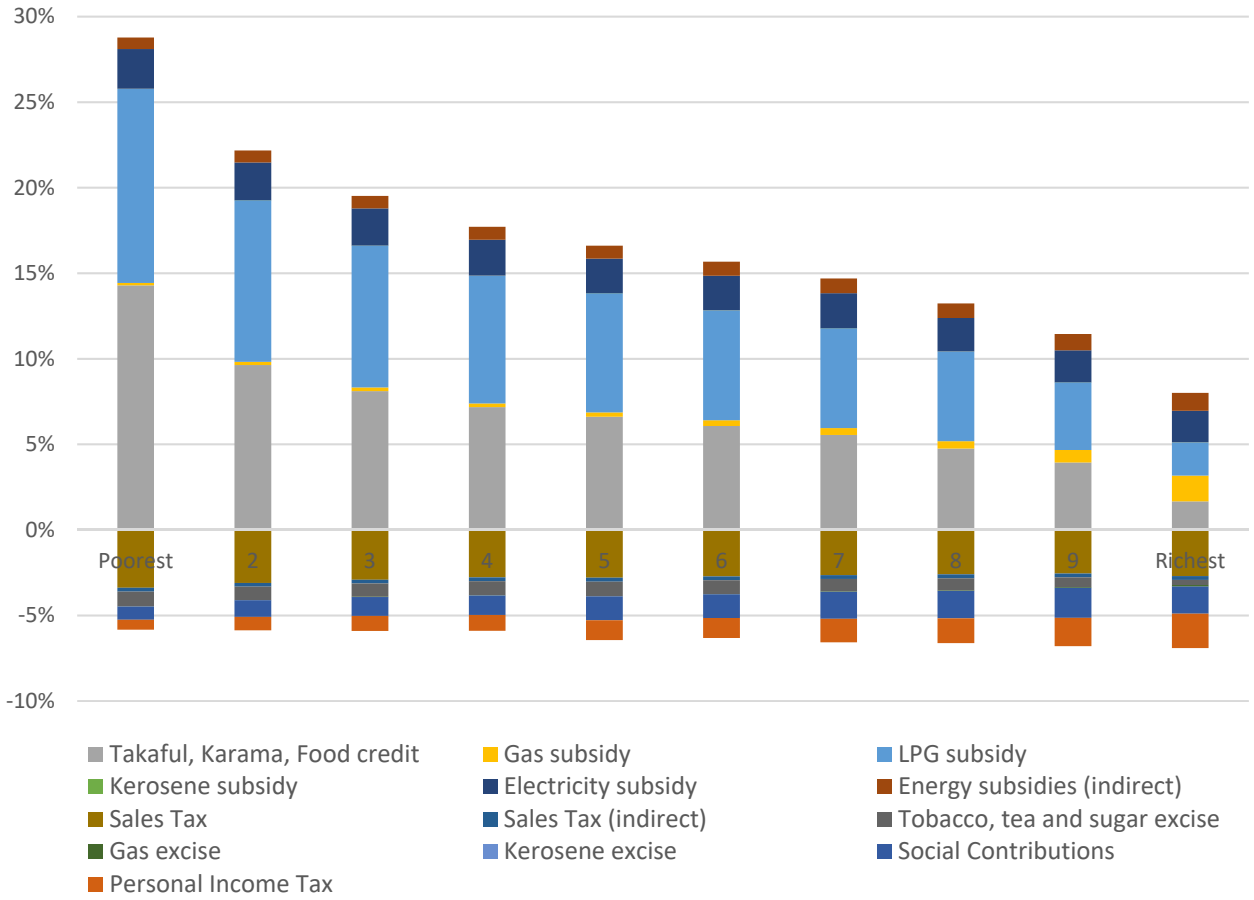
[46] See Enami, Lustig, and Tafqiri (2017) for the Iranian example of the same poverty- and inequality-reduction impacts.

