

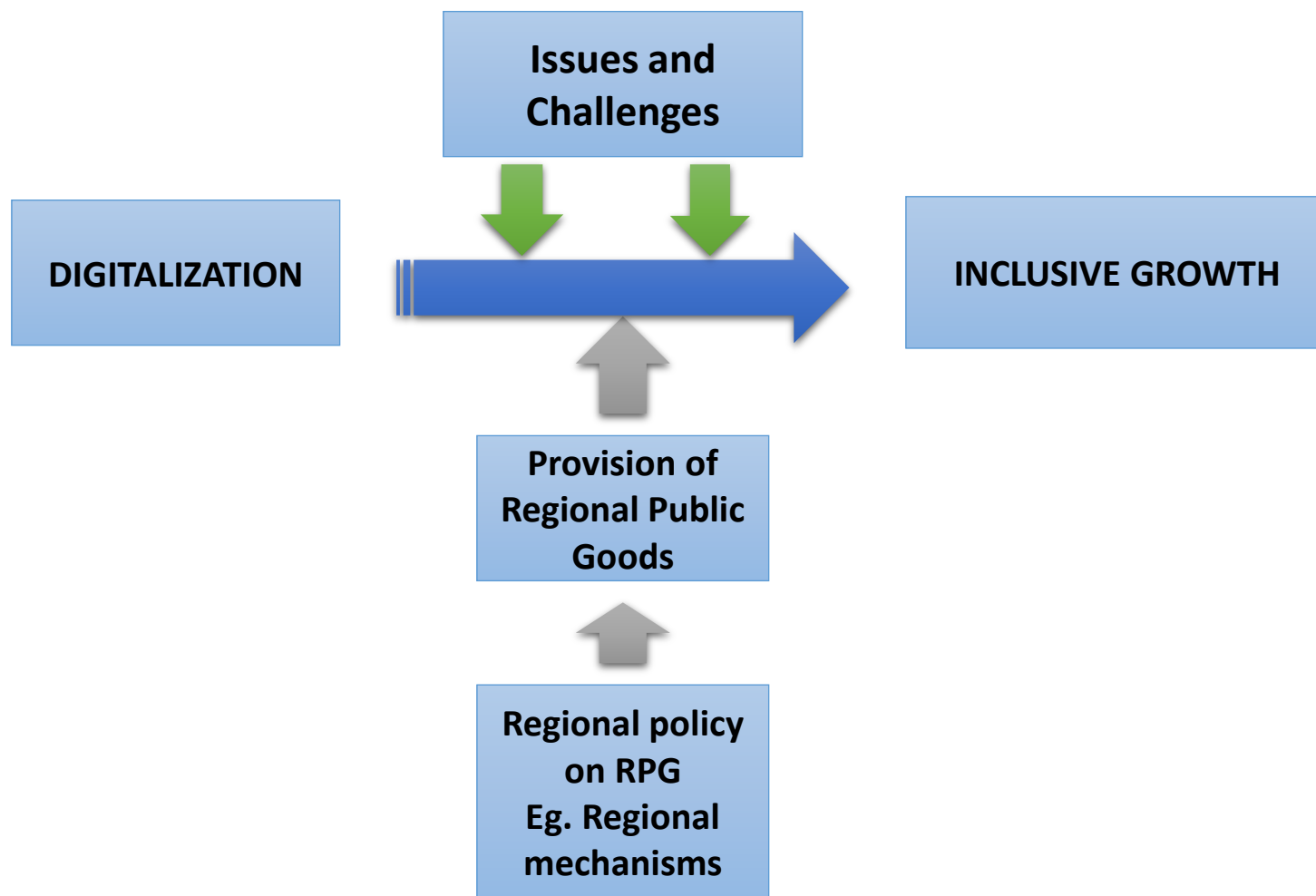
Towards Inclusive Growth through Technology and Innovation: The Role of Regional Public Goods

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Economic Research and Regional Cooperation Department
Asian Development Bank**

**AEIR 2018 Inception Workshop on Regional Public Goods
14 December 2017 | Asian Development Bank HQ**

Study Overview – Big Picture

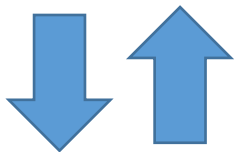


Technology and Innovation in the Digital Economy

History shows that productivity growth driven by general purpose technologies can arrive in multiple waves...

