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UNDERSTANDING POVERTY AND INEQUALITY IN EGYPT

JUNE 2019



WORLD BANK GROUP
Poverty & Equity

UNDERSTANDING POVERTY AND INEQUALITY IN EGYPT



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ACRONYMS

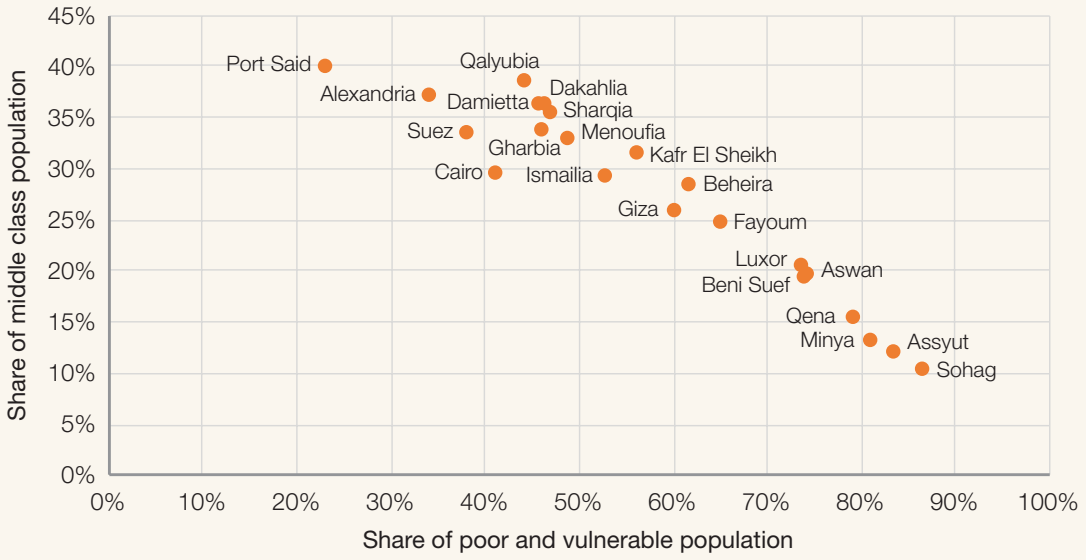
CAPMAS	Central Agency for Public Mobilization and Statistics
CBE	Central Bank of Egypt
CEQ	Commitment to Equity
DCGE	dynamic computable general equilibrium model
EGP	Egyptian pound
ELMPS	Egypt Labor Market Panel Survey
FDI	foreign direct investment
FY	fiscal year
GDP	gross domestic product
GoE	Government of Egypt
GST	general sales tax
HH	household
HIECS	Household Income, Expenditure, and Consumption Survey
ICT	information and communication technology
IMF	International Monetary Fund
LE	Egyptian pound (currency symbol)
LFS	Labor Force Survey
LPG	liquefied petroleum gas
MENA	Middle East and North Africa
MoEE	Ministry of Electricity and Energy
MoF	Ministry of Finance
PIT	personal income tax
PPP	purchasing power parity
SAM	social accounting matrix
SME	small and medium enterprise
STEM	science, technology, engineering, and mathematics
STEP	Skills Towards Employability and Productivity
VAT	value-added tax

EXECUTIVE SUMMARY

In 2015, a large share of Egypt's population was either poor (27.8 percent) or not poor but vulnerable to falling into poverty (an additional 28.7percent); most of the poor and vulnerable lived in the governorates of Upper Egypt. Clearly the country faces a challenge, but it also has the knowledge to craft solutions. Egypt's recent reforms have started to address some of the country's economic sustainability challenges. Targeted social protection programs must continue to be an essential element of poverty reduction policy. Looking ahead, this report calls attention to the fact that re-orienting education investments towards more effective learning that raises people's employability and productivity and putting in place policies that encourage job creation will be key to sustained poverty reduction. Revitalizing education and job creation will be important for maximizing the poverty-reducing potential of the economic reform program.

One of the hallmarks of healthy economies is a substantial middle class, a group often thought to be an engine of economic growth. In Egypt, a notable share of the population, close to 30 percent, can be considered middle class. Compared to the poor and vulnerable, the middle class has higher education, more assets, and better connectivity to basic services and spends a relatively large share of income on education and health. It is clearly a goal in developing countries to enlarge the middle class in order to strengthen the overall economy.

Figure ES.1. Population Share of the Poor, Vulnerable, and Middle Class, by Governorate, 2015



Source: Data from Household Income, Expenditure, and Consumption Survey (HIECS) 2015.

But strikingly, the poor, vulnerable, and the middle class in Egypt all face some degree of precariousness in employment: we find that a significant share of each group works in the informal economy—the so-called gray market that is neither taxed nor monitored in any comprehensive fashion by government and in many cases consists of low productivity work. Paid work and micro and small entrepreneurial activities are the main types of employment for all three groups of households.

The groups do, however, differ geographically to a significant degree (figure ES.1). The Upper Egypt governorates have a high share of the poor and vulnerable populations, while Lower Egypt governorates and metropolitan areas have correspondingly large shares of the middle class. Recent estimates of poverty at district and village levels also show there to be large spatial variations in poverty even within governorates. Raising prosperity overall will thus entail a geographic component.

The Government Is Shifting Its Approach to Development

Egypt is moving from a state-led to a market-oriented development model by pursuing reforms such as reducing energy subsidies and adopting a flexible exchange rate. An essential component of the government's new approach has been the reduction in energy subsidies that, while keeping all households' out-of-pocket energy spending low, had distorted the economy toward energy and capital-intensive rather than employment-intensive sectors. A fiscal-incidence analysis of government spending, furthermore, shows that energy subsidies were regressive, disproportionately enjoyed by the better-off because the rich consume more energy than the poor do.

The latest available household consumption data are from 2015 and they are used to evaluate the impact these reforms have had on the people. Simulations using household data from 2015 suggest that the energy subsidy reduction, floatation of the exchange rate, and the consequent pass through to higher domestic prices could negatively affect households' welfare (and therefore raise poverty rates) in the short term, when households have limited ability to adjust their consumption or income. The government has announced that it is directing some of its savings from the removal of the energy subsidy and the modification of others to cash transfers and other mitigation measures for households. These have been found to help protect the poor. Over the longer term, the negative short-term effects are expected to dissipate, as is already seen in some macroeconomic indicators. The reforms could spur private sector and export growth, and this would be particularly beneficial for the employment and income prospects of the poor, vulnerable, and the middle-class households.

As the government pursues needed economic reforms, and better uses social protection measures to protect the poor from adverse effects of macroeconomic shifts, it must also focus on how well-equipped the people are to lift themselves out of poverty with the help of their human capital and economic opportunities. Well-designed mitigation measures for the poor will help but a more lasting effect will come from making education access and quality work better for the poor and making the labor market work for all, particularly, the vulnerable and middle class.

It Must Also Build on the Investments in Education

In the past, Egypt has made significant investments in education, and this will serve the country well in a market-oriented economy. These education investments are visible in the leap in educational achievement observed in household survey data. A generation ago, 80 percent of Egyptians had less than primary education and about 4 percent had a university degree. Now, among individuals 25 years or older, the percentage without a primary level diploma has plummeted to 41.5 percent and the share of those with a university degree has reached 14.5 percent. A recent global study of education and income mobility, covering 148 economies, highlights Egypt's success in education investment (Narayan et al. 2018). According to the report, the latest (1980s-born) generation of adults in Egypt and in other countries of the Middle East and North Africa region has the highest average absolute educational mobility and the second-highest average relative educational mobility among all the developing regions. Educational mobility measures growth in education across generations: that is, in countries with high education mobility, children are more educated than their parents.

This progress is tangible and provides a foundation for personal and national economic growth. However, several challenges remain. Despite improvement in education levels, there are still about 27 percent of working age people who have not completed primary education and this lack of education will impact their employability and productivity. The educational level that experienced the largest increases across generations, especially among the poor and those in rural Upper Egypt, was secondary-level technical certification or vocational and technical education. This is the result of Egypt's pursuit of a policy of promoting technical education at both the secondary and postsecondary levels. In the past, the school-to-work transition for those graduating from vocational and technical education was guaranteed by a public sector job. However, this is no longer the case. Recent studies have also found that, due to the surge in the number of workers with these degrees and/or the poor quality of the technical training, the labor market returns tend to be very low and unemployment high for these graduates. In addition, although educational attainment has increased, there is a concern about lagging improvement in learning outcomes as revealed by Egypt's low performance on global standardized tests for science, math, and reading.

Furthermore, not all groups experienced the intergenerational gains in education. The poor, especially poor women and those residing in Upper Egypt, did not experience the same level of benefit experienced by the rest of the population. Slightly more than 64 percent of individuals in the current generation whose father did not graduate from primary also did not attain primary education. Nearly a third of the working-age population countrywide has less than a primary education. Moreover, many of the children of more highly educated individuals in rural Upper Egypt do not attain their parents' level of educational achievement.

Also, even though in general children are better educated than their parents, they do not necessarily earn more than them. Narayan et al (2018) show that income mobility—earning more than the previous generation—is much lower than achievement in educational mobility would suggest in Egypt, along with Morocco and Tunisia. Lackluster performance of the labor market with insufficient job creation by the private sector is likely a reason for this disconnect.

Which Must Be Done in Relation to Labor Market Realities

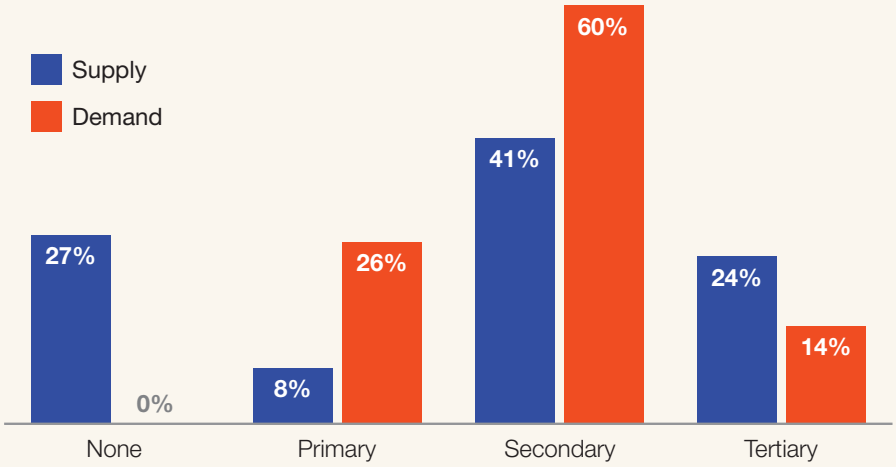
For the poor, vulnerable, and middle class to gain from market-oriented reforms and education investments, Egypt needs to ensure that economic growth is accompanied by employment growth. Key statistics suggest that the labor market is underperforming in this area. Rates of informal employment (60 percent) and unemployment (13 percent in 2016) are high. Employment growth has not kept up with the growth in the size of the working-age population. As a result, the employment rate has, in fact, declined, especially among men; women's employment rate has remained persistently low.

Employment in agriculture has fallen, a transition that is typical for this sector as an economy grows and non-agricultural sectors expand. However, there has been no corresponding gain in the country's employment rate (the number employed as a share of working-age population) in services or industry. Despite losing workers, agriculture continues to account for more than 30 percent of workers in several governorates. The share of agricultural workers is high in both high-poverty governorates of Upper Egypt and moderate-poverty governorates of Lower Egypt. This pattern suggests that more modern, productive agriculture sector could play a role in reducing poverty.

Accompanying these trends in falling employment rates is a shift in occupations toward middle-skilled and low-skilled jobs with little growth in high-skilled occupations. Public sector hiring is limited and cannot offset these trends in employment like in the past. Population pressures will only exacerbate these challenges. The 922,000 young entrants expected to enter the labor market each year represent a challenge but could become an opportunity if equipped with strong labor-market-relevant skills and provided that sufficient jobs are created. Economic and business friendly reforms can encourage private sector hiring, especially if the export-oriented and employment-intensive sectors such as textiles and agroprocessing activities pick up.

A diagnostic of the Egyptian labor market shows mismatches (figure ES.2). There is a large supply of workers who have either not completed primary or have gone on to complete secondary education. The demand for workers with such primary and secondary education exceeds the available supply. The demand for workers with postsecondary education, on the other hand, is less than the available supply. As a result of these mismatches between demand and supply of education qualifications, 38 percent of workers can be considered underqualified for the jobs they hold (this is particularly the case for administrative managers and elementary occupations) and 21 percent are overqualified (for example in customer service jobs). Among those with secondary vocational and technical certification, there are high rates of overqualification and unemployment and many of those trained in technical degrees are employed in other occupations (unrelated to these degrees). At an aggregate level, the high level of underqualification in the Egyptian labor market implies significant losses to productivity and constraints on growth. Overqualification indicates overinvestment in education compared to labor market demand or a weak education system that is failing to produce the critical labor market skills. The findings with regards to those with secondary vocational and technical education especially raises questions about the quality of learning.

Figure ES.2. Mismatch in Education Supply and Demand, 2016



Source: Egypt Labor Force Survey 2016 (OADMI 2018).

More importantly, taking together all the statistics on workers' job match quality, there are strong indications that the main challenge in the Egyptian labor market is that of insufficient labor demand or job creation. Across 20 governorates including Cairo, Alexandria, most of Lower Egypt, the share of workers that have poor labor market outcomes despite being well-educated (are overqualified for their jobs, are informally employed, or unemployed) exceeds the share that have poor labor market outcomes because of low education (are underqualified or have low education and are unemployed or informally employed). In 7 governorates mostly in Upper Egypt, the opposite is true and the share of those with low education and poor labor market outcomes exceeds the share of the well-educated with poor labor market outcomes. Comparing these results to the governorate level shares of poor, vulnerable, and middle class shows that labor demand issues among the well-educated predominate in governorates with high share of the middle class while issues related to poor education among workers predominate in governorates with high share of the poor.

To better understand the demand for workers, the report collected and analyzed data from OLX.com and Wuzzuf online job portals between August 2017 and March 2018. This offered an up-to-date picture of a segment of labor demand in the country. The data suggest that there might skills shortages in certain sectors, such as hospitality and tourism industries, secretarial, information communication technology, engineering, and retail. There is also some evidence of credentialism (overreliance on degrees or certification as a measure of ability) as well as weak labor demand. Many of the jobs posted need basic computer, quality communication, and customer service skills that a person with a quality secondary school degree should be able to provide. But many of these job advertisements require that applicants have a university or bachelor's degree. That employers assign a higher than necessary educational qualification to jobs is consistent with weak labor market demand.

Looking Ahead: Addressing Needs

Considering the profile of the different income groups in the population, the educational outcomes of the poor, vulnerable, and middle class and the findings from the diagnostic analysis of the labor market, the key elements of policies to support poverty reduction and shared prosperity must involve better investments in education and improving labor market demand to capitalize on the available skills. The government of Egypt is taking steps in both policy areas, and the evidence of the report further reinforces the importance of continued efforts in these two areas.

First, efforts to better target social assistance transfers (such as Takaful and Karama) must continue. Takaful and Karama cash transfers will not only help protect the poor but also can be leveraged to promote educational attainment among poor and vulnerable households. Programs to connect those in beneficiary households with the opportunity to work will also help, provided there are local employment opportunities.

Second, education and employment policies need to address the low education that persists amongst the poor, especially poor women; this low education level keeps them trapped in low productivity employment. Education monitoring systems could be used to ensure that children from poor households enroll and attend school at least up to primary level. The analysis has shown that 27 percent of working age today have not completed primary education and low qualifications prevails amongst workers in 7 governorates mainly in Upper Egypt. For this group, policy actions could include lifelong learning opportunities (literacy and adult learning) and training. Certain types of training can be effective for microentrepreneurs; a study from Togo has shown the significant impact of personal initiative training on sales and profits among microentrepreneurs (Campos et al. 2017). A combination of providing income generating assets and skills training (targeted to women) has also been found to be effective in helping poor entrepreneurs escape poverty in Bangladesh (Bandiera et al 2017).

Third, there is an urgent need to expand employment opportunities since so many workers, especially those with higher education, including secondary technical and vocational education, experience poor employment outcomes (such high unemployment and or informal employment); many of the working age do not even participate in the labor market. Working through the supply-side of the labor market, education policy can partially address this challenge by improving the quality and labor market relevance of the curriculum, particularly for secondary technical and vocational education. The bigger challenge appears to be on the demand side of the labor market: job creation by the private sector has not kept pace with the growing working age population. Moreover, the high share of informality even amongst educated workers suggests that there are limited formal job opportunities. Firms might prefer being informal because the costs of becoming formal might exceed the benefits (complying with regulations, facing competition from informal firms), for workers, on the other hand, the opposite could be true since formal employment brings greater social protection and job security. Addressing demand-side problems in the labor market would thus require a whole range of policies addressing the business environment, tax policy, labor regulations, and access to finance (that affect the cost of establishing formal enterprises) to encourage job creation and formal hiring by private sector firms.

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UNDERSTANDING POVERTY AND INEQUALITY IN EGYPT

OVERVIEW



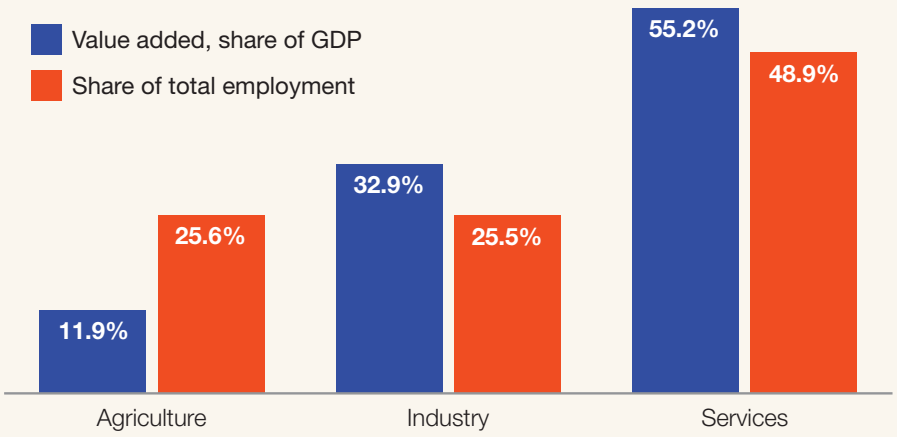
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A. INTRODUCTION AND MACROFISCAL CONTEXT

Egypt has entered a period of economic and social transformation. Nearly four years after reductions in energy subsidies were introduced and more than a year since the liberalization of the exchange rate, macroeconomic indicators appear to be recovering. Annual headline and core inflation rates that had reached 33 percent and 35 percent, respectively, in July 2017 had declined to 17.1 percent and 14.1 percent by January 2018 as the effects of the switch to a floating exchange-rate regime and the energy price increases started to fade.

The Egyptian economy grew by 5.2 percent in the first half of fiscal year (FY) 2018 compared to 3.7 percent in the prior year. The gross domestic product (GDP) and labor market are dominated by services (wholesale and retail trade) and industry (mainly extractives, manufacturing, and construction). Both these sectors contributed to the recent recovery in growth (figure O.1). Agriculture, a low productivity sector employing mostly poor and vulnerable workers, accounted for about a quarter of all employment. Agricultural employment has declined over time, and this decline has likely contributed to the strong growth in the sector in the recent period. Exports were also an important driver of the macroeconomic recovery. The recent rise in the share of proceeds from exports of finished goods

Figure O.1. Sectoral Composition of Value Added and Employment, 2016



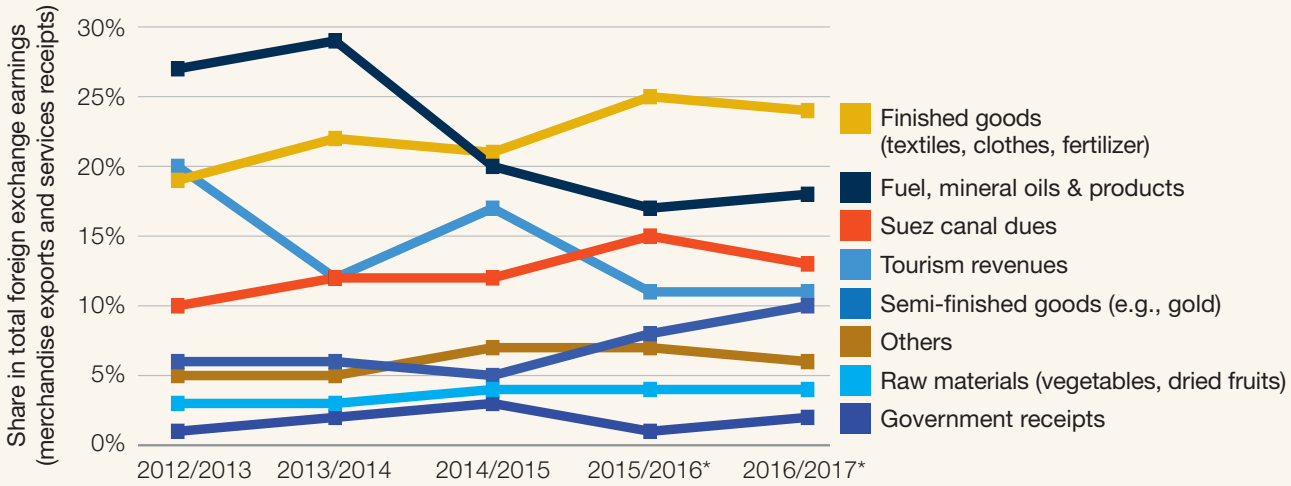
Source: WDI for value added; Egyptian Labor Force Survey (for sectoral employment shares).

