



WORLD BANK GROUP

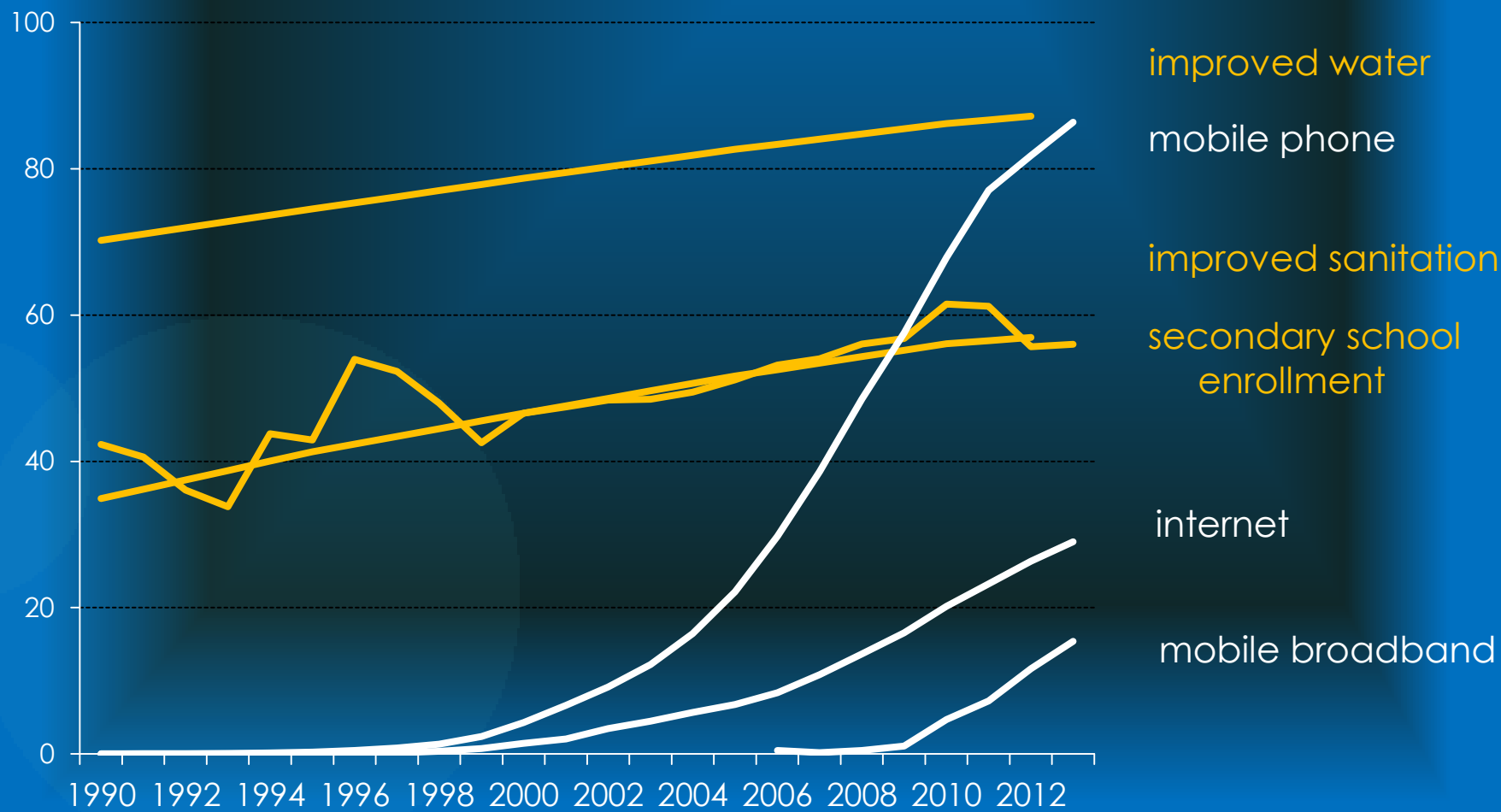
Inequality and Technology: The Future of Jobs and Social Policy

Omar Arias, World Bank European Investment Bank , Luxembourg 2017

Technological breakthroughs are speeding up



An unprecedented pace of penetration



Note: Mobile phone and mobile broadband subscriptions, internet users, improved water and sanitation are per 100 individuals. Net secondary school enrollment is the percent of the relevant age group.
Sources: World Bank, WDR on Internet and Development Team based on World Development Indicators and ITU data.

High, and growing use ...



