34th Voorburg Group Meeting Paris, France 30 September - 4 October 2019

Christian Stock
Statistics Austria

Presentation on Issues Paper

Data processing, hosting and related activities (ISIC 6311) (Cloud computing)

STATISTICS AUSTRIA
The Information Manager

- Turnover/Output

Ramon Bravo, Mexico

Olof Landberg, Sweden

Andrew Baer, USA

- Prices

Susanna Tag, Finland

Agnieszka Matulska-Bachura, Poland

Itsik Tal, Israel

- Discussant

Dorothee Blang, Germany

Industry classification

ISIC 6311, Data processing, hosting and related activities

-provision of infrastructure for hosting, data processing services and related activities

-specialized hosting activities such as:
-Web hosting
-streaming services
-application hosting
-application service provisioning
-general time-share provision of mainframe facilities to clients

Industry classification

ISIC 6311, Data processing, hosting and related activities

- data processing activities:
- complete processing of data supplied by clients
- generation of specialized reports from data supplied by clients
- provision of data entry services

Product classification

- CPC 83151, Website hosting services

- CPC 83152, Application service provisioning

- CPC 83159, Other hosting and IT infrastructure provisioning services

- CPC 83633, Sale of Internet advertising space (except on commission)

Industry classifications used

- ISIC Rev.4:   United Nations (2008)

- NACE Rev.2:   EU (2008)

- NAICS: North America (2012)

- NAICS Mexico: North America Mexico (2013)

Product classifications used

- CPC Ver. 2.1:   United Nations (2015)

- CPA Ver. 2.1:   EU (2015)

- NAPCS: North America (2017)

- NAPCS Mexico: North America Mexico (2017)

Classification issues

- Content of industry and product classifications is similar

- Traditional vs. new services in the service industry

- Rapid changes in the IT service sector (e.g. cloud computing services) cause difficulties for industry and product classifications

- Focus is often on the main activity only

- Secondary activities (ISIC 582 'Software publishing' and 620 'Computer programming, consultancy and related activities')

Cloud Computing

- ISO: 'paradigm for enabling network access to a scalable and elastic pool of shareable physical or virtual resources with selfservice provisioning and administration on-demand'

- NIST: 'model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction '

Cloud computing

Software as a Service (SaaS)

Software as a Service (SaaS)	CPA 58.2 Software publishing services
	CPA 58.29.40 On-line software
	CPA 63.11.13 Application service provisioning

Cloud computing

Platform as a Service (PaaS)

Platform as a Service (PaaS)	**CPA 62.01 Computer programming services**
	CPA 63.11 Data processing, hosting and related services

Cloud computing

Infrastructure as a Service (IaaS)

Infrastructure as a Service (IaaS)	CPA 63.11.1 Data processing, hosting, application services and other IT infrastructure provisioning services

Cloud computing

- Growth of the data processing, hosting and related activities industry
  U.S.
  Europe