(textiles and clothing) is promising for future job creation (figure O.2). Still, the proceeds from industrial outputs such as fuels and mineral oils and revenues from Suez Canal dues, that have little direct impact on employment, continue to dominate exports earnings.

The fiscal deficit, averaging between 10 percent and 12 percent of GDP over the last decade or so, has improved recently. Egypt's overall deficit decreased in FY17 to 10.9 percent of GDP (preliminary figure) compared to 12.5 percent of GDP a year earlier. 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 *Tamween* food subsidy 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 an important component of expenditures. On the tax side, instruments include personal income taxes, corporate income taxes, a property tax, a goods and services tax,[1] and excise taxes on alcohol, tobacco, fuel, and other selected products.

A fiscal incidence analysis– analyzing the net impact of 2014-15[2] government spending and revenues on households' income and the distribution of income in Egypt –shows that overall fiscal activities were both equity enhancing and poverty reducing but they were not sustainable given the fiscal deficit (Lara Ibarra et al, 2018). Estimating households' "prefiscal" income and comparing the resulting income distribution to "postfiscal" income distribution,[3] the fiscal incidence analysis showed that inequality falls due to fiscal activities: the Gini coefficient declines by 0.044 points (from 0.325 to 0.281). This redistributive effect of Egypt's fiscal policy was about mid-range when compared to other countries in the region or with similar levels of development (figure O.3).[4] Similarly, without fiscal activity, Egyptians

Figure O.2. Trends in Merchandise Exports and Services Receipts, FYs13–17



Source: Central Bank of Egypt, accessed May 2018.

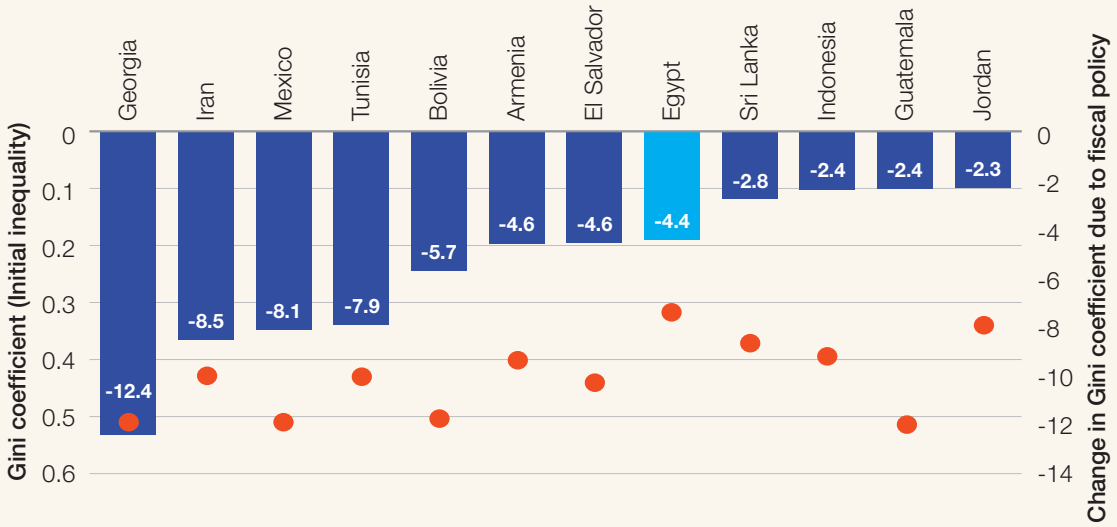
* refers to estimates

would have faced much higher poverty rates than the near 30 percent poverty rate prevailing in 2015. However, sustaining this effectiveness in achieving poverty reduction and equity goals through fiscal policy would require a narrowing of the fiscal deficit.

Fiscal incidence analysis also shows that the 2014–15 government spending on fuels and electricity subsidies was regressive especially when second round indirect effects of the subsidy were taken into account (figure O.4). The top quintiles of the income distribution were effectively receiving most of the subsidies. The opposite was true for public spending on primary and preparatory education most of which reached the poorest two quintiles; public spending on tertiary education is regressive because better off children are more likely to continue to tertiary education. Spending on the near universal *Tamween* food subsidy program benefitted all income groups equally. In 2014, the ration card component of the *Tamween* program switched from a quota to cash transfers system equal to LE 15 per person per month; several measures of administrative efficiency were also adopted. Utilizing the extensive reach of the ration card program, the government of Egypt (GoE) was able to scale up the transfers to help beneficiaries face the high inflation in 2015–17.

Spending on the poverty-targeted *Takaful* cash transfer program pilot of 2015 (which together with *Karama* cash transfers program reached 1.7 million households by 2017) appears to have been effective at reaching the poor: estimates from our simulations suggest that most Takaful's benefits went to the poorest quintile.[5] On the revenue side, the incidence of sales tax and personal income tax revenues fell more in line with people's ability to pay as better off income deciles account for larger share of revenues. Overall, by moving away from universal fuel subsidies to increased spending on education and proxy means-tested social programs, the government took an important step toward greater fiscal sustainability and effectively protecting the poor and enhancing equity.

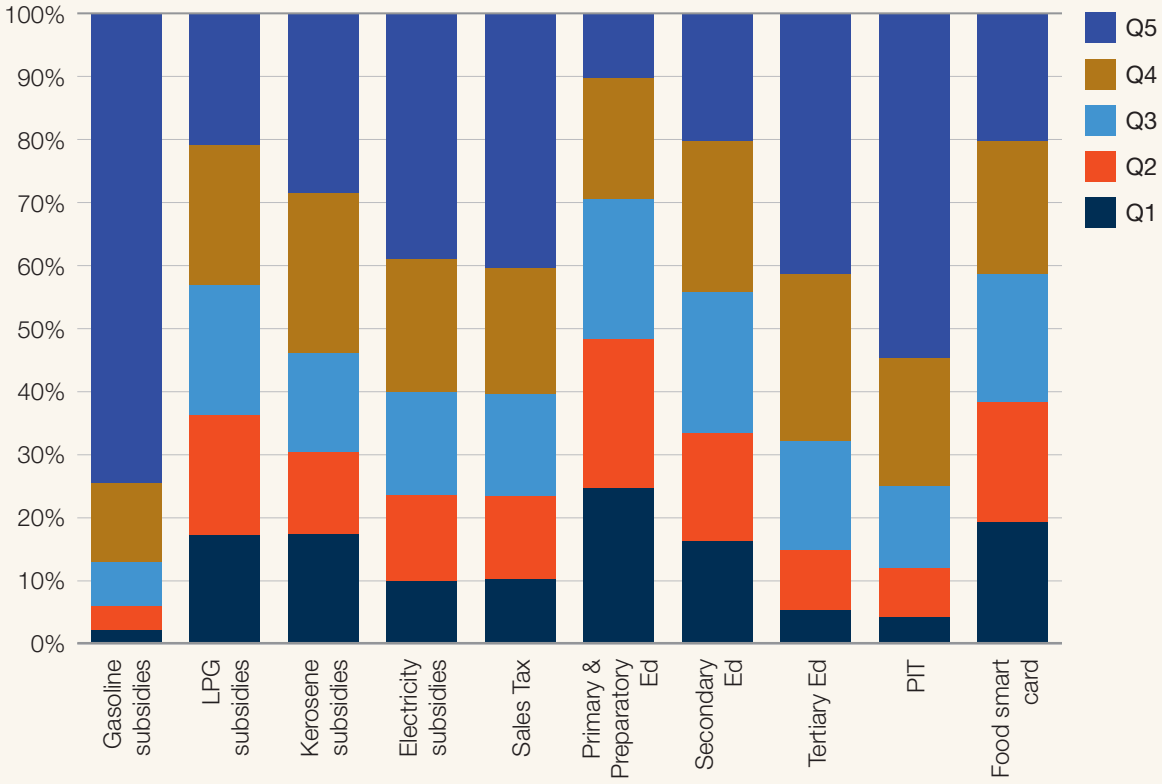
Figure O.3. Fiscal Policy's Impact on Inequality (Change in Gini Coefficient) (bars and right axis) and Initial Inequality (Gini Coefficient) (dots and left axis), Select Countries and Years



Source: Compilation of country studies as displayed in Lara Ibarra, Sinha, Fayez, and Jellema (2018).

Note: Initial inequality is measured as the Gini coefficient on the left-hand axis. Impact on inequality is plotted on the right-hand axis. A Gini coefficient close to 1 (close to 0) indicates high (low) inequality.

Figure O.4. Concentration Shares of Benefits and Payments in Egypt 2015, by Fiscal Policy and Market Income Quintile



Source: Lara Ibarra, Sinha, Fayez, and Jellema (2018).

Note: LPG = liquefied petroleum gas; PIT = personal income tax.

Given this macrofiscal context, the report analyzes poverty and equity in Egypt. The report has two objectives. First, it fills a knowledge gap by shedding light on the most recent state of affairs for several income groups of the Egyptian population.[6] The profile of those who are poor, vulnerable, and middle class is analyzed. Moreover, the report uses simulations to examine the welfare and poverty impacts of some of the recent economic reforms such as energy subsidy reforms. The second objective is to bring new evidence to the challenges in the labor market. This analysis of the labor market is important because a well-functioning labor market is critical to realizing the poverty-reducing potential of Egypt's economic reforms. By putting these two pieces together, the report concludes that there is a need for distinct policy approaches to expanding education and reviving the labor market to help those at the bottom of the distribution (who lack basic skills and are trapped in low-revenue activities) and those in the middle-income groups (who have skills but face a constrained labor market).

The report makes several contributions to the understanding of poverty and equity in Egypt. It proposes an approach to identify the middle class in Egypt and discusses its profile. The report adds to the evidence base on the extent of educational improvements across generations in Egypt (education mobility), especially among the poor and those living in lagging regions. In doing so, it sheds additional

light on the role that expansions in secondary vocational and technical education has played in the labor market. Related to this, the report analyzes education qualification and employment mismatches in the labor market and the reasons for these. It also introduces the use of online jobs data as a source of up-to-date data on hiring, vacancies, and skills demanded by employers.

The data used in this report come from several rounds of the Household Income Expenditure and Consumption Survey (HIECS), the Labor Force Survey (2014 and 2016 annual rounds), Egypt Labor Market Panel Study (several rounds), and data from online job portals. For the profile of the poor, HIECS 2015 data was used as it is the latest round available.[7] For the purpose of this report, access to a 50 percent representative sample of the HIECS 2015 data was granted by Egypt's Central Administration for Public Mobilization and Statistics (CAPMAS). It should be noted that the report uses HIECS data and CAPMAS methodology together with certain internationally used adjustments to welfare estimation to calculate poverty. As a result, the poverty rates reported here for 2015 are slightly different than those found in official publications.[8]

The profile of the poor in Egypt shows that place of residence continues to be a strong predictor of both monetary poverty and nonmonetary deprivation. In 2015, while about a third of the population in Egypt was considered poor, in Upper Egypt this population share of the poor jumps to two-thirds. Egypt has benefitted from an educational leap that saw illiteracy rates plummet in the country, from 54 percent among the fathers of today's working age Egyptians to 23 percent among today's workers. And the percentage of individuals with university degrees has more than tripled: 14.5 percent of today's group of 25-year-olds and older have a degree, while the rate was 4 percent among their fathers. However, the poor population did not participate equally in this mobility or inter-generational increase in education.

At the same time, it is evident that the middle class bore a large share of welfare losses associated with some economic reforms in recent years. Not protected by proxy means-tested social programs, this group runs the risk of facing negative effects of recent shocks. We show that this group's income and labor market outcomes are far from what we would expect for a group thought to be "engine of growth". Informality is high, and "good" jobs appear to be scarce.

Narayan et al. (2018) point out that income mobility (or gains in income across generations) in Egypt is among the lowest in the 75 countries where it was studied and not commensurate with the country's remarkable achievement in educational mobility. Lackluster performance of the labor market is likely a reason for this disconnect between educational investments and intergenerational income growth. The analysis of challenges in the labor market highlights several aspects of these challenges.

Employment rates have not kept pace with the growth in the working-age population—this is concerning, given that some 922,000 young workers are expected to be joining the labor market each year. Moreover, it appears that the expansion in education has not matched similar expansion in the types of jobs that requires higher qualifications. This has resulted in a notable mismatch between education of workers and the skills required by available jobs, most of which are low or middle skilled. Because there is still a large share of the working age population who did not complete primary education, the issue of underqualified workers persists. This underqualification, has adverse consequences for workers' productivity in the jobs they are employed in. Among those with secondary vocational and technical education, unemployment is high, and a large share are in jobs for which they are overqualified unless they are in public sector jobs. Jobs posted in two online job boards suggest that there is a shortage of skills in sectors such as information and communications technology (ICT) as well as and tourism and hospitality.

This overview is structured as follows. The following section (section B) presents an update of the poverty profile of Egyptian households, describing general correlates of poverty. It presents an in-depth description of the stock of human capital of the poor population, and it concludes by profiling the two income groups that are expected to have been affected by recent reforms: the vulnerable population and the middle class. This section also presents simulations of the short-term welfare effects of selected economic reforms on these groups. Following this, the section C presents a detailed discussion of the labor market in Egypt and explores the ability of both the supply and demand sides to cope with the challenging economic environment. A final section (section D) concludes with some recommendations to be addressed by public policy.

B. POVERTY, VULNERABILITY, AND THE MIDDLE CLASS

Understanding the implications of Egypt's recent transformational reforms requires taking a close look at the living conditions of the Egyptian population. This section presents an analysis of monetary and nonmonetary indicators for several groups of the population to shed light on their well-being, vulnerability, and ability to cope with shocks. The findings shown here use the most recent available HIECS, that of 2015 (see box O.1 for the methodology applied).[9]

About a third of Egypt's population was considered poor in 2015; the official poverty rate was 27.8 percent. Using a methodology developed by the World Bank that builds on the official approach, creates a poverty series comparable over time, and uses a sub-sample of the survey data, the estimated poverty rate for 2015 was 29.2, down marginally from 30.4 percent in FY12/13 (see Box O.1).[10] This poverty trend between FY12/13 and 2015 seems commensurate with an expansion in a number of social mitigation measures between 2010 and 2015, most importantly the food smart card program; the modest reduction in poverty is also consistent with a real GDP per capita growth averaging 0.9 percent in FY13/15 and final consumption expenditure per capita (in constant 2010 US dollars) growing at 1.6 percent on average in the same period. Meanwhile, other measures of poverty -depth and severity—remained practically unchanged. For instance, the poverty gap (depth or the average distance of the poor to the poverty line threshold) was stable at 6 percent, which is equivalent to LE 345 per person per year.[11]

Using the international poverty line of US$1.90 (2011 PPP) (SDG1 indicator), Egypt, like many countries in the Middle East and North Africa (MENA) region, shows a low incidence of poverty at about 1.35 percent in 2015. A much higher share of the population (16.1 percent) lives on less than US$3.20 per day, a poverty line used by the World Bank as a benchmark for lower middle income countries like Egypt.

Inequality, as measured by the Gini coefficient of the households' consumption per capita distribution, appears to have increased slightly (from 28.0 to 30.8 percent) between FY12/13 and 2015, partially reflecting the slow consumption growth in the bottom of the consumption distribution. The bottom 40 percent saw an annual real consumption growth of 0.07 percent between FY12/13 and 2015, whereas the overall population's consumption growth rate was 2.3 percent. Despite the relatively low Gini coefficient, there is evidence of important disparities in the consumption distribution in 2015. Based on the HIECS 2015 data, the top 10 percent of the population had an average consumption that was 6.7 times higher than the poorest 10 percent (decile 1), the average consumption of the top

Box O.1. Diagnostics Using the Household Income Expenditure and Consumption Survey

The data used in the report comes from HIECS 2015—the latest round available of the survey. The survey, collected in calendar year 2015, interviewed about 24,000 households. A 50 percent representative sample of the HIECS was provided by CAPMAS, with a total sample of 11,988 households. The results on welfare, poverty, and inequality presented here differ slightly from official numbers due to the reduced sample and the adjustments made to the methodology. Nonetheless, all findings are qualitatively similar to official figures.

In this report, we generally follow CAPMAS's approach to measure welfare and poverty but include a few adjustments to incorporate current best practices and ensure greater comparability across the households included in the analysis. The results here use a consumption-expenditure-based welfare aggregate as a straightforward addition to food and nonfood expenditures. The source data on expenditures come from the different modules from the HIECS 2015, with the welfare aggregate calculated in annualized terms. Food purchases are recorded based on a two-week recall period. Thus, for food items, the expenditures recorded in the survey are multiplied by a factor of 26 to get annual estimates. Food expenditures include all purchases of food to consume at home, as well as food purchased outside in places like restaurants, cafés, or canteens. Meanwhile, nonfood expenditures include, among other things, clothing, services, furniture, vehicles, medicines, transportation services, and education. The recall period varies across nonfood items, but it is mostly 1 month or 12 months. Thus, nonfood items are annualized using adjustment factors that vary according to the reference period of the relevant section.

The methodology used in this report differs from the official calculations of households' expenditures in two ways. First, we revalue food items purchased with Egypt's food smart card by using a market reference price for each item as a proxy for its welfare value, instead of using the out-of-pocket expenditures. Second, we run a hedonic model to correct for the distortions of the Egyptian rental market (see Lara Ibarra, Mendiratta, and Vishwanath 2017) and obtain a better valuation of housing services.

Using the estimated welfare, a household-specific poverty line is estimated using a cost-of-basic-needs approach and a household-specific caloric requirement, similar to the official methodology. Due to the corrections made to the measurement of welfare, the poverty lines and rates presented here differ slightly from official estimates. However, the patterns shown here are qualitatively the same.

5 percent was 8.8 times higher, and the top 1 percent had an average consumption close to 17 times higher than the bottom 10 percent. Given the known limitations of household survey data to capture the very rich, these consumption disparities were probably larger in reality.

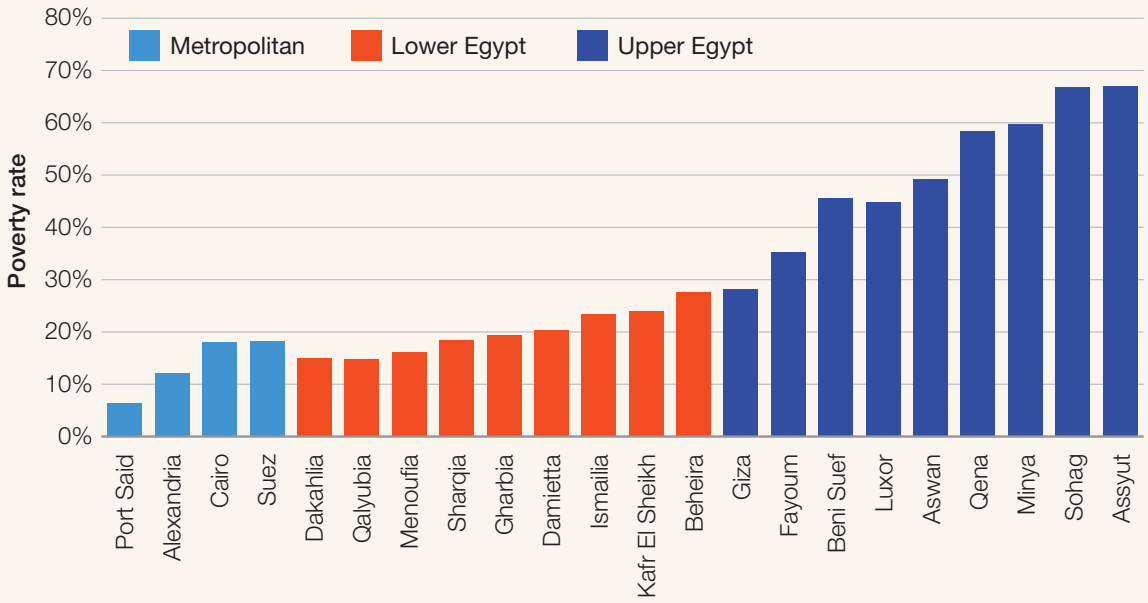
The disparities across Egypt's regions found in poverty assessment reports dating back almost two decades (World Bank 2002, 2007, 2011) are still present in Egypt today. Spatial disparities continue to be an enduring feature in 2015, especially across rural and urban areas. Rural Upper Egypt is the region with the highest poverty rates, experiencing a rate twice as high as the national rate. Metropolitan Egypt has a poverty rate that is half of the nation's overall rate (figure O.5). Meanwhile, urban Upper Egypt shows a similar rate (27.3 percent) to that of the national level and urban Lower Egypt shows the lowest rate (11.7 percent). The poor are geographically concentrated in rural Upper Egypt which is host to about a quarter of the population but at the same time it is the residence of about half of the poor population (figure O.6).