2.95 billion
42%



3.63 billion
50%



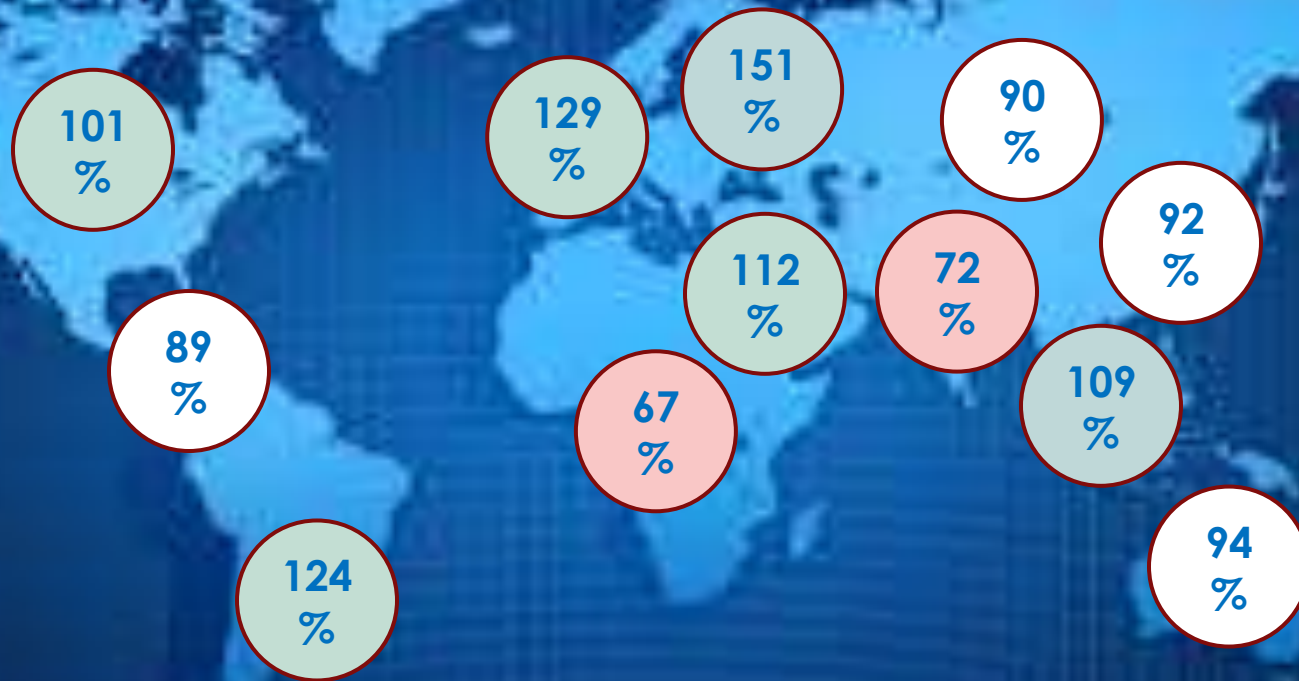
2.03 billion
28%

Source: wearesocial.sg, September 2014



... Across developed and developing countries

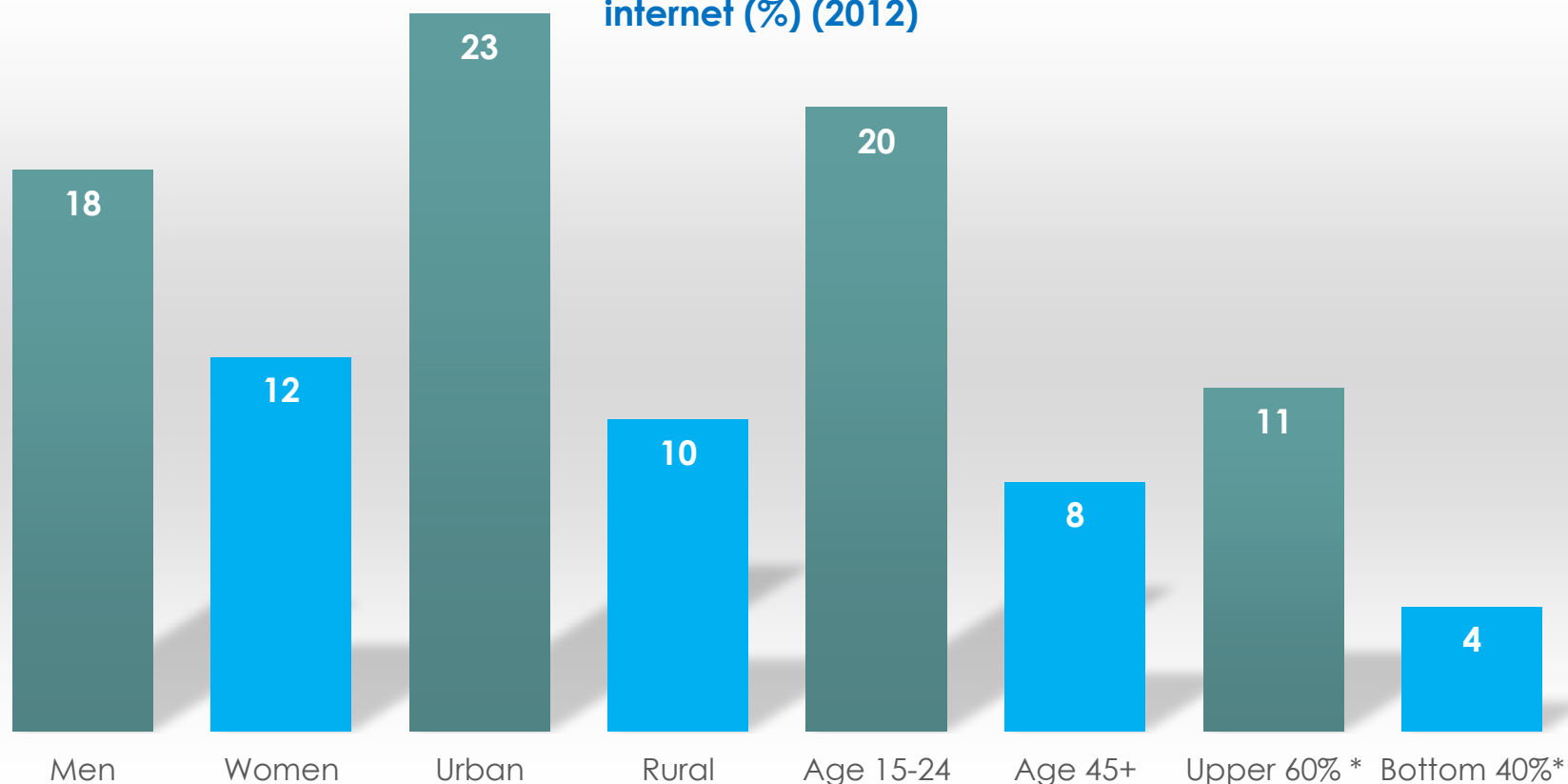
Mobile Penetration, January 2014



Source: wearesocial.sg, January 2014

Although access and use of digital technologies, especially the internet, is very unequal

Africa: Percentage of individuals who report ever using the internet (%) (2012)



Improving welfare and reducing poverty? Exacerbating inequality?

