

*2021 African Caucus: DIGITALIZATION FOR INCLUSIVE
RECOVERY AND SUSTAINABLE GROWTH*

JOBS AND ECONOMIC TRANSFORMATION (JET):

*Digital technologies as enabler for better jobs
for more people*



Office of the Chief Economist, Africa Region, The World Bank

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Bujumbura, Burundi, August 5, 2021

5 MAIN MESSAGES

1. Africa's jobs-related challenges are huge but can also be opportunities

By 2100, Africa is projected to be the continent with the largest workforce; Over 22 mn youth entering labor market each year, but young, flexible and tech-savvy entrepreneurs and workers; Africa's food import bill is around \$40bn per year.

2. Economic Transformation (Structural Change) has been very slow in Africa and is impeded by a low productivity subsistence agriculture: Need for a big shake-up!

3. **Success in tackling the JET challenges requires a systemic thinking, a whole of a government approach.** Our framework proposes building blocs for a comprehensive approach to JET: *ET = pathways to inclusive productivity growth, driven by technological, sectoral & spatial transformations; "Inclusive" means a focus on jobs-for-all growth, especially for low-income, low-skilled people*

4. **The digital revolution is more of an opportunity than a threat... Digital has the potential to catalyze million of jobs (direct and indirect) across sectors, more jobs than it can displace in Africa.** Covid-19 has accelerated the process.

5. **There's no sustainable way to jobs without complementary investment such as access to reliable and affordable electricity** (Critical for private sector development and for digitalization...)



The Future of Work in Africa

Harnessing the Potential of Digital Technologies for All

Edited by Jieun Choi, Mark A. Dutz, and Zainab Usman

Harvesting Prosperity



Technology and Productivity Growth in Agriculture

Keith Fuglie, Madhur Gautam, Aparajita Goyal, and William F. Maloney



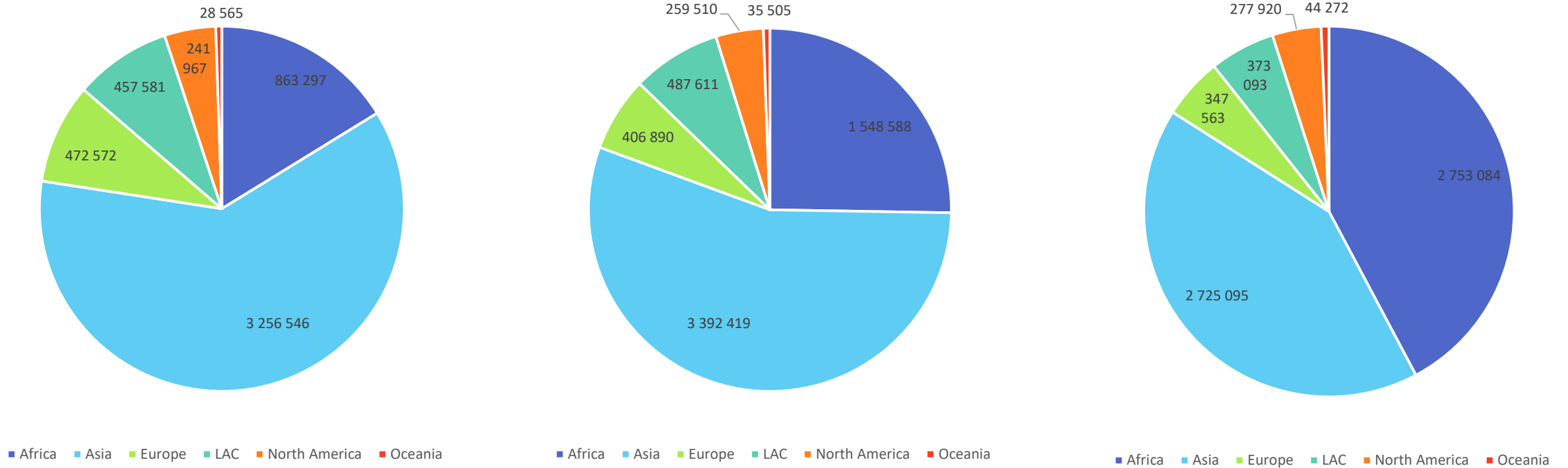
Electricity Access in Sub-Saharan Africa

Uptake, Reliability, and Complementary Factors for Economic Impact

Moussa P. Blimpo and Malcolm Cosgrove-Davies

AFRICA'S JOBS-RELATED CHALLENGES ARE HUGE... BUT THEY COULD BE SEEN AS OPPORTUNITY AS WELL

Global workforce projections (thousands): 2025, 2050 and 2100



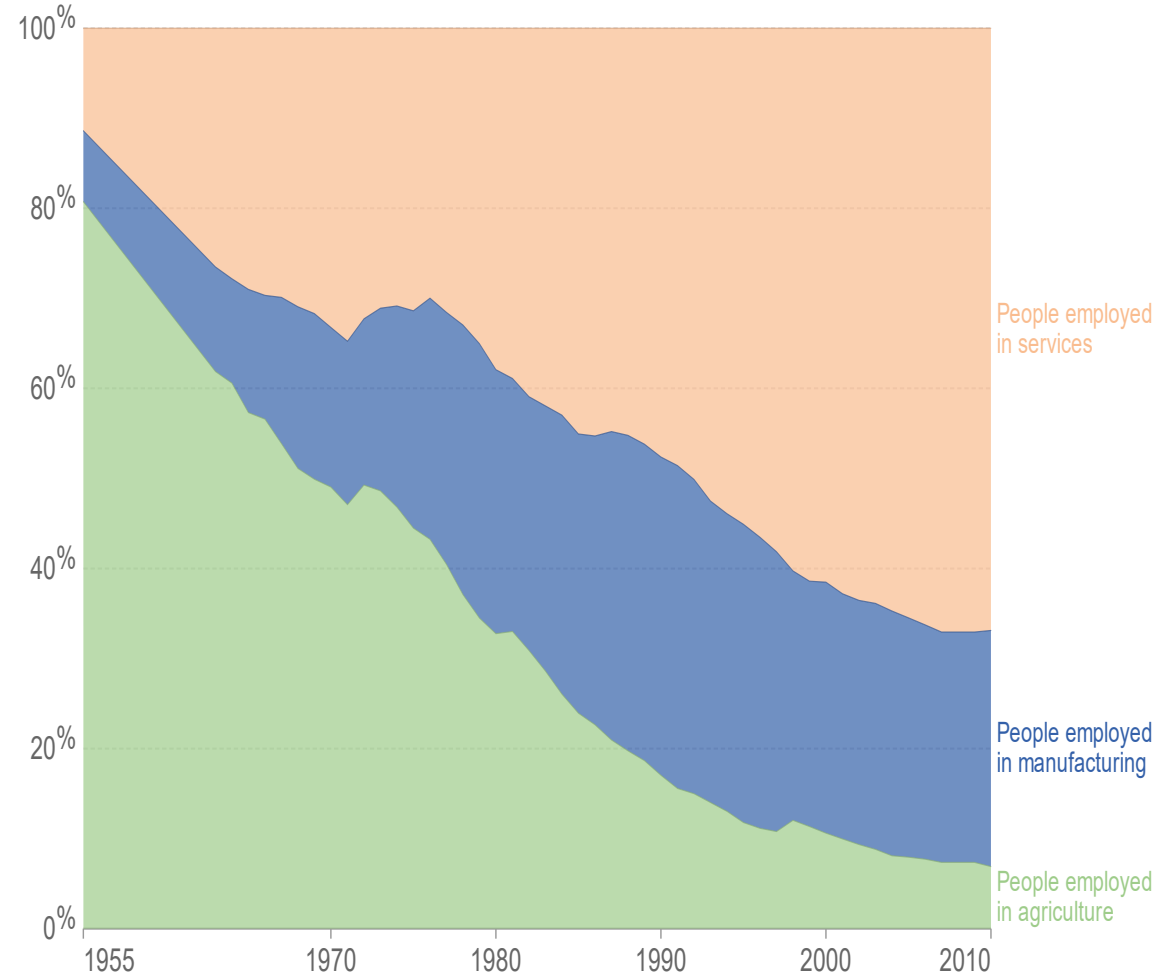
- Continental Africa’s workforce will more than triple between 2025 and 2100, from 860 mn to almost 2.8 bn, from 16% to over 42% of the global workforce – becoming the largest global share
- The increase is overwhelmingly led by Sub-Saharan Africa, whose workforce more than triples from 700 mn to more than 2.4 bn (Northern Africa increases from 165 to 310 mn)

Source: UN World Population Prospects 2019 (medium fertility variant projections); workforce is defined as the 15-64 age group.