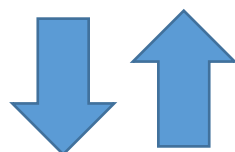
-- Chad Syverson

Cars/internal combustion engines

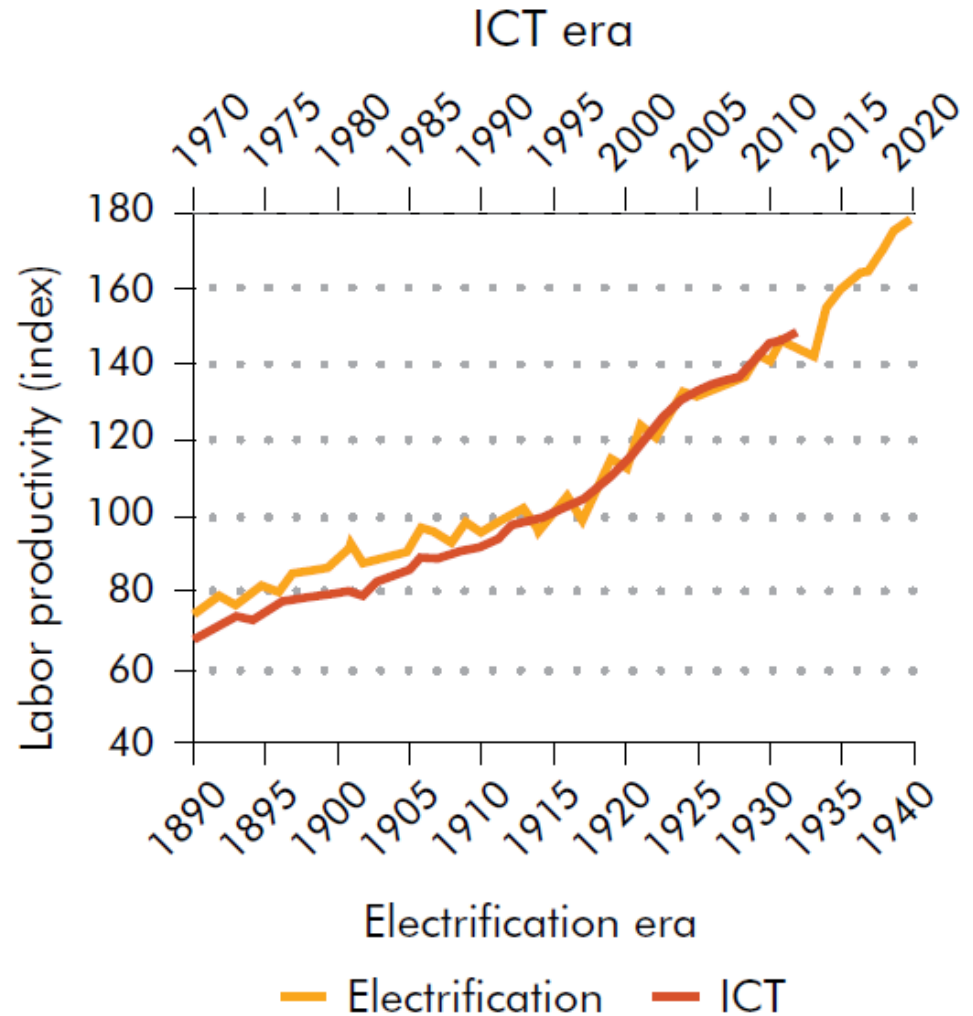


High-way system

Computer/microchip