Figure O.5. Poverty Rates by Region and by Governorate

a. Rates by region

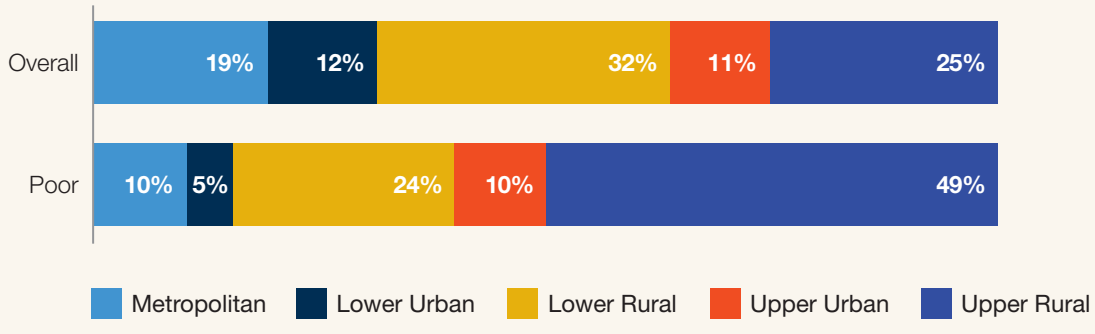
Metropolitan	15.6
Lower Urban	11.7
Lower Rural	22.3
Upper Urban	27.3
Upper Rural	58.2
National	29.2

b. Rates by governorate



Source: Lara Ibarra (2018) using HIECS 2015.

Figure O.6. Distribution of the Overall Population and the Poor Population, by Region



Source: Lara Ibarra (2018) using HIECS 2015

Monetary poverty in Egypt is highly correlated with other deprivations. The poor in Egypt are more likely to live in larger households (in terms of members), to have higher dependency rates, to live in smaller dwellings and have higher rates of overcrowding. They tend to live in dwellings of lower quality: 83 percent live in a dwelling with cement as wall material and 18 percent have dirt floors (compared to 95 and 2.5 percent among the nonpoor households, respectively). Finally, poor households generally have both lower access to and lower quality of services. More than 99 percent of the poor and nonpoor population have electricity, but among the former group, 89.2 percent had cuts to their electricity service during the survey period, while 83.6 percent of nonpoor households had cuts. In addition, 4.5 percent of poor households do not have access to water (either inside or outside their dwelling) in contrast with 2.1 percent among the nonpoor. Moreover, among those with access to water, the share of poor households that experienced cuts to their water service was 80.5 percent as compared to 70.4 percent of the nonpoor. As for sanitation, 41 percent of poor households are connected to a public or civic network, while 73 percent of nonpoor are. In addition, 27 percent of the poor suffered from seepage of sewage water, compared to 24 percent of the nonpoor. All these characteristics are clearly intertwined. As noted in Krishnan et al. (2016), the households' position in the consumption distribution accounted for anything between a fifth and half of the inequality of opportunities (such as access to basic services and education) among Egyptian children. Finally, low access to quality services for water and sanitation, coupled with low levels of consumption, may also lead to undesirable health outcomes. By coupling data from the Demographic and Health Survey of 2014 and HIECS 2015, there is suggestive evidence that children under 5 in poor households have higher rates of stunting, wasting, and underweight than those in nonpoor households (see box O.2).

Not surprisingly, the poor also have limited resources to acquire durable goods. Only 12 percent have a personal computer, 8.73 percent own a smartphone, 3.6 percent have an air conditioning unit at home, and a mere 0.7 percent of the poor population own a car. The ownership rates among the nonpoor population are 43, 28.7, 13.7, and 10.9 percent, respectively.

Poverty and human capital assets

Following the asset-based approach of assessing poverty (Lopez-Calva and Rodriguez-Castelan 2016), a fundamental component of the capacity of households to generate income (and therefore being able to escape poverty) is the productive assets they own such as human capital. The stock of human capital, such as education, which enables one to create assets, is therefore of key importance in understanding a household's capacity to participate in economic development. In Egypt, as with other assets, this type of human capital appears to be unequally distributed among the population.

In terms of human capital accumulation, the poor are a disadvantaged group: they have lower educational attainment than the population as a whole, and they have benefited less from from the investments in education the country made in recent years. In terms of educational attainment,

Box O.2. Estimated Health Outcomes among the Poor in 2015

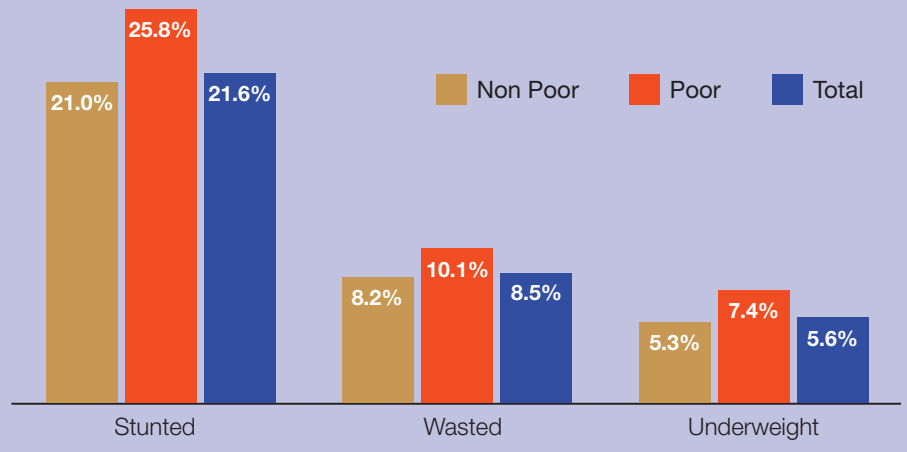
A Demographic and Health Survey was conducted in Egypt in 2014. While quite informative, it does not provide enough information to understand the difference in health outcomes between the poor and nonpoor households. We bridge this gap by using information from the HIECS 2015, which has information on households' consumption, as well as a myriad of characteristics that are correlated with a household's welfare level. Our approach is as follows:

1. we identify a set of variables (demographic, economic, location, and so forth) that are available in both DHS 2014 and in HIECS 2015;
2. we estimate a prediction model of consumption based on data from HIECS 2015, using the logarithm of household per capita consumption as the dependent variable and a series of variables that are correlated with consumption and that can also be found in DHS 2014;
3. using the parameters from the prediction model, we estimate a level of consumption for all households contained in the DHS 2014 survey; and
4. applying a national poverty line we obtain an estimate of whether a household can be considered poor or not.

One final step is to look at the health outcomes for two main groups of the population: those estimated to be below the poverty line and those above.

Our results suggest that children in poor households tend to have lower health outcomes than the nonpoor. Children below the age of 5 living in poor households tend to have higher stunting rates, higher wasting rates, and higher underweight rates (see figure BO.2.2).

Figure BO.2.1. Percentage of Children Age 0–59 Months Classified as Malnourished According to Three Anthropometric Indices of Nutritional Status, by Poor Status



Source: Based on the DHS 2014 and HIECS 2015.

about 46 percent of the working age poor population have less than primary education and less than 4 percent have at least a university degree. The corresponding rates among the nonpoor are 27.8 and 15.3.

Egypt experienced a leap in education between the previous and the current generations, but the poor population seems to not have fully reaped the benefits from this (table O.1). These findings from HIECS are consistent with the results reported in Narayan et al. (2018) using Egypt Labor Market Panel Surveys (ELMPS) data. A generation ago, approximated by the fathers of all the individuals 25 years and above found in the HIECS 2015, 80 percent of Egyptian had less than primary education and about 4 percent had at least a university degree. Among individuals of 25 years old or older, the percentage without a primary level diploma plummeted to 41.5 percent, and the share of those with a university degree reached 14.5 percent. The transitions within the poor population were positive though less impressive than those of the general population. Among the poor, more than 90 percent of the father's generation did not have a primary diploma, whereas for the current generation the share is lower but still 60 percent.[12]

It is noteworthy that among all groups, the educational level that observed the largest increases was secondary level technical certificate. Egypt has pursued a policy of promoting technical education at both the secondary and postsecondary levels, and this was accompanied by an expansion of public sector hiring (Tawfik 2008). HIECS data show that the share of the population that achieved this level of education increased almost fivefold between the current generation and their fathers' generation. Among the poor overall, attainment at this level increased more than 11 times, whereas in rural Upper Egypt the increase was about 7.5 times. This increase in the educational attainment is a remarkable achievement and consistent with the government's policy. It is worrisome, however, that the increased education was not accompanied by an equivalent increase in returns. Multiple studies have found that due either to the surge in the number of workers with these degrees or the poor quality of technical training provided, the labor market returns tend to be very low for these graduates.

Table O.1. Distribution of the Population Age 25 and Older Relative to the Education of Their Fathers

A. OVERALL POPULATION								
	Father's education							
Individual education	No primary	Primary	Preparatory	Secondary	Secondary tech.	Post-secondary	University	TOTAL
No primary	40.48	0.43	0.26	0.08	0.2	0.03	0.05	41.53
Primary	6.68	0.39	0.21	0.06	0.19	0.03	0.06	7.61
Preparatory	4.01	0.29	0.21	0.03	0.11	0.05	0.05	4.75
Secondary	1.14	0.17	0.10	0.04	0.17	0.02	0.14	1.78
Secondary tech.	19.77	1.88	1.43	0.31	1.87	0.22	0.46	25.94
Postsecondary	2.29	0.40	0.30	0.10	0.45	0.09	0.26	3.89
Univ. or higher	6.38	0.93	0.81	0.54	2.35	0.56	2.93	14.5
TOTAL	80.76	4.49	3.31	1.16	5.33	1	3.94	100

B. POOR POPULATION

	Father's education							
Individual education	No primary	Primary	Preparatory	Secondary	Secondary tech.	Post-secondary	University	TOTAL
No primary	59.7	0.5	0.32	0.04	0.16	0.01	0.02	60.74
Primary	7.03	0.21	0.17	0.05	0.12	0.01	0.02	7.62
Preparatory	3.82	0.17	0.2	0.04	0.09	0	0.07	4.38
Secondary	1.19	0.07	0.02	0.01	0.02	0.04	0.04	1.39
Secondary tech.	17.34	1.01	0.69	0.18	0.88	0.19	0.12	20.41
Postsecondary	1.13	0.09	0.04	0.01	0.1	0.01	0.05	1.44
Univ. or higher	2.76	0.17	0.08	0.06	0.49	0.18	0.28	4.02
TOTAL	92.97	2.23	1.51	0.4	1.85	0.44	0.6	100

C. RURAL UPPER EGYPT

	Father's education							
Individual education	No primary	Primary	Preparatory	Secondary	Secondary tech.	Post-secondary	University	TOTAL
No primary	56.76	0.29	0.17	0.05	0.19	0.06	0.04	57.56
Primary	6.20	0.12	0.08	0.01	0.12	0.03	0.03	6.6
Preparatory	3.75	0.1	0.08	0.05	0.11	0	0.03	4.13
Secondary	1.22	0.11	0.06	0	0.10	0.04	0.04	1.58
Secondary tech.	18.08	1.01	0.74	0.15	1.21	0.27	0.22	21.67
Postsecondary	1.74	0.09	0.08	0	0.31	0.04	0.13	2.39
Univ. or higher	3.95	0.20	0.20	0.09	0.80	0.24	0.59	6.07
TOTAL	91.71	1.93	1.41	0.35	2.85	0.68	1.06	100

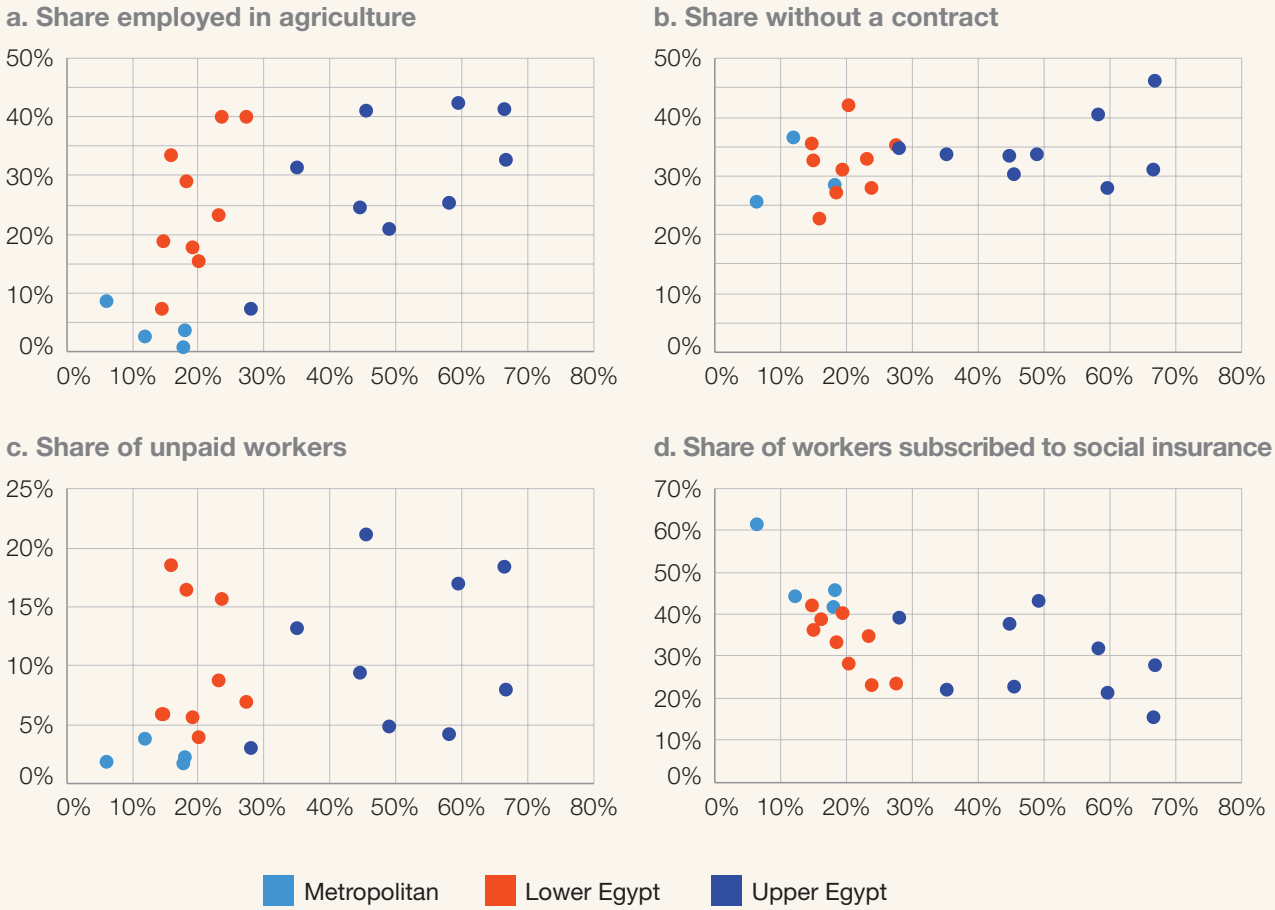
Source: Lara Ibarra (2018) using HIECS 2015.

The poor population and those residing in Upper Egypt did not benefit equally from intergenerational gains in education experienced by the population as a whole. Nationwide, 50 percent of those aged 25 years or older attained more education than their parents did, but for the poor and those living in rural Upper Egypt, this rate was only 36.4 and 38.9 percent, respectively.[13] Looking at the extremes of the educational distribution provide more evidence of the lack of mobility among the poorest. Almost two-thirds (64.2 percent) of poor individuals in this generation whose father did not graduate from primary had the same level of educational attainment, and only 4 percent were able to reach a university degree.[14] This implies that the current generation of poor Egyptians have the same percentage of university degrees among Egyptians in the previous generation. At the top of the distribution, it is also evident that the offspring of highly educated individuals in rural Upper Egypt (and among the poor population) also face barriers to achieve their parents' educational attainment. In Egypt as a whole, 74.4 percent of individuals whose fathers had a university degree also received one. In contrast, this share is only 46.7 percent among the poor and 55.7 percent among individuals living in rural Upper Egypt.

Poverty and employment status

The poor also face disadvantages in the labor market. Since the poor cannot afford to be unemployed, their employment levels are not significantly lower than those of other groups of the population, however, the quality of the jobs that this population has is not high. Figure O.7 presents how the levels of poverty across governorates is correlated with the certain job characteristics of the employed population. Governorates with higher poverty rates are also associated with higher shares of workers in the agricultural sector, higher shares of workers without a contract, a higher share of unpaid workers, and a lower share of workers subscribed to the social insurance.[15] Upper Egypt governorates particularly show worse quality of employment outcomes than the rest of the country. This geographic pattern could be the result of a combination of factors including low intergenerational improvements in education in Upper Egypt governorates as well as weak labor demand.

Figure O.7. Job Characteristics and Poverty Rates, by Governorates



Source: Lara Ibarra (2018) using HIECS 2015.

i. Poverty and women

Women constitute half of the population of Egypt and face different challenges from men for their economic development. It is notable that women have a lower poverty rate (27.9 percent) than the national average. In contrast, girls (under 18 years old) show higher poverty rates than the national rate, at 31.9 percent, though their rate is slightly lower than that for boys (34.3 percent).[16]

In Egypt, only about 3.7 of the population lives in a household where only women work. The typical household has only one breadwinner, and it is a male. Those with female breadwinners tend to have higher consumption levels and lower poverty rates (table O.2). Close to half of the population in Egypt resided in a household where there is only one breadwinner (that is, an employed member) and that member is a male. In another 14 percent of the population there is more than one male breadwinner, but no employed women.

Table O.2. Characteristics of Households, by Income Earner Composition

Household type	Share in population	HH size	Dependency rate	Poverty rate	Consumption (LE)	Wages (LE)	Income from Agricultural activity (LE)	Income from non agriculture work (LE)	Income from Monetary transfers (LE)	Value of In-kind transfers (LE)	Total income
No employed members	9.4%	3.40	43.7%	15.4%	11,584	1,413	559	698	22,344	2,409	35,222
One female breadwinner	3.1%	3.97	31.5%	16.1%	10,989	16,130	2,713	2,281	16,877	2,109	47,697
One male breadwinner	47.9%	4.99	43.3%	26.4%	8,155	18,275	3,270	11,281	3,768	1,500	43,227
More than one female breadwinner	0.6%	4.54	20.9%	25.4%	10,132	23,712	2,045	3,728	16,755	1,844	51,999
More than one male breadwinner	14.3%	5.96	22.3%	48.1%	7,368	26,033	5,791	8,008	4,640	1,653	50,760
Other type of household	24.7%	5.49	34.4%	30.8%	8,764	30,718	6,427	9,294	4,185	1,782	57,969

Source: Lara Ibarra (2018) using HIECS 2015.

Note: "Breadwinner" is an employed household member. The first column presents the percentage in the overall population. Dependency rates show the proportion of children (under 15 years old.) and elderly (over 65) as a share of the number of members of working age. Consumption is the average annual consumption per capita. Wages, agricultural activity, nonagricultural projects, monetary and in-kind transfers show the average annual income obtained from each source. Rental value, financial and nonfinancial income are not shown in these columns but are included in the total income category.

Households where only women work show lower poverty rates than those where either one or more men work. This could be partly explained by demographics: their households are relatively smaller and their dependency rates lower. From the economic side, however, it is notable that another part of the explanation is not due to better labor market outcomes for women. Households with one or more female breadwinners tend to have lower salaries, lower incomes from agricultural activities, and lower incomes from nonagricultural businesses than households with one or more male breadwinners. The higher consumption levels and total income are mainly explained by the large differences in monetary transfers. Households with female breadwinners earn an average of four times this type of income than households with male breadwinners.

Poor women in Egypt are one of the groups with the lowest human capital accumulation and thus are at a disadvantage when trying to become active participants in the labor market and find a sustainable path out of poverty. Table O.3 shows the distribution of the female population 25 years old and older. About 70 percent of this group does not have a primary level diploma, and less than 3 percent have a university degree or more. Moreover, this group shows low educational mobility–even lower than that of the poor population as a whole. Only around 28 percent of this population reached an educational level higher than that of their fathers. About three-fourths of those whose father did not complete primary also did not attain this level, while only 3 percent of this group was able to achieve postsecondary education or more. Finally, only a quarter of the women whose father had a university degree also attained this level of education. The corresponding rate among the overall poor population as a whole was over 46 percent.

Table O.3. Distribution of the Poor Female Population 25 Years and Older Relative to the Education of Their Fathers (percent)

	Father's education							
Individual's education	No primary	Primary	Preparatory	Secondary	Secondary tech.	Post-secondary	University	TOTAL
No primary	68.77	0.6	0.36	0.05	0.25	0.02	0	70.06
Primary	5.31	0.24	0.24	0.05	0.08	0.02	0	5.95
Preparatory	3.07	0.21	0.03	0.05	0.15	0	0.11	3.62
Secondary	0.71	0.1	0.02	0.02	0.03	0.03	0.03	0.94
Secondary tech.	12.8	1.01	0.5	0.19	1.02	0.14	0.19	15.86
Postsecondary	0.58	0.06	0	0	0.12	0.02	0.02	0.8
Univ. or higher	1.86	0.17	0.13	0.03	0.36	0.12	0.11	2.78
TOTAL	93.1	2.39	1.29	0.39	2.02	0.35	0.45	100

Source: Lara Ibarra (2018) using HIECS 2015.

ii. Understanding the challenges of the nonpoor, at-risk-of-poverty population

Despite the traditional focus on the poor population, another significant share of the Egyptian population deserves attention, given their risk of falling into poverty due to negative shocks. Here we discuss two income groups of the population: the vulnerable and the middle class.