Growing Opportunities



U B E R

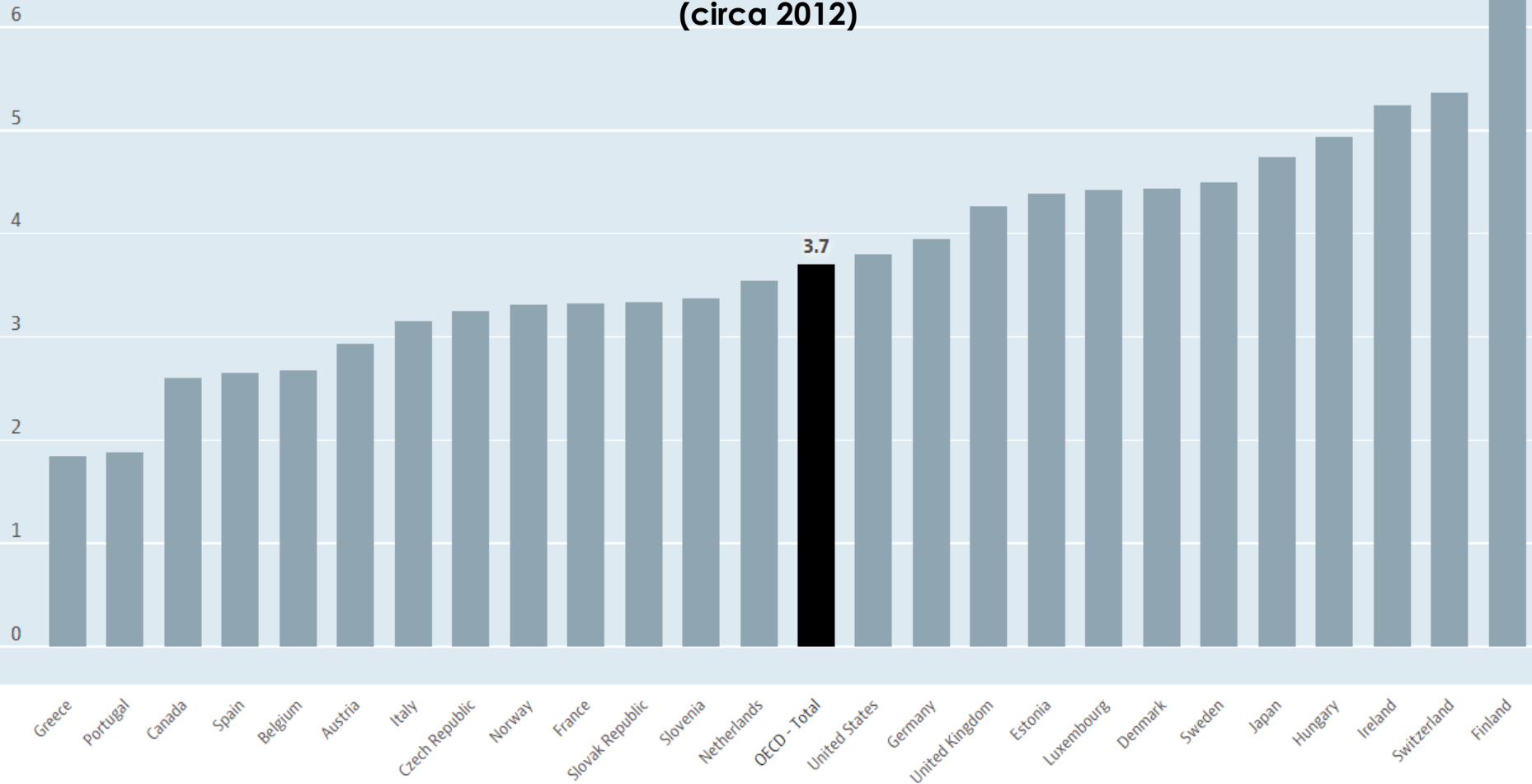
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Threats of Disruption and Exclusion



The increasing use of digital technologies is creating jobs ...

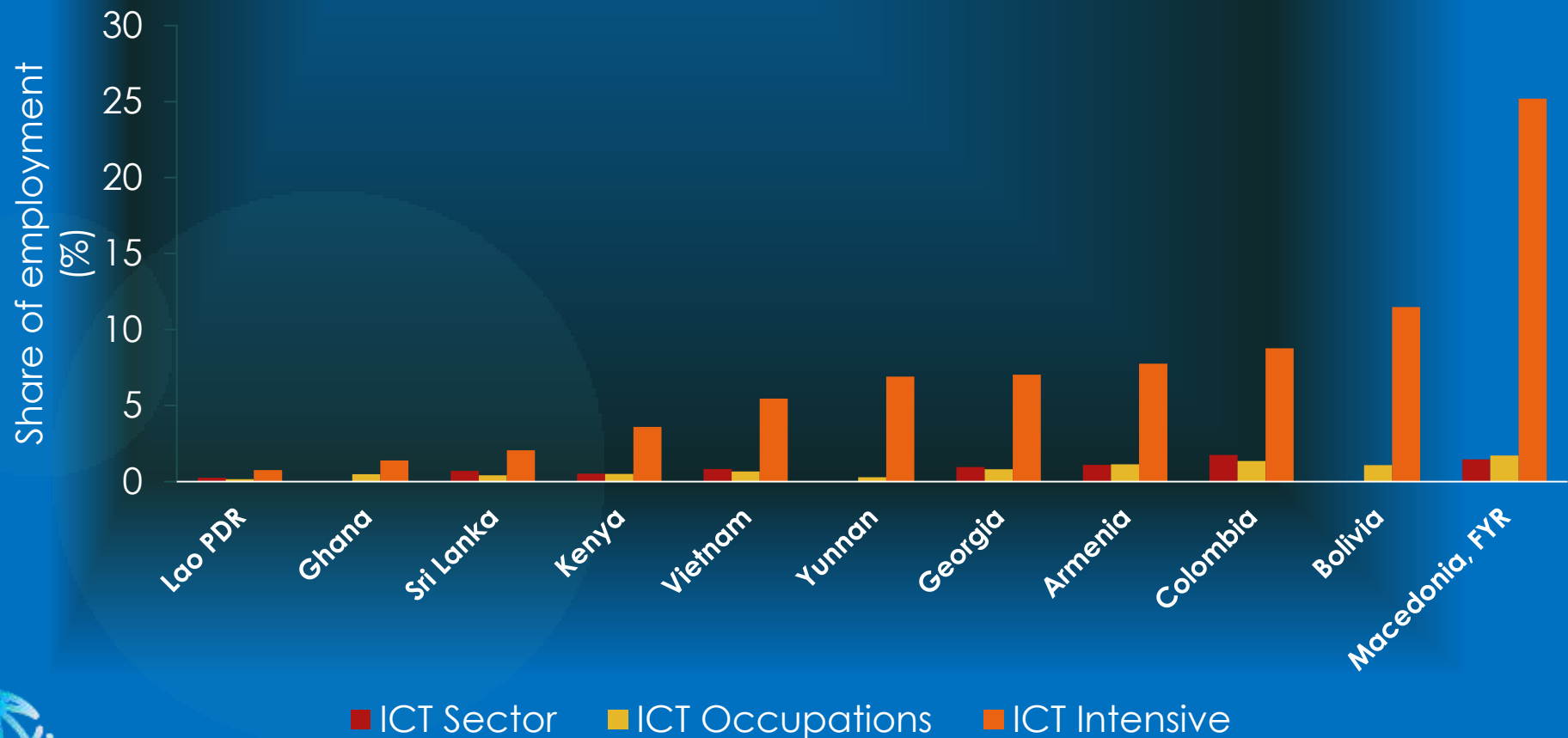
Contribution of ICT sector to total employment
(circa 2012)



Source: OECD 2017.

But still a small share of employment, while ICT intensity of jobs is larger

Contribution of ICT to employment
(2012-2013)



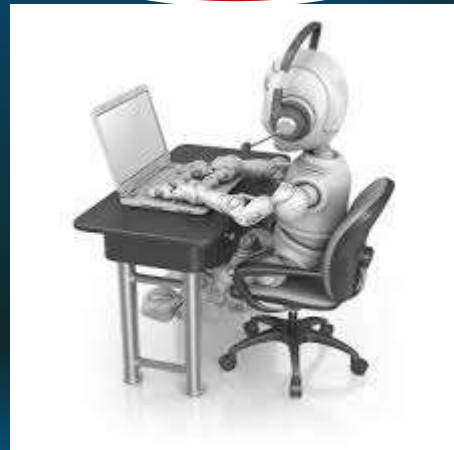
Source: WDR 2016, based on STEP household surveys. OECD definitions for ICT sector and occupations.

