Targeting Industries to Drive Youth Employment

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The context

Over the 2006-2017 period, Egypt's average rate of unemployment was 11 percent, with a 24 percent unemployment among the youth (15-29). To mitigate unemployment (in total, and among the youth), a primary policy concern is how to promote industries with a high employment-generating potential. For this purpose, it remains key to identifying those industries, and to move beyond the national-level, to the regional/governorate-levels. The promotion of industries at the regional level comes against the backdrop of the regions' total employment, youth employment, the skill and gender features of employment, and youth unemployment.

The problem

Based on Egypt's 2016-2017 Input-Output Table issued by The Institute of National Planning, input-output analysis is used to compute employment and output multipliers for all industries (agricultural, extraction and mining, manufacturing, and services). The employment multiplier is obtained as a measure of how employment would directly and indirectly increase throughout the economy as a result of an increase in the final demand for industry 'j' by one unit. The output multiplier for industry j is computed as the sum over i of the ij^{th} elements of the total requirements matrix (Leontief inverse). It would measure how much of each industry's output is needed in direct and indirect requirements to produce one unit of industry j's output.

Upon identifying industries with an employment-and-output-generating-potential, these industries are nominated for further investment and growth. Spatial analysis, based on the Moran's index, is also evaluate whether total and youth employment are spatially dependent. Such dependence would imply that local employment effects carry over to "neighbouring" regions.With possible spatial dependence, the next step would be to define: *where* are the high-employment-multiplier industries are primarily located, and *where* also the upstream industries along their value chain are located? An answer to these questions may not only help promote further employment, and also strengthen vertical integration across regions.

Research results

Egypt geographically consists of the seven regions of *Greater Cairo, Alexandria, Delta, Northern Upper Egypt, Southern Upper Egypt, Asyout*, and Suez Canal, encompassing a total of twenty seven governorates. **Total employment** is clustered in the regions of *Greater Cairo, the Delta, Alexandria, Suez Canal,* and Northern Upper Egypt, in the respective order. Lower total employment is clustered in the regions of *Asyout* and *Southern Upper Egypt*. The aforementioned regions similarly dominate **youth employment**, as shown in Figure (1). And while the youth account for approximately 33 percent of total employment for all regions, exceeding their 28 percent average share in the population at large, there remains much room for a greater youth employment.

Figure 1: **Levels of total employment and youth employment in the governorates of Egypt, 2016–2017**
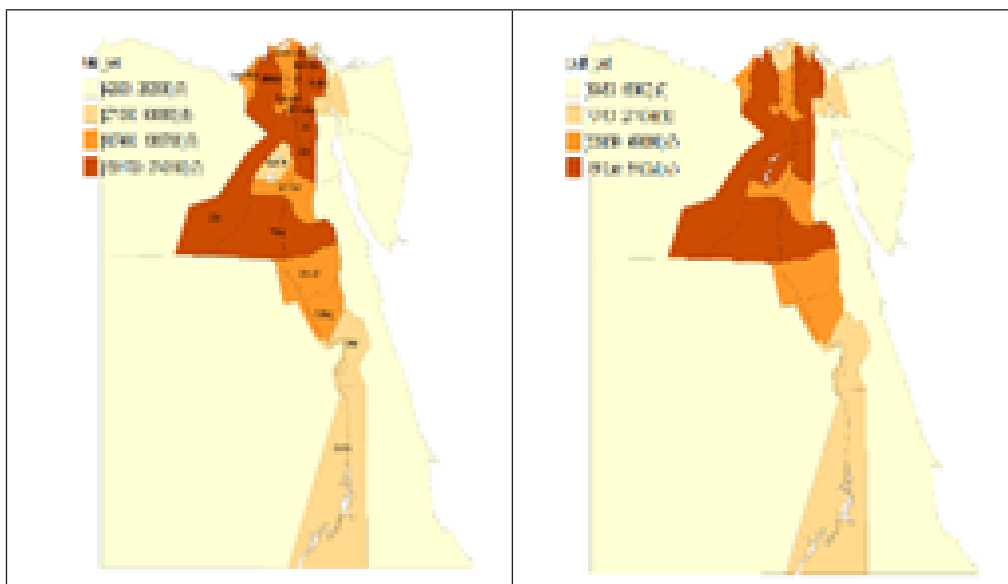
Source: Author's computations and representation.