[47] The measure of fiscal impoverishment (FI) was first proposed by Higgins and Lustig (2016). The FI headcount measures the proportion (out of the entire population) of individuals who were prefiscal poor and became poorer or prefiscal non-poor and become poor as a result of taxes and transfers. The FI consumable income poor headcount measures the proportion (out of the entire post-fiscal poor population of individuals who were prefiscal poor and became poorer or prefiscal non-poor and become poor as a result of taxes and transfers).

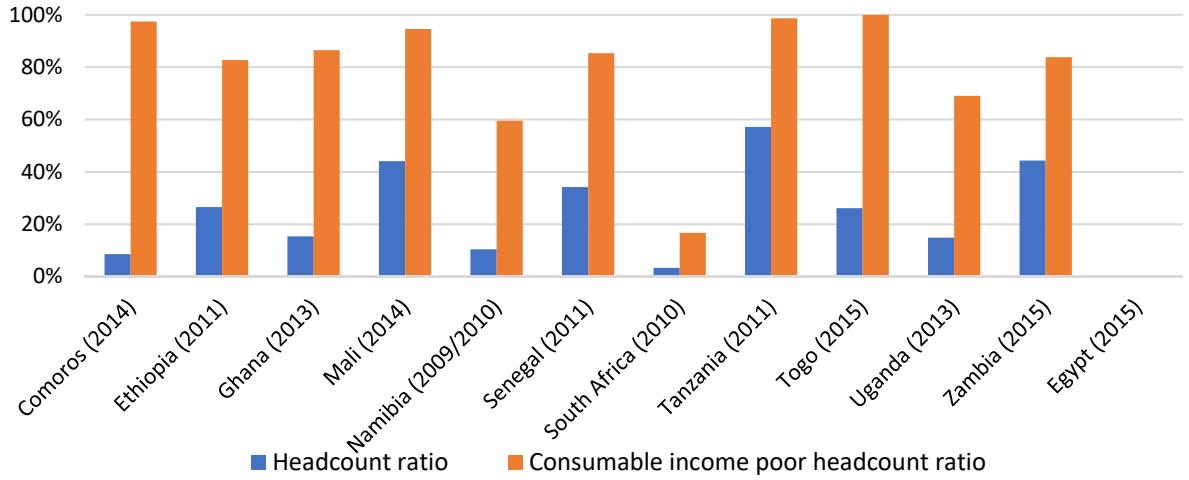
[48] Fiscal impoverishment–headcount ratio and Fiscal Impoverishment–consumable income poor headcount ratio are both zero (0.0 percent) in Egypt using the 1.90 US$ per day (2011 PPP) international poverty line or Egypt's national poverty line; and are 0.0 and 2.0 percent (respectively) in Egypt using the $PPP 3.20 per day (2011) international poverty line.

Figure 12. Net Cash Position (in Percent of Own Market Income Plus Pensions) through Consumable Income (by Market Income Plus Pensions Decile)



Source: Based on HIECS 2015 and budget figures.
Note: LPG = liquefied petroleum gas.

Figure 13. Fiscal Impoverishment (at Consumable Income) in 11 African Countries and Egypt

