Measuring the Digital Economy: Plans and Progress

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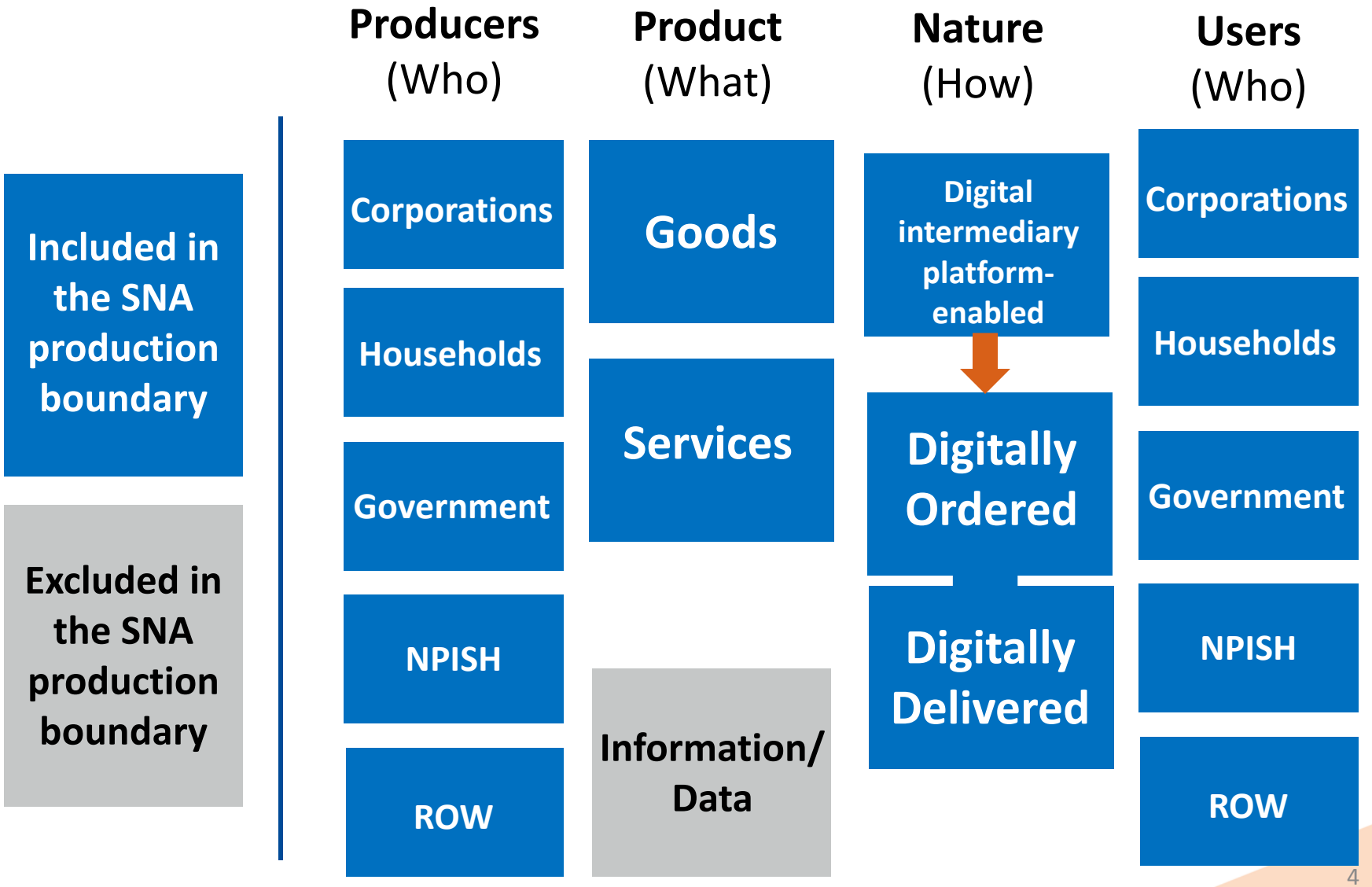
Measuring the Digital Economy

- In 2016, BEA began work on a satellite account to better measure the digital economy and to further capture technology's role in economic growth
  - Partly supported through a reimbursable agreement with the National Telecommunications and Information Administration
- Strategies include:
  - Define the digital economy and capture its contribution to economic growth
  - Improve price and volume measures of high-tech goods and services
  - Evaluate the changing role of data and (re)consider its treatment in the National Accounts
  - Estimate the contribution of "free" digital media and internet services