Economic Transformation (Structural Change) has been very slow in Africa: South-Korea vs Sub-Saharan Africa

Employment by economic sector, South Korea, 1955 to 2010

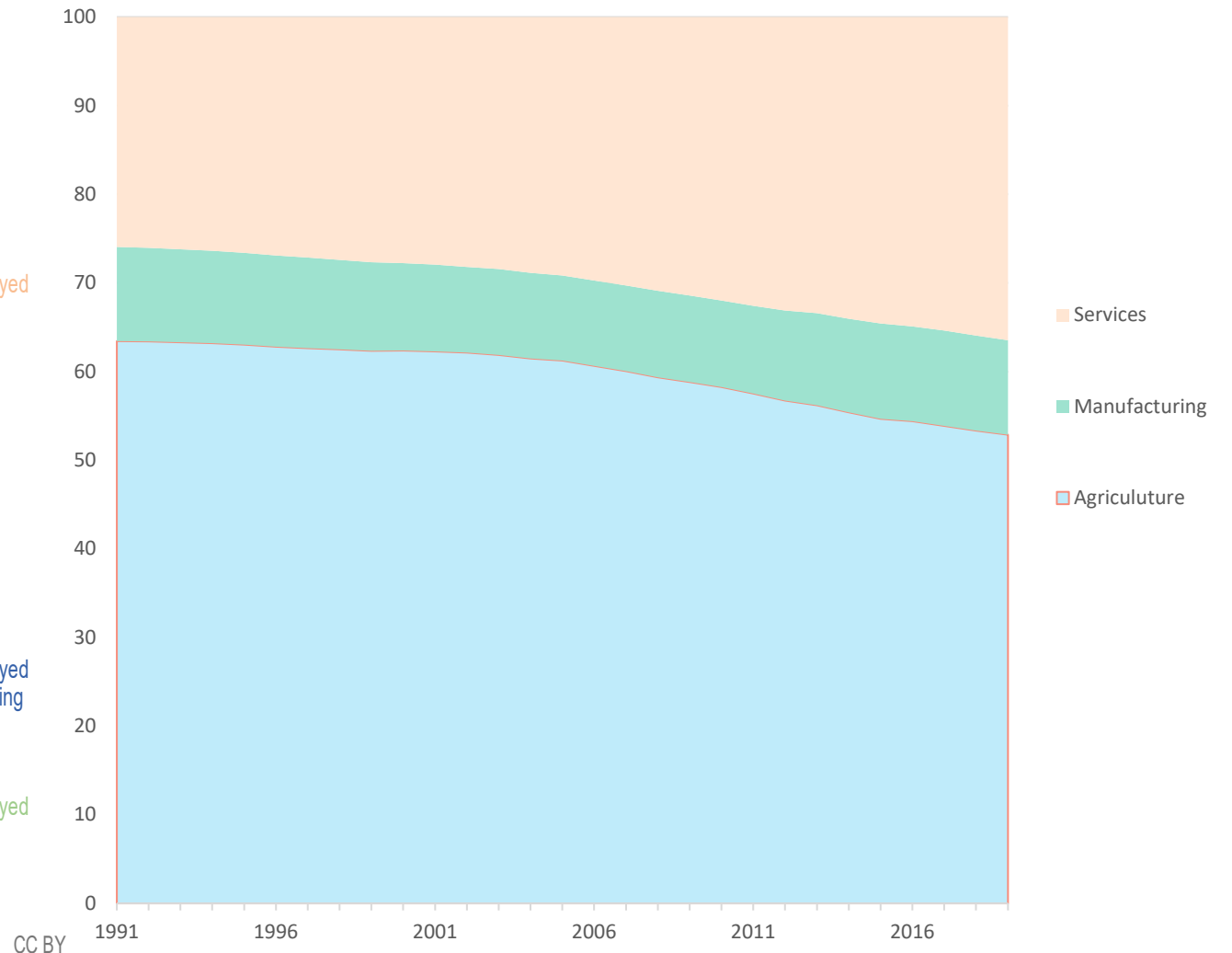
Number of people employed by economic sector.



Source: Our World In Data based on Herrendorf et al. (2014)



Employment by economic sector (%), sub-Saharan Africa, 1991 to 2019



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A FRAMEWORK for JET: 3 complementary transformations

supported by inclusive productivity growth-enabling skills, infrastructure & institutional reforms

More jobs with higher earnings for all

More production for exports and domestic consumption

INCLUSIVE PRODUCTIVITY GROWTH

Technological transformation
(digital & analog **innovations**,
both adoption & leapfrogging)

Sectoral transformation

(sector competitiveness driven by
market **contestability**), value
addition, GVCs, ex. Agro-
processing

Spatial transformation

(urban-rural & regional
integration **linkages**, logistics,
AfCFTA)

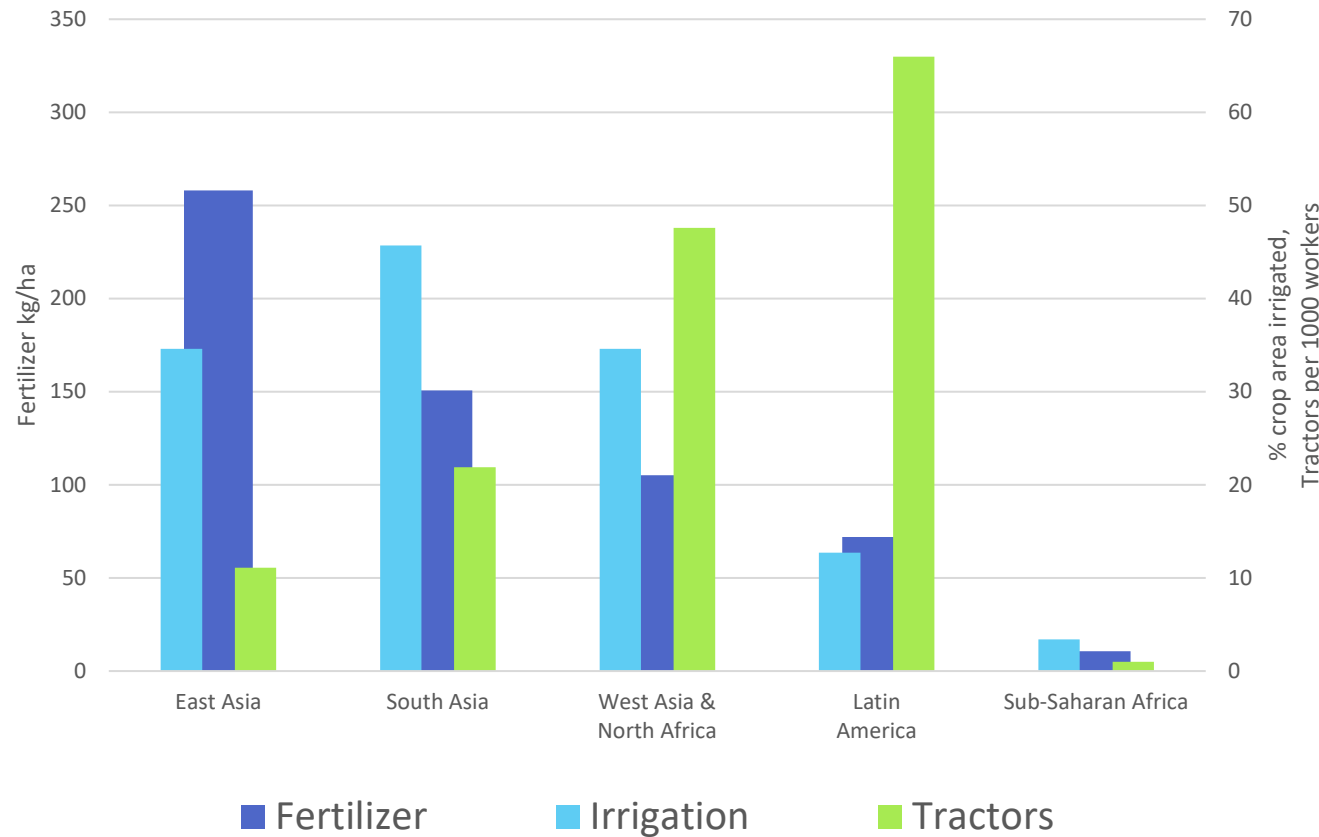
Investments in skills: education, on-the-job training

Investments in infrastructure: soft (finance) & hard (especially digital and power)

Reforms of institutions: macro stability; transparency & accountability for good governance

AFRICAN SECTORAL TRANSFORMATION IS IMPEDED BY ITS LOW PRODUCTIVITY SUBSISTENCE AGRICULTURE

Agricultural Input Use in 2015



Source: Fuglie, Gautam, Goyal and Maloney (2020), "Harvesting Prosperity: Technology and Productivity Growth in Agriculture," World Bank