Impact on employment and earnings inequality is a balance between two forces

Technology complements some Workers (skill-biased)



But technology can substitute others (labor-saving)

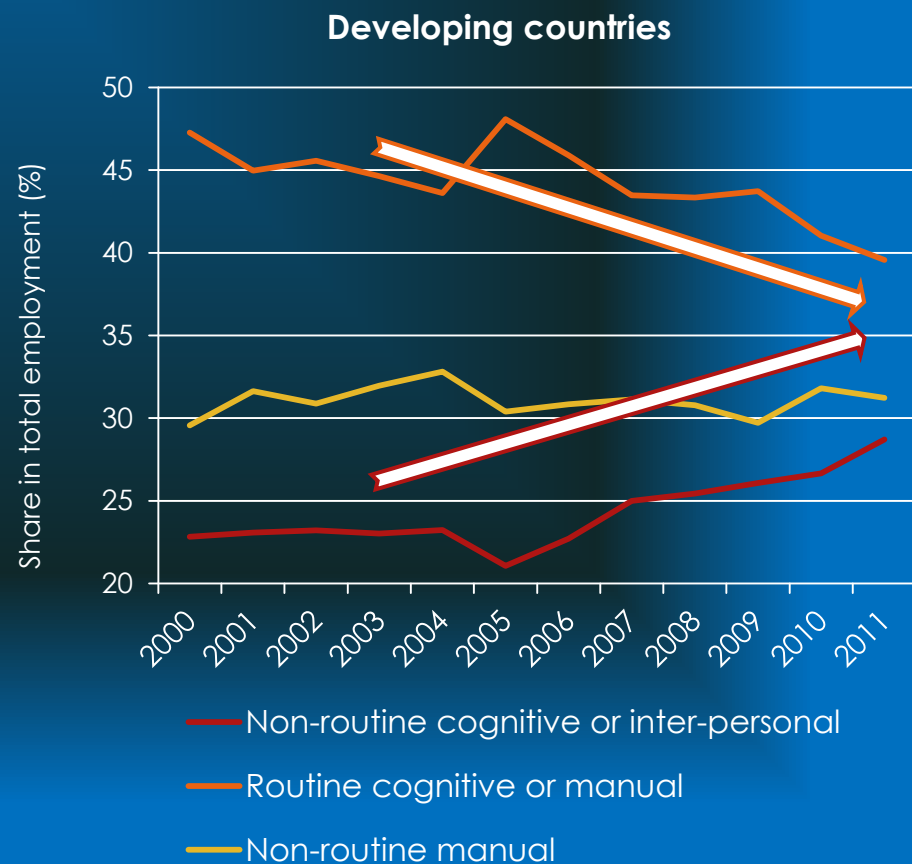
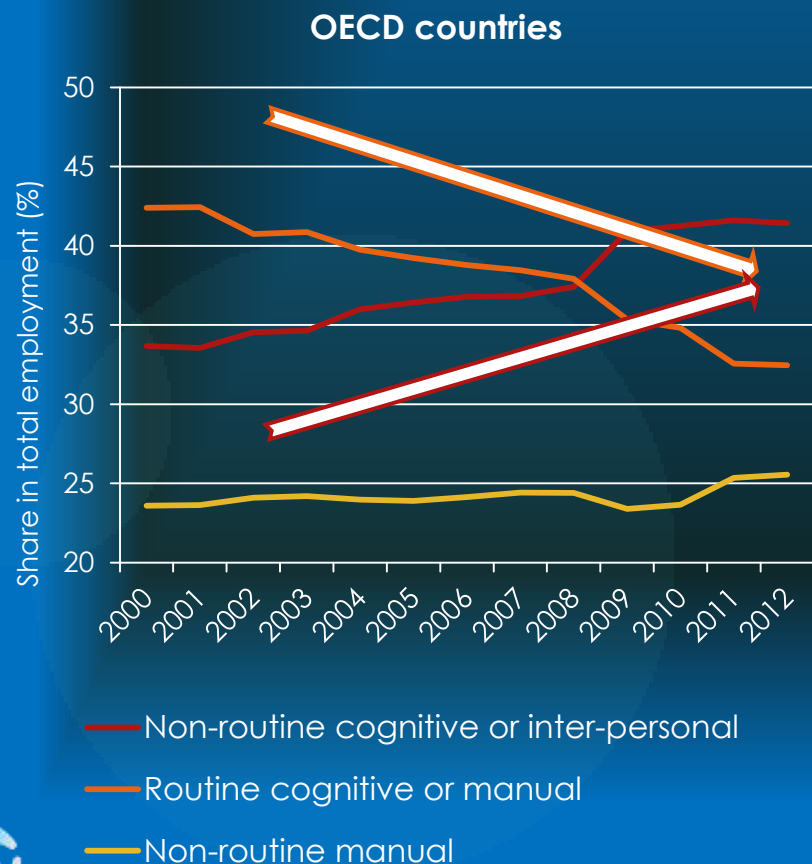


What matters is whether the task is ROUTINE (and can thus be automated) or NON-ROUTINE