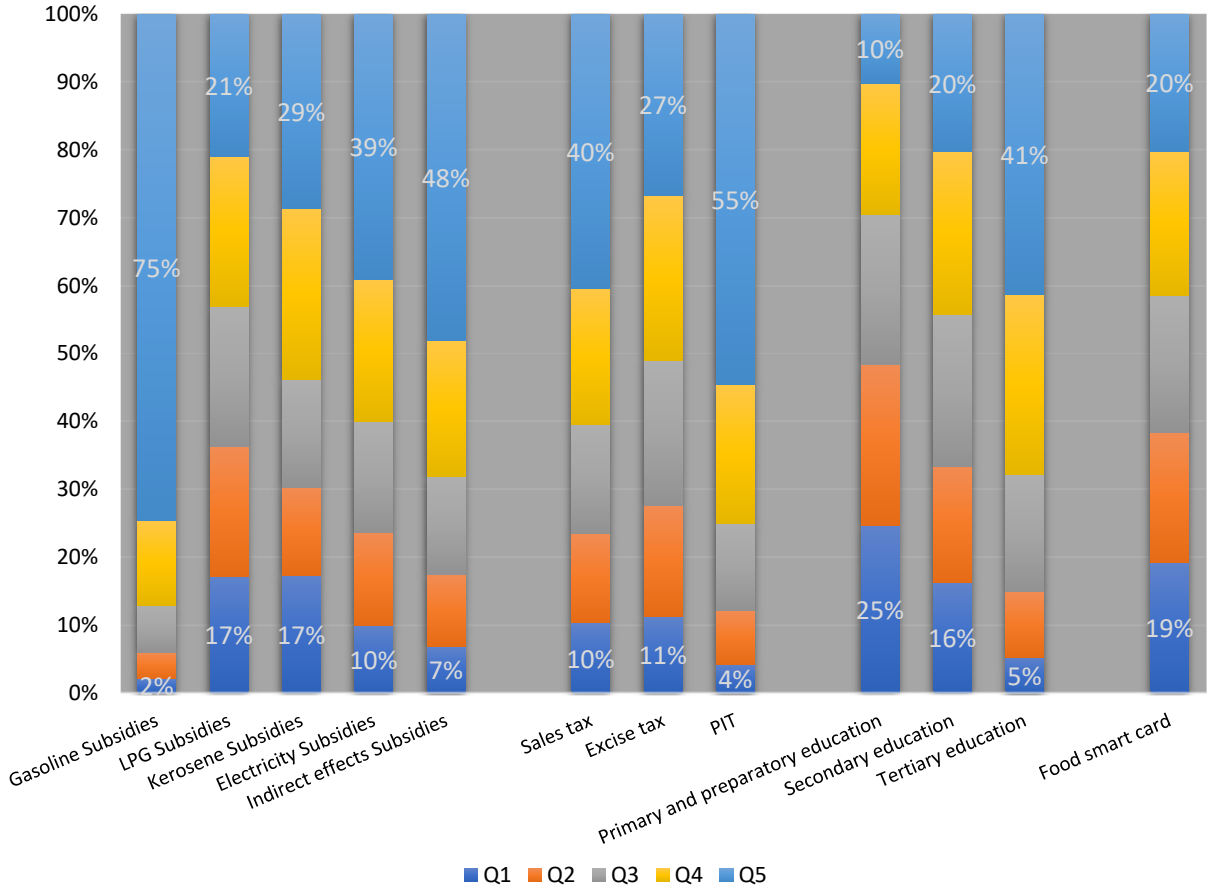


Sources: Egypt: based on HIECS (2015) and budget figures from FY14/15 and FY15/16. All other countries: de la Fuente, Jellema, and Lustig 2018. *Notes:* For a description of fiscal impoverishment see Higgins and Lustig (2016).

The incidence of different policy instruments helps us to better understand the capacity of each to attain the objectives of poverty reduction or equity. Figure 14 presents the incidence of government spending (or tax collection) across quintiles of a selection of the policies studied in the CEQ exercise. It is evident, for example, that the most equity-enhancing education expenditure is that devoted to primary and preparatory education. About a quarter of spending in this category is estimated to be received by the poorest quintile. In contrast, the spending on tertiary education appears to be regressive. About 40 percent of this spending is benefiting the richest quintile, whereas households in the poorest quintile receive only 5 percent of the benefits.

Finally, Figure 14 provides evidence that the reforms recently implemented by the GoE tackled some components of subsidies spending that were benefiting the better off. Almost three-quarters of the subsidies to gasoline were received by the top 20 percent of households, while only 2 percent were received by the bottom 20 percent. Electricity and kerosene subsidies are also enjoyed by the richest quintile, while LPG subsidies tend to be more equitably distributed.