Between 1960 and 2015, South Asia increased its number of tractors per 1000 farm workers 100 times from 0.2 to 22 and more than doubled the share of crop area equipped for irrigation from 19 to 47%,

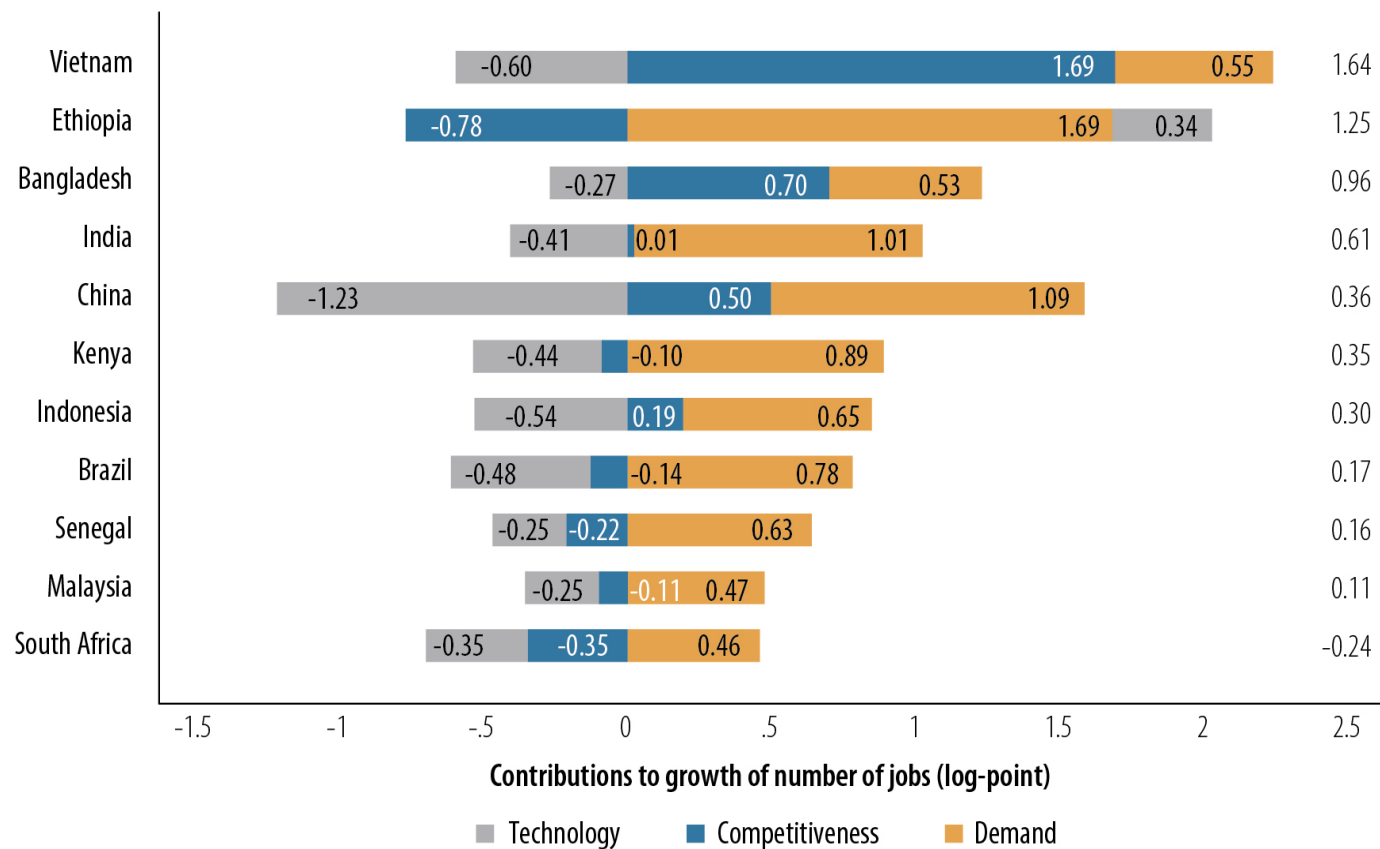
Sub-Saharan Africa increased from 0.7 to 1.0 tractors/1000 farm workers, and 2.4 to 3.5% of irrigable crop area.

Because of this situation, a worker in the Sahel is 5 times less productive than one in a non-SSA developing country, and 13 times less productive than a worker in an advanced country

Technology and innovation are what will increase productivity and the prospect of well-paying jobs on farms.

SECTORAL TRANSFORMATION: VALUE ADDITION AND PARTICIPATION IN GVC

GVC participation in manufacturing & jobs growth (2000-14):
Roles of technology, competitiveness and demand

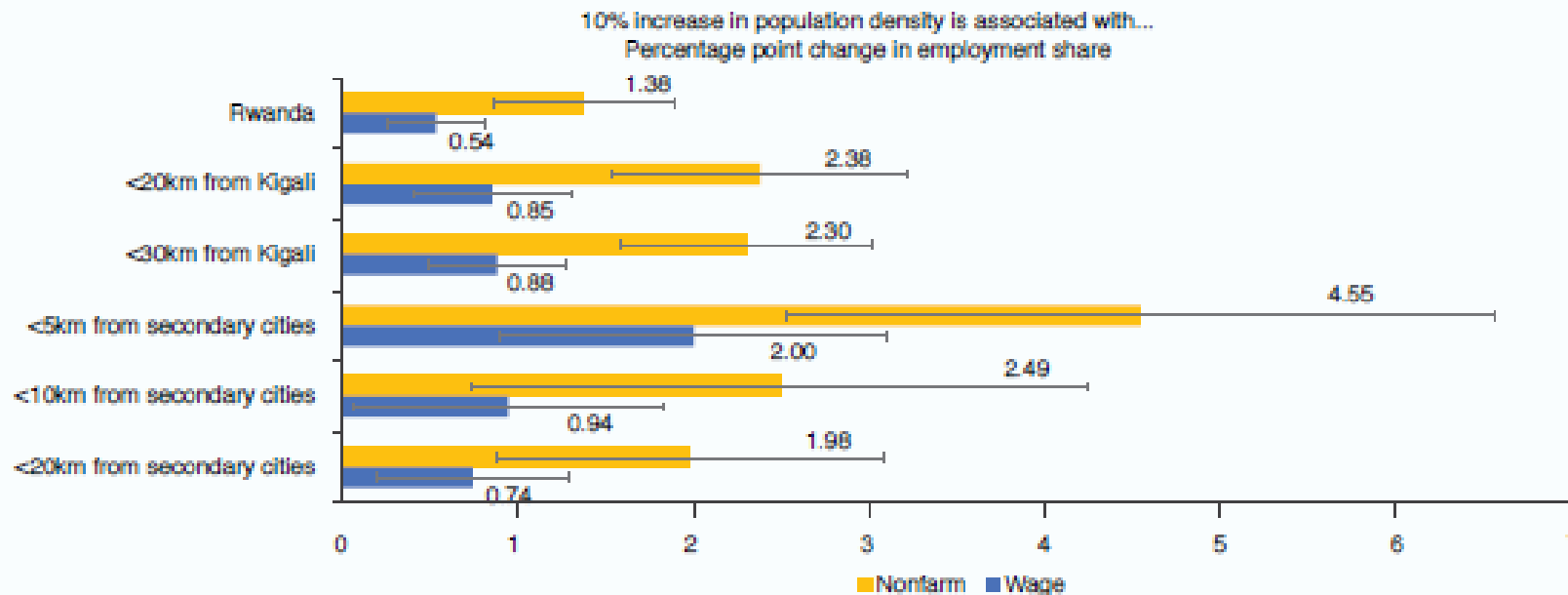
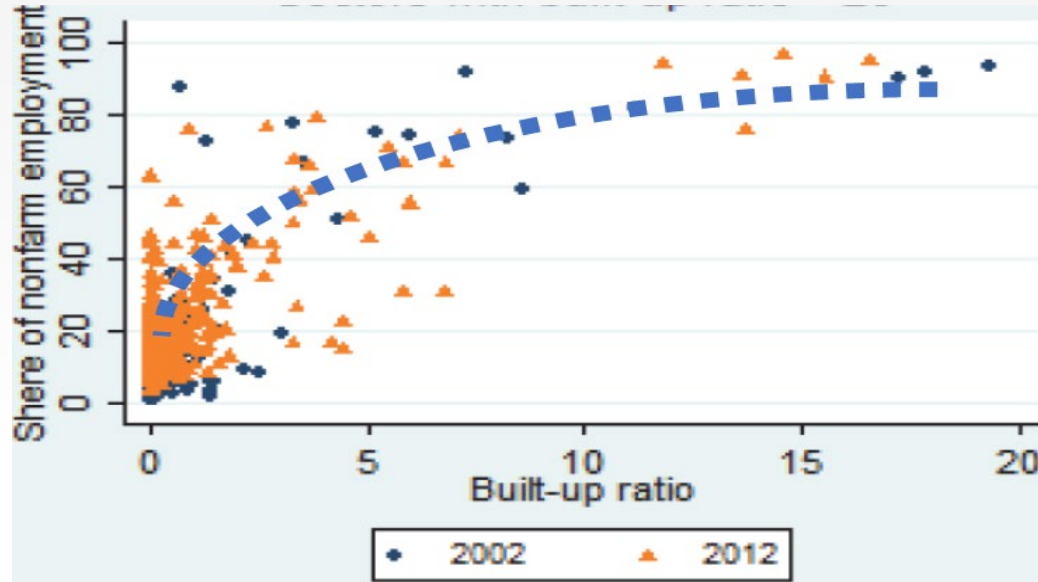