To identify the vulnerable population, we use the consumption distribution as guidance and note there is a mass of households that is above the poverty line threshold (and hence not considered poor) that are practically a shock away from falling into poverty (figure O.8). We consider as a vulnerable household those who have an estimated consumption level that is above the poverty line but that is lower than 133 percent of the value of the poverty line. For example, the average household in Egypt faces a poverty line that is equal to 5,748 EGP per person per year. This household would be considered vulnerable if its level of consumption is between this amount and (5,748*1.33=) 7,644 EGP per person per year. To put these thresholds in contexts, we can note that wages represent, on average, 45 percent of total income of households in Egypt. Thus, among households with two-earners (as it is the case for a quarter of Egyptian households), an income shock coming from one of the earners losing her job could put the household below the poverty line. If earnings come from only one working member—as it does for half of the households in 2015—the problem is exacerbated.[17]

Another group of interest is the middle class. The motivation behind examining the welfare of this income group is due to the perception that they are the main driver of economic activity: individuals in this group are more likely to be in productive activities, are generally well educated, have access to formal credit, and could potentially form the basis of the entrepreneurial class. In short, this group is considered vital to the economic development of any country. The middle class defined generically is also often of interest to politicians, as they are perceived to influence social life, and politicians view them as a key constituent, a group that can strongly support or oppose policy positions.

We use again the distribution of the consumption and define the middle class as the group of households whose consumption-per-capita level is between 133 percent and 200 percent the value of the poverty line. On average, this translates into a consumption level between 7,644 EGP and 11,496 EGP per person per year (see box O.3). This income group is perceived as having a certain level of security and able to weather certain shocks without falling into poverty (by, for example, tapping into savings to smooth their consumption).

With these two classifications, we find that about 30 percent of Egyptians are considered part of the vulnerable population, and another 28 percent can be considered part of the middle class (figure O.8). Another way to understand this is that the bottom three deciles of the population can be considered poor, while deciles 4–6 can be considered vulnerable.[18] The middle class is then closer to be represented in deciles 7-9 rather than the middle of the consumption distribution (that is, it's richer than the "average Egyptian"). The poor population has an average consumption per capita of around

Box O.3. Classifying Households into Income Groups

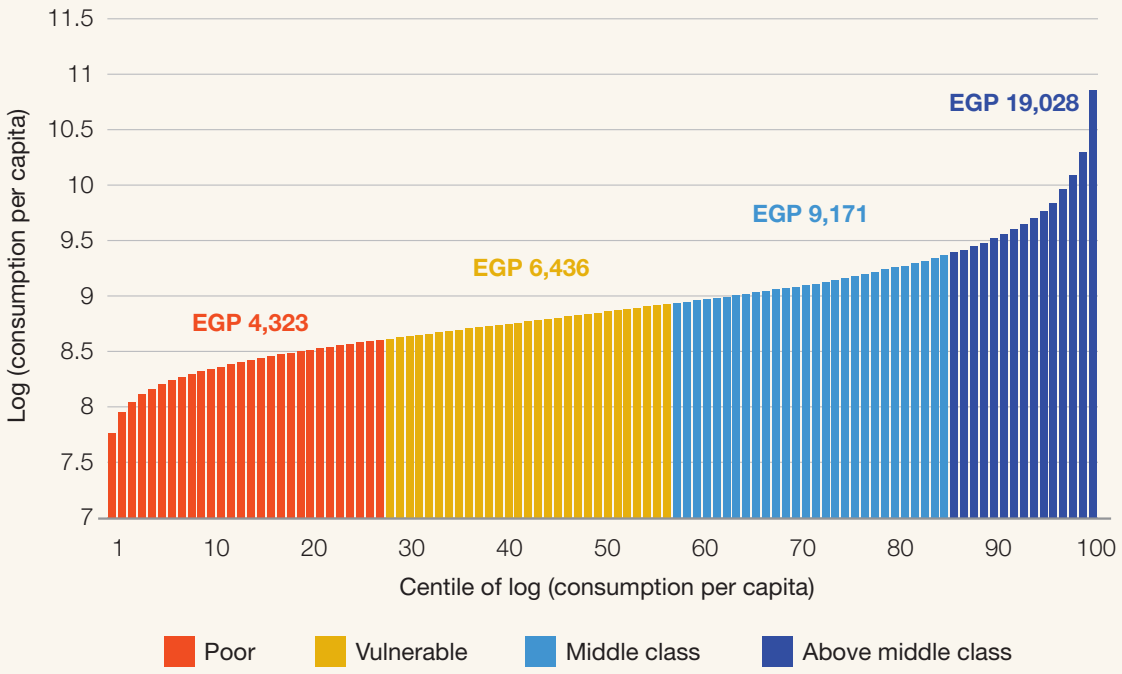
The literature has yet to reach a consensus on the definition of what constitutes the income group typically labeled the *middle class*. A strand of the literature relies on relative measures to define this group. Using the consumption (or income) distribution as a basis, some have used the second, third, and fourth quintiles to define the middle class (Easterly 2001); others chose a bandwidth 75–125 percent of the median per capita income (Birdsall, Graham, and Pettinato 2000). An alternative is to use absolute terms such as individuals with daily per capita expenditures of US$2–4 or US$6–10 purchasing power parity (PPP), an approach used frequently in developing country contexts (Banerjee and Duflo 2008). Birdsall (2007) used a combined approach by defining the middle class as those individuals who consume the equivalent of US$10 or more per day, but who fall below the 90th percentile in the income distribution. The rationale for the lower bound is that people with consumption below this level are just too poor to be middle class in any society, whereas the upper bound recognizes the local context and excluded people who are rich in their own society. Abo-Ismail and Sarangi (2013) view the economic middle class in terms of the degrees of freedom or choices they have in terms of consumption. The authors thus define the middle class as a group of individuals whose level of consumption expenditure lies above a predetermined poverty line but whose level of consumption of nonessential goods and services is less than the value of that line. It is argued that the more affluent members of society can afford to spend a more generous portion of their income on items that are deemed luxurious or unnecessary relative to the basket of goods and services consumed by the needier lower classes. The middle class consumes above the upper poverty line (Ravallion 1998), but at the same time does not adopt "frivolous" consumption habits. Applying this approach to Egyptian data from 2011, the authors find that the poor and vulnerable constituted 49.8 percent, 44.7 percent of Egypt population belonged to the middle class, and 7.1 percent are in the affluent class.

In this study, three approaches to identify the middle class are examined. The first approach adopts a vulnerability-to-poverty approach. It derives thresholds that distinguish the middle class from poor and rich classes by estimating the probability of transitions of households into and out of poverty, based on a panel data analysis. The second approach uses multiplicity of the poverty line. That is, income groups are defined according to how their consumption is benchmarked to multiples of the poverty line: the vulnerable population is nonpoor but has a consumption level of less than 133 percent of the poverty line value; the middle class has a level of consumption above this threshold, but inferior than twice the value of the line. The third approach identifies the poor as those with daily per capita consumption less than US$3 (adjusted by PPP); the vulnerable are those between US$3 and US$4; the lower-middle class is defined as those with daily per capita consumption of between US$4 and US$6; an upper middle class has daily consumption between US$6 and US$8; and those above US$8 are considered members of the affluent class (adjusted at purchasing power parity).

Analyses performed on the data show large overlaps across the different approaches, suggesting small potential differences in the inferences drawn from one definition or another. In this work, we adopt an *absolute* approach, and use the multiplicity of poverty line approach to define middle class in Egypt. This approach thus applies a definition of the middle class that also takes into account the local context (via the use of a country-specific poverty line).

Source: El Laithy and Armanious (2018).

Figure O.8. Log Average Consumption per Capita by Centile



Source: HIECS 2015.

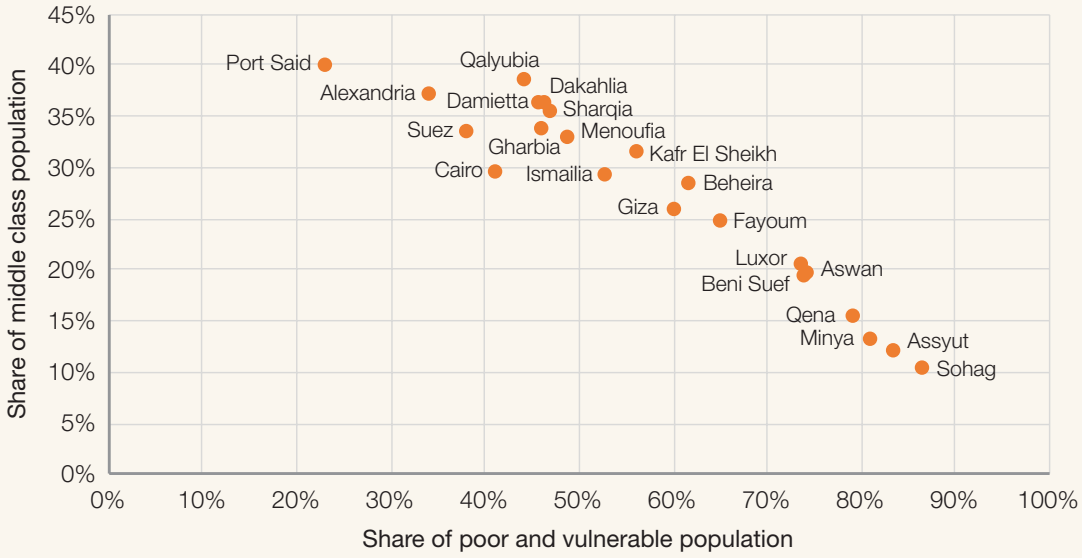
Note: Numbers reflect the average annual consumption per capita by income group.

LE 4,323. For the vulnerable population it is LE 6,436, whereas for the middle class the average is LE 9,171. Households above the middle class, with estimated an estimated consumption that is twice as high or more as the poverty line, show an average consumption per capita of LE 19,610.

The distribution of the different income groups has a strong spatial component. As shown in figure O.9, poverty and vulnerability rates tend to be higher in Upper Egypt governorates, while there is a relatively higher concentration of the middle class in Lower Egypt and in the governorates of the Metropolitan area. Probably linked to this, the composition patterns (as reflected by the share of expenditures of purchased goods and services) also varies across income groups (table O.4). The poor, at the bottom of the distribution, devote slightly over 40 percent of their expenditures to food. This share is lower for the vulnerable (37.8) and the middle class (35) households. In turn, the share of expenditures devoted to health care, transportation, and education tend to rise with the consumption level. These three expenditure groups represent close to 20 percent of total expenditures among the middle class households; for the poor, they represent only 13.7 percent.

The vulnerable and middle-class groups fair somewhat better in several indicators than the poor population. Both the vulnerable group and the middle class are better educated than the poor. The illiteracy rate among heads of poor households is 18.3, whereas it is 16.2 and 12.3 percent for the vulnerable and middle class, respectively. In contrast, only a quarter households heads of the poor population have at least a secondary degree, while 43.5 and 55.6 percent of the vulnerable and middle class population do, respectively.

Figure O.9. Shares of Middle Class and Poor or Vulnerable Populations, by Governorate



Source: Adapted from El Laithy and Armanious (2018) with HIECS 2015 data.

In terms of the labor market, there are some notable differences across income groups. The vulnerable and middle class are more likely to be wage earners (i.e. salaried) than the poor, and fewer work in the agriculture sector. As consumption rises, the share of workers with social insurance or benefitting from health insurance increases as well. For instance, among the poor, 40 percent of employed household heads have participated in social insurance. For the vulnerable and middle class employed heads, this share is 51.8 percent and 63.2 percent, respectively. A similar progression is observed for access to health insurance.

Promoting entrepreneurship is one of GoE's policy goals. Entrepreneurship (both with employers and the self-employed) is an important type of employment among the poor, vulnerable, and middle class (table O.4). Indeed, the middle class is often considered to be the "entrepreneurial" class driving investment and innovation. The 2015 HIECS shows that about 26 percent of the employed middle class consider themselves as self-employed or an employer,[19] and almost all of them (95 percent) work in a firm with fewer than 10 employees. Among this group, 30 percent works in wholesale and retail and about 27 percent work in agriculture.[20] Krafft (2016), using ELMPS data, shows that household small and microenterprises in Egypt consist mainly of shop owners (wholesale and retail trade) or people engaged in manufacturing, construction work, and transportation and storage among other (nonagricultural) sectors. More generally, these small and microenterprises mainly serve as employment avenues for those with low education whose likely alternative would be low quality paid work. In this sense, the small and microenterprises appear necessity driven rather than being innovative and opportunity led. Krafft (2016) also finds that the father's education and work status matter for the

growth of these enterprises. Since this result could reflect the importance of business contacts and networks in enterprise success, she suggests that programs that help reduce the reliance on informal networks could be beneficial for small and microenterprises.

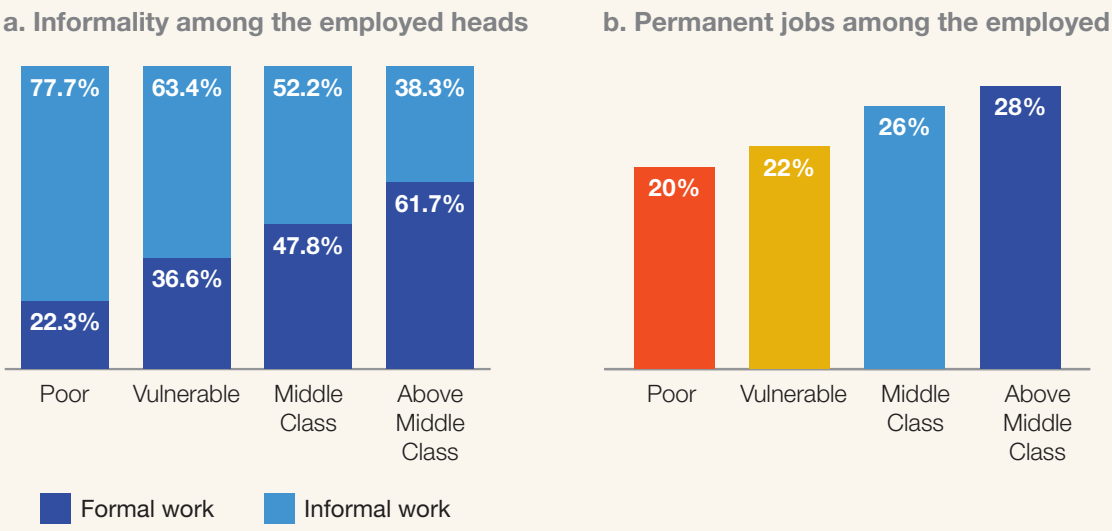
Despite having a low probability of falling back into poverty, middle class Egyptian families still face several challenges. Most notably, the jobs that heads from this group are able to attain are far from ideal. More than half of the employed household heads in this group can be considered informal workers (figure O.10).[21] While it is likely that some in this group choose to be informally employed, it is more likely the case that this high share of informal employment is due to limited formal employment opportunities. This level of informality has potentially important negative implications on the level and security of wages received, on their investment on firm-specific human capital, on their savings and planning for retirement decisions, and on the access to credit decisions, among others. More generally, the opportunities for the employed population in this group are not better than for the vulnerable. Stability of the job, one of the conditions for formality, is available for only 26 percent of employed individuals among middle class households.

Table O.4. Characteristics by Income Group

	Poor	Vulnerable	Middle class (MC)	Above MC
SHARE OF TOTAL EXPENDITURES				
Food	40.8	37.8	35.0	25.0
Housing/furniture	21.8	21.5	21.5	23.1
Health care	7.2	8.5	10.0	12.8
Transportation	4.0	4.4	5.1	9.9
Education	2.5	4.0	4.7	6.6
Other	23.7	23.8	23.7	22.6
EDUCATION OF HOUSEHOLD HEADS				
Illiterate	18.3	16.2	12.3	8.2
Less than basic education	42.2	24.2	16.8	11.9
Basic education	14.4	16	15.3	9.9
Secondary	20.2	31.6	33.9	25.5
Above secondary	4.9	11.9	21.7	44.5
EMPLOYMENT STATUS OF HEADS				
Wage earner	48.3	52.9	51.8	42.5
Employer	20.6	17.3	16.4	17.2
Self-employed	12.2	12.0	10.5	7.0
Unpaid worker	0.3	0.2	0.1	0.1
Unemployed/out of labor force	18.6	17.6	21.2	33.2

Source: Adapted from El Laithy and Armanious (2018).

Figure O.10. Employment Characteristics by Income Group



Source: El Laithy and Armanious (2018).

Simulating short-term distributional implications of selected economic reforms

Starting in 2014, the GoE embarked on a series of reforms to address its pressing needs such as a large fiscal deficit and balance of payments crisis. An important part of the reform was the implementation of several fiscal consolidation measures, and promotion of a better business climate that would allow a sustainable path for continuous economic growth. The package of reforms included the progressive elimination of fuel subsidies (table O.5), 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 also adopted a value-added tax (VAT) rate to replace the already existing goods and services tax (GST), to extend the direct tax regime to the services sector. The change included a gradual increase in the rate as well. On the business environment side, an industrial licensing law and a new investment law were recently passed, as was a new insolvency law and companies law. 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,[22] compared to 12.5 percent of GDP a year earlier. Similarly, the primary deficit decreased to 1.8 percent of GDP in FY17, 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.

Table O.5. Price Adjustments to Energy Products Implemented by the Government of Egypt

	Year-on-year changes (percent)				Cumulative changes (percent)	Prices as of July 2017 (EGP)
	2014	2015	2016	2017		
Diesel (per liter)	64	0	31	55	232	3.65
Gasoline 80 (per liter)	78	0	47	55	306	3.65
Gasoline 92 (per liter)	41	0	35	43	170	5
Gasoline 95 (per liter)	7	0	0	6	14	6.6
LPG (per cylinder)	0	0	88	100	275	30
Natural gas (vehicles, per cubic meter)	144	0	45	25	344	2
Electricity	31	19	33	40	190	NA

Source: Adapted from World Bank Egypt DPF3 Program Document.

Note: EGP = Egyptian pound; LPG = liquefied petroleum gas.

The reforms will help attain the long-term objective of sustained growth. However, in the short term, it is expected that some of the reforms may have negative effects on the welfare of certain households. For instance, the partial elimination of subsidies for products like gasoline, electricity, or LPG would lead to an increase in prices that households face, a decrease in their purchasing power, and corresponding welfare losses. A similar effect is expected from the flotation of the Egyptian pound, as a large share of the consumption baskets Egyptians purchase have an imported component. Thus, all imported goods would increase their price in Egyptian pound terms affecting households' welfare. The effects are expected to be heterogeneous across the population. Certain households such as those who consume mostly locally produced goods may be less affected by the flotation of the pound. Other changes that may negatively affect households include the switch from the GST to the VAT system.[23] To assess these impacts, the World Bank conducted a series of simulations using data from 2015 as a baseline. The findings of these simulations showed that the fuel subsidies reforms and the change to the VAT system negatively impacted the welfare of Egyptian households.[24] Among households belonging to the poorest quintile (the bottom 20 percent), the estimated welfare loss from the reforms was LE 485, quintiles two and three had higher estimated losses of LE 640 and LE 924, respectively (table O.6). The largest losses were experienced among quintile five (richest or top 20 percent) households: LE 2,182.[25] In contrast, when we focus on FY18 and look at the losses in relative terms as a share of household consumption, we find that the latest price changes affected those at the bottom of the distribution most: the poorest households' welfare loss was estimated at 7.3 percent of their average household consumption, whereas for the top it was estimated at 4.4 percent. These findings can be better understood as a reflection of rich households having more imported goods in their consumption baskets (and therefore being hardest hit by the exchange rate movements). In turn, poor households are hit more by energy subsidy reforms which make up a larger share of their consumption.

A separate set of simulations showed that the largest short-term impacts came from the inflationary effects of the flotation of the Egyptian pound, with the middle class and above-middle-class income groups being affected the most. Inflation averaged 11.1 percent in FY15, 10.2 percent in FY16, 23.3 percent in FY17, and around 22.1 percent in FY18. Taking together the different estimations (using

the combined effect of price changes, and correcting for nominal growth), simulations show losses across the consumption distribution, with higher losses experienced by the middle class and the richest households. The estimated loss in purchasing power due to inflation between FY16 and FY18 was LE 1,860 for quintile one or the bottom 20 percent of the distribution. Households in quintile four experienced, on average, an estimated loss of LE 5,609 and those in quintile five, LE 10,912.

Table O.6. Short-Term Estimated Welfare Losses from Energy Price Changes and Implementation of the VAT System

	Estimated welfare loss (EGP per capita) from FY16–FY18 subsidy and VAT reforms	Estimated welfare loss (percent of houseohld consumption) in FY18 due to subsidy reforms
Quintile 1	-485	7.3%
Quintile 2	-640	6.7%
Quintile 3	-924	4.9%
Quintile 4	-1,169	4.8%
Quintile 5	-2,182	4.4%

Source: World Bank, Egypt DPF3 Program Document.

Note: Estimated welfare losses include the direct (price) effects of the increase in fuel prices and the change in tax rates from GST to VAT. Indirect effects of the price changes are captured via an input/output matrix. Simulations do not include behavioral responses and thus represent upper bounds.

To complement the simulations above, a computable general equilibrium (CGE) model was applied to the Egyptian economy to incorporate the possible economywide effects of the subsidy reforms and devaluation, while allowing a certain degree of behavioral responses in households' consumption. The results confirm the partial equilibrium evidence. Breisinger et al. (2018) find that in the short term most households experienced a drop in their consumption.[26] On average, rural households show larger welfare losses as a share of household expenditure (5.6 percent) than urban households (4.9 percent). The group with the largest losses are the rural high-income households and the urban poor.