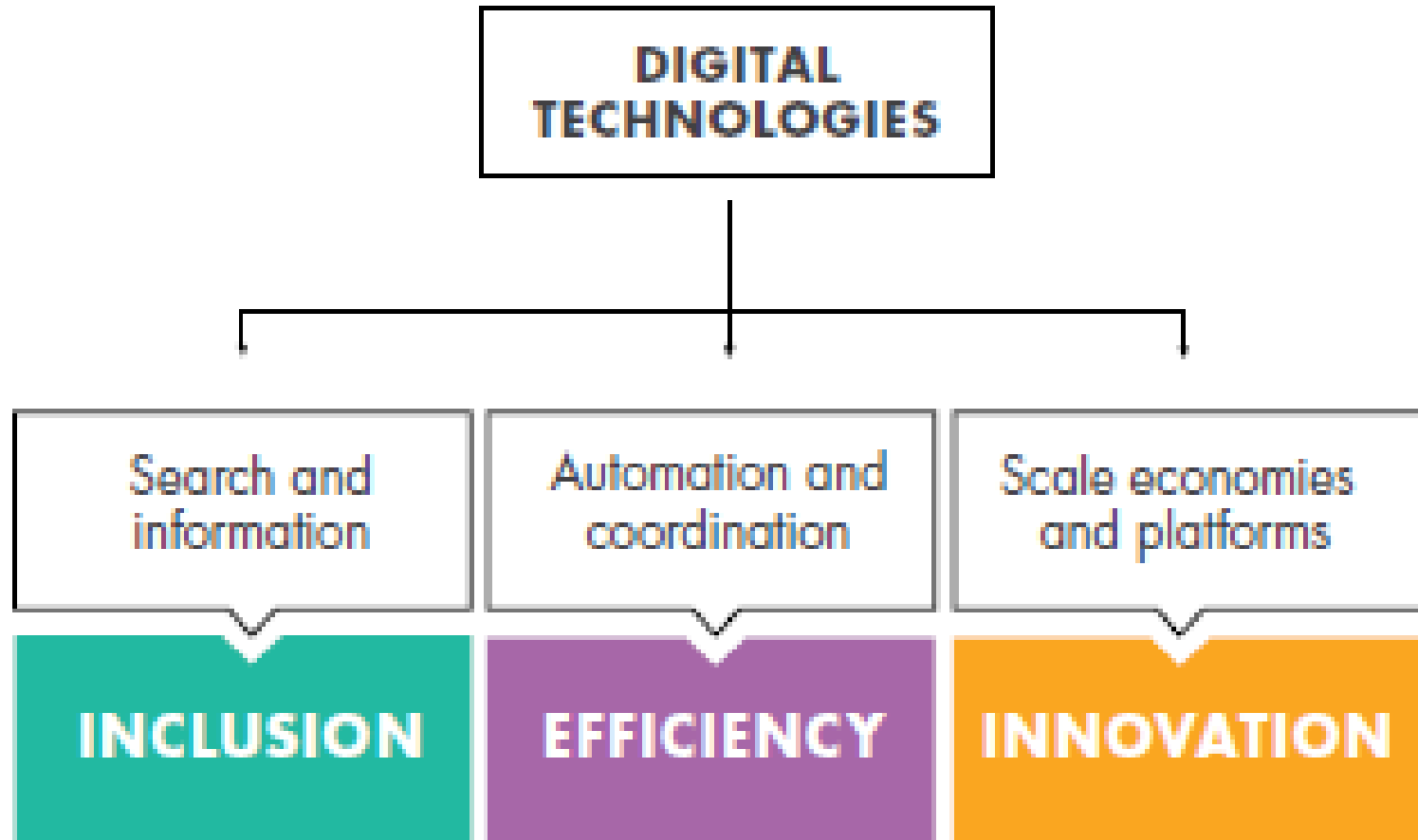


Internet

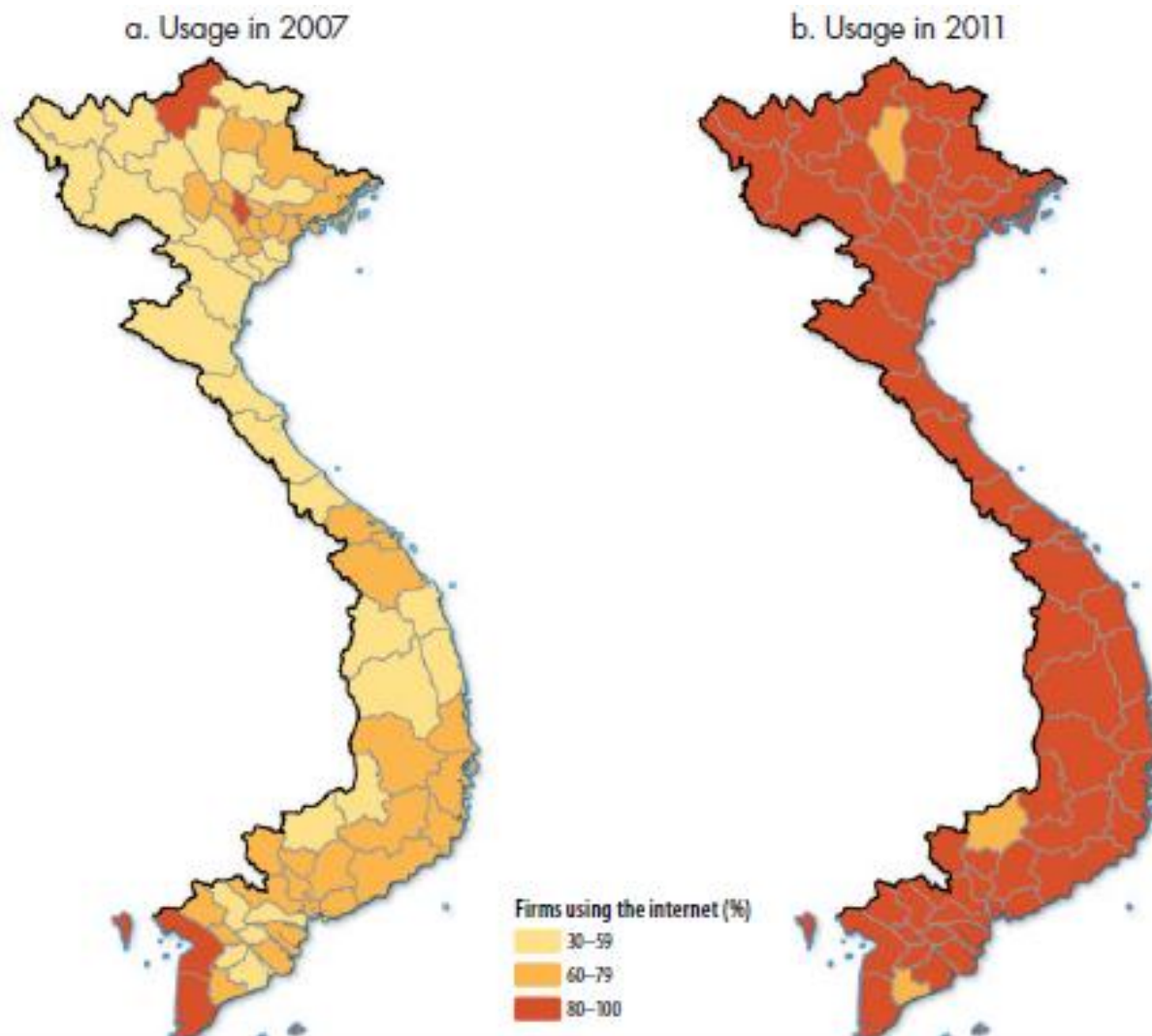


Source: Syverson 2013

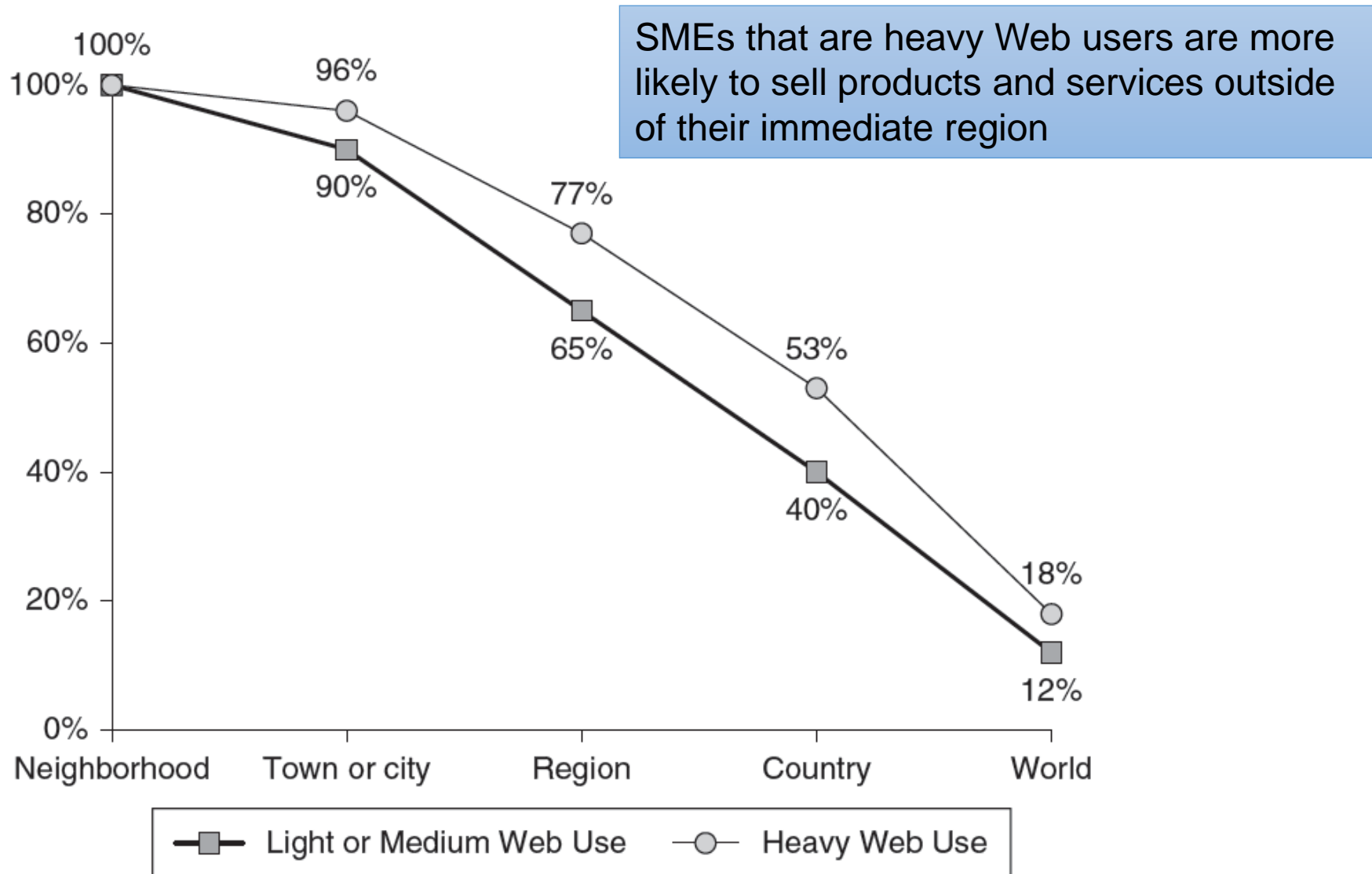
Digital Technology are Drivers of Economic Growth