Figure 14. Concentration Shares of Benefits and Payments in Egypt 2015, by Fiscal Policy and Market Income Quintile



Source: Based on HIECS 2015 and administrative data.
Note: LPG = liquefied petroleum gas; PIT = personal income tax. Subsidies reflect only the direct effects.

The concentration coefficients in Figure 15 provide a summary indication of whether a fiscal instrument is more (or less) equally distributed than income itself.[49] Intuitively, when a single expenditure (tax) instrument has a concentration coefficient smaller (larger) than the prefiscal income Gini coefficient, that instrument *potentially* reduces inequality.[50] Figure 15 indicates that the pilot direct transfer programs—Takaful and Karama—as well as public health care services and public education services at the primary and secondary levels, the kerosene and LPG subsidies, and the personal income tax and social contributions all could (in theory) reduce income inequality. The electricity subsidy and the sales tax, because they have concentration coefficients *nearly* equal to the income Gini, likely have little inequality-reducing potential. Meanwhile tertiary public education, the gas subsidy, and the indirect impacts of energy subsidies all could (in theory) actually contribute to an increase in inequality.

Egypt collects most of its revenues from the indirect tax system. The personal income tax (PIT) in Egypt is progressive in that shares of the PIT burden increase with income shares; it also protects poor households with a reasonably high tax threshold (the income amount below which an individual with that income is not liable for PIT). However, indirect taxes, provide a larger share of revenues to the Egyptian government and affect all households via consumption expenditure activity; even sales-tax-exempt goods and services may carry an implicit tax burden via taxes on inputs paid by producers and passed on to consumers in higher final prices.

A majority of Egypt's fiscal instruments have the *potential* to reduce inequality. To illustrate how much of that potential was actually achieved in 2015, Figure 16 presents inequality impact effectiveness indicators for expenditures and taxes. These indicate the size of the actual marginal impact a fiscal instrument had on inequality relative to its potential maximum impact in Egypt in 2015 if the fiscal intervention would have been designed in such a way to maximize its inequality-reduction impact, keeping the amount collected or spent fixed. Figure 16 demonstrates that the PIT system in Egypt achieved approximately 27 percent of its maximum potential inequality reduction, while all energy-subsidy spending achieved slightly less than 20 percent of its maximum potential inequality reduction. Therefore, based on this estimated potential, the PIT system was more effective at equalizing incomes than was the subsidy program. Notice also that the inequality impact of individual indirect taxes in Egypt can be highly negative (the tobacco excise), highly positive (the fuels excise), or neutral (the general sales tax). Overall, indirect taxes *increase* inequality in Egypt as the direct burden (for the household) for poorer households of the tobacco excise, measured as a share of pretax income, far exceeds the direct burden of the fuels excise.