Another key characteristic of employment is the ***skill level occupations across governorates***. Skill level occupations per the International Standard Classification of Occupations 2008 range from Levels 4 to 1 (high- to low-skill level occupations, respectively). Because skill level occupation data are available for the ***total employed***, but not for the ***youth employed***, the first was used as proxy for the second. Similarly, individual governorates of Egypt vary widely in the share of the different ***skill level occupations in total employment and in youth employment***. On average for all governorates, almost 62 percent of youth employment owes to craft and related trades workers (Level 2); professionals (Level 4); skilled agricultural forestry and fishery workers (Level 2); plant and machine operators, and assemblers (Level 2), in the respective order. Of the 62 percent, 46 percent owe to Level 2 (namely: craft and related trades; skilled agricultural forestry and fishery; plant and machine operators, and assemblers) (Source: Author's computations based on data from the Annual Bulletin of the Labour Force Survey 2017). The bulk of total and youth employment thus tends towards lower skills, indicating that supply-side labour skills may be constraining greater employment.

With respect to unemployment, the highest share of ***youth unemployment*** in Egypt owes to the region of *Alexandria, Delta, Greater Cairo, Northern Upper Egypt, Asyout, Southern Upper Egypt,* in the respective order. As for ***gender***, data on youth unemployment by gender by governorate are not available so as to provide the

detailed governorate facts. However, the **unemployed females** relative to the females in the 15-29 age bracket of the labour force nation-wide account for 36.5 percent, while unemployed males relative to males in the same age bracket account for 20 percent (*Source:* Author's computation based on data of the CAPMAS Statistical Yearbook 2017). By analogy, *there would be twice as many unemployed youth females as unemployed youth males at the governorate level*.

With *,#, C denoting those industries also having a high output multiplier value of 1.70 or more, a high female employment intensity of 10 percent or more, and a high competitiveness with a revealed competitiveness advantage of 1 or more, the targeted **high manufacturing industries employment multipliers** (ranging from 4.30 to 1.90 in value) are found to be: Food products*#C; Basic metals*C; Motor vehicles and other transport equipment*C; Paper products*C: Non-metallic mineral products*C; Beverages*C; Wearing apparel*#C; Coke and refined petroleum productsC. For *primary industries*, agricultureC, extraction of crude petroleum, and mining of metal oresC have employment multiplier values of 1.45, 1.43, and 1.37, respectively. Leading *service industries* employment multipliers range from 2.66 to 1.44 in value: Real estate; Hotels and restaurants; Administrative & support services; Communication; and Construction (Source: author's computations based on input-output analysis, and data of the CAPMAS Statistical Yearbook 2017, and RCA calculated from Egypt data for the year 2017 (with concordance of SITC rev. 3 with ISIC rev. 4) as available at: https://unctadstat.unctad.org/en/RcaRadar.html).

Total and youth employment are found to have a positive **spatial dependence**, with values of the Moran's indices of 0.30 and 0.28, respectively (Source: Author's computations). Employment carry over is therefore expected, which further underscores the importance of **location**. The high multiplier industries and the upstream industries along their value chains are found to be **located** in neighbouring governorates, or in geographically close ones, with prospects for greater vertical integration across regions. To cite Food products as an example: this high employment multiplier industry is mainly located in Greater Cairo, Alexandria, and Suez Canal regions. Its main upstream industries (and locations) are: Crop and Animal production (Delta, and Suez Canal); Food products (in same locations); Coke and refined petroleum (Alexandria, Asyout, Greater Cairo and Suez Canal); Machinery and equipment (Greater Cairo, and Delta). Thereby, by example to all other employment multiplier industries, Food Products has much potential for greater vertical integration across regions.