- Growth of the cloud computing industry
  U.S.
  Europe
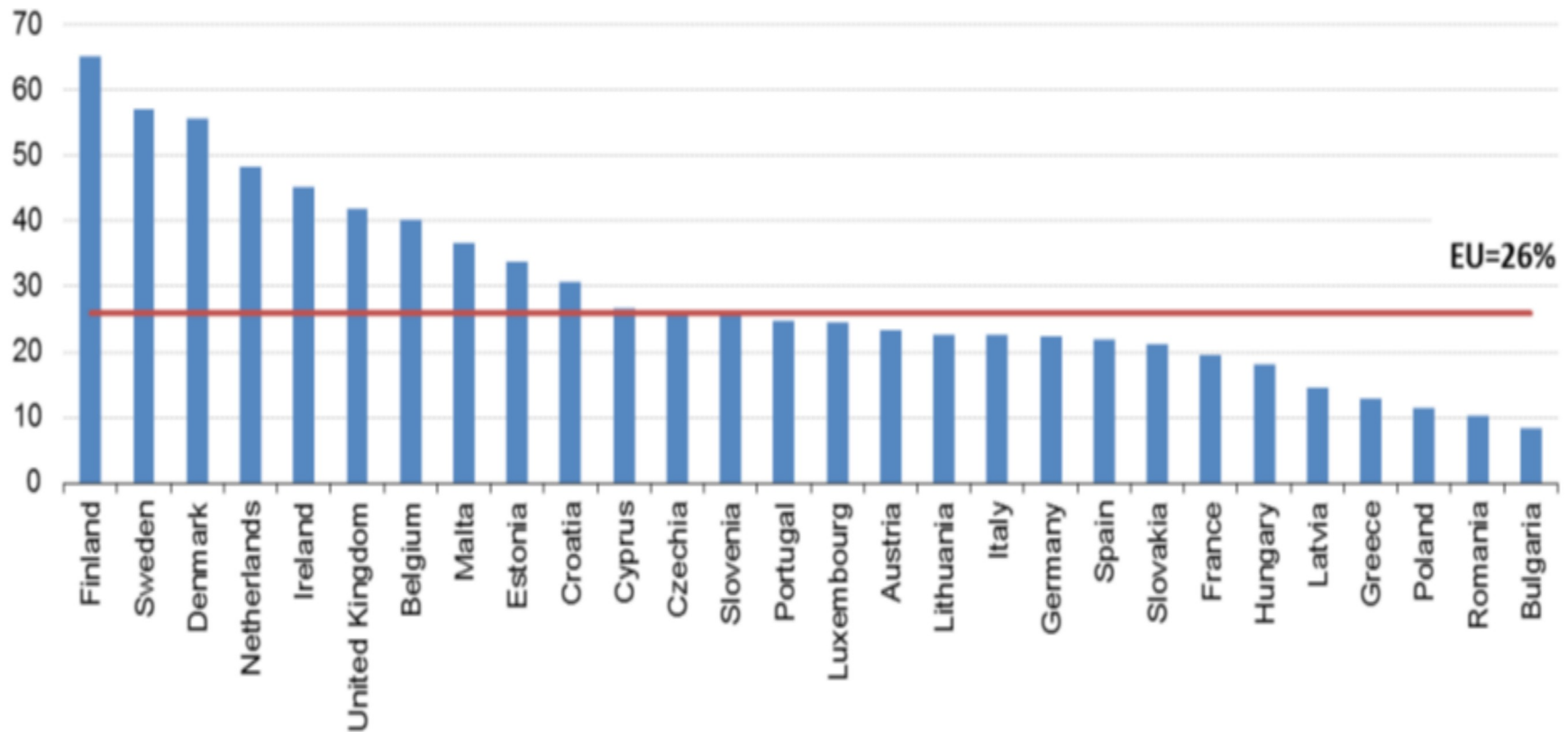
- Traditional activities are mixed with cloud computing

Cloud computing

Use of cloud computing services by enterprises in the EU member states, 2018 (% of enterprises)

EU=26%

Cloud computing

- Global companies offer cloud computing services
  - ➢ Measuring and ensuring coherence of transactions between the ultimate owner of the cloud computing infrastructure, the unit where the infrastructure is located, and the end user

- Cloud computing services are also intermediate inputs in the production process of services

- Many different cloud computing offerings to customers

- Direct value of cloud computing services is not always available

- Bundled services

- Turnover is generated by different establishments at different points in time
  - ➢ Improvement of latency can be a driving force for setting up new data centers

- Unclear if enterprises record turnover on establishment level

- Alternative sources of turnover/output information
  - ➢ Administrative tax records
  - ➢ Social security system
  - ➢ Regulatory institutions

Service Producer Price Index (SPPI)

- Publication of higher aggregate levels

- Industry vs. product level details

- Missing cloud computing data
  - ➢ Classification of enterprises
  - ➢ Weighting of enterprises and their services

Service Producer Price Index (SPPI)

Price determining factors

- Latency

- Type of technical equipment from the cloud provider or lease period of resources from the service provider

- Processing performed overnight, during the workday or over the weekend

- And others: Number of users, computer storage capacity (gigabytes), computer connection speed, etc.

Service Producer Price Index (SPPI)

Pricing methods

• Data processing, hosting and related activities are complex services. A wide range of services, service packages and pricing schemes are offered by enterprises of this industry. Various pricing methods could be best options

• Direct use of prices of repeated services, contract pricing, hourly charge-out rates, unit values, hedonic pricing

Service Producer Price Index (SPPI)

Pricing methods

Main basic pricing mechanisms in the cloud computing industry

Pricing mechanism	Price
Fees based on time or usage	e.g. Price per hour of application usage, Price per GB of storage
Hyprid form	e.g. Price per month combined with price per hour after a certain limit of the service
Flat fee (Subscription)	e.g. Price per month to access the service

Future topics

- Cloud computing services should be explicitly defined in classifications

- Missing of product level details for this industry

- Any other classification codes with secondary cloud computing activities

- Identify different units and characteristics of global companies offering cloud computing services and units of cloud computing users

- How the supply and demand side of cloud computing services interact together

Future topics

- More cloud computing information on turnover/output and prices is needed

- Adaptation of already used pricing methods or development of new ones (e.g. for cloud computing services)

- Development of pricing methods for main cloud computing categories (SaaS, PaaS and IaaS)

- Any other important cloud computing categories

- Bundled cloud computing services (which products, how frequently they are transacted together)

Please address queries to:

Christian Stock

Contact information:

Guglgasse 13, 1110 Vienna

phone: +43 (1) 71128-7967

fax: +43 (1) 718 0 718

christian.stock@statistik.gv.at

Thank you!