Toward a Digital Economy Satellite Account

- The U.S. is one of the first countries to produce experimental estimates on the digital economy
  - Initial results were published in March 2018
  - In April 2019, BEA updated experimental digital economy estimates for the period 1997-2017:
    - https://www.bea.gov/data/special-topics/digital-economy
- Initiative is consistent with guidance from the OECD Advisory Group on "Measuring GDP in a Digitalized Economy"
  - BEA chairs the Advisory Group

Toward a Digital Economy Satellite Account



Toward a Digital Economy Satellite Account – Digital Enabling Infrastructure

Digital-enabling infrastructure is the basic physical materials and organizational arrangements that support the existence and use of computer networks, which are the foundation of the digital economy

Digital-enabling infrastructure includes:

- Computer hardware
- Software
- Telecommunications equipment and services
- Structures
- The Internet of Things (IoT)
- Support services

Toward a Digital Economy Satellite Account – E-commerce

E-commerce is the broad term used to describe all transactions involving the purchase and/or sale of goods and services that occur over computer networks

E-commerce includes:

- Business to business (B2B) e-commerce, including manufacturing and wholesale e-commerce
- Business to consumer (B2C) e-commerce, including retail
- Peer-to-peer (P2P) transactions, or what is sometimes referred to as the 'sharing' or 'on-demand' economy, which involve the exchange of goods and services between consumers facilitated through a digital intermediary

Digital media consists of content that is created, accessed, stored, or viewed on digital devices

Digital media includes:

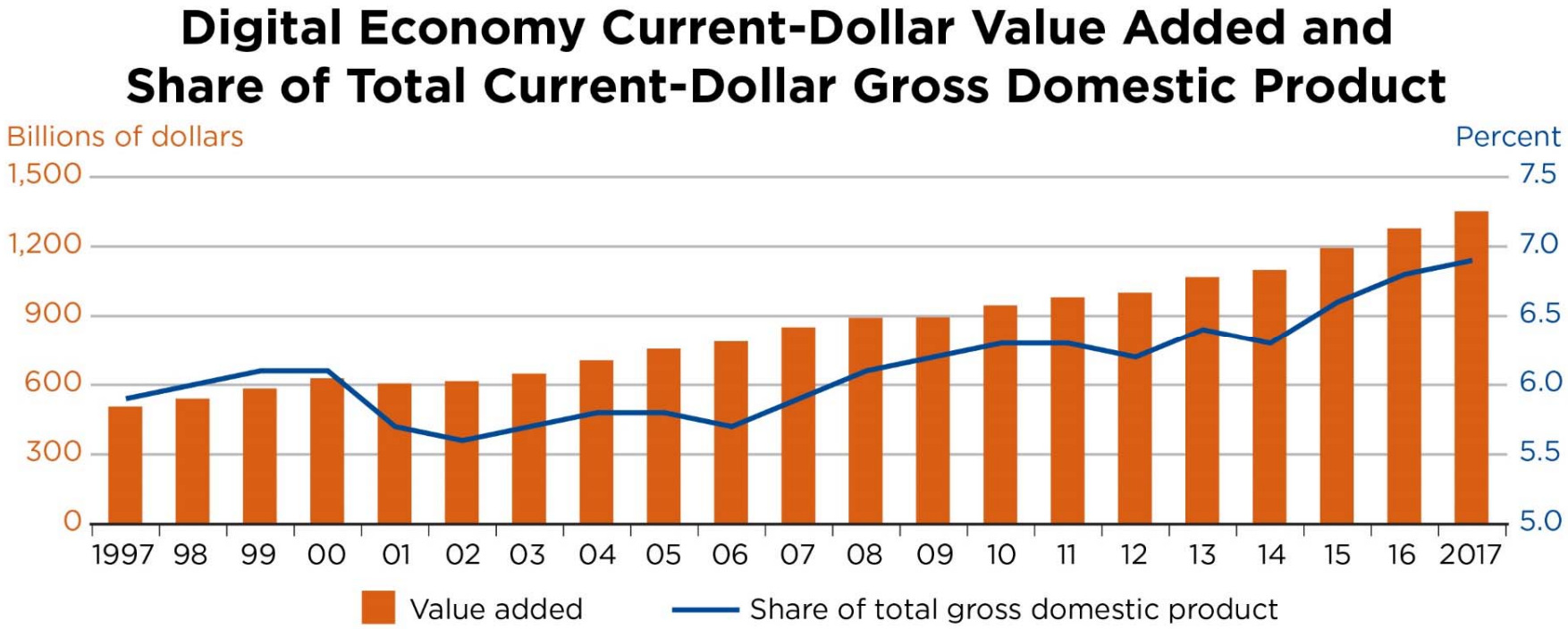
- Direct-sale digital media sold to consumers in exchange for a fee, either on an item-by-item basis or through a subscription service (e.g., Netflix)
- Free digital media—usually supported by advertising or marketing revenue (e.g., Google Search)
- Big data that companies collect during operations and sell to other firms—this could include data on consumer behavior or preferences (e.g., Facebook)