Source: World Bank (2020)

More & better jobs from:

- better **integration** between MSMEs and larger local firms and international supplier & buyer firms within GVCs
- better **linkages** between firms within cities, and between firms & consuming households
- Need **competitiveness support** to build capabilities within local value chains;
- reforms for greater market contestability (sectoral) and for more appropriate technology adoption in sectors with sufficient D (technological)

SPATIAL TRANSFORMATION



More & better jobs from:

- **urbanization:**

- more rapidly urbanizing areas (higher built-up ratios) between 2002 and 2012 have created a larger share of non-farm jobs

- **proximity to secondary cities and capital city:**

- non-farm employment & wage employment shares rise with increases in population density, increasing especially more in localities closer to secondary cities

Source: World Bank (2017), Rwanda Economic Update: Rethinking Urbanization in Rwanda: from Demographic

Transition to Economic Transformation

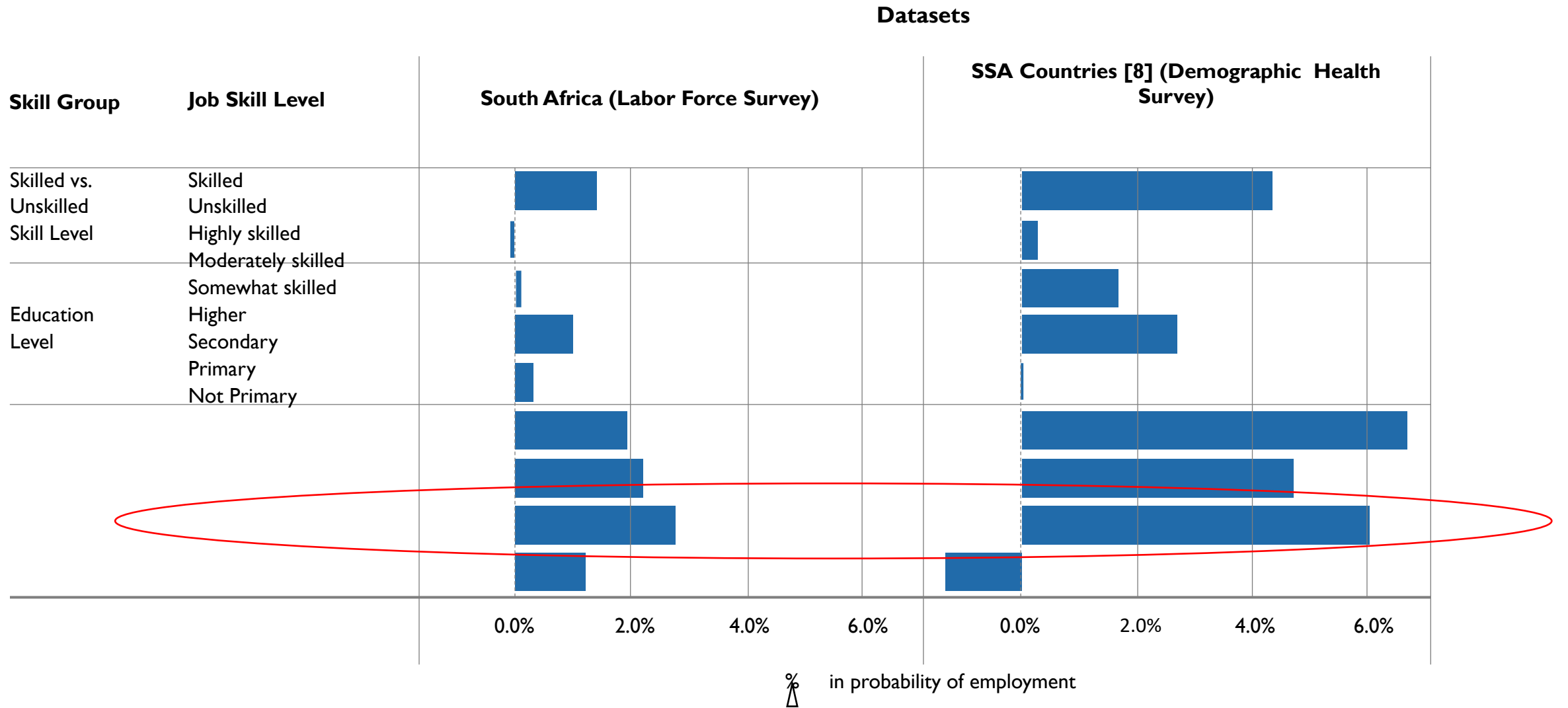
Digital has overtaken traditional sectors in advanced economies:

Largest US Companies by Market Cap, 1980-2020

	1980	1990	2000	2010	2020
1	Exxon	GM	GM	Walmart	Apple
2	GM	Ford	Walmart	Exxon Mobil	Microsoft
3	Mobil	Exxon	Exxon Mobil	Chevron	Alphabet (Google)
4	Ford	IBM	Ford	GE	Amazon
5	Texaco	GE	GE	Bank of America	Facebook
6	Chevron Texaco	Mobil	IBM	Conoco Philips	JP Morgan Chase
7	IBM	Altria Group	Citygroup	AT&T	VISA
8	GE	Chrysler	AT&T	Ford	J & J
9	Amoco	Dupont	Altria Group	JP Morgan	Walmart
10	ITT Industries	Texaco	Boeing	Hewlett-Packard Co	Proctor & Gamble