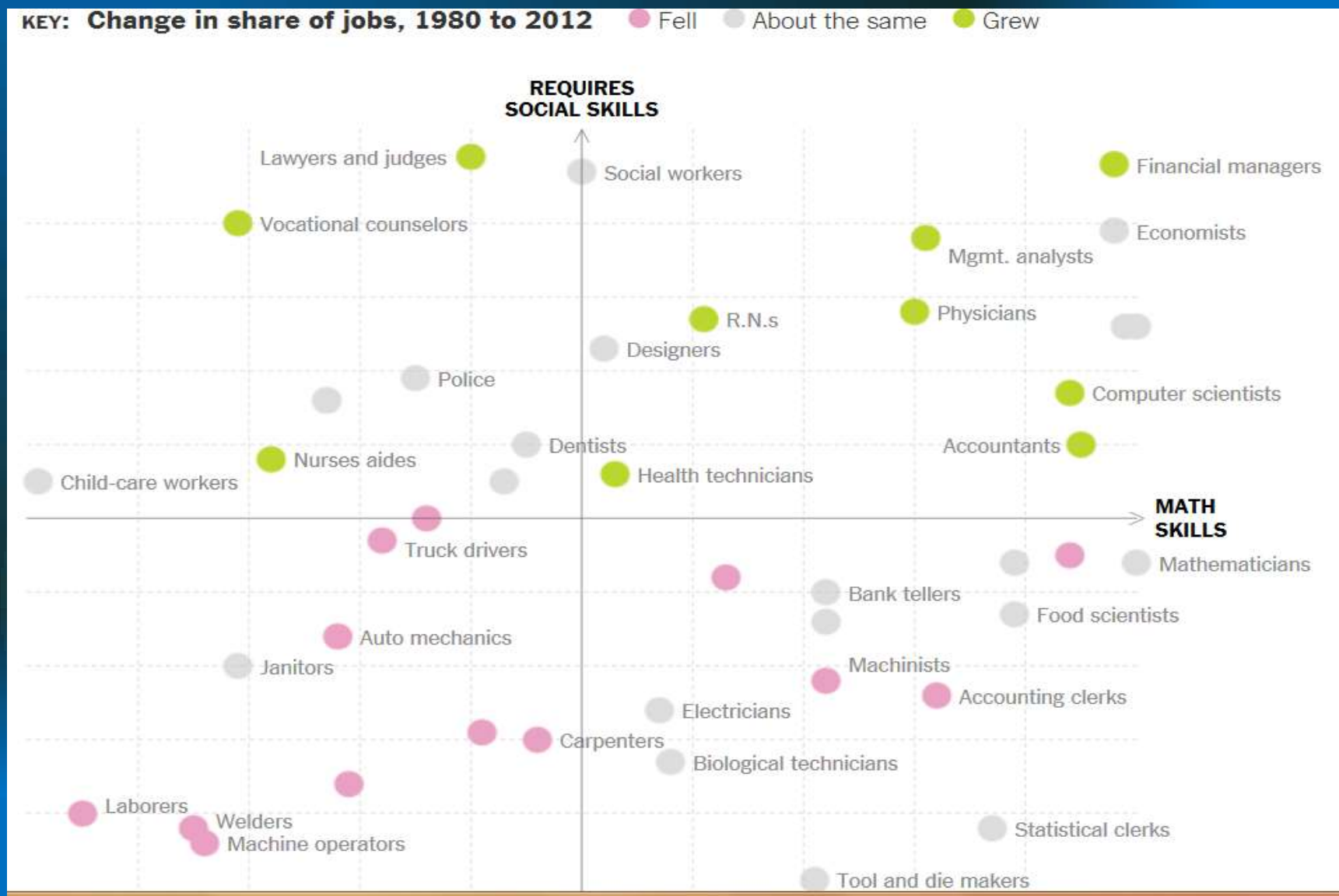


Work is becoming more intensive in non-routine skills, and labor markets are polarizing

Skills-intensity of Employment
(simple cross-country average by type of occupation)
(2000-2012)

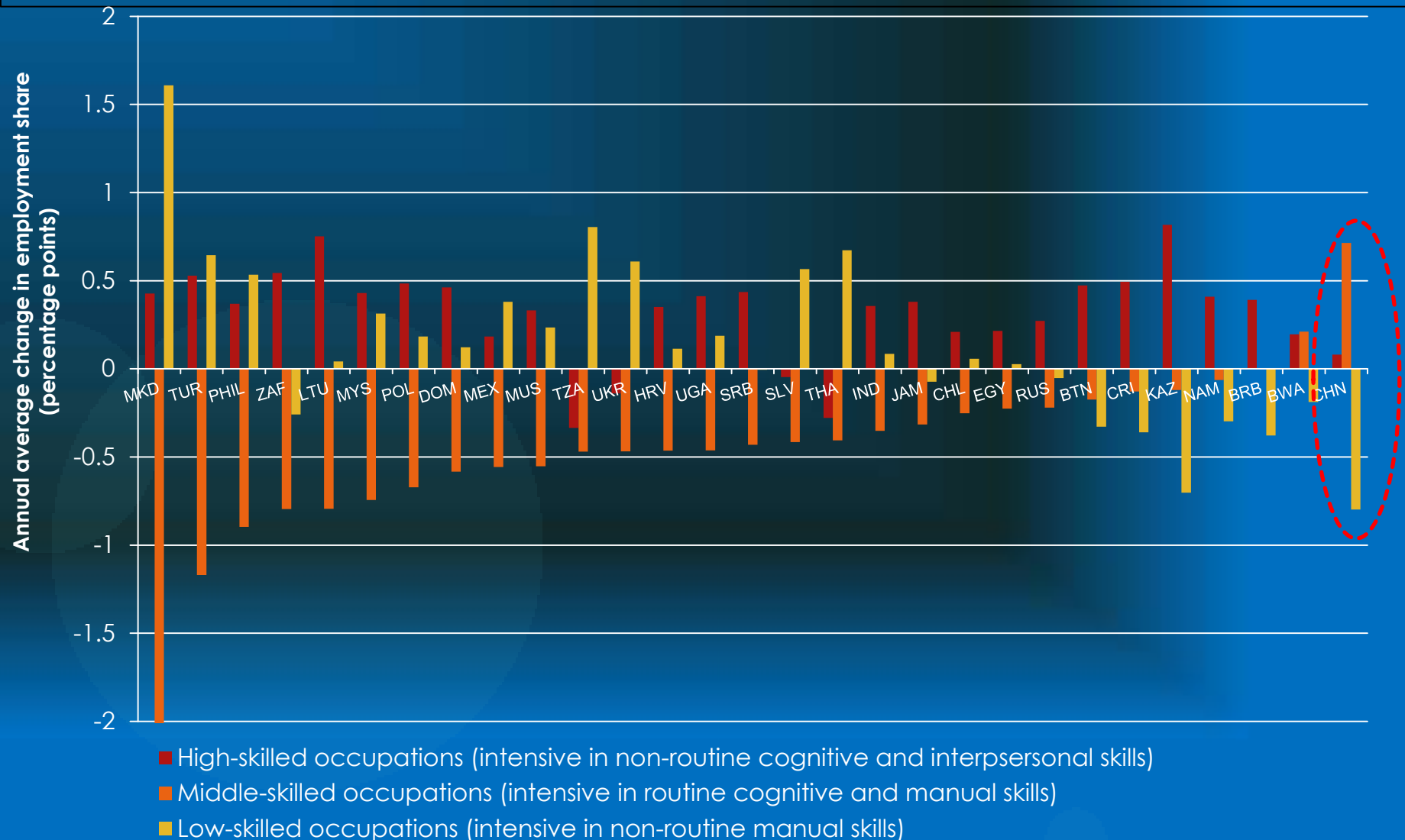


Demand of skills is shifting towards jobs requiring both non-routine cognitive/technical and socio-emotional skills



Labor markets in the developing world are also becoming polarized (shift towards non-routine skills)