Experimental Digital Economy Estimates

1. **Digital-enabling infrastructure**
   - Hardware
   - Software
   - Telecommunications equipment and services
   - Support services
   - *Structures*
   - *The Internet of Things (IoT)*
2. **E-commerce**
   - Business-to-business
   - Business-to-consumer
   - *Peer-to-peer*
3. **Digital media**
   - Direct sale
   - *Free*
   - *Big data*

Italics denotes ongoing work not yet included in experimental estimates

Digital Economy Share of GDP



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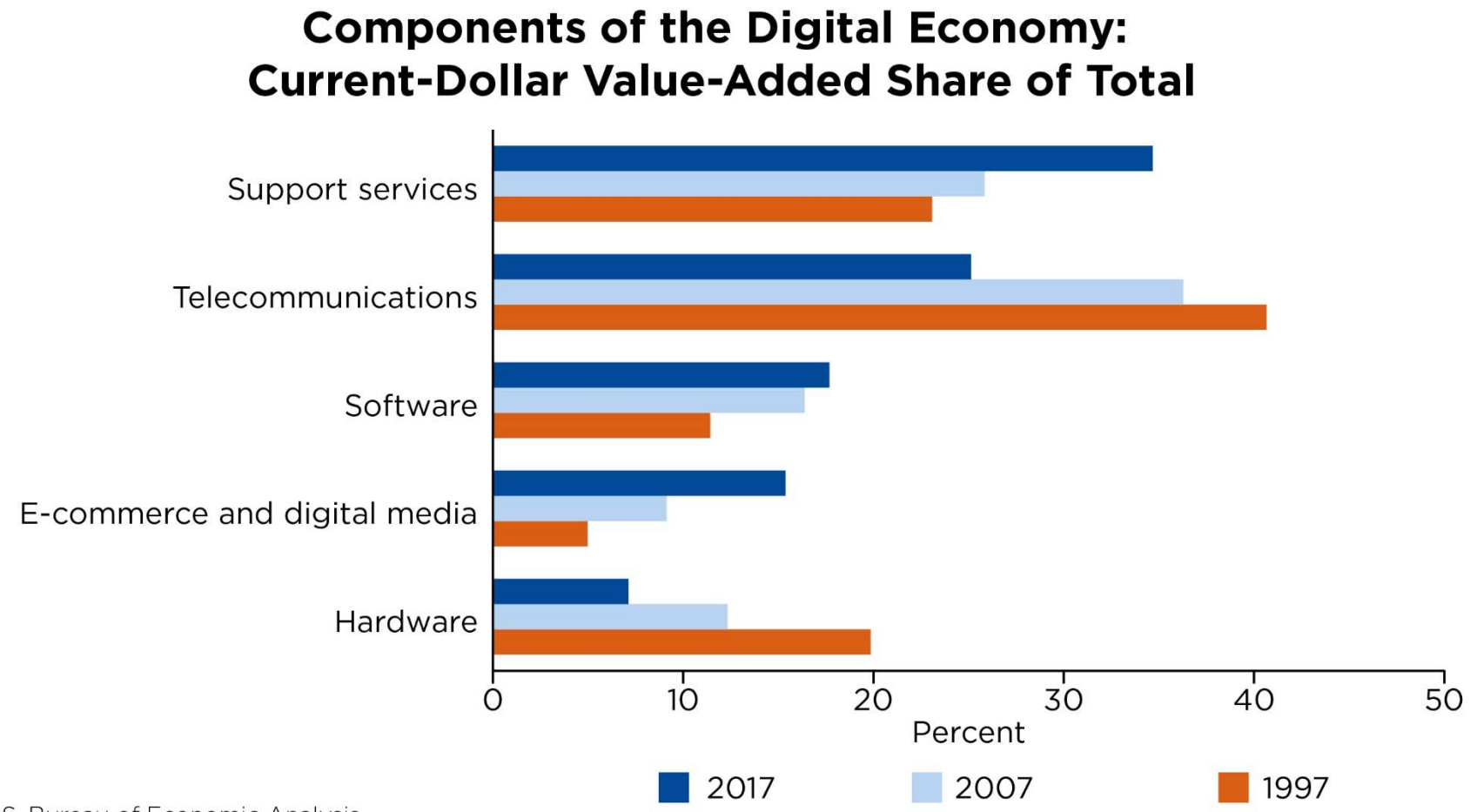
Components of the Digital Economy