Firms using Internet in Vietnam (2007 vs 2011)

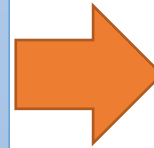


SMEs' Sales Reach by Market, by Level of Web Use



Digitalization and Inclusive Growth – Channels

- Improve connectivity & reduce asymmetric information
- Lower cost for all economies by expanding scale economy and network effects
- Expand economic participation and tap latent markets



- Labor market Inclusion
- Digital Inclusion
- Financial inclusion
- Entrepreneurial inclusion



- Better social, industrial, territory inclusiveness
- Less income inequality

Evidence in the literature

(Positive effects of digitalization on inclusive growth)

- New digital technology will likely replace women's jobs to a lesser extent than men's jobs (Alina, Eckhardt and Christiane; 2017)
- Digitalization of financial services helps overcome mobility constraints for those who live in remote regions, in which traditional financial institutions are underrepresented (G20 Germany 2017 Report)

Evidence in the literature, cont.

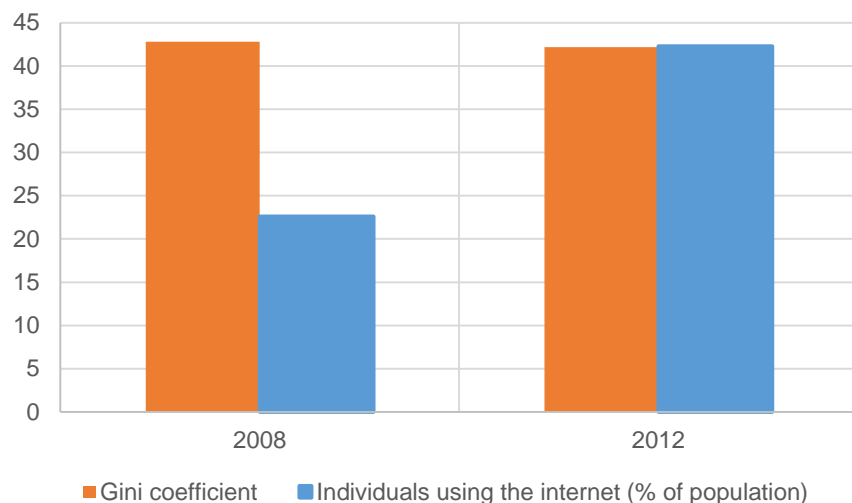
(Digital innovation may also challenge inclusive growth)

- Technology replaces labor but not evenly. Within the high-risk category of workers, a significant number of them have non-tertiary educational qualifications and tend to be older adults, making them less likely to be re-employed if they lost their jobs (Lee, 2017)
- Digital innovation may have negative impact on disadvantaged and excluded groups (OECD, 2017)

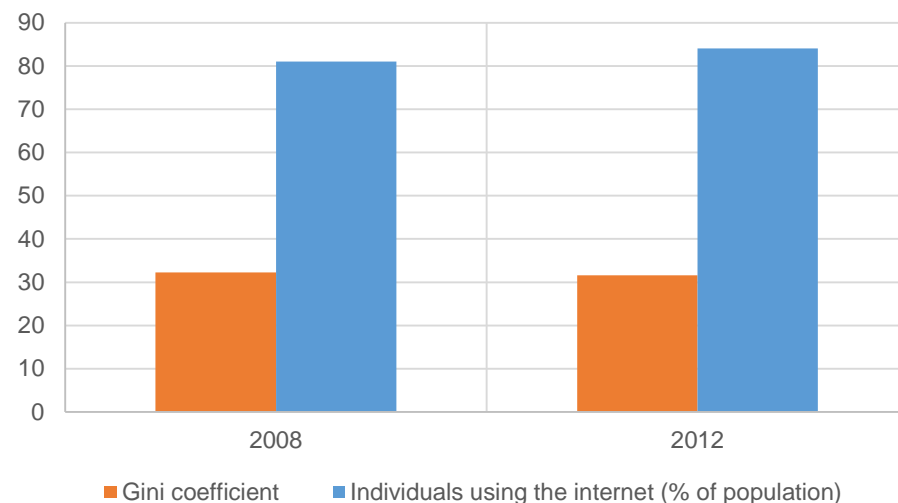
Digitalization does not always lower inequality

(selected countries based on data availability)