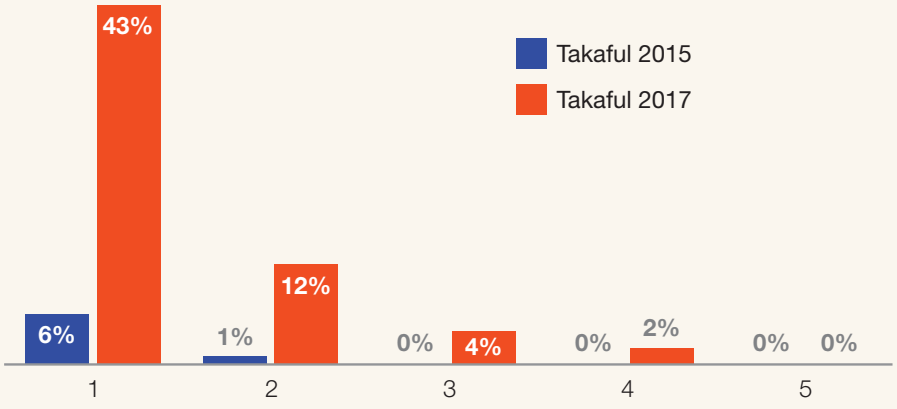
Recognizing the need to protect the most vulnerable and support the affected households, the GoE launched a series of mitigation strategies. First, the social protection budget was increased by about LE 85 billion in FY18. Second, the beneficiaries of the food smart card (Tamween program), a close to universal program, received a series of increases in the card allowance. The card provided LE 15 per person per month to beneficiary households in 2015. The transfer was increased to LE 18 in April 2016 and to LE 21 in FY17. At the beginning of FY18 it was raised substantially to LE 50 to help recipients of the program cope with increasing food prices.[27] The bread component of the program was left untouched, providing an allotment of five loaves of bread per person per day. Third, the government continued its ambitious initiative to reform its fragmented social protection system and moved toward the implementation of a proxy-means-tested cash transfer program that prioritized the governorates with the highest poverty rates. Takaful and Karama were launched in 2015, targeting vulnerable households living in the poorest regions in the country.[28] In the first year, the programs benefitted 160,000 households, and by 2017 the number of beneficiaries had increased tenfold, reaching 1.7 million households. Also in FY18, the GoE increased the monthly allowance of the beneficiaries by LE 100.

Simulations based on the HIECS 2015 provide some insights on the effects of these measures. First, the expansion of spending in social programs coupled with the increased allowances of the food smart card appear to have helped—and almost completely shield—beneficiaries in the bottom quintile from the price changes between 2015 and 2018. Second, the expansion of Takaful had a strong potential to reach the poorest of the poor. We run our simulation in the following way. We ran a proxy means test simulation based on response to the questions that the actual Takaful application form collected for the HIECS data. This approach allows for inclusion and exclusion errors linked to fact that consumption levels are estimated and not directly observed. By assuming that all households would be applying to the program, we can assign them a positive probability of being included in the program if they are below the eligibility threshold. Our analysis does not incorporate any of the conditionality elements of the Takaful program, such as school attendance and health visits (although anecdotal evidence suggests that the conditionality was not enforced in 2015).

The estimated share of the poorest quintile receiving the Takaful increased from 6 percent to 43 percent between 2015 and 2017 (figure O.11). The second quintile also received expanded coverage, reaching 12 percent in 2017. Due to Karama's small size, it was not possible to produce statistically robust simulations of participation in this program across consumption quintiles.

An additional simulation shows that government's interventions helped contain the negative welfare effects of the inflationary environment after 2015. In the absence of the government's mitigation measures, the loss in purchasing power due to high inflation rates experienced between 2015 and 2017 could have raised poverty rates in the country. Given that about a third of the population was not poor but lived not too far from the poverty line, it is plausible that the price shocks from inflationary pressures could result in them becoming poor. However, the increases in food smart card allowance and the expansion of the Takaful and Karama programs would have helped to mitigate the loss in purchasing power and contain the poverty increase. Poverty projections by Egyptian researchers estimated an increase in poverty rate of at least of 7 percentage points during the 2015–17 period.[29]

Figure O.11. Simulated Share of Takaful Program Recipients in 2015 and 2017, by Quintile



Source: Lara Ibarra et al. (2018) using HIECS 2015.

Notes : Quintiles are based on households' "market income" distribution that adjusts households income levels to purge the effects of fiscal policy interventions.

GoE also introduced some measures aiming to support other vulnerable groups and the middle class. Forsa was started in 2017 to connect youth in beneficiary households with the opportunity to work so that the families can escape poverty. At the same time, new investments to the Labor-Intensive Works programs were made to increase job creation—with a focus on poor regions.[30] Social insurance pensions were increased by 15 percent, the income tax threshold for low income taxpayers was increased, and an exceptional 7–10 percent increase for civil servants was provided. Smaller expansion of subsidies to social services, such as school meal programs, health insurance for vulnerable populations, and training for skill enhancement were also implemented by the government.

The mitigation measures implemented by the GoE surely helped lessen the burden of the short-term effects of the price reforms. However, sustainable economic development for individuals and households requires going beyond setting up a solid, well-targeted safety net. It requires a vibrant labor market that provides a sustainable source of income via good quality private sector jobs; equipping individuals with the education and skills needed to become active members of the labor market, is important too. The key question then becomes how vibrant the Egyptian labor market is. The next section explores this in detail.

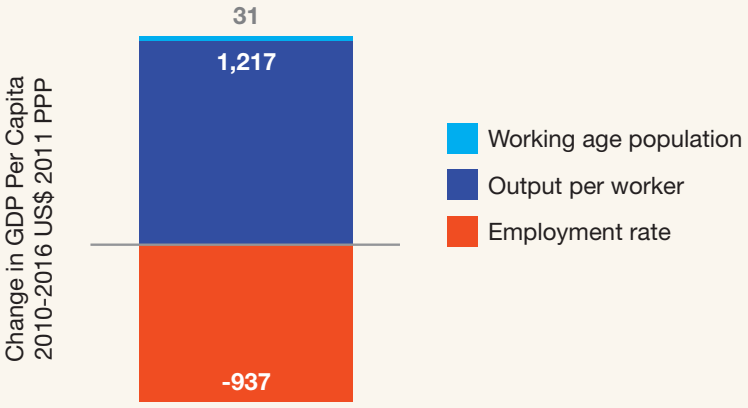
C. LABOR MARKET CHALLENGES: TRENDS AND MISMATCHES IN DEMAND AND SUPPLY

An estimated 39 million people, nearly three out of four in Egypt of working age are out of the labor force, unemployed, informally employed, or underqualified for their job, and their poor labor market outcomes represent lost productivity potential despite progress in educational attainment.[31] Many of the informally employed are poor with low education outcomes and bleak employment prospects. Egypt's ability to reduce poverty sustainably will depend on enabling this group to participate in quality employment opportunities in tradable sectors that the continued pursuit of economic reforms can bring. Moreover, back-of-the-envelope calculations suggest that Egypt can expect some 922,000 new entrants into the labor market in the next five years (2018–22).[32] The education system and the labor market will have to be ready to meet the employment aspirations of these cohorts of young people.

i. Trends between 2010 and 2016

A useful starting point to understand Egypt's labor market challenge is the analysis of the contribution of employment growth, population changes, and productivity growth to overall economic growth (figure O.12). Such a decomposition exercise shows that between 2010 and 2016, labor productivity (output per worker) was the main contributor to GDP per capita growth. The number of people employed or changes in the size of the working age population did not play a role. While the positive

Figure O.12. Growth Decomposition, 2010–16: Contribution of Employment, Productivity, and Population Changes



Source: Chun (2018).

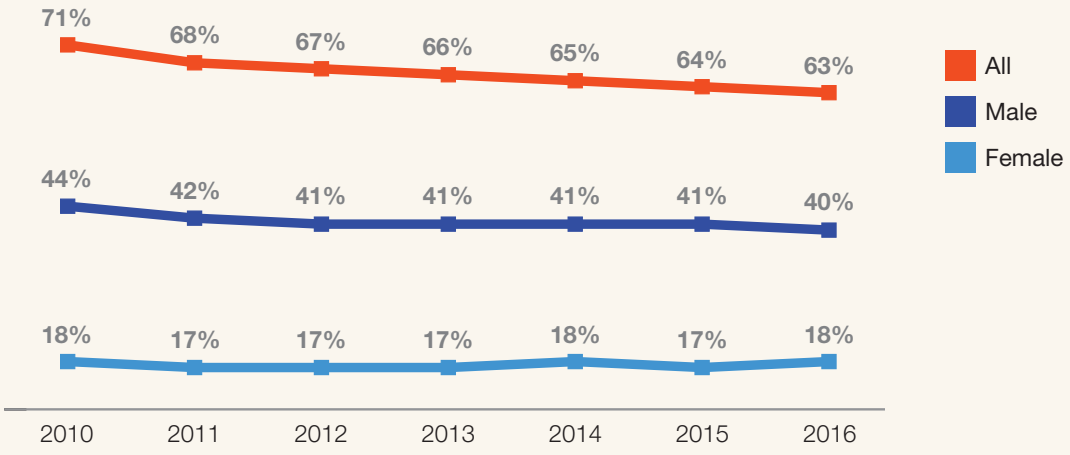
Note: Output per worker is GDP divided by working age population 15+. Working-age population is 15+. Employment rate is based on actual employment numbers for those age 15+. Years 2010 and 2016 use numbers from the national statistical yearbook's national population and employment estimates for total population, population age 15+ and total employment. Based on computations described in: World Bank Job Generation and Growth Decomposition Tool: Reference Manual and User's Guide v1.0: http://siteresources.worldbank.org/INTEMPSHAGRO/Resources/JoGGs_ Decomposition_Tool_UsersGuide.pdf

contribution of labor productivity is good news, the inability of the economy to employ a large share of the working age population limits the ability of the labor market to sustainably lift people's incomes and reduce poverty.

Even though the number of those employed increased from 23.8 million in 2010 to 25.3 million in 2016, this gain did not match the growth in the working-age population (from 53.9 million to 62.5 million) over the period. As a result, the share of the working-age employed, or the employment rate (employment to population ratio), declined (figure O.13).

The main source of the decline in employment rate was the fall in male employment rate from 71 percent in 2010 to 63.5 percent in 2016. The reasons for this decline in male employment rate needs further investigation; the decline is consistent with reduction in employment rate across sectors and shrinking public sector employment. The female employment rate, already low at about 18 percent, barely changed during this time. This gender difference in employment rate trends is driven by the different occupations and economic sectors that men and women are engaged in. There is a growing body of research trying to understand the reasons for the low female employment rates in Egypt.[33] Globally, both household responsibilities and labor market opportunities shape women's participation in the labor market.[34] In Egypt, the role of social norms that shape men's and women's household and care responsibilities and female mobility has received a lot of attention. The structure of the economy that affects employment opportunities matters as well. Assaad (2010) analyzes the economic liberalization pursued by Egypt and Morocco in the 1990s and shows that female employment did not commensurately rise in the former but did so in the latter. One reason for this differential impact on female employment explored by Assaad (2004) is the type of export sectors that responded to the liberalization; while Egypt's exports were led by services (tourism and rents from Suez Canal), which did not have much female participation, Morocco's exports were dominated by textile and garment manufacturing that employed women.

Figure O.13. Employment—Population Ratio

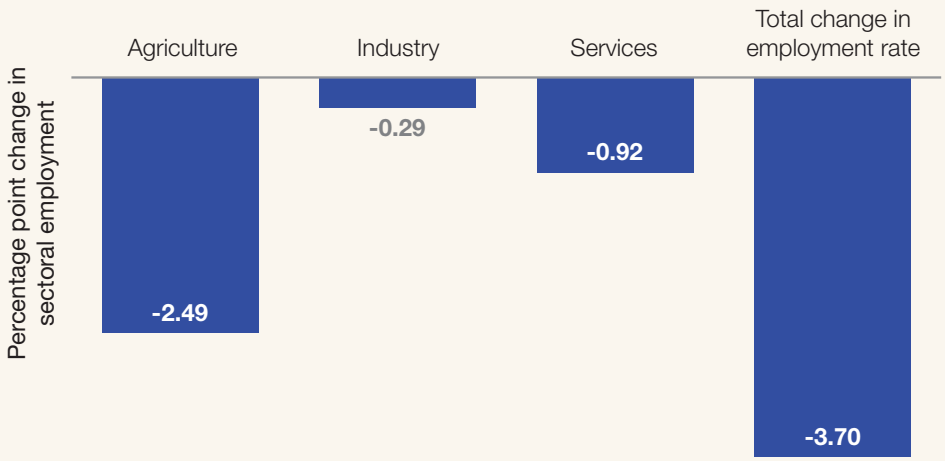


Source: Data from CAPMAS and WDI (national estimates, gender breakdown). The employment-to-population ratio or employment rate is the ratio of those employed to population age 15 and older.

Moreover, the reduction in the employment rate (that is, employment as a share of working age population) appears to have occurred across all sectors (figure O.14). In industry and services, employment grew but did not keep up with the growth in the working-age population, resulting in a decline in employment rate. Agriculture experienced the largest drop in employment rate (as a share of working age population) as well as a reduction in employment levels (total number employed in the sector). El-Enbaby et al. (2016) show that the share of households relying entirely on agricultural work declined, as did the share of households that had members in both agricultural and nonagricultural work. Land fragmentation and uneconomical farm sizes could be a factor in declining agricultural employment along with agricultural policies (World Bank 2009; El-Enbaby et al. 2016). Despite the decline, agriculture remains an important employer. In 2016, agriculture accounted for 25 percent of all employment in Egypt, and agricultural employment is concentrated, as expected, in rural areas of Upper Egypt. El Laithy and Armanious (2018) finds that poor and vulnerable households account for nearly 70 percent of all agricultural employment, making this decline in agricultural employment, unaccompanied by a commensurate increase in nonagricultural employment, a concern for poverty reduction prospects. As figure O.7a shows, the governorate-level share of poverty is positively correlated with the share that is employed in agriculture. The Upper Egypt governorates with the highest poverty rates in the country have more than 30 percent of their workers engaged in agriculture. However, the type of agriculture practiced in a region matters. Some Lower Egypt governorates that are at the heart of cotton textile manufacturing (an important source of export revenues) have high share of agriculture employment but much lower poverty rates than Upper Egypt governorates.[35]

Accompanying these trends in falling employment rates is a shift in occupation toward middle-skilled and low-skilled jobs with little growth in high-skilled occupations and agriculture continuing to shed jobs (figure O.15). This small contribution of high-skilled occupations has not always been the case for Egypt. During the 1990s, when Egypt undertook reforms to liberalize the economy, reform trade, and privatized a number of state-owned enterprises (SOE), growth in high-skilled and middle-skilled jobs dominated the labor market—a trend consistent with the rise in manufacturing documented in previous

Figure O.14. Sectoral Breakdown of Change in Employment Rate, 2010–2016

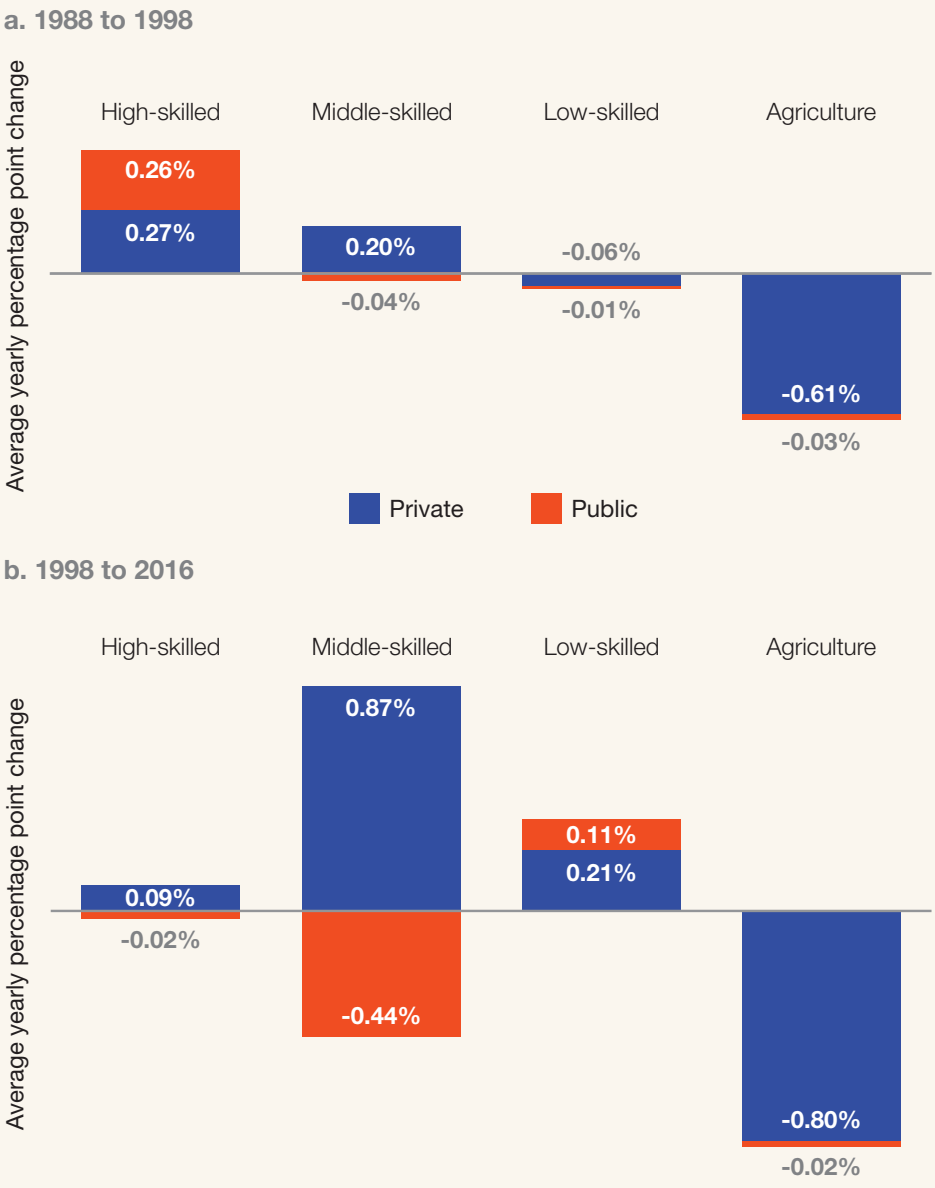


Source: WDI

Note: Figure shows change in sectoral employment as a share of working age population.

studies (see World Bank 2014). Still, almost half of the growth in high-skilled occupations over this period was from public sector employment. In fact, the public sector remains the main source of high-skilled work in Egypt; as we show later in this section, this pattern is consistent with the fact that occupations in this sector require performance of analytical and abstract tasks. As the government continued to curtail the growth of public sector employment and privatize SOEs, the impact has become visible in the slow growth in high-skilled jobs and reduction in public sector middle-skilled jobs between 1998 to 2016 (figure O.15). In this period, most workers outside of the public sector are in low- or middle-skilled occupations. The middle-skilled, private sector jobs being created are primarily in the nontradable construction and transportation sectors that are unlikely to exist as a long-term source of labor demand and quality jobs.

Figure O.15. Shifts in Occupations, 1988 to 2016



Source: Based on Egypt Labor Market Panel Survey (ELMPS) 1988–2012 (OAMDI 2013, 2016a, 2016b); and Labor Force Survey (LFS 2016) (OAMDI 2018).

Note: High-skilled = managerial, professional, and technical and associate professionals; middle-skilled = clerks, craft-related trade workers, plant and machine operators and assemblers, service workers; low-skilled = elementary occupations. Agriculture = all workers in agriculture industry independent of occupation level.

Solving the problems of declining employment for men and persistently low employment among women and absorbing those moving out of agriculture requires robust job creation by businesses especially in tradable sectors. All data point to weak job creation by Egyptian firms. The Industrial Production Surveys of 2007 and 2011 show no net job creation by private sector firms in industry (World Bank 2014). More recent data from the 2016 Egyptian Enterprise Survey data also shows that formal private sector firms (spanning industry and service sectors) reduced employment in the three years prior to the survey. Job creation by Egyptian firms may be hampered by factors such as limited competition and employment protection regulations. In-depth studies that have analyzed the effects of political connections of firms show that preferential treatment has created an unequal playing field, allowing less innovative and less profit-generating firms to succeed and even dominate markets. More detailed evidence shows that these connections occurred through the channels of trade protection, energy subsides, access to land, and regulation enforcement. The consequences of unfair application of rules was shown to significantly slow employment growth and skew the distribution of employment toward smaller, less productive firms (World Bank 2014; Diwan et al. 2016). The extent to which labor laws impact hiring depends on implementation. There appear to be no clear standards for fines and punishments associated with minimum wages and labor legislation.[36] As a result, nearly 30 percent of all workers that were considered formally employed received wages below the minimum wage in 2014. The 2003 labor laws that brought more protection to workers may have helped individuals with existing jobs in formal firms to transition into better employment (Wahba and Assaad 2017), but they had the potential consequence of reducing more formalized job creation (Langot and Yassin 2015).