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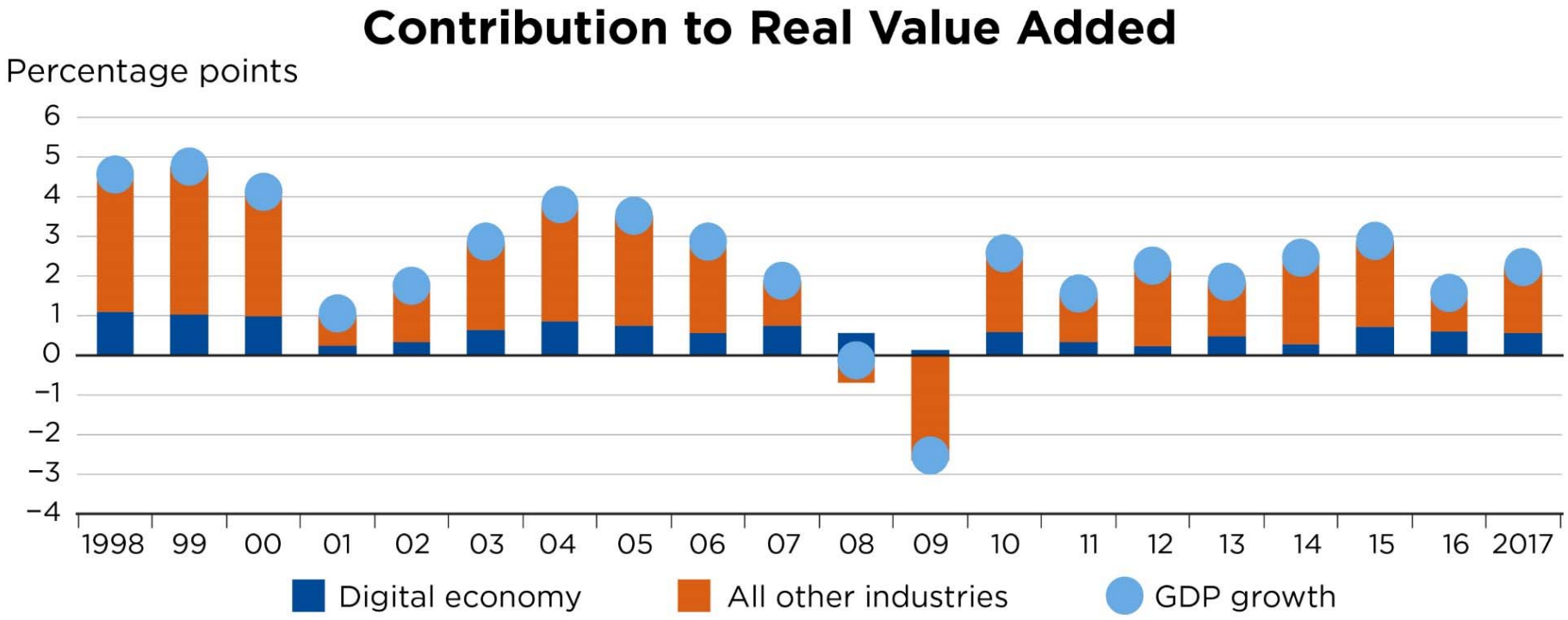
Contributions to GDP Growth