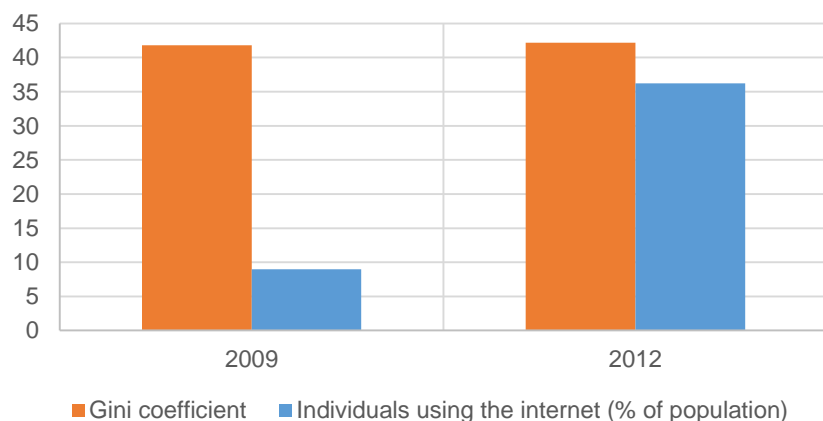
PRC



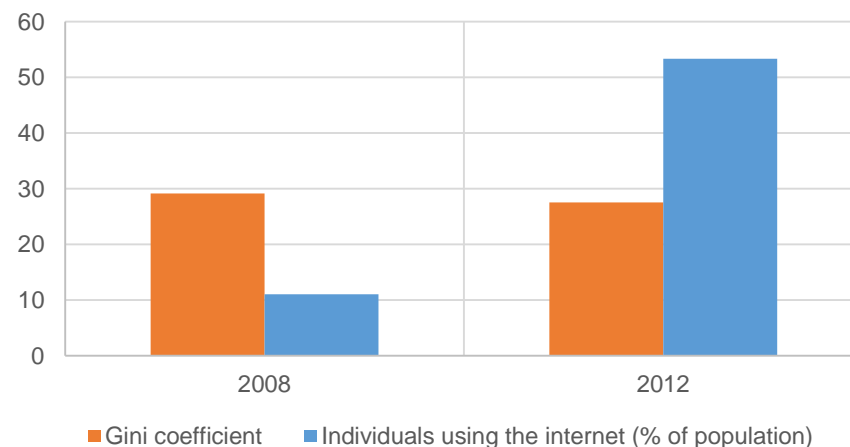
Republic of Korea



Philippines



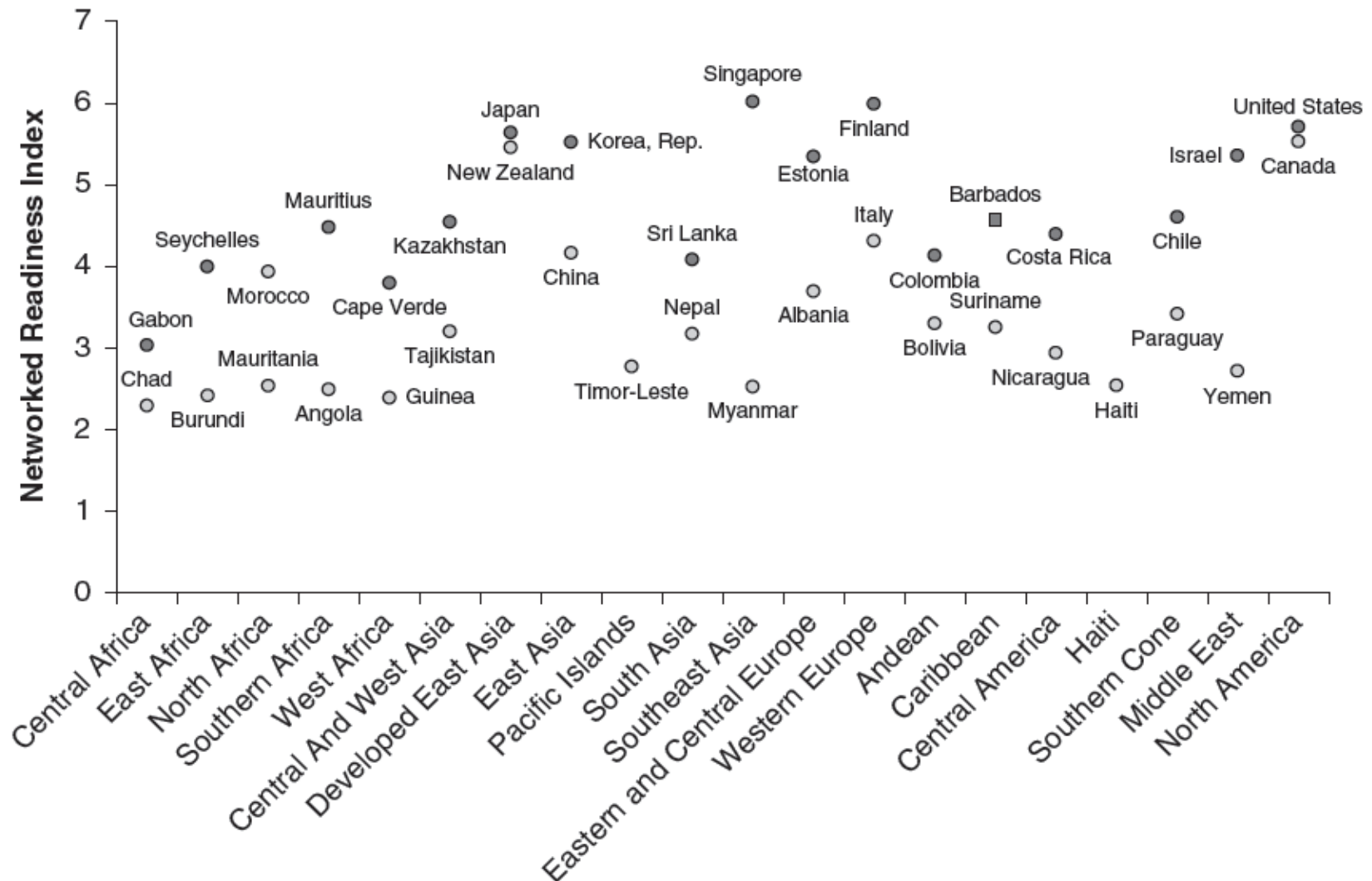
Kazakhstan



