Skills Development in a Digital Age

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Outline

• About APEC
• Impacts of Digital Technology: GDP and Jobs
• Challenges of a Digital Age
• Skills Needed in a Digital Age
• Role of Policy
APEC Official Observers
- Association of South East Asian Nations (ASEAN) Secretariat
- Pacific Economic Cooperation Council (PECC)
- Pacific Islands Forum (PIF)
APEC Policy Support Unit

• APEC Policy Support Unit (PSU) is the research and analysis arm of APEC.
  • Conducts independent research in line with APEC’s core priorities.
• Mission: To provide rigorous research & analysis needed to improve the quality of APEC's deliberations and decisions.
  • Provide APEC members and fora with professional & tailor-made research, analysis, policy support & evidence-based policy suggestions.
• Five focus areas:
  • Trade & Investment Liberalization & Facilitation
  • Structural Reform
  • Connectivity including Supply Chain Connectivity & Global Supply Chains
  • Economic and Financial Analysis
  • Sustainable Economic Development
Impacts of Digital Technology

- The Internet has given people unprecedented access to all the world’s information
- Doing research and verifying information is easier than ever
- But false information/misinformation is easier to spread too

Note: n = 8,215 US adults surveyed in Feb 2018. Source: YouGov
Impacts of Digital Technology on GDP

Scatterplots of real per capita GDP and digital technology use, 2000-2014

- A higher rate of digital technology use is correlated with per capita GDP.
- A plausible explanation is that digital technology increases GDP through its impact on consumption and production, while a higher income also increases firms’ and households’ access to digital technology.

Note: Fitted curves are generated using nonparametric locally weighted scatterplot smoothing (LOWESS).
Source: World Bank, World Development Indicators and Directorate-General for Budget, Accounting and Statistics (Chinese Taipei).
Impacts of Digital Technology on Jobs

- Linkages between digital technology and employment are unclear.
- Correlations between digital use and GDP are positive and significant, while correlations for number of employed workers are insignificant.
- While these findings are preliminary, they could indicate opposing effects.

**Correlations between GDP/employment and digital technology use in APEC**

<table>
<thead>
<tr>
<th></th>
<th>Real GDP</th>
<th>Employed workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Mobile cellular subscriptions</td>
<td>0.006**</td>
<td></td>
</tr>
<tr>
<td>Fixed broadband subscriptions</td>
<td></td>
<td>0.005***</td>
</tr>
<tr>
<td>Lagged real GDP</td>
<td>0.936***</td>
<td>0.951***</td>
</tr>
<tr>
<td>Real GDP (in 2005 USD)</td>
<td>1.622***</td>
<td>1.284***</td>
</tr>
<tr>
<td>Constant</td>
<td>1.622***</td>
<td>1.284***</td>
</tr>
<tr>
<td>Observations</td>
<td>526</td>
<td>268</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.744</td>
<td>0.695</td>
</tr>
</tbody>
</table>

Source: World Bank, World Development Indicators; Directorate-General for Budget, Accounting and Statistics (Chinese Taipei); and APEC PSU staff calculations.
Impacts of Digital Technology on Jobs

Jobs Created

- Technology leads to the creation of new jobs and opportunities; many jobs today did not exist 10 years ago (e.g., app developer, social media manager, digital marketing specialist, data scientist).

- WEF (2016):
  - the most in-demand occupations today did not exist five to 10 years ago;
  - predicts that 65% of children joining primary school today would be working in jobs which do not exist yet.

- While automation takes over some jobs, it also frees up labour to focus on other activities, potentially increasing wages and productivity; market expansion could also increase labour demand (e.g., ATMs and demand for bank tellers).

- Digital technology improves coordination, opens up opportunities for freelance work, and creates new markets (e.g., Uber, Go-jek, Upwork, Airbnb).
Impacts of Digital Technology on Jobs

Jobs Lost

• Automation: jobs that once hired a worker are now done by computers or robots; 47% of US jobs are at risk (Frey and Osborne 2013).

• Vulnerable workers are those who do routine tasks that require simple cognitive and manual activities following explicit rules and codes, such as factory assembly, transcription, or simple accounting or data collection.