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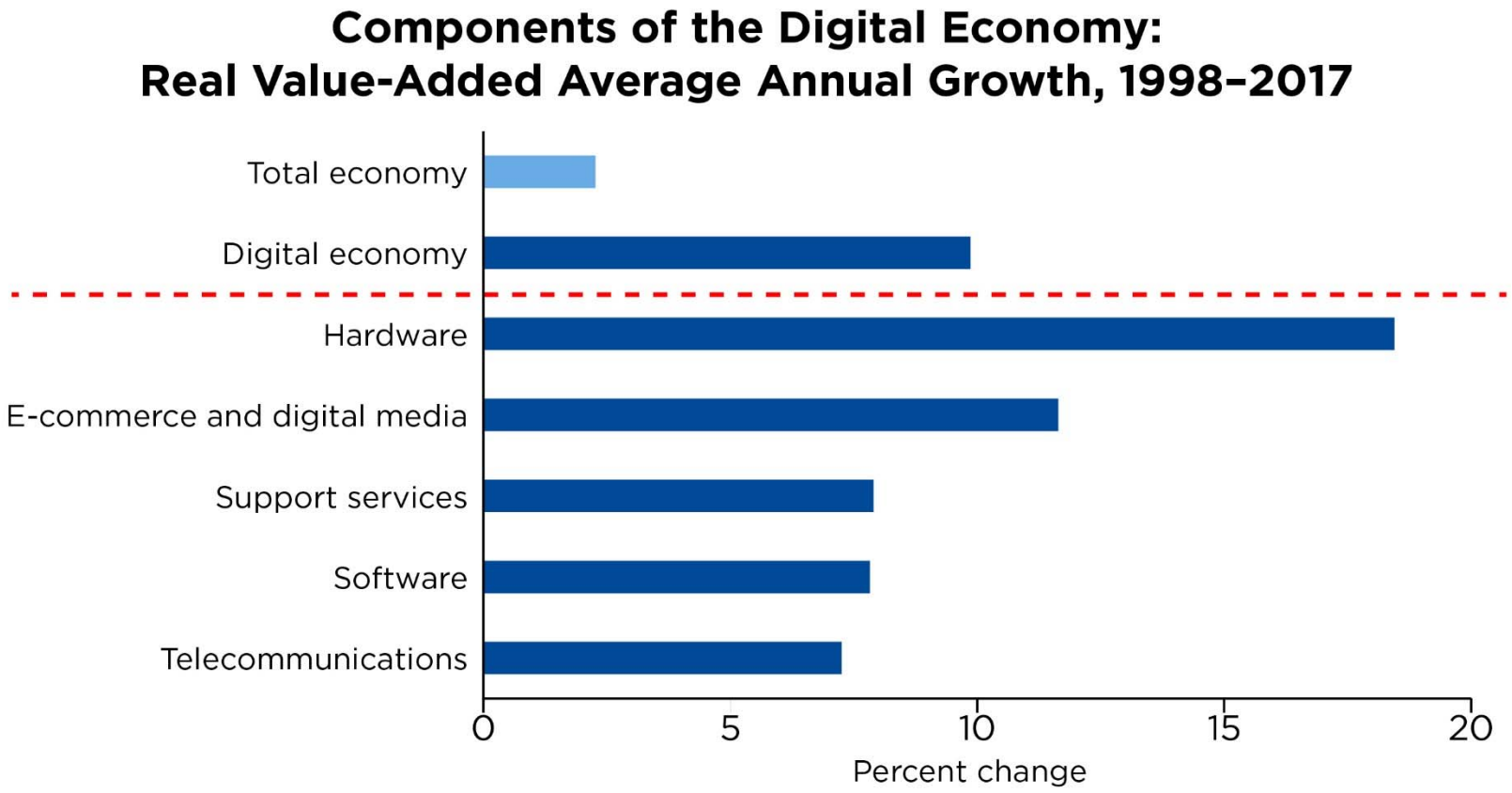