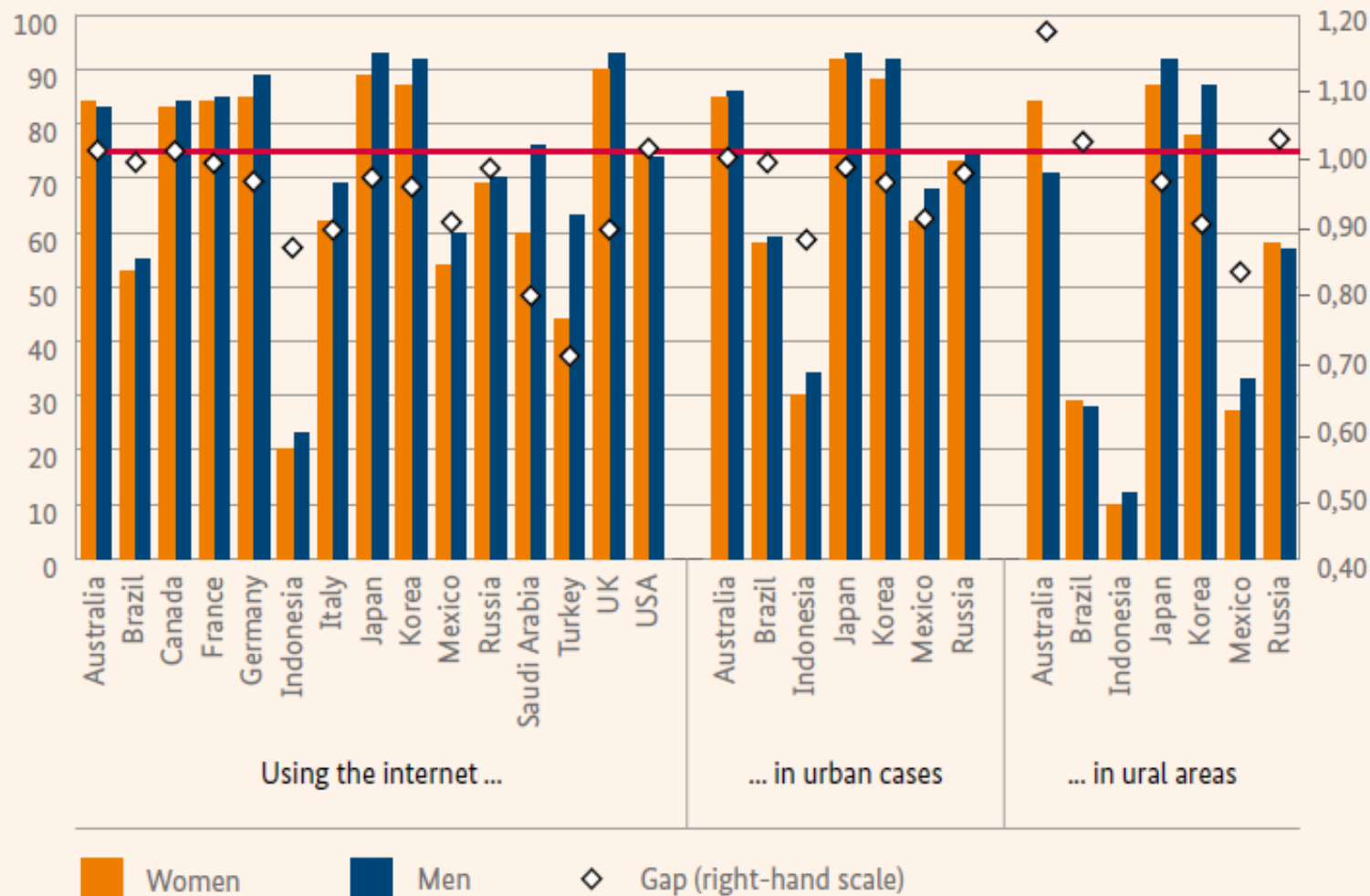
How Digitalized is the world?

Big variations even within the same region

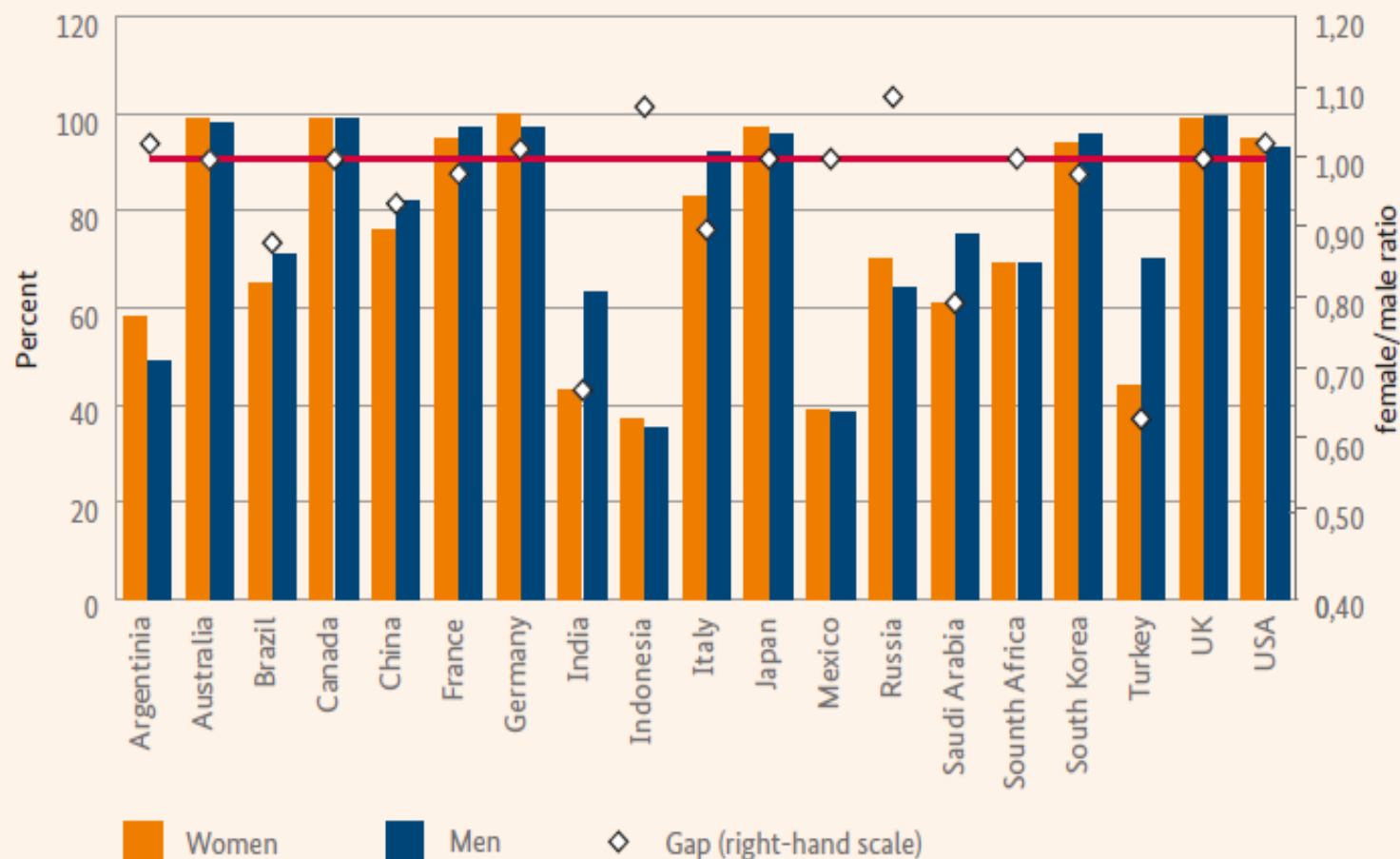
Networked Readiness Index in 2015, by Subregion