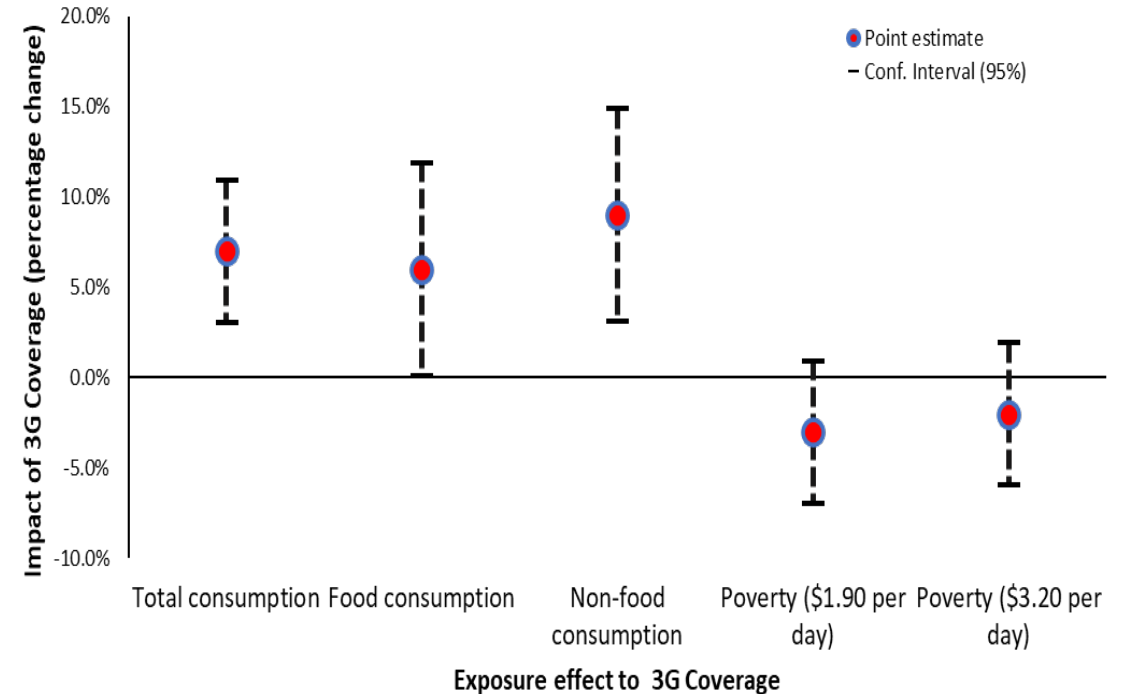
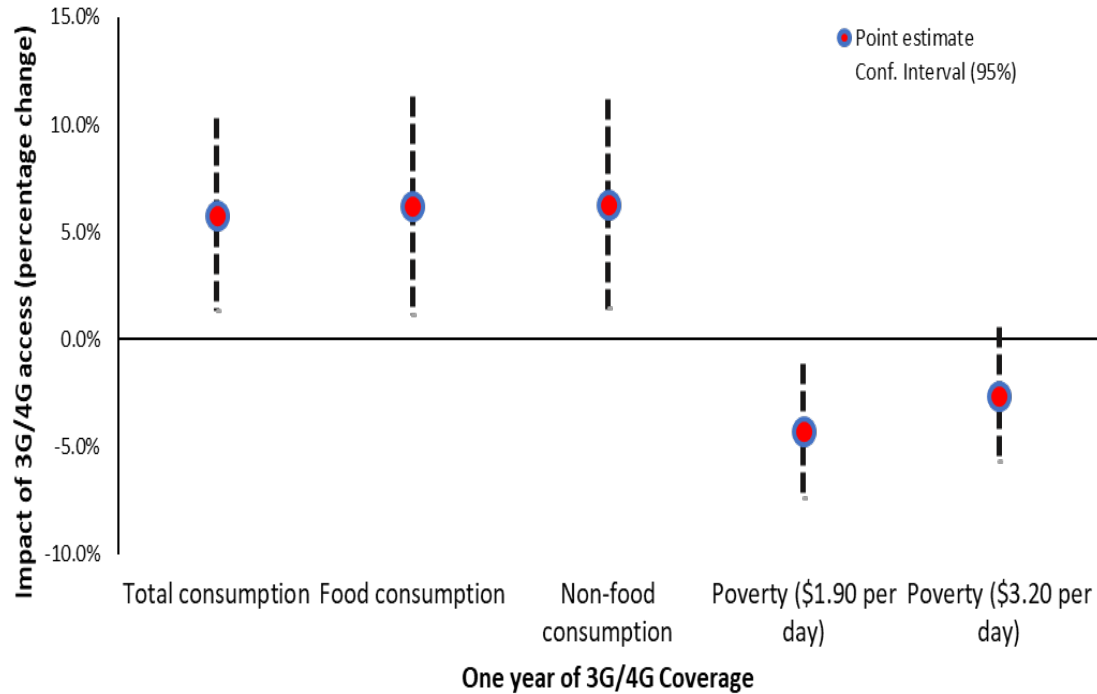
Source: Fortune database of 50 years of FORTUNE's list of America's largest corporations

DIGITAL TRANSFORMATION DRIVES JOB CREATION IN AFRICA: FASTER INTERNET IN AFRICA HAS INCREASED JOBS ACROSS EDUCATION LEVELS



Source: Hjort and Poulsen (2019), "The arrival of fast internet and employment in Africa", AER

CAUSAL EFFECTS OF THE GRADUAL DEPLOYMENT OF MOBILE BROADBAND THROUGH CELL TOWERS OVER 2010-16 PERIOD IN NIGERIA AND TANZANIA



Households in Nigeria with at least 1 year of mobile broadband coverage:

- increased consumption (total, food & non-food) by about 6%
 - reduced poverty by 4.3% (extreme) and 2.6% (moderate)
- ...importantly due to increases in labor force participation

Households in Tanzania following 3G mobile broadband coverage:

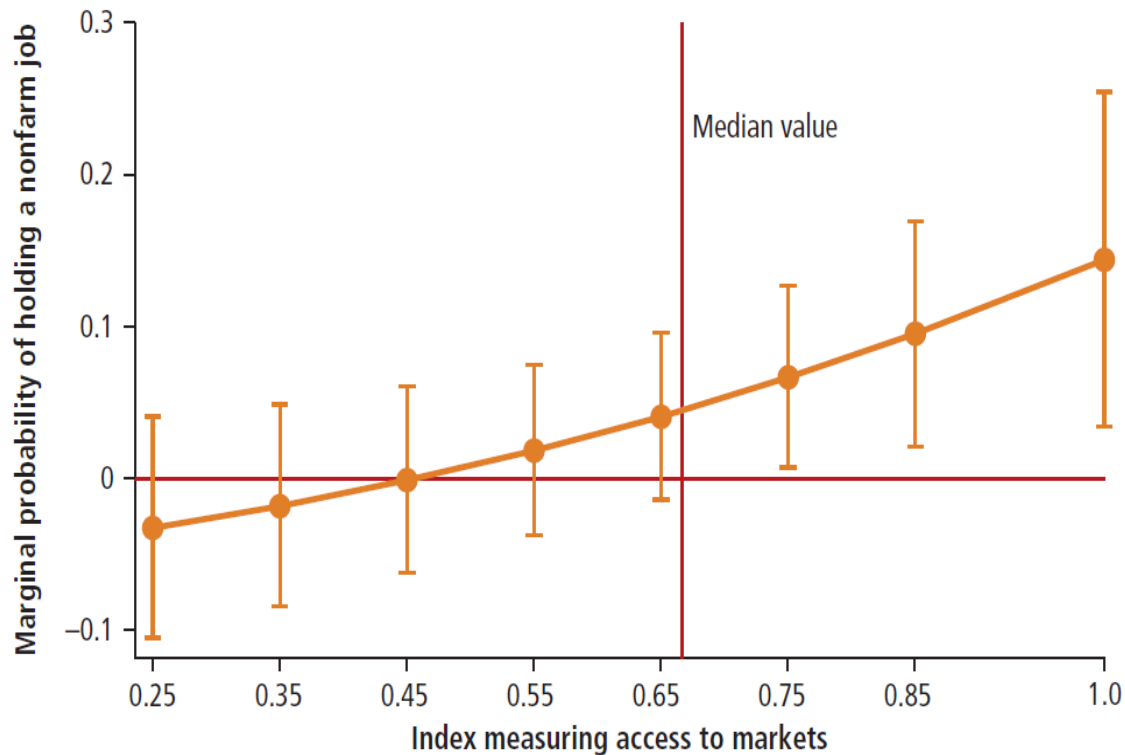
- increased consumption by 7% (food and non-food by 6% and 9%)
 - reduced poverty by 3% (extreme) and 2% (moderate)
- ...due to increases in labor force participation and non-farm/wage employment

Source: Bahia et al. (2020, 2021), to be featured in: "Digital Africa for Inclusive Growth: Technological Transformation for Jobs", Begazo, Blimpo and Dutz (forthcoming).

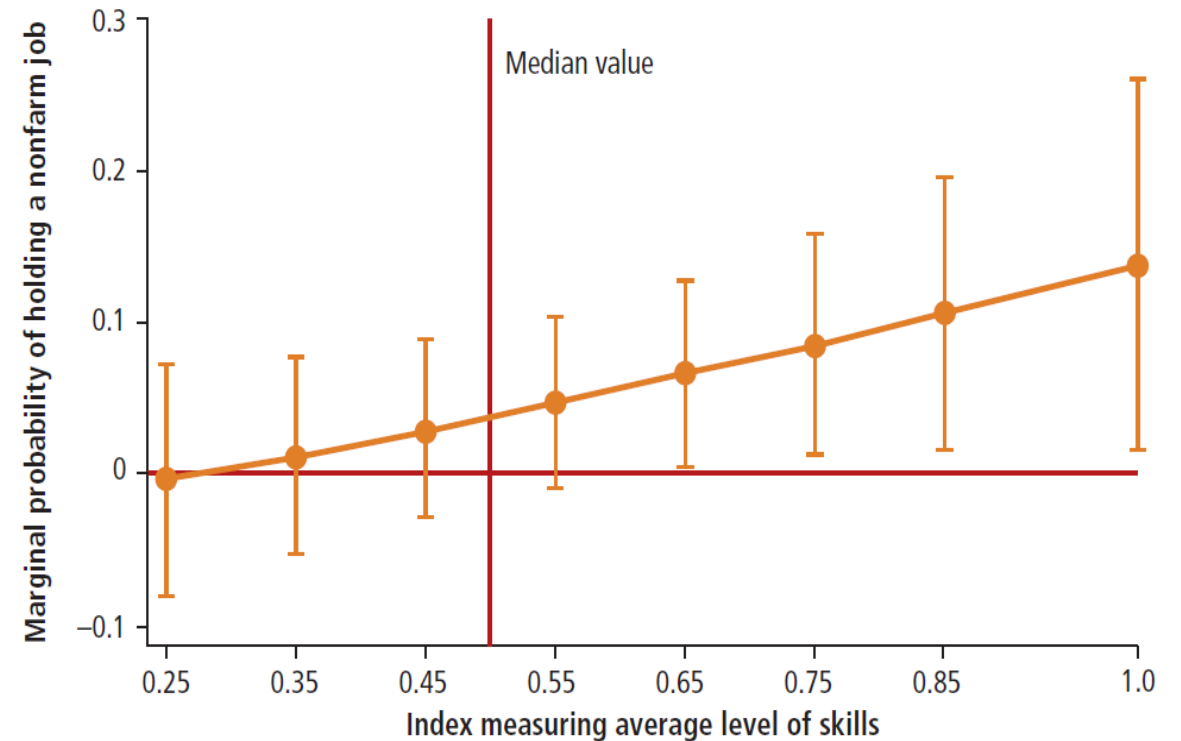
BUT COMPLEMENTARY INVESTMENTS SUCH AS ELECTRICITY ARE REQUIRED

EX: RWANDA ELECTRICITY INVESTMENTS

Effect of access to reliable electricity on nonfarm jobs by extent of **access to markets**