Given the low job creation and high share of informal employment, developing forward-looking policies that facilitate employment creation in productive jobs is a priority for Egypt. In trying to identify where policy efforts could focus, examining the quality of labor market match outcomes —how well workers' qualifications compare to skills requirements of available jobs—can provide more insights compared to those that focus only on unemployment or wage outcomes. In Egypt, a large proportion of the population are informally employed, making it difficult to assess job outcomes due to missing wages. Quality, detailed information on mismatches, skill shortages, and gaps can help in pinpointing the major areas that need investments to improve labor market outcomes. There have been relatively few studies of the quality of labor market match outcomes in Egypt. Building on World Bank (2014), the last in-depth analysis of jobs in Egypt, this report focuses on diagnosing labor market matching issues using standard data sources (labor force surveys) accessible for 2016 and as well as online job posting data collected between August 2017 and March 2018.

ii. Labor market matching outcomes

The labor market in Egypt is characterized by low rates of labor force participation, with only 49 percent of the population participating in the labor force, a low rate driven primarily by the fact that only a quarter of all females of working age participate in the labor force. Unemployment stands at 13 percent in 2016 and is high both among females, youth ages 15–29, and those with a secondary or higher education. However, in developing countries, informal employment may be a better measure of quality of job match outcomes. According to the LFS, the share of workers who do not have a formal contract is high with nearly 60 percent of the employed population in informal jobs.[37] Youth and those with a primary education have even higher rates of the informality (annex table OA.1). For jobs with a fixed location and where the company has at least 25 employees or more, rates of informality stand at less than 5 percent. These standard labor force statistics are the outcome of a "matching" process between the supply of labor by workers and the demand for labor by employers and firms. The rest of the section seeks to shed light on the matching process and the inefficiencies it reveals.

1. What is the skills requirement of jobs in Egypt? Applying the tasks framework

The decomposition of occupations into a series of tasks is useful for understanding the skills and education needed for jobs. It provides a way to describe how technologies and automation are changing the relative importance of the tasks that will drive labor demand. The task framework provides a broad breakdown of tasks that are categorized along different dimensions. Following Autor et al. (2003) and Acemoglu and Autor (2011), a brief description of task types, not specific to Egypt, follows:

- Routine tasks are repetitive in nature and have clear rules that are codifiable. For example, basic bookkeeping and assembly jobs are highly routine and require minimal interaction with others. These tasks are increasingly being automated, as the relative cost of technologies to labor declines.
- Nonroutine tasks require adjusting to different environmental conditions and are more difficult to codify. These tasks differ along manual, physical, interactive, and abstract dimensions. Manual tasks require movement in operating machinery and tools. Physical tasks require heavy lifting (such as logging, mining, and construction). Interactive tasks require interfacing with customers and clients (such as sales and customer service). Abstract tasks require higher order thinking and innovation and include occupations such as engineering and research services. Both interactive and abstract tasks are more difficult to automate and are highly complementary to technology.

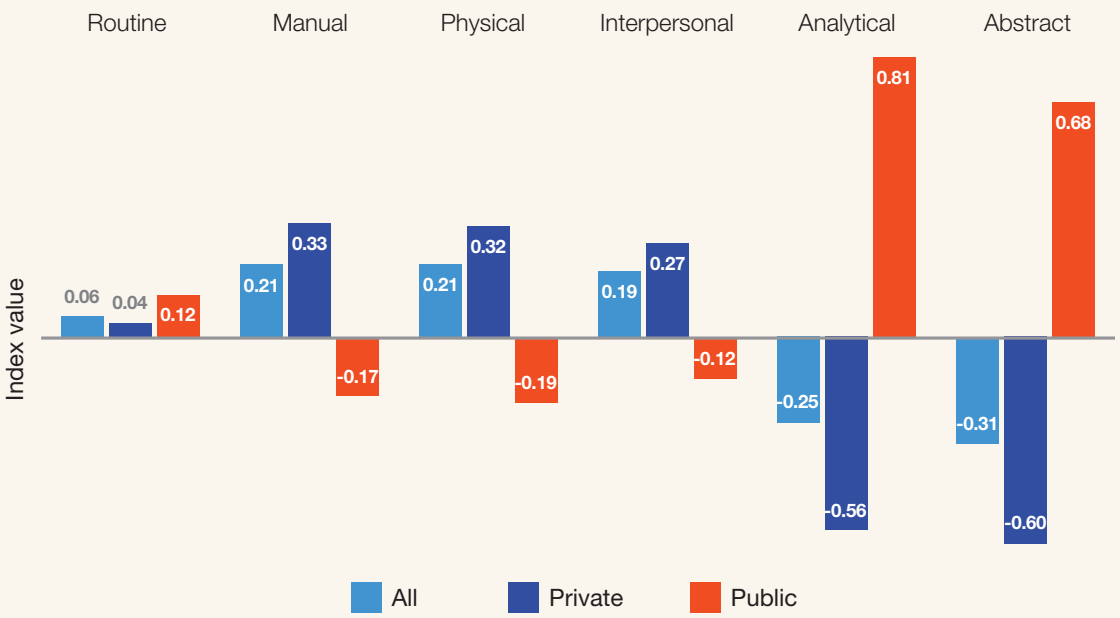
Workers have different skills, many of which are learned through the education system and/or through on-the-job training. Individuals with strong motor skills have an advantage in conducting manual tasks. Those with strong soft skills involving communication, empathy, client orientation, leadership, and attention to details have an advantage in conducting interactive tasks. Those with hard skills

that include problem solving and numerical and analytical skills have advantages in conducting more complex, abstract tasks. Technical skills such as programming or diagnosing diseases provide advantages in very specific and specialized occupations. For soft, hard, and technical skills that improve an individual's capabilities in performing interactive, abstract, and occupational specific tasks, the education system plays an important role.

The US Department of Labor's Occupational Information Network (O*NET) lists the skills, knowledge, and education needed to be effective and successful in detailed occupations that are at the technological frontier. Task measurement is an evolving approach; efforts by Autor and Handel (2013) and the World Bank's Skills Towards Employability and Productivity (STEP) skills measurement program have greatly expanded the measurement of skills and actual tasks on-the-job, especially for developing country contexts.[38]

Benchmarking the task content of occupations in the Egyptian Labor Force Survey (LFS) 2016 to the STEP skill measures, the average occupation in Egypt in 2016 is found to be highly manual and physical rather than analytical and abstract (figure O.16). Compared to the task content of private sector occupations, public sector occupations in Egypt have more analytical, abstract, and routine tasks and less of manual, physical, or interpersonal tasks. Private sector occupations have more manual and interpersonal task content compared to public sector occupations. Outside of the public sector, the task content of most jobs in Egypt do not appear to require a high level of skills or education. The observed decline in public sector employment (figure O.15), therefore, could have led to a decline in the share of jobs requiring analytical and abstract skills.

Figure O.16. Task Content of Occupations in 2016



Source: Egypt LFS 2016 (OADMI 2017); World Bank Skills Toward Employment and Productivity (STEP) Surveys. Reported in Chun (2018).

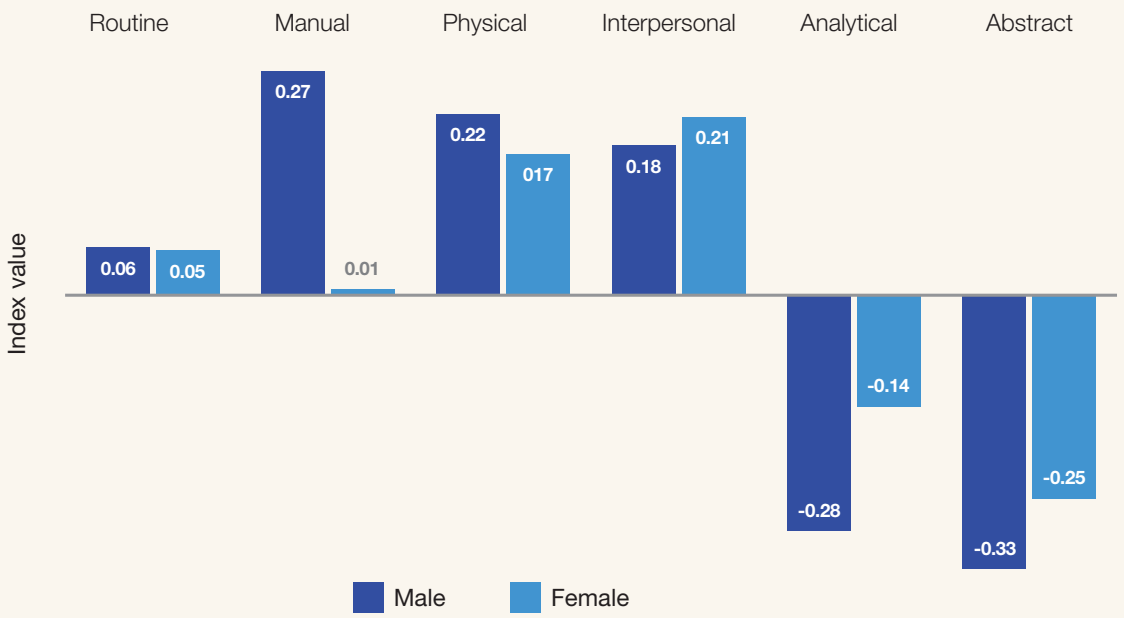
Note: Mean task content from the STEP skills surveys for six Asian economies at the one-digit occupation, one-digit industry level is merged with the ELMPS and LFS data. Task content measures are designed to have a mean of 0 and standard deviation of 1 in the original data. Positive indexes indicate a larger share of occupations require a specific task than the average share of the benchmark countries.

As the task content of private sector jobs in the Egyptian labor market is skewed toward manual and physical jobs (with some jobs requiring interpersonal tasks) the average job is not conducive to female labor force participation and employment. A look at the occupation shares shows that jobs requiring manual or physical tasks have been increasing over time relative to interactive, nonmanual jobs in part because transportation and construction have been growing more than other sectors. Women on average are much more likely than men to be employed in occupations that are less manual and physical and more interpersonal (figure O.17). Women tend to dominate or account for a large share of employment only in a few occupations: teaching, health associates, business administration associates, agriculture laborers, and legal associates. Unlike in developed countries, customer service and sales jobs have a very small percentage of females employed.

2. Comparing educational attainment to occupations: Qualification matches and mismatches

Given the task content of occupations in Egypt, it is informative to examine the labor market outcomes data and identify where there is a need for greater educational investments versus where improvements in labor market demand are necessary to better capitalize on the available skills. It is striking that despite the expansion in education across generations, 27 percent of working age population in 2016 had either never been to school or not completed primary education. This high share is the result of older workers (50–65) who had high rates of no schooling or incomplete primary; still, 17 percent of 15 to 29-yearolds in 2016 had no primary education.[39]

Figure O.17. Task content of Occupations of Men and Women

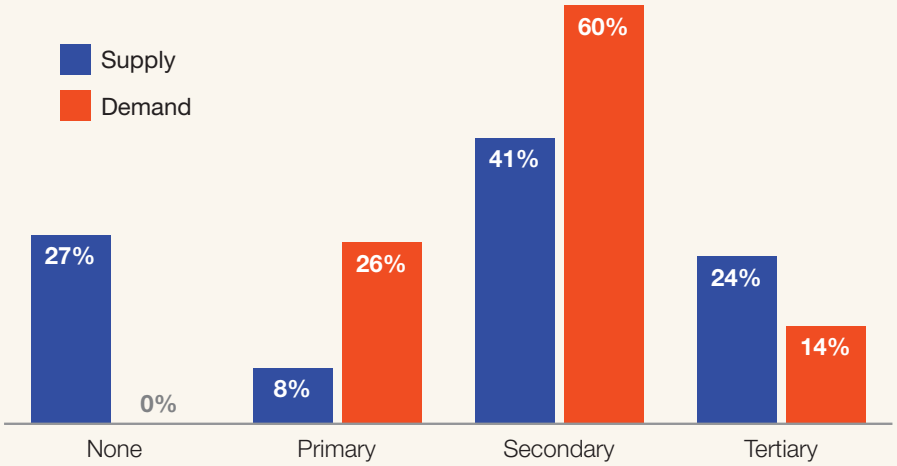


Source: See figure O.17; and Chun (2018).

Qualification mismatches represent an inefficiency in matching education supply to labor market demand. Underqualification and overqualification mismatches arise when a person has a lower or higher level of education relative to what is needed for their job or occupation. At a microlevel, information, mobility, and skill constraints can result in people ending up in jobs for which they are over- or underqualified even while there are jobs available that are better matched to their education level. At an aggregate level, too much underqualification implies significant losses to productivity and constraints on growth. Too much overqualification can indicate overinvestment in education compared to labor market demand or a weak education system that is not delivering the needed learning and skills.

Analyses of labor market matching shows both underqualification and overqualification to be a problem in Egypt, with a larger share of the workforce underqualified for the jobs they are in. As a starting point, comparing the educational attainment of the labor force (supply) to the education needs (demand) of existing occupations shows the extent of mismatches in Egypt (figure O.18). While 76 percent of the working age (15–64) had primary or less than primary education or secondary/secondary TVET qualification, and only 24 percent had a tertiary education, an overwhelming majority (86 percent) of jobs required primary or secondary education. The demand for primary and secondary educated workers therefore exceeds the supply of workers with this level of education; the opposite is true for the demand and supply of tertiary educated workers. This level of mismatch suggests that will be likely be workers who are either underqualified or overqualified for the jobs they are in. This is borne out by more detailed analysis discussed below.

Figure O.18. Education Supply and Demand



Source: Labor Force Survey (LFS) 2016 (OADMI 2018).

Note: Demand is based on low-skilled jobs needing at most primary education; middle-skilled jobs needing at most a secondary education; and managerial, professional, and technical jobs needing a postsecondary education.

Qualification mismatches can be estimated by applying a set of criteria to the level of quality education needed to productively execute tasks associated with an occupation. Chun (2018) provides a detailed description of the criteria applied using the 2016 LFS. The mapping of education levels to tasks and occupations assumes that even for elementary occupations a person needs basic numeracy, literacy, computing, and communication skills that are delivered through a quality primary education. In countries faced with a large informal sector, a basic level of education is seen as critical basis for developing numerical, reading, and communication skills for workers to enhance their opportunities for employment and income. Most middle-skilled jobs and technical associate occupations require basic technical, problem-solving, and communication skills. These skills can be delivered through a quality secondary education that develops more advanced problem-solving, writing, and oral communication skills in addition to basic technical or occupation-specific skills. For professional and managerial occupations, there is a need for higher order problem-solving, communication, and writing skills in addition to specific technical skills that can be delivered through a postsecondary or university education. The exception to this rule is for managers of agriculture and low-skilled services, where only a quality secondary education that emphasizes general skills in addition to basic business and market oriented skills is needed.[40]

Comparing the qualification requirement of occupations with the qualifications of the workers engaged in those occupations shows that 38 percent of workers are underqualified for the jobs they are in, and 21 percent are overqualified for their jobs, with the remaining 41 percent in occupations that match their qualifications. A detailed analysis (table O.7) also shows the following:

- Underqualification occurs in many different occupations but is most severe in middle- and low-skilled occupations. Underqualification in low-skilled occupations arises because 35 percent of all labor force participants in 2016 had at most a primary education.
  - There is a high degree of underqualification also among administrative managerial positions (13 percent).
  - The presence of underqualification among elementary occupations suggests that these jobs are being carried out by those with no or low education (33 percent underqualification amongst agricultural workers, drivers, and cleaners).
  - 60 percent of administrative managers are underqualified for their job, which could affect the productivity and learning potential of employees they oversee.
- In the public sector, workers' qualifications are well matched to qualification requirements of their jobs.
- Overqualification is common in some occupations, such as customer service and keyboarding, but these account for a minimal share of overall employment.[41]

Table O.7. Job Match Outcomes by Occupation (percentage)

Occupation category (ISCO two-digit)	ALL					PUBLIC SECTOR					ALL						
			Job match					Job match			Education			Certification			
	Emp.	Inf.	Match	Over	Under	Emp.	Inf.	Match	Over	Under	<Prim.	Sec.	Ter.	STEM	Health	Edu.	Bus.
CEOs	0.0	2	74	0	26	0.1	0	74	0	26	14	12	74	5	6	10.1	22
Administrative managers	13.4	8	32	8	60	5.6	1	60	0	40	52	28	19	13	2	1.8	12
Production managers	0.2	0	78	0	22	0.9	0	79	0	21	1	21	78	12	2	7.5	47
Science and engineering prof.	0.9	34	99	0	1	1.4	2	99	0	1	0	1	99	81	10	2.0	2
Health prof.	0.8	15	95	0	5	2.6	1	93	0	7	0	5	95	1	73	0.2	0
Teaching prof.	6.4	15	83	0	17	22.0	2	83	0	17	0	17	83	9	3	38.9	6
Business administration prof.	3.3	32	92	0	8	7.3	4	89	0	11	0	8	92	3	0	2.3	48
Science and engineering assoc.	2.3	26	73	24	3	5.2	3	79	19	2	3	73	24	63	0	0.8	8
Health associates	1.4	11	58	40	2	4.9	2	56	44	0	2	58	40	8	36	1.9	4
Business administration assoc.	0.0	48	58	42	0	0.1	33	53	47	0	0	58	42	22	0	8.7	26
Legal associates	5.3	31	48	48	3	17.5	17	56	42	2	3	48	48	15	3	5.1	53
Keyboard	2.1	26	58	39	3	4.4	3	71	26	3	3	58	39	20	0	1.9	46
Customer service	0.5	27	52	44	4	1.2	3	69	29	3	4	52	44	18	0	0.9	36
Service and sales	4.3	53	39	21	41	7.8	1	25	36	39	41	39	21	15	0	0.5	10
Sales	6.2	90	47	20	33	0.3	18	52	34	14	33	47	20	21	1	1.3	21
Building and construction	10.5	95	47	5	48	0.9	7	53	1	46	48	47	5	21	0	0.4	11
Metal	2.5	73	43	9	48	1.5	6	49	5	46	48	43	9	24	0	0.4	5
Handy print	0.7	79	47	8	45	0.1	8	58	7	35	45	47	8	23	0	0.3	13
Electronic and trade	2.6	86	43	5	52	0.3	11	43	7	50	52	43	5	19	0	0.5	10
Machine operator	3.4	61	44	6	50	1.6	4	50	5	45	50	44	6	22	0	0.3	15
Drivers	7.5	84	49	7	44	2.8	4	52	3	45	44	49	7	23	0	0.2	11
Cleaners and helpers	7.4	57	13	43	43	11.0	7	18	33	49	57	37	6	14	0	0.2	9
Agriculture laborer	17.5	96	11	43	47	0.4	15	11	41	48	57	39	4	12	0	0.2	9
Mining and mfg. laborer	0.5	95	13	36	51	0.0	23	0	65	35	64	33	4	12	0	0.2	7

Source: 2016 LFS. See Chun (2018).

Note: ISCO =International Standard Classification of Occupations; Inf. = working informally; over = overqualified; under = underqualified; STEM = science, technology, engineering, and math.

Among the workers who have a secondary vocational and technical certification, overqualification and unemployment rates are high (table O.8). Over 40 percent of those with technical degrees are employed in other occupations. More importantly, unemployment among those with tertiary engineering and science degrees stands at 26 percent, and 36 percent of university graduates with engineering certifications are overqualified for their jobs; these outcomes are slightly better for those with vocational or technical certification in engineering and physical sciences. Somewhat similar numbers are observed for those with business training. Only the labor market for health and life science graduates of secondary vocational and technical education is relatively tighter and comparatively well matched, but this seems to be largely due to the fact that they are employed by the public sector. Specific training, especially through secondary vocational and technical education, is not translating into employment and better job matches, and this is a concern, as it represents lost productivity and wasted investments in education. The high unemployment rates could be due to the poor quality of education. Given that education from primary to university is publicly funded, there is a great need to ensure that learning and relevance of curriculum are improved, especially for the secondary vocational system.

Table O.8. Labor Force Participation and Employment Outcomes of Individuals with Technical Certifications (Vocational Technical and University Degrees)

Certification	Population share	LFP	Unemployment rate	Job match			Technical	In public sector
				Match	Over	Under	Skill match	
SECONDARY VOCATIONAL								
Other	3	75	14	62	25	13	0	27
Engineering/physical science	11	70	17	73	21	5	10	18
Health/life science	0.342	65	3	93	2	2	89	89
Business	11	50	19	69	24	6	17	27
TERTIARY								
Other	7	79	21	60	39	0	0	54
Engineering/physical science	1	88	26	64	36	0	51	34
Health/life science	1	86	13	72	27	0	56	60
Business	3	78	21	54	46	0	48	40

Source: 2016 LFS. Reported in Chun (2018).

Note: LFP = Labor Force Survey.