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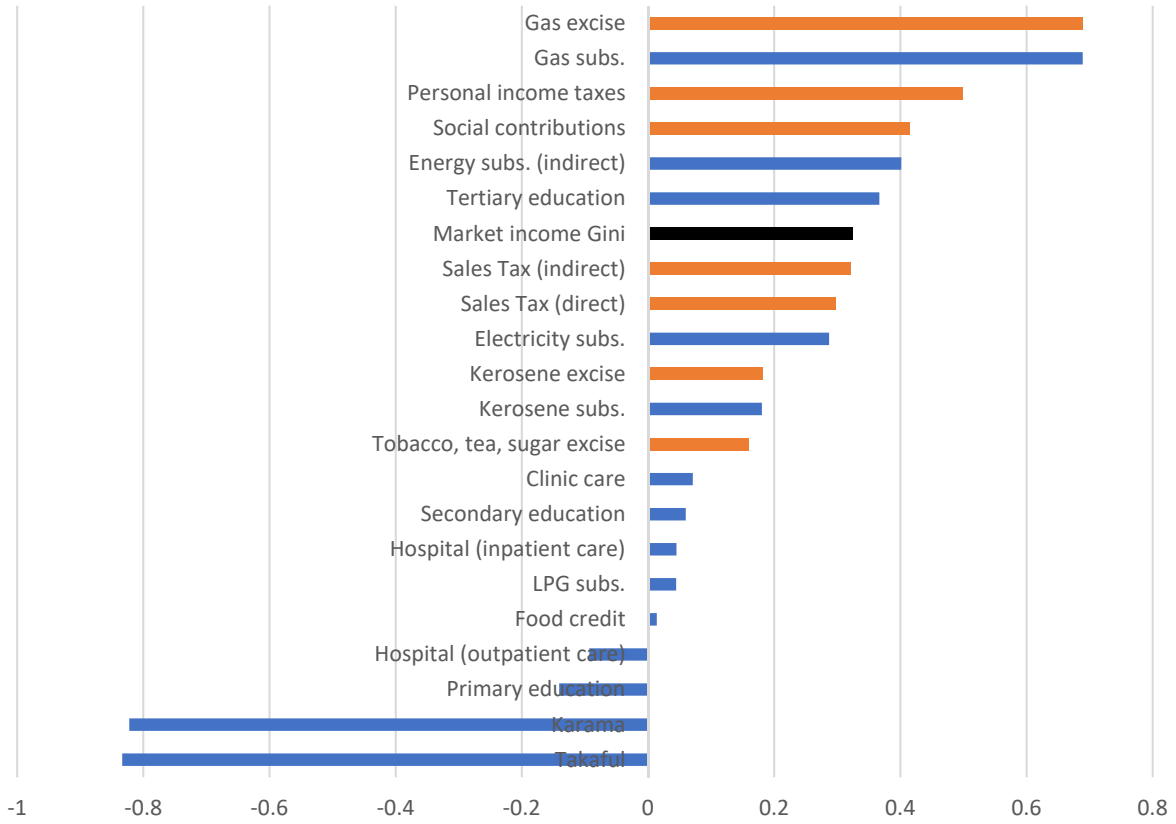
[49] A concentration coefficient is calculated in a way analogous to the Gini coefficient, but with households ordered or ranked according to prebenefit or pretax (or prefiscal) income. That is, if p is the cumulative proportion of the total population when individuals are ordered according to increasing prefiscal income values, and $C(p)$ is the concentration curve, that is, the cumulative proportion of total program benefits (of a particular program or aggregate category) received by the poorest p percent of the population, then the concentration coefficient of that program or category is defined as the integration (from 0 to 1) of $2*\int(p-C(p))dp$.