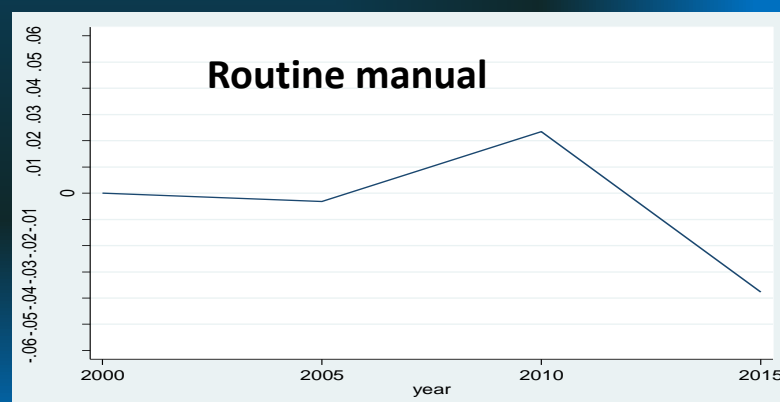
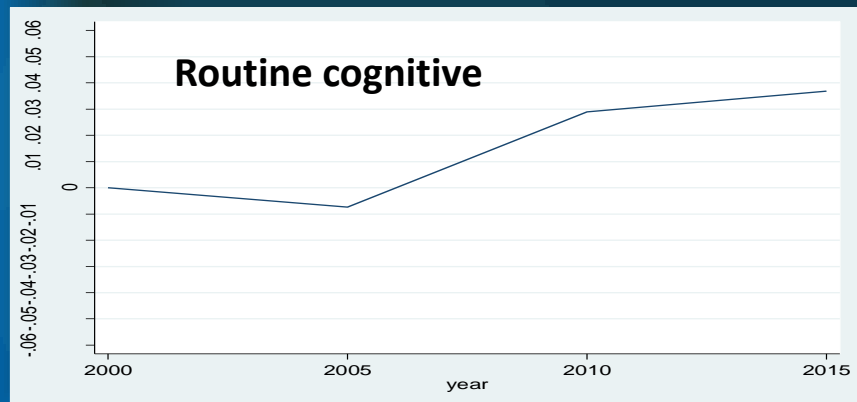
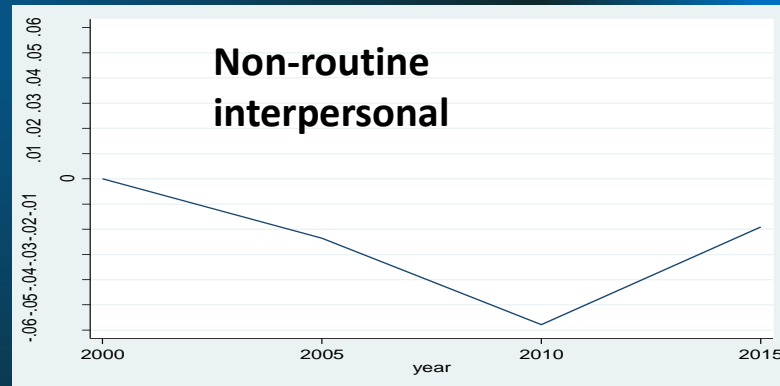
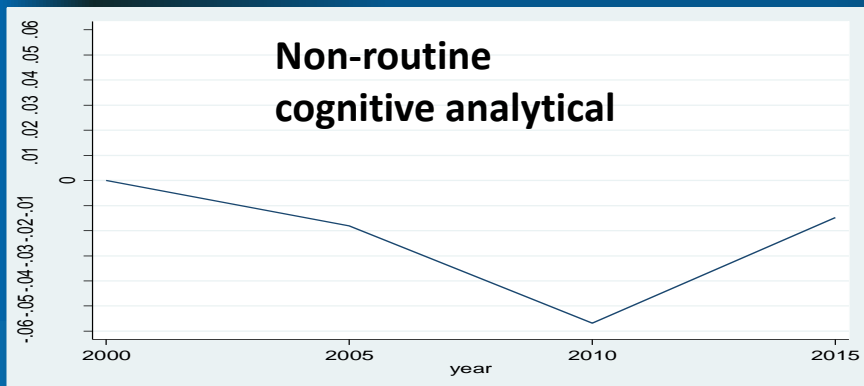
Change in employment shares in selected developing countries: 1993-2010



Source: WDR 2016, based on ILO KILM data. For China, data from the Population Census for 2000 vs 2010.

The one notable exception to labor market polarization trends – China- is no longer...

Changes in the Skills-intensity of Employment in China (2000-2015)



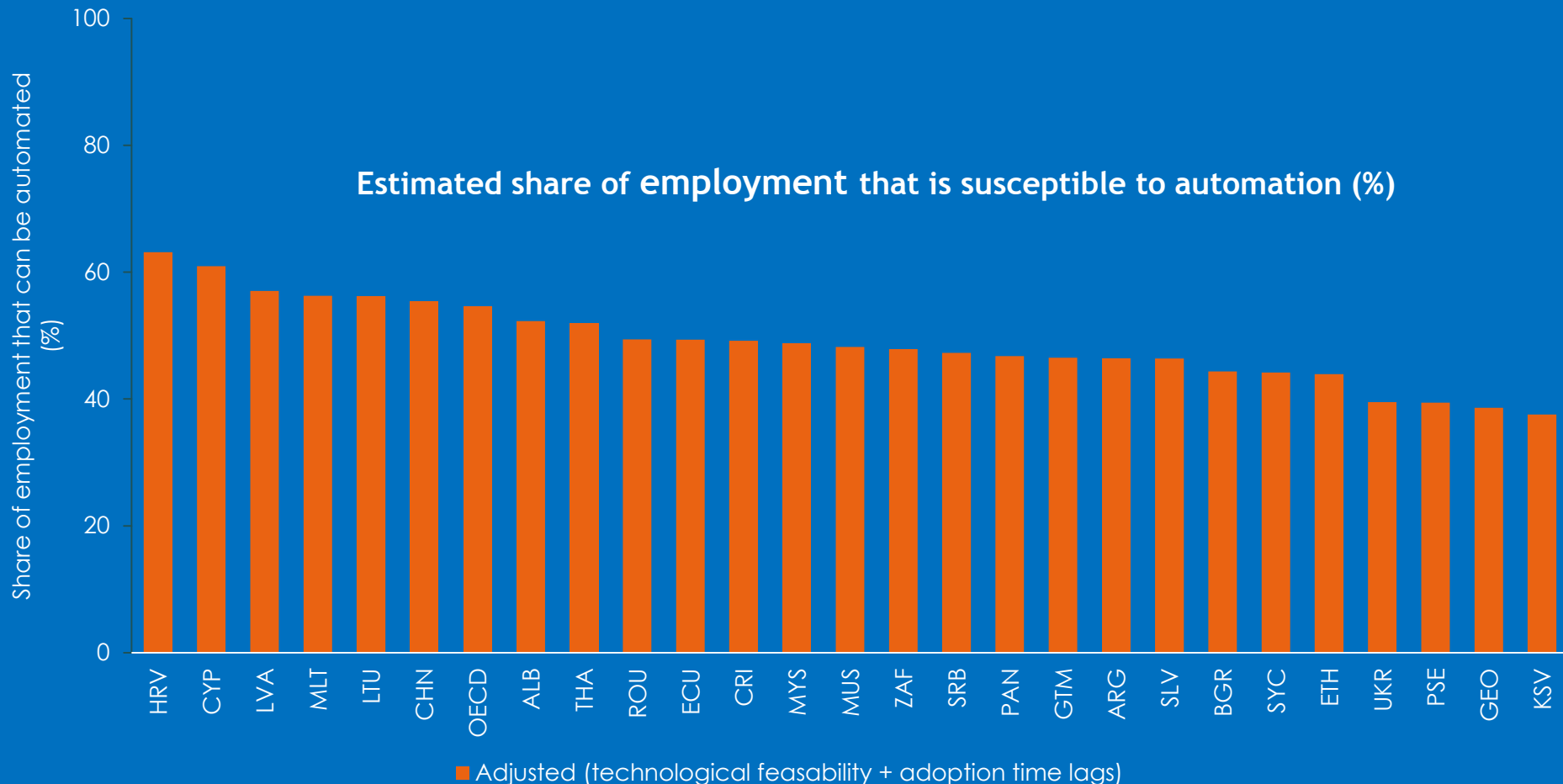
Use of robots in China is up 60% between 2010-15

