

Asia Development Outlook 2018 How Technology Affects Jobs

Comments motivated by the employment challenge in Sub-Saharan Africa

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How technology affected jobs in Asia

- Comprehensive upbeat report about employment prospects under current technological change. Evidence-based
- Demand-side decomposition of employment gives net positive employment change from technology-induced changes in labor demand: job creation in nonroutine tasks exceeds job displacement by automation.
- Reasons for optimism:
 - Decomposition shows large share of employment changes related to growth in domestic demand (rather than trade that is slowing down)
 - Evidence that technology creates new occupations and entire new industries
 - Use of robots associated with reduction in routine employment share but increase in non-routine employment share
- Comparisons with other regions would be welcome
- Greater sector-focus as in Halward-Driemer-Nagyar 2017 WB report would help get a handle on the transferability of Asian conclusions elsewhere (LA, SSA?)

Aspects of success and transferability

- 1st. unbundling (cost of moving goods ↓) Goods produced «here» and consumed «there» but innovation local as cost of moving ideas is high. Asian Gang of 4 ELG via production becoming progressively more skill-intensive
- This globalisation phase established a middle class willing to pay taxes for the proivision of public goods (Birdsall (2015))
- 2nd. unbundling (cost of moving ideas ↓-- ICT 'revolution') Concentration of the ensuing great convergence to few countries (the I6 --China, Korea, India, Indonesia, Thailand, Poland). Control and coordination of production done «here» and actual production done «there». Unbundling via GVCs. Now quality of institutions matter for offshore implantation resulting in transfer of technological know-how. MNEs bet on preventing 'knowledge spillovers'.
- Globalisation under ICT revolution has been cohesive (wages up) in I6 group (and a few more) as opposed to being divisive in old HICs
- **3rd. Unbundling** (ongoing) when costs of moving labor \downarrow (labor input no longer in physical location. ADO 2018: sufficient complementarity of robots with non-routine jobs in Asia that prospects for employment positive in Asia.
- How relevant is this employment path for SSA's employment challenge?

Can SSA replicate Asia's Performance (1)?

SSA employment Challenge

- Mc Kinsey (2012): SSA to create 120 million jobs by 2020
- Pattern of employment across regions shows negligible and stagnant shares of VA and manufacturing jobs in SSA (<u>here</u>)

Both Poverty and industry falling

- Decadal Poverty profiles Head count (HC) ratios show that SSA was pulled by the I6-led 'super commodity boom' (<u>here</u>)
- Poverty Reduction and GDP Growth: decadal rates show low elasticity of poverty to growth in SSA(<u>here</u>)
- Early peaking of manufacturing and employment shares in SSA (<u>here</u>)

Can SSA replicate Asia's Performance (2)?

Current challenges: Labor is expensive

- On a comparative basis, labor is not cheap in SSA (<u>here</u>)
- PPP price level is high in SSA: Accounting for the Price Level enigma in SSA (<u>here</u>)

Future challenges: Large migratory pressures on the horizon

- Insignificant contribution to CO2-emissions relative to other regions (here)
- ...but large projected damages by 2050 putting (<u>here</u>)

Concluding remarks

- Complementarity of tasks (routine, non-routine cognitive) and imperfect substitution across categories of jobs
- Conditions of assortative matching in manufacturing i.e. (routine-low skill--SSA) and (high- skill cognitive--Asia) patterns emerge (Kremer O-Ring theory (1993)).

To participate in 3rd. Unbundling:

- Increase human-capital to attract MNEs.
- Policies to raise share of middle-class in population (\$10-50\$ p.d. for a family of 4) now <2% in SSA to develop institutions that will attract GVC-related FDI.

Figures

Changing Distribution of Manufacturing and employment Across regions

Changing distribution across countries*



Source: World Development Indicators database. Countries categorized by income level in 1994

*Source: Trouble in the Making: The Future of Manufacturing-led development (<u>back</u>) *Sources:* ILOSTAT database, International Labour Organization (ILO); Key Indicators of the Labour Market (KILM) database, ILO; Groningen Growth and Development Centre (GGDC) 10-sector database, University of Groningen, Netherlands. HIC categorized by income level in 1994.

Poverty Headcount Ratio by Region, 1981-2011



Note: Sample: 101 countries. Poverty headcount ratio at 1.25\$ per day (2005 PPP)

Source: Cadot et al. (2016)



Poverty Reduction (Δ HC) and GDP per capita Growth (regional averages per period)



GDP per capita growth: (1980-1991)

GDP per capita growth: (1991-2011)

Note: Poverty line at 1.25\$ per day (PPP). Sample of 101 countries (43 SSA). HC= head count. Source: Cadot et al. (2016).



Prospects for labor-intensive industrialization appear bleak



High labor costs in Sub-Saharan Africa seem to explain the lack of employment creation by the manufacturing sector



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SSA Price level enigma

Price Levels vs GDP/head (economies with full data) Quadratic log-log estimate



Note: Income differences account for (2/3) [30%] of deviations (full sample) [SSA sample].... SSA is outlier Other controls reduce gap by half to 15%...

Source: Gelb and Diofasi (2016) fig. 1b. Sample of 168 countries

Contribution of Controls

 \Rightarrow Together, controls below reduce gap by half to 15%.

Geographic characteristics
 (Isolation, population density, size)

- Quality of institutions
- Subsidies to energy
- Oversampling of consumption basket of HICs (proxies by income inequality) reduces gap from 30% to 25%
- 10% increase in AID/GDP increases price level by 8%.
- Mismeasurement of GDP (60% Ghana and 89% for Nigeria)
- Low agricultural productivity raises price of food (25% of consumption basket—twice LA and Asia- Pacific).



CO2 emissions vs. Population shares

(regional averages)



- Bubbles proportional to total CO2 emissions (cement and fossil fuels).
- Regions below the 45 line have below-average per capita emissions.
- If converging CO2 emissions per capita, effort from North America, Europe and East Asia

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Projected (2050) damages by region (no migration)



Damages measured as percentage of days with temperature outside 90th. Percentile of distribution of projected temperatures

Strongest damages in SSA and SA (damage shares above 45⁰ line)
 ⇒ If adaptation to climate change fails, strong migratory pressures from SA, SSA, EA
 ⇒ In absence of large redistribution of population across regions, climate-change related conflicts on the horizon. More details <u>here</u>

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