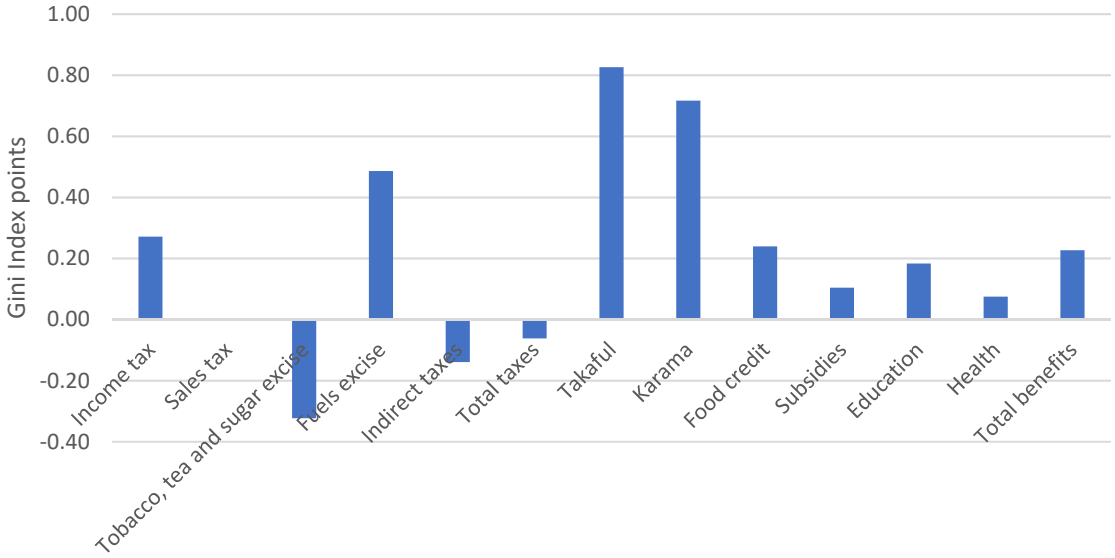
[50] Lambert (2001) shows that in a many-fiscal-instrument world, a concentration coefficient smaller (larger) than the prefiscal income Gini coefficient is neither necessary nor sufficient for an expenditure (tax) to have an inequality-reducing impact. For that reason, a CEQ assessment also generates *marginal contributions* to inequality or poverty reduction for each fiscal instrument allocated. The marginal contribution is the impact of the instrument in question in the presence of all other instruments considered. For Egypt's case, hospital-inpatient health care, clinic health care, and the kerosene subsidy are all expenditures with concentration coefficients smaller than the Gini coefficient for market income but zero or negative marginal contributions to inequality reduction; all revenues with concentration coefficients larger than the Gini coefficient for market income have positive marginal contributions to inequality reduction.

Figure 15. Concentration Coefficients by Available Instruments in Egypt 2015



Source: Based on HIECS 2015 and administrative data.
Note: LPG = liquefied petroleum gas. LPG subsidies only reflect only the direct effects.

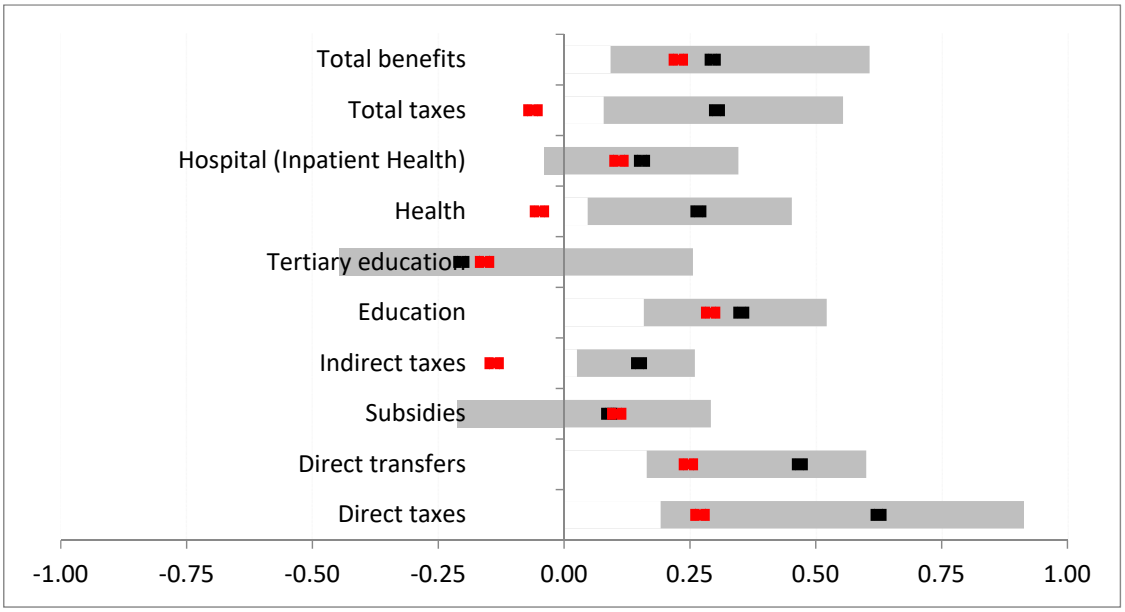
Figure 16. Impact Effectiveness Indicator: Inequality



Source: Based on HIECS 2015 and budget figures.