Source: Park and du Yang 2017, forthcoming for China's Sources of Growth Study.



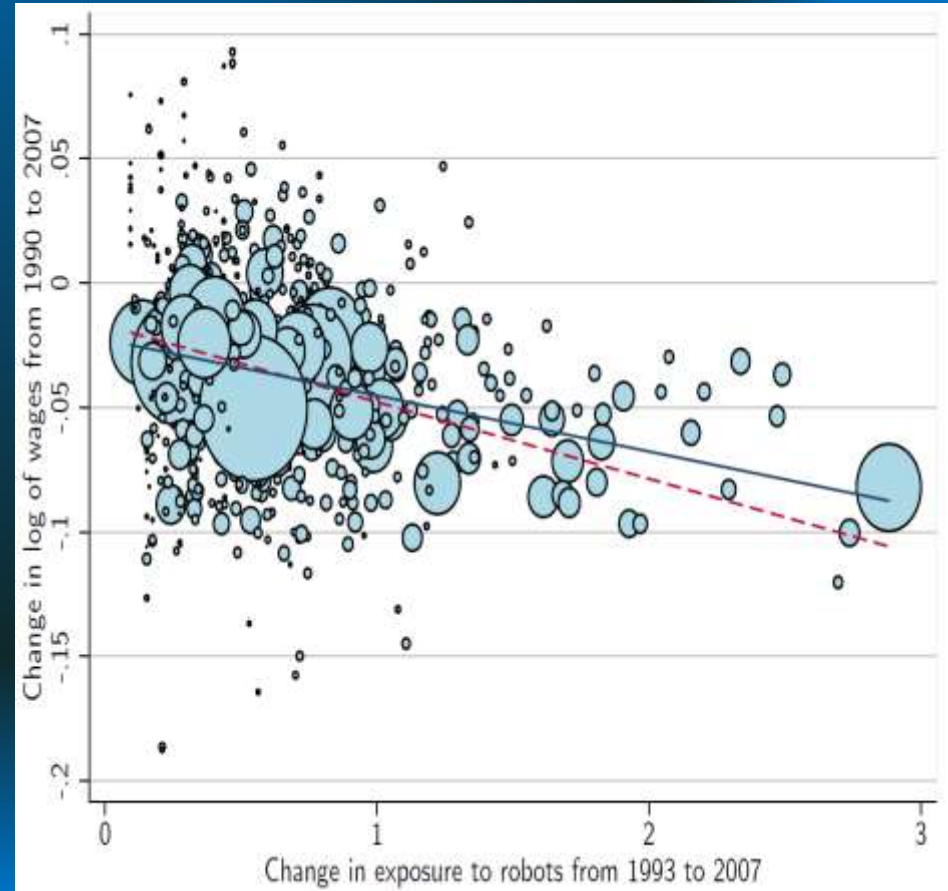
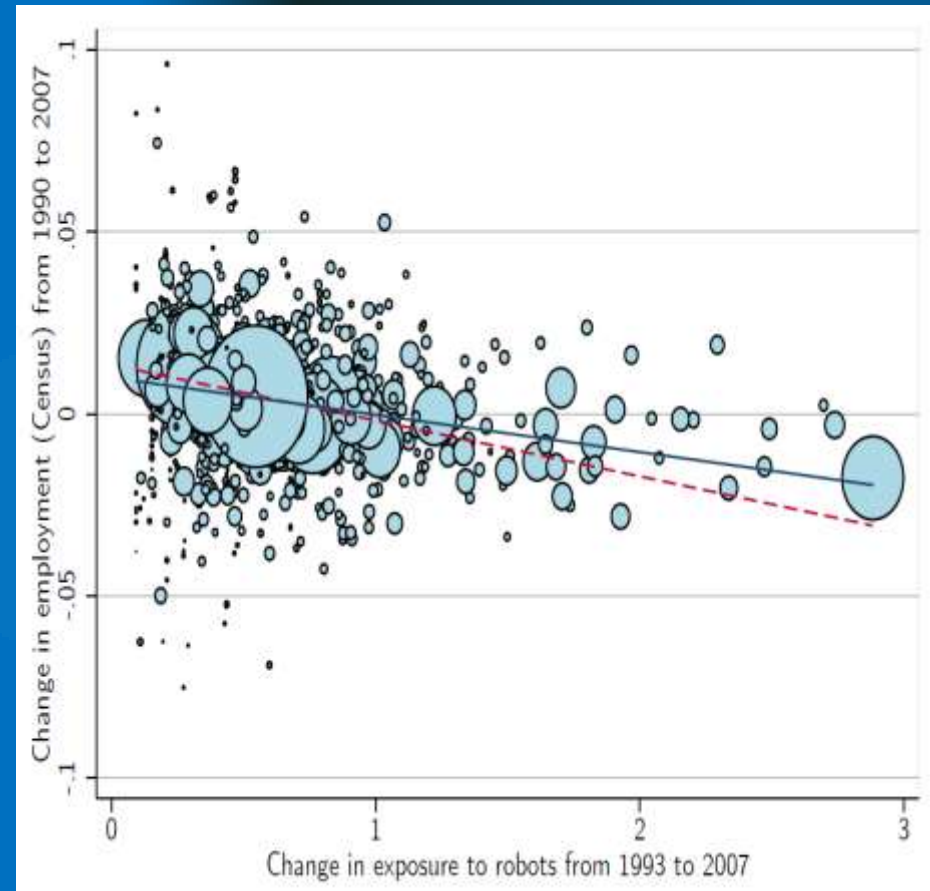
Digital technologies are expected to take on or transform many jobs