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Implications/ recommendations / policy options

In recognition of the spatial dependence of total and youth employment, and of the high multiplier industries and the upstream industries being located in neighbouring governorates, the targeting of the industries nominated in this study may deepen vertical integration and strengthen domestic supply chains. The nominated industries are also those which have been identified as candidates for deeper vertical integration under Egypt's "Strategy for Industrial Development, 2016-2020": **Food Products; Textiles; Chemicals and chemical products and pharmaceuticals; Electrical equipment; Computer and electronic and optical products; Wearing apparel; Crop and Animal production; Basic metals; Motor vehicles and other transport equipment** (Source: Ministry of Industry and Trade, Egypt, and arranged by author per industry competitiveness). Thereby, deeper vertical integration of these industries is expected to sponsor their integration in global value chains especially that only *Textiles and Wearing apparel, Crop and animal production* (fresh and processed fruits and vegetables), and *Motor vehicles and other transport equipment* have successfully integrated global value chains, *to date*. Policy makers would be well-advised to target the following industries for greater global value chains integration: *Food Products, Chemicals and chemical products and pharmaceuticals, Electrical equipment, Computer and electronic and optical products, and Basic metals.*

New investments and/or capital expansion of the following industries may be guided by their potential youth unemployment mitigation, especially in the regions with the *highest* youth unemployment in Egypt: Crop and animal production in (*Alexandria, Delta*); Mining of metal ores (*Alexandria*); Extraction of crude petroleum (*Greater Cairo*); Food products (*Alexandria*); Basic metals (Alexandria); Paper products (*Alexandria, Greater Cairo*); Wearing apparel (*Alexandria, Greater Cairo*); Textiles (*Alexandria*); Coke and refined petroleum (*Alexandria, Asyout, Greater Cairo*); Chemicals and chemical products and pharmaceuticals (*Alexandria, Greater Cairo*); Rubber and plastics (*Alexandria, Northern Upper Egypt, Greater Cairo*); Fabricated metal products (*Alexandria, Greater Cairo*); Nonmetallic mineral products (*Northern Upper Egypt, Greater Cairo*); Electrical equipment (*Northern Upper Egypt, Greater Cairo*); Motor Vehicles (*Greater Cairo*); Beverages (*Greater Cairo*); Computers and electronic and optical (*Greater Cairo*); Machinery and equipment (*Greater Cairo*).

Given the potential for the identified industries to mitigate youth unemployment, and for spatial-dependence-associated youth employment spillovers, it would of high policy relevance that these findings are linked with Egypt's investment map (See Egypt General Authority for Investment and Free Zones). It is also of policy relevance that the results reached be linked with the "Youth Employment Inventory (YEI):

Egypt" of the International Labour Organization (ILO) which includes interventions ranging from "skills training" (counseling and job search skills) to "entrepreneurship promotion" (providing financial, technical, and training assistance) to "employment services" to "subsidized employment" (wage subsidies and public works). The inventory also complements information about the geographical coverage, scale and targeting characteristics of each intervention by information about their design, costs, implementation mechanisms. The database of interventions is periodically updated, and may thus be linked to the present research outcomes.

References

D'Hernoncourt, J., Cordier, M., and Hadley, D. (2011). Input-output multipliers – Specification sheet and supporting, Spicosa Project Report, Université Libre de Bruxelles – CEESE, Brussels. Available at: http://www.coastal-saf.eu/output-step/pdf/Specification%20 sheet%20I_O_final.pdf

Central Authority for Public Mobilization and Statistics (CAPMAS) Industrial Statistics Bulletin, (2015-2016 and 2016).

CAPMAS Statistical Yearbook. (2017).

CAPMAS, Annual Bulletin of the Labour Force Survey. (2017).

General Authority for Investment and Free Zones. Investment Map, Egypt. Available at: https://www.investinegypt.gov.eg/english/pages/industrial-investment-map.aspx

Institute of National Planning Input-Output Matrix by Economic Activity. (2016-2017).

International Labour Organization Youth Employment Inventory. (2014). Available at: https://www.ilo.org/employment/Whatwedo/Publications/WCMS_459550/lang--en/index.htm.

UNCTADStat, RCA Radar Egypt data for the year 2017, available at: https://unctadstat.unctad.org/en/RcaRadar.html).

Vega, S.H. & Elhorst, P. (2013). On spatial econometric models, spillover effects and W. Conference Paper presented at the 53rd Congress of the European Regional Science Association: "Regional Integration: Europe, the Mediterranean and the World Economy", 27-31 August 2013, Palermo, Italy. Available at: https://www.econstor.eu/bitstream/10419/123888/1/ERSA2013_00222.pdf.

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