Effect of access to reliable electricity on nonfarm jobs by extent of **skills available**



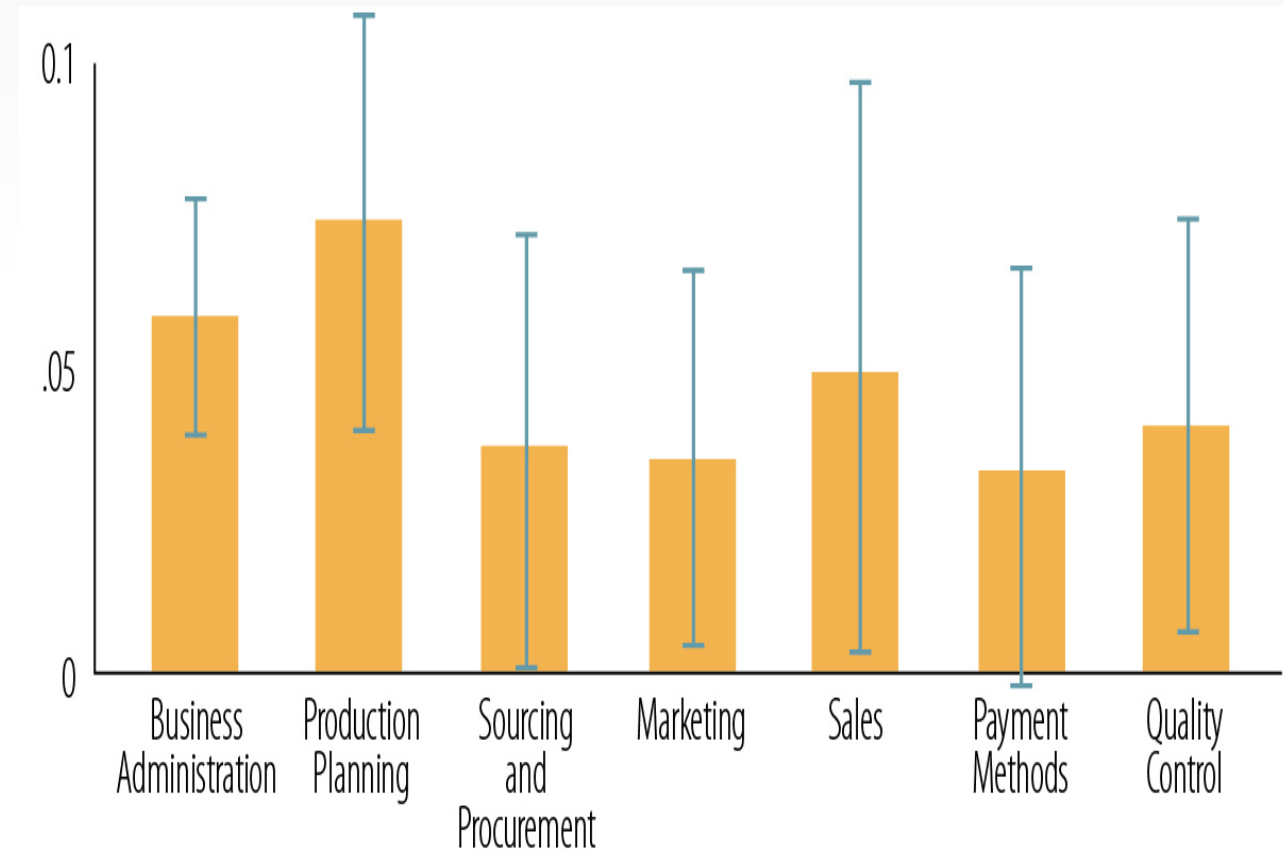
Jobs impact of reliable electricity increases with access to markets and skills available

Source: Blimpo and Cosgrove-Davies (2019), "Electricity Access in Sub-Saharan Africa: Uptake, Reliability and Complementary Factors for Economic Impact", AFD and World Bank. Note: Estimations using multi-tier framework data for Rwanda.

EMPLOYMENT GROWTH HIGHER AMONG FIRMS WITH BETTER TECHNOLOGIES

Evidence from Senegal

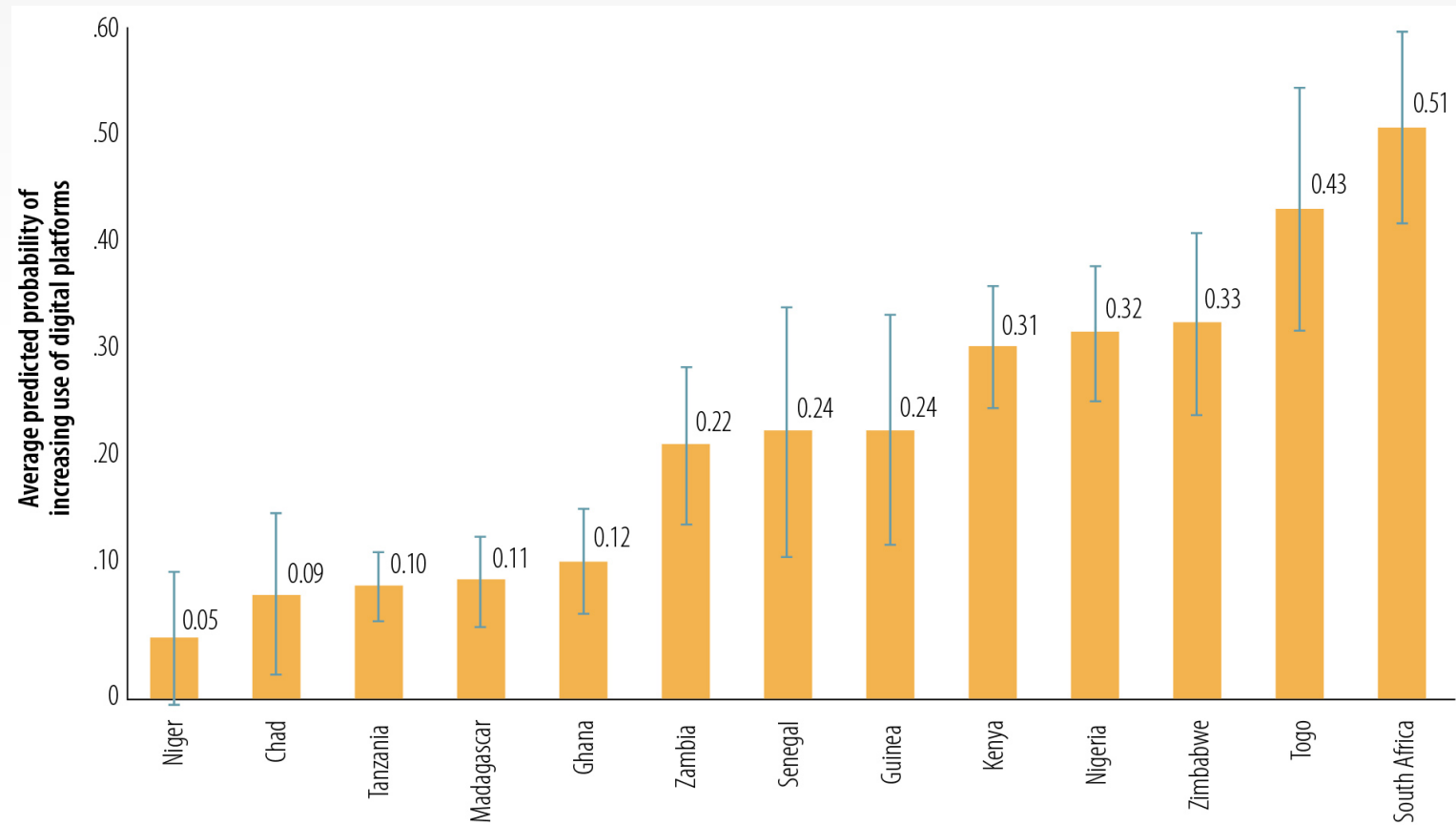
- When adopting new technologies (e.g. new machinery and equipment or software):
- Most firms do not change the number of workers (78%) and more than ¼ offer training to current workers.
- 2% of surveyed firms reported job reduction and 3.8% increased the number of workers (with similar skills).
- 6.1% reported hiring more qualified workers.
- Employment growth among Senegalese firms is higher among firms with better technologies.
- Firms with better technologies tend to be more productive and benefit from opportunities to expand—thus leading to increased employment.