Figure 16 also demonstrates that direct taxes and direct transfers are more effective at reducing inequality than are, for example, subsidies, in-kind services, or indirect taxes. This is not uncommon—see Figure 17, which presents the range and mean of the Inequality Impact Effectiveness Indicator for different classes of instruments in 11 African countries between 2010 and 2015 as well as the value of the same indicator in Egypt in 2015. Egypt's inequality impact effectiveness indicators for direct transfers and direct taxes are below the mean, but still within the range shown in figure 17. Subsidy spending is approximately at mean effectiveness, while indirect taxes (and also total taxes) are outside the range and actually contribute to an *increase in inequality*. This is due to the steep excises on alcohol and, especially, tobacco.[51] Figure 17 also presents Egypt's fiscal quandary: while fiscal policy (circa 2015) was indeed reducing inequality as well as poverty, most Egyptian expenditures are not targeted and are therefore *larger* than they need to be in order to have positive welfare impacts. That in turn indicates that the 2015-era profile of expenditures and revenue collections is likely not sustainable (see also tables 1 and 2).

Figure 17. Inequality Impact Effectiveness Indicator: Egypt (red square), Range (gray bars), and Mean (black square) and 11 Low- and Middle-Income African Countries



Source: Egypt: based on HIECS 2015 and budget figures. All others: - de la Fuente, Jellema and Lustig 2018.

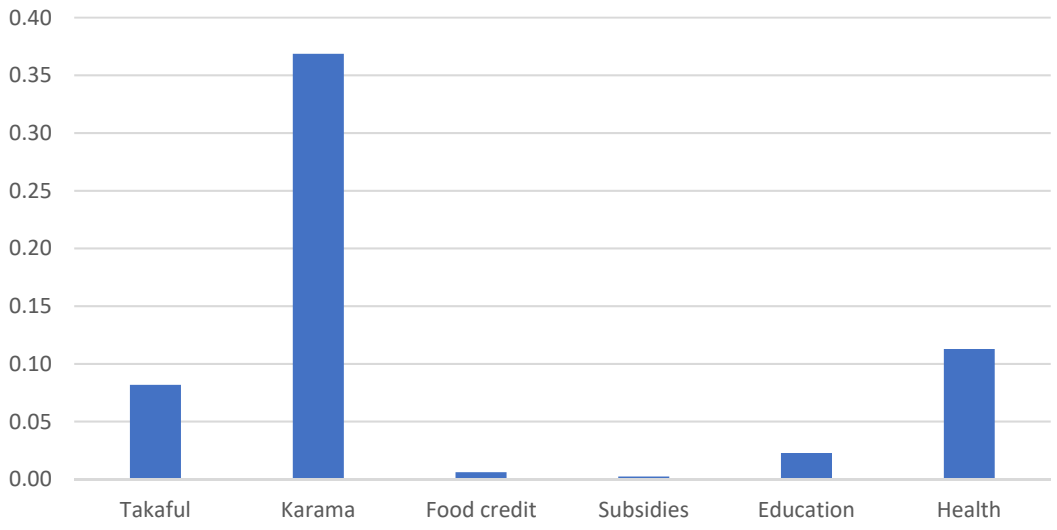
Note: Hospital/inpatient health in Egypt includes outpatient services at public hospitals.