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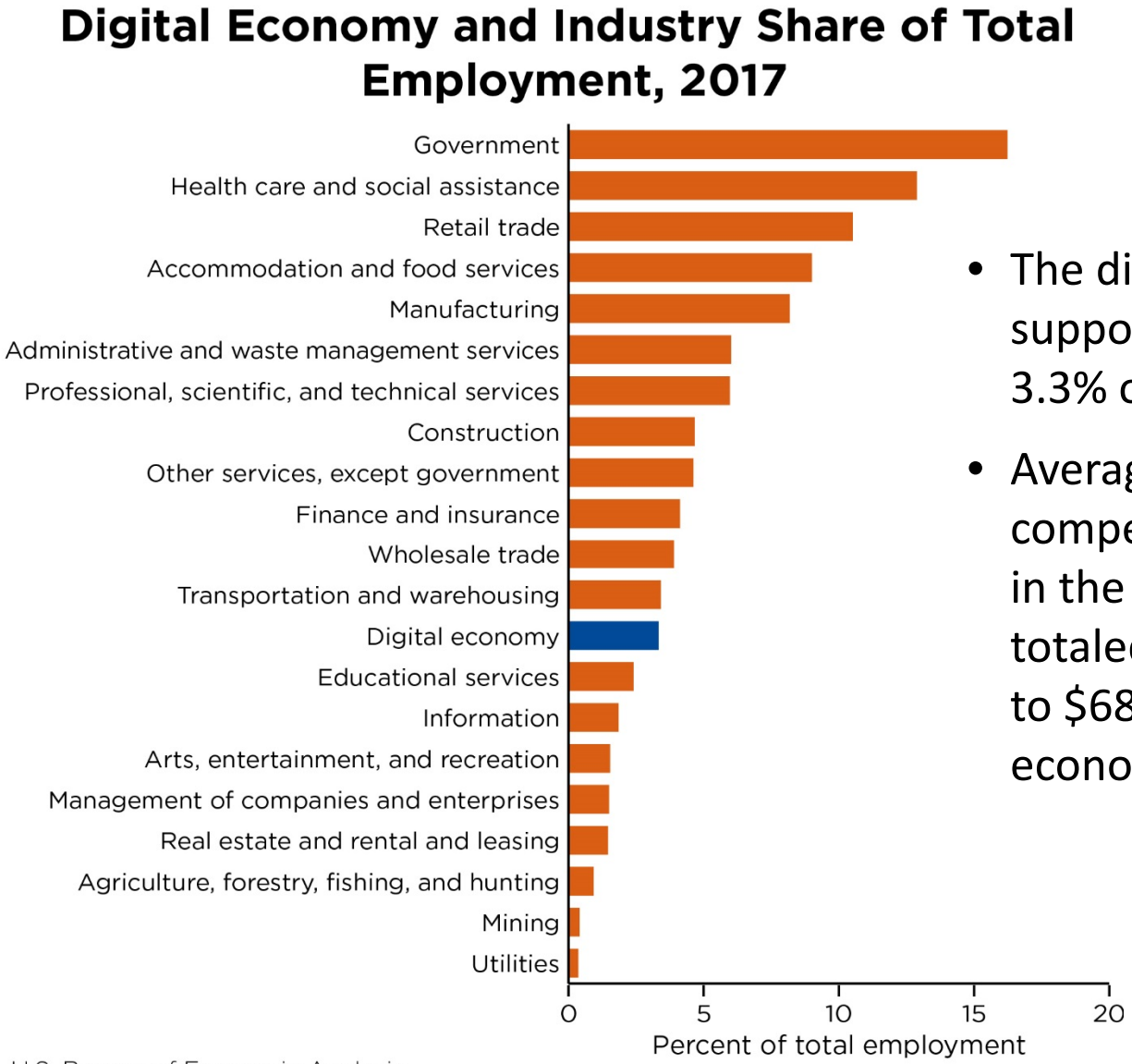
Employment and Compensation



- The digital economy supported 5.1 million jobs or 3.3% of total employment
- Average annual compensation per employee in the digital economy totaled $132,233 compared to $68,506 for the total economy

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Quality-Adjusted Price and Volume Measure for High-Tech Goods and Services

- Progress: 2018 Comprehensive Update
  - Improved software prices
  - Introduced new quality-adjusted prices for electro-medical equipment
  - Incorporated new and revised quality-adjusted prices (including cellphones) from the Federal Reserve Board
- Plans: 2019 Annual Update
  - Incorporate new BLS quality-adjusted CPIs for cellphones, available as of January 2018
  - Incorporate historical smartphone prices and improved nominal consumer spending based on Aizcorbe, Byrne and Sichel (2019)

Measuring Data in the National Accounts

- What is the role of data in a modern economy?
- What is an appropriate typology of data?
- How are data currently treated in national accounts and how are data valued in the private and public sectors?
- Who owns data?
- What are the different methods that national statisticians could use to assign a value to data?
- What is the value of data?

“Free” Internet Services

- Many Internet services do not involve direct payment of fees by users, but rather are funded by advertising
  - Google search, Facebook, Instagram, etc.
- Consumers, however, undoubtedly value these services and would be willing to pay for them
- Economists argue that the value to consumers is “missing” in household final consumption expenditures/GDP

Conclusion and Next Steps

- Fall 2019, BEA plans for an update of the Digital Economy Satellite Account, focused on estimates for cloud computing and online platforms
  - A first step is profiling MNE data collections for cloud and digital intermediaries
- Next steps are many:
  - Ongoing work to update the satellite account to reflect guidance from the OECD Advisory Group
  - Further considerations on the treatment of data, “free” internet services
  - Continued work to prioritize improvements to price and volume measures for “digital” goods and services