• Jobs polarisation: routine mid-skilled work are being lost, while remaining jobs are at low- and high-end of skills spectrum.

• Middle-wage/middle-skill jobs are routine enough to be developed into an algorithm, but valuable enough for firms to invest in their automation.

• Empirical evidence that job polarisation is already happening in Europe and the US (Eurofund 2014; Autor and Dorn 2013).
Impacts of Digital Technology on Jobs

• Technological change has been very beneficial
  • Economic growth and jobs growth
  • Improved living standards and connectivity
• But it also brings about automation and computerisation
  • Increased efficiency of production; less demand for certain labour
  • Jobs polarisation: wage and income inequality
  • New skills needed; some skills become obsolete
• It can also change how labour markets work
  • Gig economy: contractualisation and lack of security; cross-border employment contracts
  • Sharing economy: flexibility; threat to established industries
  • Informality of work: impact on social security
Challenges of a Digital Age

• Structural unemployment
  • Many people are unemployed, unable to participate
  • Many firms cannot fill job openings
  • Skills gaps and mismatch

• Skills development
  • Teaching new skills needed in a digital age
  • OJT, apprenticeships, lifelong learning
  • Adapting to new technologies and techniques
  • Importance of soft skills; learning to learn
Challenges of a Digital Age

- Labour market
  - Informal and vulnerable employment
  - Over- and under-regulation
  - Information constraints

- Social protection and assistance
  - Unemployment benefits and coverage
  - Employment counselling and jobs matching
  - Active labour market policies
Skills Needed in a Digital Age

- Employment in the digital age requires basic cognitive skills, such as literacy and numeracy, while a well-equipped worker needs skills that are easily transferable across jobs and occupations.
- A worker needs to be adaptive and flexible, being quick to learn new skills as they are required by the job market. As the World Bank (2016) put them, workers in the digital age require higher-order cognitive, socioemotional, and technical skills.

Role of Policy

Policy will need to address new issues

- Human capital and skills development
  - Need for new pedagogies with dynamic curriculum development
  - Access to retraining, reskilling, and lifelong learning
  - Who would provide training and who should pay?

- Labour markets, wages, and social security
  - Increased casualisation and precarity of work
  - Employment contracts across multiple jurisdictions
  - Inability to collect social security premiums from employers

- Regional cooperation
  - Digital technology disruptions have cross-border impacts
  - Increasing need for policy coordination and cooperation
  - Knowledge and information sharing
Role of Policy

• Improve access to and quality of education and training

• Develop labour and educational reforms with a view to reaching appropriate ALMPs

• Involve the private sector in training and skills development

• Reform labour market regulations and protection as needed

• Develop and improve data on all aspects of the labour market
Role of Policy

- Develop definitions of skills and appropriate certification mechanisms
- Enhance social protection and safety nets for all
- Establish employment centres, especially in areas where information is poor and where exclusion is a significant issue
- Provide support for displaced workers and those at risk of displacement due to structural unemployment
- Improve people-to-people connectivity through cross-border training exchange, labour mobility, and regulatory coherence
Role of Policy

- Education
- Technical and Vocational Training
- Apprenticeships
- Lifelong learning

- Demand for skills and labour
- Coordination with employers and industry groups

Skills development

Employment

Active labour market policies

Labour market information systems

Social protection

- Labour force surveys
- Firm/employer surveys
- Feedback from social protection programmes

- Unemployment insurance
- Skills matching
- Job information portals
- Employment assistance
APEC Framework on Human Resources Development in the Digital Age

• Endorsed in May 2017; for implementation in 2017-2025

• Objectives
  ➢ provide high-level strategic direction on strengthening regional cooperation in human resources development in the digital age
  ➢ outline common policy challenges in building human capital in the face of rapid technological change
  ➢ identify and take action in priority areas of collaboration where APEC can add value

• Priority Areas and Actions
  ➢ Future of work in the digital age and labour market policy implications
  ➢ Skills education and training
  ➢ Social protection
APEC Regional Trends Analysis (Nov 2016)
Rethinking Skills Development in the Digital Age

Structural Reform and Human Capital Development
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