50%: Probability that a child in the developing world will find a job in an occupation as they exist today



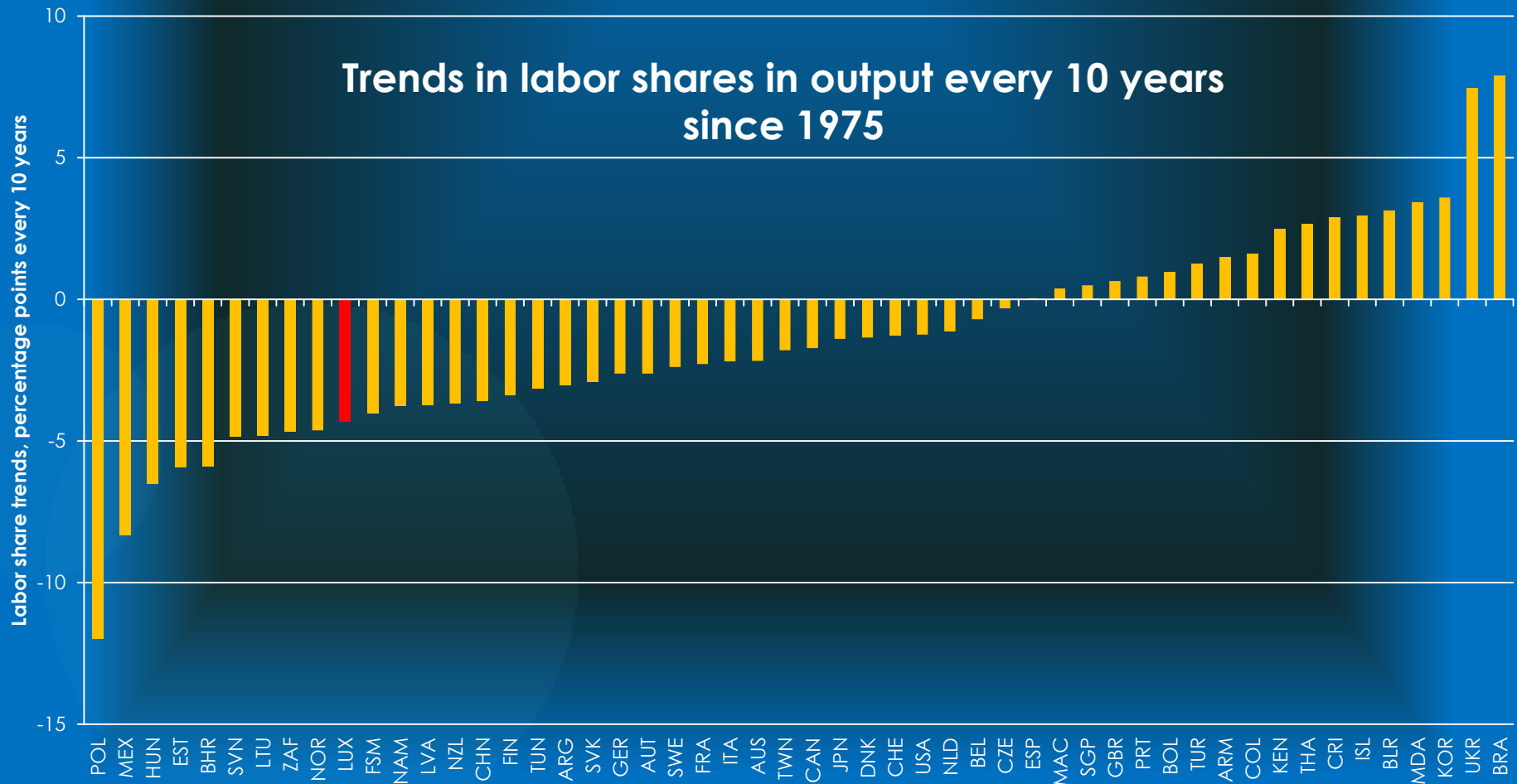
Newer technologies (e.g, robots) can have net negative labor impacts by displacing workers altogether

Estimated impacts on employment (left) and wages (right) of exposure to robots in the US (%)



Source: WDR 2016 team, based on household surveys, the Income Distribution Database (I2D2), ILO Laborsta database, China's Population Census, Frey and Osborne 2013, and Comin and Hobijn (2010).

Technological change is one key driver of the fall in labor shares in output across the world



Source: Karabarbounis, L. and B. Neiman (2013)

Note: The figure shows estimated trends in the labor share for all countries in data set with at least 15 years of data starting in 1975. Trend coefficients are reported in units per 10 years (i.e., a value of 5 means a 5 percentage point decline every 10 years).

Policies have to adapt to new realities...

- ▶ Technology **changes the skills** required to succeed in a modern economy.
- ▶ Technology also **accelerates the pace of change**, making skills obsolete more quickly and opening up new opportunities.
- ▶ Technology further changes the world of work, introducing **new forms of work and allowing for more flexible work arrangements** but also eroding traditional employer-employee and social protection schemes.



Policy Implications: Strengthening life long-learning and training programs

- ▶ Equip future workers with the skills that are complementary to technology: foundational (cognitive and socio-emotional) skills, digital skills;
 - ▶ Schools need to shift from rote learning to nurturing “learning to learn”
- ▶ Refocus training programs to equip workers with both foundational and technical skills
- ▶ Improve incentives for life-long learning
 - ▶ For individuals
 - ▶ Training accounts
 - ▶ For industries
 - ▶ Work with sector-wide trade and employer unions to co-finance training and retraining in sector-specific, but not firm-specific training
 - ▶ For firms
 - ▶ Subsidies for firms to provide non-firm, non-sector specific training



Policy Implications: Rethinking social protection schemes –shift to protections delinked from the job

- ▶ Technology can make too strict labor regulations more binding (need for workforce reorganization)
- ▶ All individuals should be registered in the same social insurance system, regardless of where they work, with subsidies for the poor or low-wage earners.
- ▶ Strengthen the link between employment services, post-secondary educational institutions and the private sector using technology throughout the service chain
- ▶ Raises several policy issues:
 - ▶ How to move away from an insurance system designed with little careers disruptions and stable formal employment in mind?
 - ▶ How to support workers that are not able to work or earn enough to afford a basic standard of living and coverage? Universal basic income?
 - ▶ How to finance social insurance if labor taxation becomes less desirable?

And hopefully we can avoid this!



A stylized, light blue wireframe globe is positioned on the left side of the slide. It features several curved lines representing latitude and longitude, creating a three-dimensional effect. The globe is partially cut off by the left edge of the frame.

Thank you!

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WORLD DEVELOPMENT REPORT 2016

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