Digital Inclusion: Internet Utilization by women as compared to men (2014/2015)



Financial Inclusion: Gender Gaps in account ownership at a financial institution (2014/2015)



Benefits of digitalization: A score card

| Channel | Impact so far | | Potential impact | |
|---------------------------------------|---------------|---------|------------------|---------|
| | Poor | Nonpoor | Poor | Nonpoor |
| <i>Creating jobs</i> | | | | |
| In the ICT sector and occupations | Negligible | L | Negligible | L |
| In sectors that use ICT | L | M | L | M |
| <i>Increasing worker productivity</i> | | | | |
| Increasing returns to human capital | L | M | L | H |
| Connecting people to work and markets | M | H | H | H |
| <i>Benefiting consumers</i> | | | | |
| Increasing consumer surplus | M | H | H | H |

Digitalization and Inclusive Growth – Future (Big Data, AI and Robotics)

- Financial Sector
 - Fintech, digital currency, and blockchain
- Education
 - Online education (e.g., MOOC)
- Healthcare
 - Diagnostic wearable devices with sensors along with big data and big data analytics supported by context-aware computing in real time
- Energy and transportation
 - Online platform, smart contract

Issues and Challenges

- Market failure (externality and Information asymmetry)
 - Underinvestment in basic research in digital technology
 - Underinvestment in applied research commercialization (the “valley of death” for new technology)
 - Underinvestment on physical and soft infrastructure and education
- Asymmetric incidence of costs and benefits
 - Financial risk (e.g., digital currency)
 - Privacy protection
 - Rents for innovation
- Unable to achieve network effects and economy of scale
- Lack of complements
 - Regulations
 - Institutional arrangement

Provisions of RPG

(Advancing digitalization for inclusive growth)

- Connectivity (evolution of technology)
- Complements (the choice of economic, social, and governance arrangements)

Policy Implications

- Physical infrastructure
 - Regional fiber optic cables; regional E-commerce logistics;
- E-infrastructure
 - Regional Internet Exchange Points (IXPs); regional mobile spectra; facilities for data flow; interoperable payment system; techhubs; digital identifiers
- Human capital
 - Online education for skills training
- Regulation and institutions
 - Regulation for financial stability
 - Internet e-commerce legislation
 - Regional harmonization and liberalization pertinent to the digital economy

Example of Regional Initiative



ADB supports high-speed broadband internet in Palau

Palau President Tommy Remengesau led the official commissioning of the high-speed broadband internet service on 7 December in a ceremony at the Palau National Museum. PARC DDG James Lynch led the ADB delegation at the event celebrating the latest milestone of the North Pacific Regional Connectivity Investment Project, which will boost Palau's international connectivity and deliver affordable, accessible, and faster internet. See [news release](#). Sally Shute-Trembath, 5589

Source: ADB Today, December 12, 2017

Regional Mechanisms to provide RPG?

- PPP
- Regional multilateral, multi-stakeholder forums and dialogues
- TA

The Role of MDB?

Next Steps...

- Collect data to analyze the challenges and issues of promoting digitalization for inclusive growth by regions and countries in Asia
- Refine the analytical framework for RPG provision
- Conduct case studies in existing ADB RPG projects
- Suggest regional mechanisms