Source: Cirera, Comin, Cruz, and Lee 2021. Note: The figure provides the coefficient estimates of the GBF technologies and 95 percent confidence intervals from the employment growth regressions. That is, employment growth is regressed for each specific GBF at the intensive margin while controlling for firm size, sector, and region. GBF = general business functions.

COVID-19 HAS ACCELERATED THE USE OF DIGITAL TECHNOLOGIES, ESPECIALLY IN SOUTH AFRICA AND TOGO

- In SSA region, more than 1 in 5 firms started or expanded their use of digital technology in response to the COVID-19 shock.
- On average, firms in East and Southern Africa were more likely than those in West and Central Africa to have started or expanded their use of digital platforms (27 and 20 percent, respectively).
- Still, the propensity to use digital platforms in the region is smaller than that of firms in other developing countries (32 percent).
- Across countries in the region, there was a great deal of variation in firms' digital response to the pandemic.



Source: Davies et al. 2021. Note: The values are average adjusted probabilities of starting or increasing the use of digital technologies (increased use of the internet, online social media, specialized apps, or digital platforms), calculated from a Probit regression that controlled for country, firm size, sector, and the timing of the survey. The computations used weights equal to the inverse of the number of observations per country and excluded countries where the fraction of missing values in the dependent variable exceeded 60 percent. The bars represent 95 percent confidence intervals.

SUGGESTIONS FOR A POLICY AGENDA TO HARNESS THE FULL POTENTIAL OF DIGITAL TECHNOLOGIES FOR JOB CREATION

- **1. FIRM/HOUSEHOLD LEVEL:**

- Technology & skills/capabilities upgrading through matching grants and access to finance through partial credit guarantees and equity investments
- Job-search training & social safety net support during the transition

- **2. SECTOR (OR VALUE CHAIN) LEVEL:**

- Fixing market failures, promoting common services and access to markets

- **3. AGGREGATE LEVEL:**

- Structuring of infrastructure and common-service PPP projects to close the digital infrastructure gap: Universal access to broadband
- Remove barriers to Digital technology adoption: Affordability, Reliability, and Skills
- Enact and implement a regulatory framework that promotes innovation and competition in Telcos and Financial services
- Invest in complementary infrastructure (electricity)
- Promote education in STEM and support skills upgrading of workers –especially women and the youth, including in the informal sector.

IN CONCLUSION

THE CHALLENGE OF JOBS AND ECONOMIC TRANSFORMATION IS HUGE!

BUT AFRICA CAN RISE TO THE CHALLENGE BY:

- Adopting a whole of the government approach,
- Shifting the narrative from job creation to job facilitation and work in tandem with the private sector, promote and support entrepreneurship including in the digital
- Implementing targeted policies at the Firm/Household, Sector and aggregate level
- Fully embracing the digital revolution as it's driving jobs creation in Africa
- Transforming its agriculture, adding value to products before export and integrating regional and Global Chains,
- Building livable cities, connect them to rural areas, and build solid foundations for long run growth (Skills, Infrastructure, Macro Stability and good governance);

THE TRANSITION IS ALREADY HAPPENING ACROSS AFRICA AND HAS ACCELERATED WITH COVID-19; LET'S NOT WASTE THIS CRISIS!

THANK YOU!



CREATIVE DESTRUCTION – HORSES TO AUTOMOBILES

- ▶ The U.S. employed 4 million horses in 1840. By 1900 they were harnessing more than 24 million (a 6-fold increase) for transport and agriculture.
- ▶ In 1890 there were 13,800 Cos. in the business of building carriages pulled by horses (employing more than 90,000 people). With the advent of automobiles, by 1920, only 90 such companies remained.
- ▶ *The arrival of the car and electrified railways proved the horse's death knell.* As horses vanished, so did the numerous jobs that relied on the horse economy. As the horse industry collapsed, another industry came to life – the auto industry.
- ▶ Between 1910 and 1950, the auto industry created 6.9 million net new jobs in the US, equivalent to 11 percent of the country's workforce in 1950. This includes 7.5 million jobs created and 623,000 jobs destroyed. These jobs represented new occupations that serviced cars and that utilized motorized vehicles for transportation and delivery (the McKinsey Global Institute, 2017).
- ▶ the transition was not smooth or inevitable.

COVID-19, DIGITAL UPTAKE AND EMPLOYMENT

1. Novel dataset: Business Pulse Surveys (BPS)

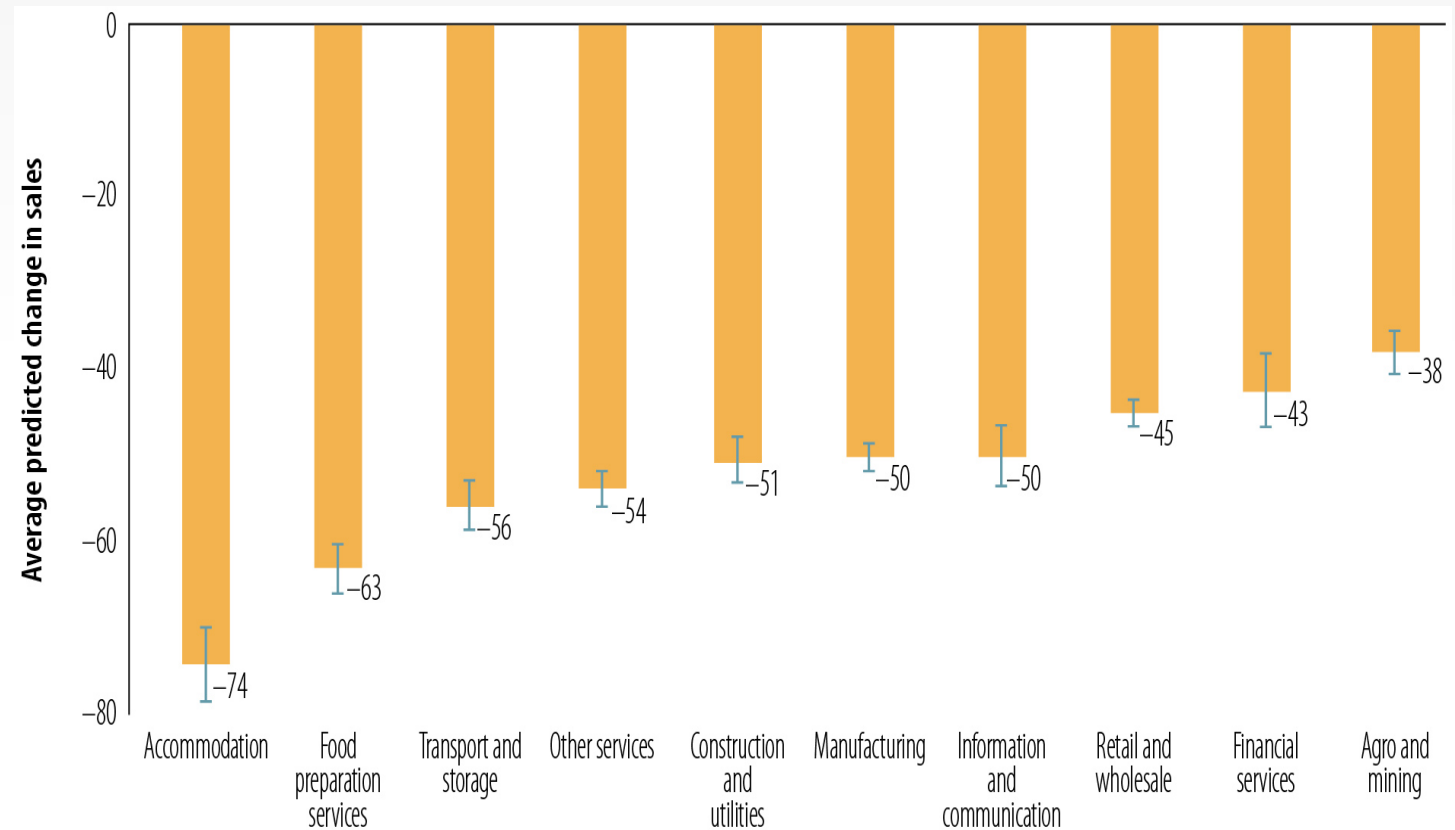
- 51 countries, 100k + business (Apedo-Amah et al. 2020, Cirera, Cruz et al. 2021)
- **Sub-Saharan Africa:** 15,819 firms across 18 countries, (Davies et al. 2021)