The fiscal gains to the poor effectiveness indicator (Figure 18) provides a similarly intuitive statistic for the effectiveness of direct and indirect transfers in protecting poor and vulnerable households from further impoverishment. In other words, the Karama direct cash transfer was the most effective at protecting poor households *specifically* because it was targeted to households in the poorest 20 percent of the population. The Takaful program, meanwhile, delivered far greater amounts through direct transfers, but it delivered

[51] With such "sin taxes" Egypt may create incentives for better long-term public health outcomes and therefore long-term increases in human capital and incomes in all households and thereby also long-term reductions in income inequality (see for example Fuchs, Hasbun, and Mukong 2018). Such long-term dynamics are not captured here.

those amounts to poor and non-poor households. Therefore, the Takaful program was relatively less "effective" and less efficient (given the Takaful program's budget) at protecting poor and vulnerable households than the Karama program (given the Karama program's budget). The food credit program, energy subsidy expenditures, and public education expenditures reach a very small proportion of their potential to reduce inequality; this is due primarily to the large amounts spent on those programs combined with their near-universal coverage.

Figure 18. Fiscal Gains to the Poor Effectiveness Indicator



Source: Based on HIECS 2015 and budget data.

CONCLUSIONS

This study implements the CEQ methodology for the case of Egypt. Having unprecedented access to the administrative data of the GoE, this study is able to map several of the country's main policies and assess their impact on poverty and inequality. From the expenditure side, the exercise accounts for social spending (including pension fund contributions, the food subsidy program, the Baladi bread program, and the recently implemented Takaful and Karama programs); we also account for education and health spending, as well as expenditures on fuel and electricity subsidies. For the revenue side, the exercise includes the direct personal income tax, the alcohol and tobacco excise, the fuels excise, and the direct and indirect burdens created by the GST.

Fiscal policy in Egypt reduces inequality and poverty through a series of fiscal policy elements. The flagship, nearly universal program of the food smartcard and Baladi bread allowances of the Tamween program has a relatively low contribution to the equity efforts of the GoE. Instead, poorer households tend to receive larger benefits from education spending in basic education and were well targeted by the recently introduced Takaful and Karama programs. Direct taxes are also found to be slightly progressive, with richer households liable for larger shares of the tax than their estimated market income share. Subsidy spending is not equality enhancing, as a large share of the benefits end up among the richest households—probably linked to the consumption patterns and ownership of assets, such as cars. Overall, Egyptian fiscal policy in 2015 achieves inequality reduction around the median of its comparator group

but, since its prefiscal inequality is rather low, Egypt ranks lower among the same set of countries in terms of the total impact of fiscal policy on inequality.

The direct and indirect benefits from energy subsidies, however, contribute nearly as much to total poverty reduction (from fiscal policy) as total direct transfers. As the food credit transfer made up nearly 100 percent of total direct transfer expenditures in 2015, the largest poverty reductions are produced by universal or nearly universal transfers, making poverty reduction an expensive proposition. Fiscal policy reduces the poverty headcount ratio and does not impoverish the poor, but it could achieve more if transfers and subsidies were switched from universal to more targeted.

Results of the exercise suggest that recent GoE policy directions have been progressive and led to important impacts on inequality and poverty. The continuous elimination of subsidies that the government launched in 2014, with the corresponding increase in social spending, change the balance of GoE's spending toward a more equitable distribution. The tenfold expansion of the Takaful and Karama programs between 2015 and 2017 is also an important step in the right direction. Using a means-tested approach, these programs have strong potential to benefit the most vulnerable in the Egyptian population. Finally, the measures to increase administrative efficiency and clean the beneficiary list of the food program to exclude those who are ineligible may have also positively affected the equitable angle of the government spending. Being a quasi-universal program, shifting the resources of the food subsidy program toward those on the bottom of the distribution will surely contribute to a more equity-enhancing distribution of expenditures.

The findings in this exercise should be taken as a solid starting point to promote evidence on the impact of policy levers in Egypt. Going forward, the structure of the exercise could be easily updated to reflect new data as soon as it becomes available. The recent completion of the new HIECS round in October 2018 holds great potential for updating of the results, as long as it can be complemented with administrative data.

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