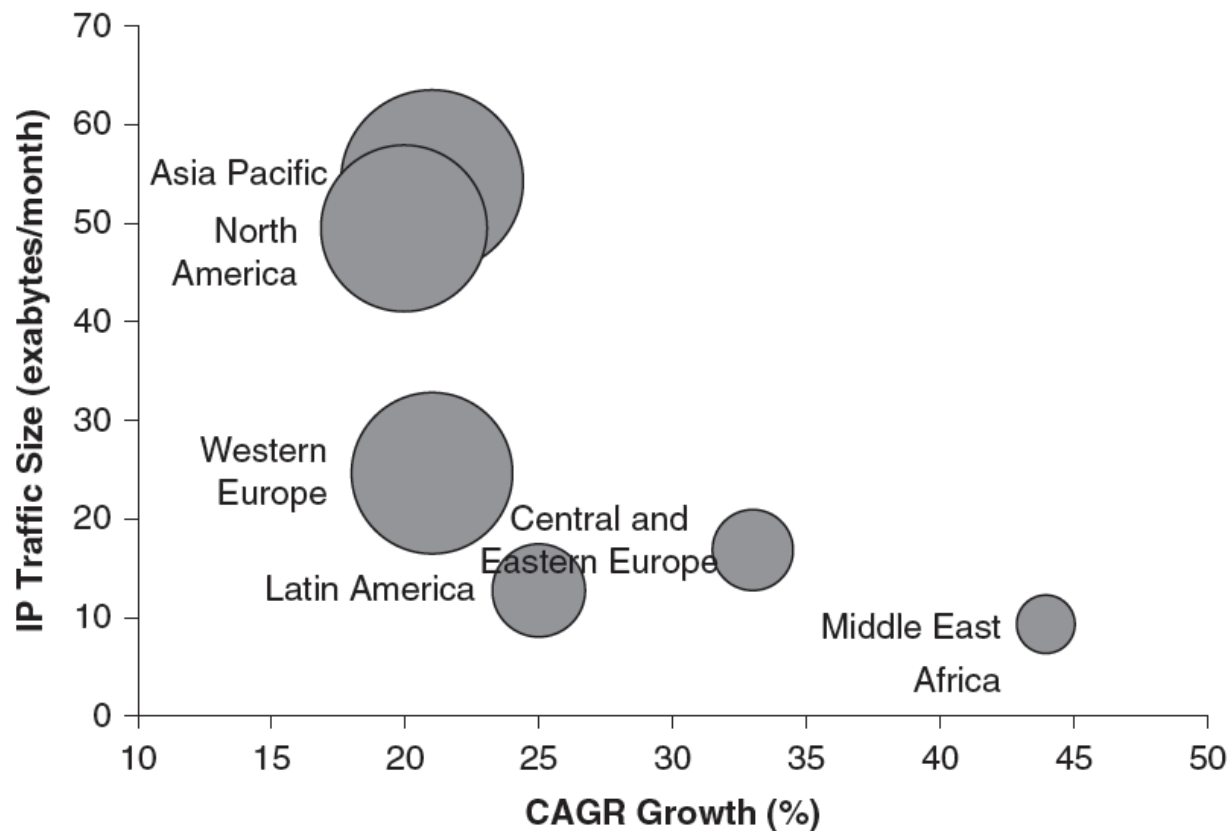


Thank you



Extra

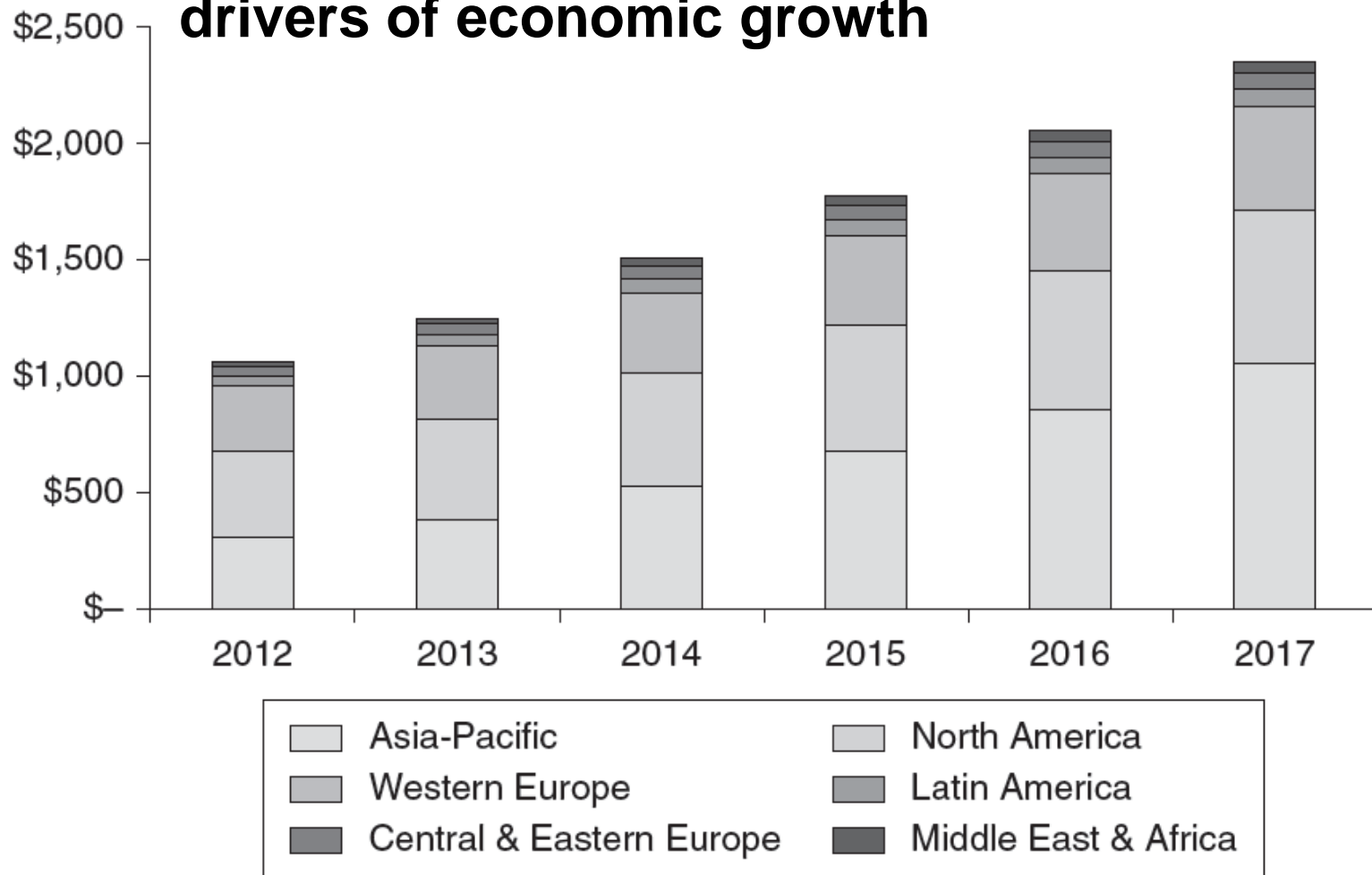
Technology and Innovation in the Digital Economy



IP Traffic in Exabytes per Month by 2019 and CAGR Growth for 2015-2019

Source: Cisco

Digital Technology and Innovations are drivers of economic growth



Global B2C E-Commerce Marketplace in 2012-2017 (in Billions of US\$), by region

Gender gaps in total early-stage entrepreneurial activities in the ICT sector