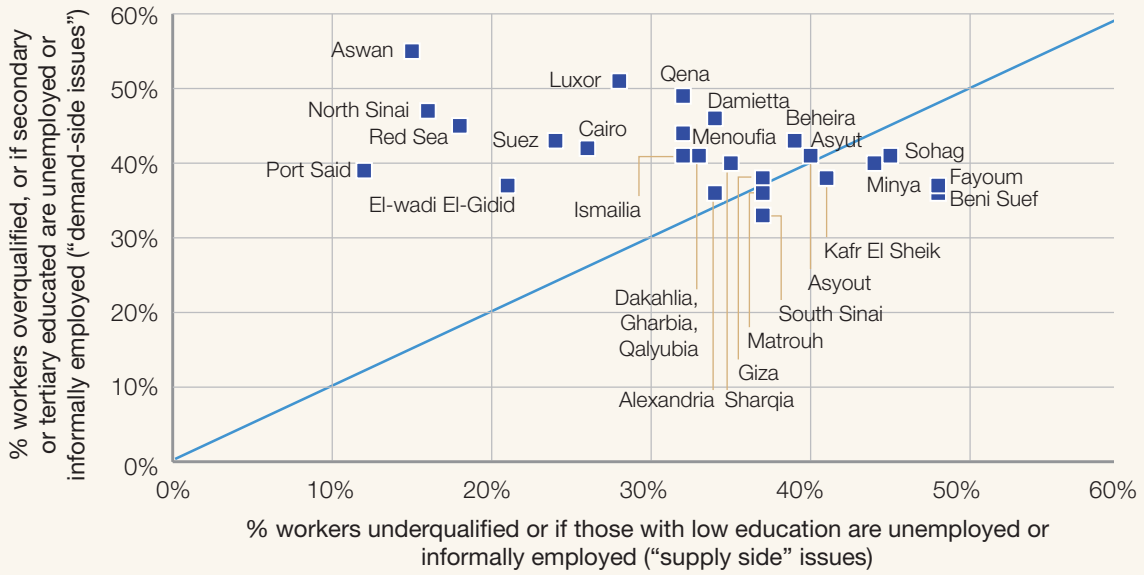
iii. Diagnosing supply- and demand-side problems across governorates

In the labor market, workers "supply" their skills while businesses "demand" workers with skills needed for producing their goods and services. Supply-side challenges arise from low education or poor quality of education received by workers which reduces their productivity. Fixing supply side problems would call for improving education access and quality. Demand-side problems arise from low job creation or a shortage of formal employment opportunities outside the public sector likely because employers want to avoid costs of hiring workers formally. Addressing demand-side problems would require a whole host of policies (business environment, taxation, labor regulations, cost of establishing formal enterprises) to encourage job creation and formal hiring by firms.

Among those participating in the labor force, combining information on the employment status and employed workers' match status (matched, over-, or underqualified) and formality status, it is possible to diagnose if the key challenge in the labor market is on the supply side or on the demand side. In this report, the following indicators or symptoms of supply- and demand-side problems have been adopted. There are problems on the supply side if workers are underqualified or if those with low education are unemployed or informally employed. The report considers there to be labor demand problems if workers are overqualified for their jobs, workers are matched by their qualification but are informally employed, or if there are high levels of unemployment and informality among those with secondary or tertiary education. Central to this approach to diagnosing labor market problems is the presence of informal employment. Workers could be informally employed because they lack skills. Informal employment could also reflect limited opportunities to work formally. While for firms the costs of becoming formal might exceed the benefits (complying with regulations, facing competition from informal firms), for workers, the opposite is true since formal employment brings greater social protection and job security.

Applying these definitions in 20 governorates the shares of workers affected by demand side problems exceeds the share of workers affected by supply side (low education or skills) problems, while in 7 governorates the reverse is true (figure O.19). The governorates primarily affected by low demand for workers include Cairo, Alexandria, and most of the Lower Egypt and frontier governorates. Governorates mainly affected by supply side issues are mostly in Upper Egypt. Comparing these results to the governorate level shares of poor, vulnerable, and middle class shows that labor demand issues predominate in governorates with high share of the middle class while labor supply issues predominate in governorates with high share of the poor. In 4 of the Upper Egypt governorates of Beni-Suef, Fayoum, Suhag, and Menia, the large share of those with low qualification and labor supply problems coincides with some of the highest share of the poor, those employed in agriculture, and unpaid employment.

Figure O.19. Share of Labor Force Participants Facing Poor Labor Market Outcomes, by Governorate, 2016



Source: Calculations based on Labor Force Survey (LFS) data 2016 (OADMI 2018). Reported in Chun (2018).

Public sector employment in the governorates ranges from 15 percent to 50 percent of all employment. This is suggestive of either weak private sector labor demand or the public sector competing for better educated workers. While in 1998 and 2006 there is some evidence that higher public sector employment contributed to higher unemployment among university-educated male and female youth in governorates with higher public sector employment, this relationship declined over time (Assaad 2014).

These governorate level diagnostics suggest that ensuring everyone receives a quality primary education should be a continued policy priority and an important element of poverty reduction strategy. In many of the governorates, agriculture and construction accounts for the majority of underqualification, informality, and sometimes overqualification. Developing more viable and stable sectors that can absorb low-skilled labor will help push Egypt's structural transformation forward and help absorb those moving out of agriculture. At the same time, raising agriculture productivity could play an important role in governorates where agriculture dominates.

However, most governorates are facing a labor demand-side problem, where the labor markets are unable to absorb university and secondary vocational graduates into quality employment. This suggests both a need to revisit the quality of education provided, especially in vocational and technical education stream, as well as to raise private sector job creation. In governorates where overqualification, informality, and unemployment are high among secondary and university graduates, there is a need to identify the skills that these graduates possess and the potential to develop tradable sectors such as manufacturing and business services that are competitive and can provide greater employment possibilities.

iv. Demand for skills: Using firm-level and online job-posting data

Creating a dynamic education system responsive to labor market demands requires having detailed information from businesses on hiring demand. Typical firm survey data provide limited information on labor market demand, trends in occupations and skills needed, or on unfilled vacancies. Standard labor force surveys that contain only the background of a person's education and technical qualifications are not designed to collect data on specific skills beyond qualifications that firms might seek (such as foreign language skills for jobs in the hospitality industry). Moreover, educational and technical qualifications are imperfect proxies for skill shortages when the education system has been poor at building the right skills needed for the labor market. Collecting survey data in many developing countries is also costly and time intensive. Enterprise surveys carried out in the Middle East and North Africa region by the World Bank, European Bank for Reconstruction and Development, and European Investment Bank collect information on obstacles faced by firms, including inadequate work force. According to the 2016 Enterprise Survey data for Egypt, concerns about inadequate workforce skills are important but not the most common constraint facing firms.[42] Correlating different firm, industry, and regional indicators with firm responses, skills constraints are more likely to be cited by firms in basic metals, chemicals, the ICT industry, and the tourism and hospitality industry (annex table OA.2).

This section presents the results from a first attempt in Egypt to leverage data from online job boards (box O.4). Data extracted from the web provides a potentially significant opportunity to increase the timeliness of assessments and identify the key skills that are in demand that are important for informing policy makers and individuals on learning investments. Recent work by Nomura et al. (2017) using online job portal data from India has shown the potential power and value that big data methodologies can provide to understand the labor market and inform policies. This section provides some initial exploratory work using data obtained from two Egypt job websites.[43] Three findings from this analysis are worth noting from the perspective of labor market and education policies.

First, job postings suggest that there might skills shortage in certain sectors. To identify potential skill constraints, the number of postings for OLX job vacancies are compared to the share employed in the labor force in 2014 over broad industry groups.[44] There is suggestive evidence that the hospitality and tourism industries, secretarial, ICT, engineering, and retail could be facing skill shortages, as there is a much higher level of job postings relative to those employed in these sectors in the LFS.[45] Hospitality and tourism require quality customer service and English language skills, while ICT and engineering positions are focused on highly specific technical skills. Information from Wuzzuf indicates that travel and hospitality jobs are the primary jobs in demand per aggregate numbers on this website, after those in transport and logistic.

Box O.4. Online Job-Posting Data in Egypt to Track Labor Demand

OLX.com is one of Egypt's largest online portals, with over 133,000 job ads as of the end of August 2017. Roughly two-thirds of these postings are advertisements for vacancies, with the remaining one-third presenting people looking for jobs. Ads on the website are typically posted in Arabic and are live for a maximum of 90 days. The data cover almost all of the major cities and areas in Egypt.

Key statistics from the OLX.com data were downloaded daily from January through March 2018. February showed a slight dip in vacancy postings compared to January and March (annex table OA.3). Postings show a clear decline in page views over time, with 75 percent of page views occurring in the first week of posting. On average, architecture, accounting, retail service, and secretarial jobs appear to receive the most views on average on OLX.

The downloaded data covered more than 200,000 thousand job ad vacancies, as displayed in annex tables OA.3 and OA.4.* Hospitality jobs account for a major portion of all job ad vacancies where the sector is known. However, these jobs receive fewer views than business development, secretarial. and retail job ads. Based on the job ads that report compensation, accounting, consulting, retail, and business development have higher average compensation, but the large majority of ads typically do not report this type of information or do not have seemingly credible numbers for compensation (stating only, for example, higher than LE 100).

Wuzzuf.net is an online job portal representing approximately 5,000 jobs per month from January through March 2018, or 17,600 job ads over the period representing nearly 30,000 vacancies. It serves as a platform to match workers to jobs. In contrast to OLX.com, individuals can apply for jobs directly through the website. As a result, the website displays tracking of job ads in terms of number of applicants, number of applicants reviewed, number rejected, and number shortlisted. Wuzzuf job ads are primarily tied to the export and tradeable services market and are largely limited to the Alexandria and Cairo labor markets. Most Wuzzuf job ads are listed in English and provide a very detailed breakdown of different skill demands and minimum requirements in tradable sectors and those catering to foreign clients.

While there is selection in terms of the jobs that are posted, the jobs that are advertised online are likely to have greater demand for critical hard and soft skills that cannot be fulfilled by a basic set of labor. These jobs represent the more innovative and productive sectors of Egypt that are truly concerned with hiring skilled labor and are more likely to pay a premium for a person with better skills.

The Ministry of Manpower and Migration provides public employment services acting as an intermediary between government, prospective employers, and the unemployed. The ministry's webpage contains a registration portal for prospective jobseekers and applicants to public sector jobs, where workers give a basic set of details about their industry and skill set. On April 6, 2018, there were 15,711 jobs listed by the ministry for jobs in the country with a summary contained in a pdf document. The document appears to provide limited information to help job seekers search for and identify jobs that are well matched to their skills.

Source: Chun (2018)

* Page data was downloaded at a different time then the job ad counts. The statistics reported should be viewed as preliminary, as it was not possible to scrape all of the job ads at the time of data analysis.

Second, there is also some evidence of employers' overreliance on degrees or certification as a measure of ability (credentialism), in addition to weak labor demand. Many of the jobs posted that require basic computer skills, communication, and customer service skills ask that applicants have a university or bachelor's education (see annex tables OA.3 and OA.4). In the Wuzzuf data, 40 percent of the nonmanagerial, sales, and retail jobs lists a bachelor's degree as a minimum requirement (table OA.4). This type of requirement could be driving rates of overqualification that stand at 37 percent for these occupations. Similar statistics are found in OLX, where nearly 50 percent of all sales jobs require a bachelor's degree. If expectations are the main factor driving constraints in labor market matching, then standard labor market interventions that match workers to jobs are unlikely to work. That employers assign a higher than necessary educational qualification to jobs is also consistent with weak labor market demand. Given that far too many people are sufficiently skilled, employers could be using a university degree as a minimum requirement to narrow the set of possible applicants.

Third, while jobs vary in the types of skills and qualifications needed, communication and computer skills appear to be in high demand. Tag words associated with different Wuzzuf job advertisements reveal the critical skills and competencies needed for productivity and efficiency (figure O.20). Even in engineering occupations that are highly technical, basic soft skills that are critical for working in a team play a significant and important role. These advertisements show the increasing importance of individuals in having a basic level of digital and communication skills that can help complement and humanize digital technologies for more modern and progressive occupations.

Figure O.20. Key Skills and Competencies, Select Occupations



Source: Chun (2018).

D. CONCLUSION AND POLICY IMPLICATIONS

The discussions in preceding sections have two objectives. The first is to fill a knowledge gap on the living conditions and characteristics of the poor, vulnerable and middle class in Egypt with the aim of better understanding the potential implications for households of some of the recent reforms. The second is to bring new evidence to bear on the challenges in the labor market. Addressing these challenges would enable poor, vulnerable, and middle-class income groups to participate in and benefit from Egypt's push toward market-oriented economic development.

Extreme poverty in Egypt, as measured by the international poverty line of US$1.90 per day in 2011 PPP, fell from 4.3 percent in 2005 to 1.35 percent in 2015. Using the national basic needs threshold, the estimated poverty rate for 2015 was 29.2, down marginally from 30.4 percent in 2012–13. The disparities across Egypt's regions found in poverty assessments dating back almost two decades (World Bank 2002, 2007, 2010) are still present in Egypt today. Upper Egypt continues to experience the highest poverty rate in the country, especially in the governorates of Assyut, Minia, and Sohag. About 30 percent of Egyptians can be considered members of the vulnerable population, and another 28 percent can be considered part of the middle class. In distributional terms, the middle class is close to the seventh through ninth income deciles. Poverty and vulnerability rates tend to be higher in Upper Egypt governorates, while the share of the middle class is higher in Lower Egypt and metropolitan areas. The middle class spends more than the poor and vulnerable on nonfood items like health care, transportation, and education. The vulnerable and middle class groups fare somewhat better that the poor in several indicators. Nonmonetary dimensions of poverty include large household size, a high share of dependents, and low access to sanitation facilities.

Inequality, as measured by the Gini coefficient of the households' consumption per capita distribution, appears to have increased slightly (from 28.0 to 30.8 percent), partially reflecting the slow consumption growth in the bottom of the consumption distribution. Measured inequality in consumption is low according to global comparisons but this could be due to the national household income and expenditure (HIECS) survey not capturing well the consumption of rich households.

Egypt experienced an increase in education between the previous and the current generations, but the poor population, especially women, did not fully reap the benefits from this expansion. Compared to other groups, education mobility was much lower among the poor and women. The share of those completing vocational and technical education saw an almost fivefold increase across generations—a

result of public policy efforts in the past. This increase in share with secondary vocational and technical education was even higher for the poor and those in rural Upper Egypt. However, multiple studies have found that due to the surge in the number of workers with these degrees and/or the poor quality of technical training provided, the labor market returns are very low for these graduates.

The poor, the vulnerable, and the middle class are mainly wage earners or micro- and small entrepreneurs (with 10 or fewer employees). Informal work accounts for a large share of the employment among all classes. The middle class are more likely to have permanent jobs, social insurance, and health insurance. Only a small share of households relies on women as the main breadwinner. These female breadwinner households have lower poverty rates than those where either one or more men work. This could be partly explained by demographics: households with only female earners are relatively smaller, and their dependency rates lower than that of households with male earners. Households with one or more female breadwinner tend to have lower salaries, lower incomes from agricultural activities, and lower incomes from nonagricultural businesses. The lower poverty among female breadwinner households is explained by the high monetary transfers received by these households, about four times the monetary transfers received by households with only male breadwinners.

The consumption and employment characteristics of the poor, vulnerable, and middle-class households would have influenced how they responded to the price effects of fuel subsidies reforms, the introduction of the VAT system, and the switch to a floating exchange rate regime. At least in the short term, when these households had little scope to modify their consumption or labor market activities, simulations suggest that all groups experienced welfare losses. In absolute terms, the middle class would have been impacted the most because of its higher consumption. In relative terms (welfare losses as a share of household consumption), the poor would have felt the impact of the reforms the most. Recent household data are not yet available to gauge the impact on poverty and inequality of these measures; HIECS 2017–18 is currently in the field. Simulations of the short-term welfare responses suggest that poverty could have increased but that the mitigation measures implemented by the GoE helped offset some of this increase.

How well households adapt to and gain from ongoing reforms depends on their ability to adapt their labor market activities. The report therefore analyzed the challenges in the labor market. Labor productivity (output per worker) rather than employment growth has been the main contributor to GDP per capita growth over 2010–16. The number of people employed or changes in the size of the working-age population did not play a role. Even though the number of those employed increased from 23.8 million in 2010 to 28.3 million in 2016, this gain did not match the growth in the working-age population (from 53.9 million to 62.5 million) over the period. As a result, the share of the working-age employed, or the employment rate (employment to population ratio), *declined*. The main driver of the decline in the employment rate was the fall in the male employment rate, from 71.0 percent in 2010 to 63.5 percent in 2016. The female employment rate, already low at about 18 percent, barely changed during this time. Moreover, the reduction in the employment rate appears to have occurred across all sectors. In industry and services, employment grew but did not keep up with the growth

in the working-age population, resulting in a decline in the employment rate. Agriculture experienced the largest drop in employment rate as well as reduction in employment levels. Accompanying these trends in falling employment rates is a shift in occupation toward middle-skilled and low-skilled jobs, with little growth in high-skilled occupations.

While previous research has studied the barriers to job creation by firms, this report analyzed how the skills needs of the labor market have changed and whether workers' qualifications and skills were meeting these needs. Using a task framework approach, the average occupation in Egypt in 2014 was found to be highly manual and physical (which require workers with low to middle skills) rather than analytical and abstract (requiring middle to high skills). Private sector occupations have more manual and interpersonal task content compared to public sector occupations. This highly physical and manual nature of private sector jobs could at least partially explain low labor force participation by women.

A diagnostic analysis shows mismatches between the demand and supply of skills. There is demand for workers with primary and secondary education that exceeds the available supply of workers with such qualifications, mainly because of a significant share of workers who do not complete primary or, if they do, go on to postsecondary schooling. The demand for workers with postsecondary education is less than the available supply. As a result of these mismatches between demand and supply of skills, 38 percent of workers are underqualified for the jobs they are in (this is particularly the case for administrative managers and elementary occupations), and 21 percent are overqualified (for example, in customer service jobs). Mismatches are significantly lower in the public sector, where most of the women are employed, than in the private sector. There are high rates of overqualification and unemployment among those with secondary vocational and technical certification, and many of those trained in technical degrees are employed in other occupations.

Combining information on unemployment and employed workers' match status (matched, over-, or underqualified) and formality status, it is possible to diagnose if the key bottlenecks are on the labor supply (education) or demand side (job creation). Labor market supply and demand problems occur in most governorates. Demand-side problems are found to be a greater issue than supply in 20 of the 27 governorates. In 5 governorates of Upper Egypt, the high share of underqualification and informality coincides with the large share of the population that has very little education.

Creating a dynamic education system that can be responsive to labor market demands requires having detailed information on labor market demand. Typical firm survey data provide limited information on labor market demand, trends in occupations and skills needed, or on unfilled vacancies. Standard labor force surveys that contain only the background of a person's education and technical qualifications are not designed to collect data on specific skills beyond qualifications that firms might seek (such

as foreign language skills for jobs in the hospitality industry). Moreover, educational and technical qualifications are imperfect proxies for skill shortages when the education system has been poor at building the right skills needed for the labor market. The report collected and analyzed data from OLX.com and Wuzzuf online job portals between August 2017 and March 2018. These data indicate some skills shortage in certain sectors such as hospitality and tourism industries, secretarial, ICT, engineering, and retail could be facing skill shortages, as there is a much higher level of job postings relative to those employed in these sectors in the LFS. There is also evidence of an overreliance on degrees or certification by employers (credentialism). Many of the posted jobs that require basic computer skills, communication, and customer service skills are looking for applicants with university or bachelor's degree. Employers seeking a higher than necessary educational qualification for such jobs is also consistent with weak labor market demand. While jobs vary in the types of skills and qualifications needed, communication and computer skills are highly in demand by employers.

Policy implications

Considering the profile of the different income groups in the population, the educational outcomes of the poor, vulnerable, and middle class and the findings from the diagnostic analysis of the labor market, the key elements of policies to support poverty reduction and shared prosperity must involve better investments in education and improving labor market demand to capitalize on the available skills. The government of Egypt is taking steps in both policy areas, and the evidence of the report further reinforces the importance of continued efforts in these two areas. Moreover, while continued efforts to strengthen social assistance measures are important, reviving the labor market and the potential for the private sector to employ a larger share of the working-age population would help the poor, vulnerable, and middle-class households benefit from market-oriented reforms. Given this context, training programs and other active labor market programs (ALMPs) are more likely to be effective for those who lack education; for the workers with secondary or higher education for whom the most pressing problem (in at least 20 governorates) is the low and limited demand for educated workers such ALMPs are unlikely to be effective.

First, ongoing efforts to better target social assistance transfers (such as Takaful and Karama) will not only help protect the poor but can also be leveraged to promote educational attainment among poor and vulnerable households. Programs to connect those in beneficiary households with the opportunity to work will also help, provided there are local employment opportunities.

Second, education and employment policies need to address the low education that persists amongst the poor, especially poor women. Effective education monitoring systems could be used to ensure that children from poor households enroll and attend school at least up to primary level. Here digital technology can be leveraged to monitor enrollment and attendance. Better infrastructure and transportation

networks and approaches that reduce the cost of attending school could also help in keeping children in school. Conditional cash transfers to poor mothers linked to their child's school attendance (such as in the Takaful program) has been found to be effective in several settings across the globe. The analysis has shown that 27 percent of working age today have not completed primary education and low qualifications prevails amongst workers in 7 governorates mainly in Upper Egypt. For this group, needed policy actions include lifelong learning opportunities through literacy and adult learning programs as well as training programs to improve business skills and employment opportunities. Training has been found to be effective for microentrepreneurs; a study from Togo has shown the significant impact of personal initiative training on sales and profits among microentrepreneurs (Campos et al. 2017). A combination of providing income generating assets and skills training (targeted to women) has also been found to be effective in helping poor entrepreneurs escape poverty in Bangladesh (Bandiera et al 2017).