2. Harmonized questionnaire evaluating the impact of COVID-19 on firm performance

- Operating status and sales
- Financial situation of the firms (*falling into arrears?*)
- Changes in employment (intensive and extensive margin)
- Use of digital technologies in response to the pandemic
- Access to public support (subsidized loans, rent & utilities deferral, fiscal exemptions, tax deferrals, among others)

COVID-19 SEVERELY AFFECTED FIRM SALES IN SUB-SAHARAN AFRICA

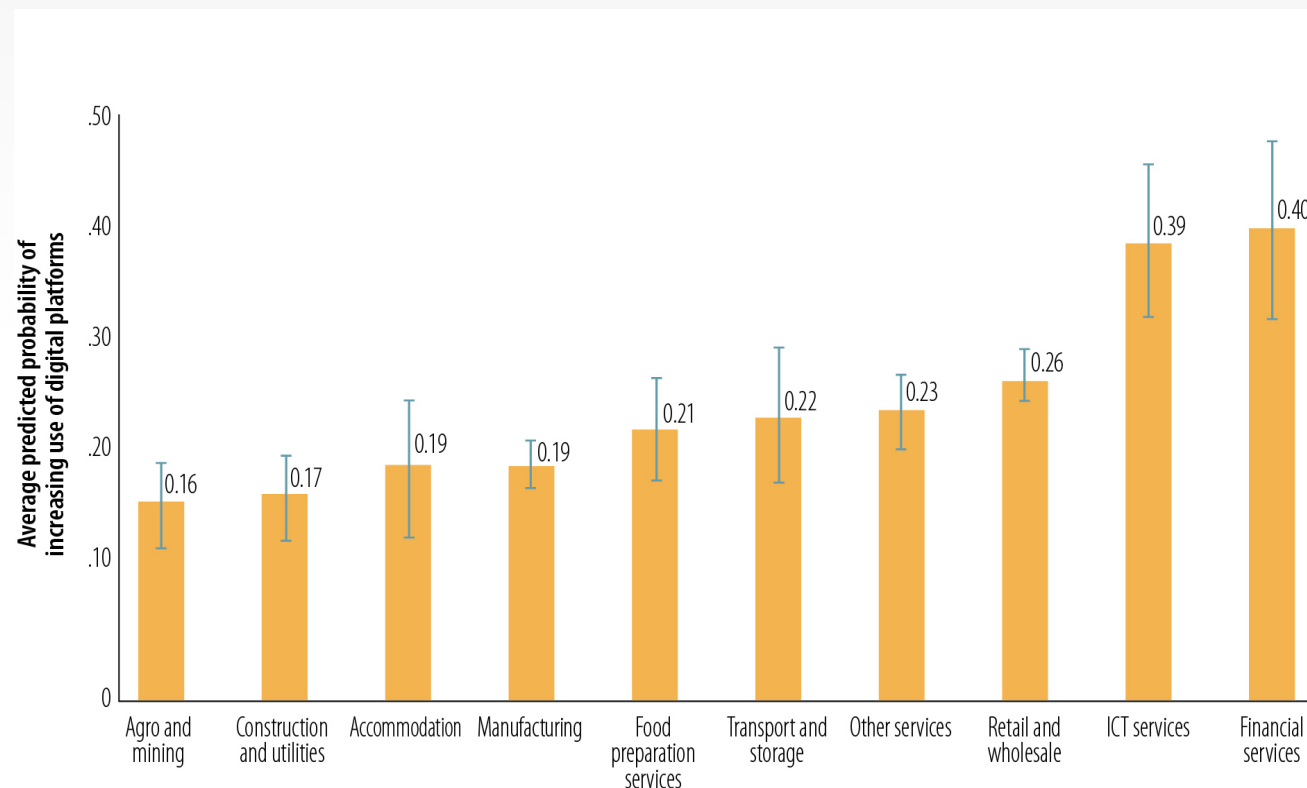
- Sales dropped by 49% across SSA firms—a decline comparable to LICs and MICs (48%) but greater than HICs (32%).
- Across sectors of economic activity, the largest sales decline reported by businesses intensive in face-to-face interactions and involved tasks that could not be performed from home.
- Firms in accommodation and food services experienced a 74% decline in sales, followed by those in food preparation (63%) and transportation and storage services (56%).
- Agricultural and mining firms were the least affected, their sales still dropped by 38%



Source: Davies et al. 2021. Note: The conditional average change in sales was computed after controlling for firm size, sector, and the timing of the survey. The regressions were computed for Sub-Saharan African firms only. The bars represent 95 percent confidence intervals. For temporarily closed firms, the change in sales equals -100 %; closed firms were excluded.

FIRMS IN SECTORS WITH GREATER SHARE OF TASKS THAT CAN BE PERFORMED FROM HOME WERE MORE LIKELY TO INCREASE USE OF DIGITAL PLATFORMS

- Firms in sectors with a greater share of tasks/jobs that can be performed from home were more likely to have increased their use of digital platforms in their businesses.
- Firms in financial and ICT services were the most likely to use digital platforms in response to the pandemic shock (40 and 39%, respectively).
- More than one-quarter of the firms in retail and wholesale trade started or increased their use of digital platforms.
- Firms in agriculture, construction, accommodation services, and manufacturing were less prone to have expanded their use of digital platforms (less than 20%).



Source: Davies et al. 2021. Note: The values are average adjusted probabilities of starting or increasing the use of digital technologies (increased use of the internet, online social media, specialized apps, or digital platforms), calculated from Probit regressions that controlled for country, firm size, sector, and the timing of the survey. The computations used weights equal to the inverse of the number of observations per country and excluded countries where the fraction of missing values in the dependent variable exceeded 60%. The bars represent 95% confidence intervals.

AFRICA CHIEF ECONOMIST OFFICE PERIODICALS

KNOWLEDGE GENERATION

1. Economic Updates

2. Regional Studies

3. Analytical Research

MACROECONOMIC AND FINANCIAL WEEKLY MONITORING
June 4th, 2021
OFFICE OF THE CHIEF ECONOMIST OF THE AFRICA REGION

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I. "COVIDONOMICS" WEEKLY UPDATE

FIGURE 1. MAP OF COVID-19 CASES IN SUB-SAHARAN AFRICA

Last issue (May 28th, 2021) This Week (June 4th, 2021)

REGION

SURGES OF COVID-19 CASES THREATENING AFRICA

An increase in COVID-19 infections that has been reported in many African countries poses a threat to the continent's already fragile public health systems. Wafaridine Mweeti, WHO regional director for Africa, said the continent was on the verge of a new wave of coronavirus infections and easing of containment measures, like weather and stifled vaccination targeting high-risk groups. She warned that the lighter movement and arrival of winter could fuel a new wave of coronavirus infections in Africa, adding that governments should re-adopt critical case infrastructure to avert the risk of fatalities. According to WHO, Africa has recorded a 205% spike in COVID-19 positive cases in the last two weeks while eight countries have witnessed a 30% increase in their caseload in a week's period. Mweeti said the pandemic has been trending upwards in 14 African countries in the last week with Uganda registering a 130% week-on-week rise in cases in the past week, as infection clusters are reported in schools and among health workers. She said that South Africa, Angola and Nigeria have also experienced a resurgence in infections as they enter a cold season that is ideal for the spread of the virus. Mweeti said that stalled COVID-19 vaccination linked to global supply chain disruptions could exacerbate the situation, adding that the continent's health facilities should be re-equipped to cope with a spike in the number of critically ill patients.

RECESSION AND VIOLENCE AS COVID-19 SIDE-EFFECTS

Much of Africa may have been spared the death toll that COVID-19 brought to other regions, but it now faces recession, growth violence and higher unemployment because of the pandemic. The global economic shutdown has driven Africa into recession

Africa's Pulse APRIL 2021 | VOLUME 23
AN ANALYSIS OF ISSUES SHAPING AFRICA'S ECONOMIC FUTURE

COVID-19 AND THE FUTURE OF WORK IN AFRICA: EMERGING TRENDS IN DIGITAL TECHNOLOGY ADOPTION

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2020 JULY 2020

CPIA AFRICA
ASSESSING AFRICA'S POLICIES AND INSTITUTIONS

Safeguarding human capital during and beyond COVID-19

Office of the Chief Economist for the Africa Region WORLD BANK GROUP