Third, there is an urgent need to expand employment opportunities since so many workers, especially those with higher education, especially secondary technical and vocational education, and many with tertiary education, experience poor employment outcomes (such high unemployment and or informal employment); a large share of the working age population simply does not participate in the labor market. At least part of the solution to this problem lies in addressing the quality of education and learning. The poor employment outcomes of secondary technical and vocational education graduates underscores the importance of improving the labor market relevance and quality of this level of education. Reevaluating vocational and technical education to improve quality and relevancy would be important, given the significant public investments made in this level of education. A much larger challenge lies on the demand side of the labor market because of low job creation by the private sector. In addition, most jobs are informal. Firms might prefer being informal since the costs of becoming formal might exceed the benefits (complying with regulations, facing competition from informal firms), for workers, the opposite is true since formal employment brings greater social protection and job security. Addressing demand-side problems would thus require a whole range of policies (business environment, taxation, labor regulations, cost of establishing formal enterprises) to encourage job creation as well as policies to encourage formal hiring by private sector firms. A growing number of emerging economies have also implemented policies addressing informality. These efforts have mostly concentrated on extensive labor market reforms, streamlining registration procedures, and simplifying taxes on small businesses.

While the report has not analyzed the role of ICT, evidence from the United States as well as Africa suggests that the expansion of internet connectivity can increase employment rates. Broadband internet access can potentially transform employment prospects by making it easier for workers to connect within the country or globally to job opportunities.

ANNEX A

Table OA.1. Labor Market Indicators (percent)

Certification	2016					Age 15 to 29	Age 30 to 49	Age 50 to 65
	All	Male	Female	Urban	Rural			
Labor force participation	49	73	24	47	50	40	61	48
Labor force participation female	24	0	100	25	24	29	22	19
TERTIARY								
No education	27	28	23	19	33	17	26	51
Primary	8	9	6	7	9	10	8	6
Preparatory/secondary	8	8	7	7	8	11	6	4
Secondary vocational	33	33	31	31	34	36	35	20
Postsecondary	5	5	5	6	4	4	6	4
University or higher	19	16	29	29	12	21	18	14
STEM technical training	18	21	11	20	17	23	19	8
Medical/nursing training	2	1	4	3	1	2	2	2
Teaching	3	2	7	4	3	3	4	3
Business	15	13	22	19	13	16	16	14
Unemployed	13	10	24	15	11	27	5	1
Employed	87	90	76	85	89	73	95	99
Underemployed	1	2	1	1	1	2	1	1
EMPLOYMENT STATUS								
Wage	70	71	66	77	65	78	68	61
Employer	10	12	2	7	12	3	11	20
Own-account	12	13	8	13	11	7	15	13
Unpaid family worker	8	4	23	2	12	12	6	6
Informal worker	60	61	60	54	65	82	55	38
Has health insurance	32	29	41	40	26	18	36	44
Has social insurance	38	37	43	49	31	22	45	50
Mobility								
Work outside governorate	13	15	8	10	16	15	14	8
Mobile worker								
TYPE OF WAGE EMPLOYEE								
Unlimited contract (incl. officially hired)	24	22	30	30	20	8	28	39
Written contract (limited)	9	8	12	12	7	13	8	4
No contract	37	40	24	35	38	56	31	18
Not stated	31	30	34	24	35	23	32	39
Monthly wage (Egyptian pounds)	2,132	2,224	1,817	2,271	1,966	1,596	2,258	2,631

Source: LFS 2016 (OADMI (2018))

Note: All values expressed as a percent except mean monthly wage.

Table OA.2. Ordered Logit Regressions on Degree to Which Labor Regulations and Inadequate Labor Force Are Obstacles (5 = very severe)

Certification	Tax rates	Corruption	Business licensing	Access to finance	Labor regulations	Inad. labor force
Foreign direct investment	-0.024 (0.025)	0.272*** (0.026)	0.465*** (0.026)	0.163*** (0.027)	0.467*** (0.026)	-0.110*** (0.030)
Firm: subsidiary	-0.140*** (0.016)	0.392*** (0.016)	-0.054*** (0.016)	-0.123*** (0.016)	0.765*** (0.017)	0.127*** (0.018)
Size: Micro	-0.727*** (0.028)	-0.410*** (0.027)	0.043 (0.031)	1.006*** (0.029)	-0.600*** (0.038)	-0.172*** (0.035)
Size: Medium	-0.076*** (0.013)	-0.171*** (0.014)	0.297*** (0.013)	0.238*** (0.014)	-0.004 (0.015)	0.464*** (0.015)
Size: Large	-0.126*** (0.023)	0.408*** (0.024)	0.536*** (0.023)	0.398*** (0.022)	0.342*** (0.024)	1.113*** (0.024)
Ind: Food and beverage	0.520*** (0.016)	-0.193*** (0.016)	0.487*** (0.016)	-0.251*** (0.016)	0.252*** (0.017)	-0.323*** (0.018)
Ind: Textiles and garments	0.943*** (0.027)	-1.144*** (0.026)	-0.622*** (0.028)	-0.112*** (0.025)	0.101*** (0.029)	-0.528*** (0.031)
Ind: Leather products	-0.347*** (0.045)	0.030 (0.042)	0.196*** (0.043)	0.591*** (0.044)	-0.569*** (0.058)	-1.164*** (0.072)
Ind: Wood products and paper	0.153*** (0.026)	-0.899*** (0.027)	0.218*** (0.027)	0.456*** (0.026)	-0.620*** (0.036)	-0.436*** (0.033)
Ind: Petrochemicals	-0.283*** (0.043)	-1.446*** (0.045)	-0.005 (0.046)	-0.600*** (0.046)	-0.681*** (0.055)	-0.779*** (0.058)
Ind: Chemicals	-0.087 (0.054)	-0.065 (0.053)	0.218*** (0.053)	-0.385*** (0.053)	0.292*** (0.056)	0.278*** (0.051)
Ind: Nonmetallic minerals	0.303*** (0.042)	-0.408*** (0.045)	-0.405*** (0.044)	0.391*** (0.041)	-0.095** (0.046)	-0.473*** (0.050)
Ind: Basic metals	0.165*** (0.031)	-0.565*** (0.030)	-0.384*** (0.030)	-0.284*** (0.030)	-0.542*** (0.037)	0.629*** (0.033)
Ind: Mach., equip., and elec.	0.042 (0.036)	-0.481*** (0.038)	0.205*** (0.038)	0.138*** (0.037)	0.304*** (0.040)	-0.482*** (0.043)
Ind: Hospitality and tourism	0.324*** (0.017)	0.137*** (0.018)	-0.409*** (0.017)	-0.184*** (0.018)	0.430*** (0.018)	0.350*** (0.019)
Ind: Transport	-0.224*** (0.041)	-0.764*** (0.047)	-0.187*** (0.044)	-0.730*** (0.049)	-0.547*** (0.056)	-0.904*** (0.060)
Ind: ICT	-0.239*** (0.058)	0.785*** (0.058)	0.401*** (0.070)	1.358*** (0.059)	1.807*** (0.059)	0.931*** (0.067)
Ind: Real estate and const.	0.111* (0.057)	0.230*** (0.065)	-0.106* (0.061)	0.153** (0.063)	0.017 (0.070)	-0.242*** (0.071)
Constant cut1	-1.113*** (0.013)	-1.652*** (0.015)	-0.765*** (0.013)	-0.270*** (0.013)	0.886*** (0.014)	1.016*** (0.015)
Constant cut2	-0.382*** (0.013)	-1.300*** (0.014)	-0.032** (0.013)	0.768*** (0.013)	1.328*** (0.015)	1.488*** (0.015)
Constant cut3	0.456*** (0.013)	-0.373*** (0.013)	0.867*** (0.013)	1.779*** (0.014)	2.187*** (0.016)	2.268*** (0.016)
Constant cut4	1.996*** (0.014)	1.189*** (0.014)	2.172*** (0.015)	3.191*** (0.017)	3.064*** (0.018)	3.537*** (0.019)
Observations	102,077	102,796	99,663	102,668	102,121	102,693

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: WBES 2016.

Note: Base cases for regressions size = small; industry = wholesale and retail trade; region = greater Cairo. Regional controls included, but not shown.

Table OA.3. Statistics from OLX Egypt Job Postings, January 1 through March 31, 2018

	Number	Mean			Percent of Ads						
	Ads	Days Posted	Views	Compensa-tion	Has Valid Compensa-tion	listed email	listed phone	Bachelor Degree Required	Full-Time	Experience: Managerial	Experience: Entry Level
Accounting	4,950	43	722	6481	25	57	58	64	57	36	29
Architecture - Engineering	3,607	44	676	330	4	60	57	70	58	46	21
Art - Design	2,738	43	525	300	2	54	56	55	45	43	20
Business Development	472	42	638	513	3	58	64	44	40	35	23
Construction	3,475	44	465	296	10	60	71	27	33	50	13
Consulting	1,042	47	611	857	9	54	63	71	37	31	39
Education	5,089	50	532	434	9	57	67	61	29	41	19
Executive	3,710	41	613	281	2	59	60	46	54	41	21
HR - Recruiting	2,304	36	580	307	1	55	61	27	44	23	30
Hospitality	20,788	40	343	295	1	54	66	10	47	16	38
IT - Telecom	5,568	39	492	377	1	65	68	61	52	25	27
Marketing - PR	13,037	41	408	445	3	58	68	41	37	24	36
Medical - Health	5,036	45	529	361	5	54	66	58	37	38	32
Other	101,761	38	340	423	2	54	62	9	42	9	45
Retail	7,779	40	719	679	3	47	65	20	42	16	41
Sales	12,778	45	495	326	2	56	66	50	57	26	40
Secretarial	11,269	33	888	605	4	51	62	35	36	24	27
TOTAL	205,403										

Source: Source: Downloaded daily from OLX.com/eg: January 1, 2018-March 31, 2018

Note: Eliminates ads for job seekers and only focuses on employer ads. Compensation is the average for job postings where this data is available. However, a large majority of ads do not post data on compensation. Job ads are distinct with data from last job ad kept even though we have multiple entries in the dataset. Average views does not take into account time length that job ad is posted and should be altered for future work.

Table OA.4. Statistics from Wuzzuf Job Advertisements, January 1 through March 31, 2018

	Number		Mean		Share of ads (%)				
	Ads	Vacancies	Applicants	Job requirements	Fulltime	Bachelors required	Female only	Male only	English required
ALL	17,682	28,959	74.3	6.9	0.95	0.44	0.06	0.09	0.70
Repair services	732	1151	73.7	6.8	0.95	0.46	0.06	0.09	0.70
Tourism	225	365	76.0	6.9	0.96	0.39	0.04	0.07	0.70
Health	561	924	79.3	7.0	0.95	0.44	0.06	0.07	0.67
Engineering	6,262	1,0349	73.9	6.9	0.96	0.44	0.07	0.09	0.70
Customer service/support	2,556	4,192	73.8	6.9	0.95	0.44	0.06	0.08	0.68
Hospitality/ hotels/food services	89	147	71.3	6.7	0.93	0.46	0.06	0.12	0.69
Education/ teaching	600	996	70.8	6.8	0.95	0.45	0.06	0.07	0.70
Managerial	892	1,462	74.1	7.1	0.97	0.45	0.06	0.09	0.68
Sales/retail	3,987	6,582	75.7	6.9	0.94	0.43	0.07	0.09	0.69
Other	1,665	2,721	72.1	6.9	0.96	0.43	0.07	0.08	0.70
Professional services	6,814	,	74.9	7.0	0.95	0.45	0.06	0.09	0.70

Source: Chun (2018).

Note: Some ads are listed in multiple categories and receive double counting. Number of requirements is simply a count of the desired skills and competencies that are listed in the requirements section of the job advertisement.

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ENDNOTES

1 A new VAT system was adopted in 2016 to replace the GST.

2 The most recent budget data available for analysis is from 2014-15 fiscal year when the economic reform program had just been introduced.

3 *Prefiscal* here refers to the income (or consumption) that households enjoy in the absence of any intervention of the government: that is, a simulated income where no taxes are paid and no benefits (cash or inkind) are received by the household. *Postfiscal* describes a situation where all taxes are deducted from household's incomes and public transfers are monetized and added to the household as income.

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

5 While the Household Income, Expenditure, and Consumption Survey (HIECS) allows for a clear identification of expenditures on subsidized items, attendance to public schools, and participation on the tamween program, it does not identify beneficiaries from the Takaful program. To simulate the incidence of this program, we apply the following approach: (i) we use the geographical distribution of beneficiaries of Takaful in 2015 by governorate; (ii) we use the elements that Ministry of Social Solidarity (MoSS) observed for the eligibility criteria (beneficiary form) and map it to the HIECS 2015 data; and (iii) we rank households by the inverse of their estimated consumption levels (that is, the likelihood of being identified as beneficiaries) and assign households as beneficiaries until the official number of beneficiaries in the governorate is met. Benefits are assigned based on the household structure and following Egyptian pound transfers as stated by program documentation.

6 The last poverty assessment was published in 2010, with some updated analysis of poverty conducted as part of the Egypt Systematic Country Diagnostic.

7 A new round of the HIECS was launched in October 2017 and is still in the data-collection phase.

8 The calculated poverty line used here was based on recognized current good practices, as well. The microdata made available to the team did not include a poverty status indicator.

9 The microdata for HIECS 2015 were made available in response to specific requests of the team through a Technical Assistance and Capacity Building work program and thanks to CAPMAS's work in recent years to make its data accessible to selected researchers. One of CAPMAS's most notable efforts is the partnership between it and the Economic Research Forum (ERF), although ERF has only been able to put a harmonized version of a 50 percent sample of the HIECS rounds online (sometimes excluding sections of the questionnaire or presenting data at the aggregate level and not per item). In another effort, CAPMAS has developed its microdata catalog site, but the dissemination strategy seems to be limited for non-Arabic users and is also limited to a 50 percent sample for the most recent survey rounds. CAPMAS should do more to move its open data agenda forward. The richness of the information collected in the HIECS can make the most impact and help the policy dialogue when it is shared with a larger community of researchers, academics, and development partners.

10 See Lara Ibarra (2018) for the methodology used to obtain these estimates. On average, the poverty line is equivalent to LE 5,750 per person per year (in 2015 prices). Region-specific consumer price indexes are used to temporally adjust the information from earlier rounds and compare them to the poverty line. In contrast to our findings, official poverty measures suggest a slight increase in poverty in recent years. Official measures are based on a *relative* poverty line, whose real value is updated every survey year. That approach reflects a good snapshot of the current levels of deprivation but severely limits the comparison of poverty over time (as the threshold that defines the minimum acceptable consumption is changed).

11 The severity of poverty (poverty gap squared) remained at 1.8 percent in the period.

12 The increase in educational attainment need not be perfectly correlated with quality of actual learning. Unfortunately, some evidence suggests that there is a gap between the schooling and learning in Egypt. Egypt participated in the 2007 and 2015 Trends in International Mathematics and Science Study. In 2007 Egypt ranked 38 out of 48 countries, while in 2015 it ranked 33 out of 37 (in the eighth grade mathematics achievement test). Using the 2015 data, the World Bank (2018) found that among people ages 25 to 29, the average years of schooling was 10, but after adjusting for quality, learning was only equivalent to 6.4 years of education. Global rankings such as the quality of primary education from the Global Competitiveness Index placed Egypt in the bottom of the distribution in 2014–15. Finally, a United Nations report (UNDP and MPMAR 2015) suggested that about a third of students in preparatory stage could not read and write.

13 Krishnan et al. (2016) show that location is also an important predictor of lower educational attainment among Egyptian children, as measured by completion of primary school on time.

14 These rates follow in spirit the intergenerational poverty rate and the poverty-to-privilege rate described in Narayan et al. (2018).

15 Krishnan et al. (2016) also present evidence of the nexus of inequality in education and inequality in the labor market. In Egypt, the inequality-adjusted coverage of labor market opportunities show parents' education and the individuals' education (itself a function of the former) as strong explanatory variables in the disparities of access to good jobs.

16 The poverty rates presented here are based on the household-level poverty status. Strictly speaking, this rate represents the percentage of women (or girls or boys) that are living in households considered to be poor. Due to inequality of intrahousehold allocation of consumption, individual poverty need not be the same as household-level poverty. See World Bank (2012) for a review of the literature on intra-household inequalities in resource allocations. A recent study in Sub-Saharan Africa (Brown et al. 2017) shows the disparities in nutritional status within households.

17 Here we use income and consumption interchangeably. Strictly speaking, the percentages need not correspond, as income and consumption are imperfectly correlated.

18 The bottom three deciles are the bottom 30 percent of the consumption-per-capita distribution.

19 The proportion is similar among the poor, vulnerable, and those above the middle class.

20 In the overall small firm universe, agriculture (35 percent) and wholesale and retail (30 percent) are the largest sectors, followed by transport (9 percent) and manufacturing (8.8 percent). Interestingly, among the small firms owned by poor individuals, 46 percent work in agriculture and 26 percent in wholesale/retail.

21 Formal workers include those who work in permanent jobs, inside an established firm, and they participate in social insurance.

22 Preliminary figures.

23 VAT has one standard rate of 13 percent for all goods and services (up from 10 percent in GST) and exempted 57 goods, including baby milk and food, bread, tea, coffee, dairy, education, health, and electricity, among others. The VAT was raised to 14 percent the fiscal year after the adoption of the VAT system.

24 The simulations provide only a partial view of the effects of the reforms studied. The analyses are carried out by looking into the price effects exclusively. Thus, the results are based on the increase in expenditure that would be needed for households to consume the same basket after prices of goods increases (due to a lower subsidy). Results reflect the short term and should be interpreted as upper bounds, as they do not integrate behavioral responses from households that would allow them to mitigate the shocks faced (such as decrease in consumption, shifts away from consuming relatively more expensive goods, or labor supply responses). See also World bank (2017).

25 The VAT system was estimated to be more progressive than the GST system, placing a larger burden on households in the top of the distribution.

26 The CGE's estimated short-term effects reflect the period 2014 to 2017. The CGE model did not have the level of granularity needed to simulate the VAT reform.

27 Other changes to the food subsidy program aimed at improving it included changes to its administration, the introduction of income ceilings (to improve targeting), and the removal of about 10 million noneligible beneficiaries (improving its inclusion rate).

28 Takaful ("Dignity") and Karama ("Solidarity") were launched in 2015 as a pilot and aimed to protect the most vulnerable households in Egypt. Takaful targeted families below the poverty line and provided a basic payment of 325 EGP montly. Additional payments of 60, 80 and 100 EGP were made for each child in primary, preparatory and secondary stage, respectively. In turn, Karama provided transfers for elderly, disabled and orphans. The transfer, made at the household level, was equivalent to 350 EGP per month per beneficiary individual within th family up to a maximum of 1050 EGP (or 3 beneficiary members).

29 Egypt Today "Egypt's poverty line to increase to LE 800 monthly per person" [https://www.egypttoday.com/Article/3/13326/Egypt-s-poverty-line-to-increase-to-LE-800-monthly accessed May 25th, 2018]

30 World Bank (2017).

31 Estimates based on Egypt's LFS 2016 out-of-labor-force are those that are not enrolled in school and not searching for a job. Chun (2018) uses predictions from Mincerian wage regressions to simulate that total wages could rise from LE 18.5 billion to at least LE 66 billion if it were possible for the entire working-age population (54.5 million) to be sufficiently educated and for everyone to be employed in a quality formal sector job that matches their skill set based on the average wages of workers.

32 This estimate is based on the size of the 10-14-year-old age group counted during the 2017 Population Census. There were about 9 million children in this age Using this figure, the additions to the labor force over the next five years are calculated assuming a 75 percent labor force participation rate for males and 25 percent labor force participation rate for females.

33 The latest World Bank report on women's economic empowerment reviews this research.

34 See, for example, Blau and Winkler 2017.

35 El-Enbaby et al. (2016) show that agriculture value added as a share of regional GDP is higher in Lower Egypt than in Upper Egypt.

36 There are 247 legislative articles that formalize employee rights upon entering into a contract with an employer. In January 2014, minimum wage was raised to LE 1,200 from LE 700.

37 Informality is defined as workers who do not have a formal contract and are not employers.

38 Covering Albania, Armenia, Azerbaijan, Bolivia, Bosnia and Herzegovina, Colombia, Georgia, Ghana, Kenya, Kosovo, Lao PDR, Macedonia, Serbia, Sri Lanka, Ukraine, Vietnam, and the Yunnan Province in China. See Pierre et al. (2014).

39 With the educational mobility described earlier in the report this share of people ages 15–29 with no primary education is likely to drop further.

40 Table 4 in Chun (2018) provides a more detailed outline of this mapping. The primary mapping is compared to various alternative mappings and the returns to education within each two-digit occupation code. It is shown that the primary mapping provides a reasonable minimum standard on the level of quality education that is needed to be productive in an occupation in a modern economy focused on skills. It is observed that the mapping is similar to educational requirements reported in World Bank's STEP skills surveys for six Asian economies and is below the level of education reported as required for occupations in the United States. Ideally, comparison would be based on countries in the Middle East. However, data availability on countries in the Middle East and North Africa plus time constraints resulted in opting to use these countries as a comparison instead.

41 According to International Standard Classification of Occupations (ISCO) classification, keyboard clerks record, organize, store, and retrieve information and perform a range of clerical and administrative tasks according to established procedures.

42 The obstacles that the greatest share of firms cite as major-to-severe obstacles in the 2016 enterprise survey were political instability (80 percent), corruption (70 percent), and tax rates (48 percent). Labor regulations and an inadequate workforce are cited as problematic by only 20 percent of all firms.

43 See Chun (2018) for more details.

44 This data is based on aggregate data on job ad counts downloaded at the end of August 2017.

45 This assessment is made more difficult in that ideally we would have more recent employment data as certain industries such as tourism and hospitality could be more volatile and exposed to shocks in Egypt.

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