

**UN-ECLAC,  
UNCTAD, and IMF  
Webinar  
Measurement of the  
digital economy and  
trade in Latin  
America and the  
Caribbean**

November 8-11, 2022



**STATISTICS**

**Measuring Cross Border  
Digital Trade Consumption  
of Online Services by  
Households**

Statistics Department, IMF

# Agenda

- **Developing Digital Trade Estimates**
- **Germany: Estimation of Consumption of Digital Trade (Internet products)**
- **Ireland: Estimation of Consumption of Online Services by Households**

# Roadmap to developing digital trade estimates

Country **strategy** towards developing digital trade estimates

- What is the impact on the economy (trade, investment, etc.) of the advent of digital technology, and how fast is it growing?
- Sectors of activity that play a major (but also disruptive) role in the economy affecting both business and consumers behaviors
- How to measure the digital sector, including the cross-border aspects? Contribution of digital trade to major aggregates (GDP, employment, etc.)

**Framework** for the development of digital trade estimates (data collection template)

# Strategy towards developing digital trade estimates

## Define the *digital trade*

by identifying:

- Most relevant **products** (**goods; services**) and/or that are online ordered and/or delivered
- Typology of **industries** (Digital-enabling infrastructure, DIPs, digital media, etc)
- Main **actors/ institutional sectors** (business; households; government?) and direction of flows (**supply/consumption; imports/exports**)
- Presence of **Domestic** vs. **foreign DIPs** in the economy

## Data sources:

- **studies, research**; possibility to exploit and/or add questions to existing sources (e.g., **surveys**);
- development of **new sources** and cost implications;
- **large case units**

## Institutional and legal framework

- **supportive legislation**;
- **interagency cooperation**, data exchange, etc.)

## Publish experimental estimates

- including **contribution to major economic aggregates**, and
- **plan refinements and improvements**

# Template for reporting Digital Trade (simplified)

	Exports			Imports		
	By Institutional sector			By Institutional sector		
	Corporations By industry	Governments	Households / NPISHs	Corporations By industry	Governments	Households / NPISHs
i Digitally ordered						
ii Goods	ES	AR	HS/CC	ES/ITSS	AR	HS/CC
iii Services*, not digitally delivered	ES/ITSS					
iv Digitally delivered services*						
v Digitally ordered*		AR	HS/CC	ES/ITSS/ITRS/VAT	AR	HS/CC/MOSS
vi Not digitally ordered*	ES/ITSS/ITRS					
<b>vii Total Digital Trade</b>						
<b>viii Transactions via DIP's</b>						
ix Digitally ordered						
x Goods	ES + DIP		HS/CC + DIP	ES/ITSS + DIP		HS/CC + DIP
xi Services*						
xii Digitally delivered*	ES/ITSS/ITRS + DIP		HS/CC + DIP	ES/ITSS/ITRS/VAT + DIP		HS/CC/MOSS + DIP
xiii Not digitally delivered*						

\* Services should be displayed by EBOPS category, see Chapter 4

ES = Enterprise surveys

HS = Household survey

CC = Credit card data

ITSS = International Trade in Services Statistics Survey

DIP = Data collected directly from Digital Intermediation Platforms  
(especial surveys, webscraping, etc.)

ITRS = International Transaction Reporting System

MOSS = Mini One Stop Shop

AR = Administrative records

VAT = administrative records from value added tax collection (especific for digital activities)

# **Germany:** Estimation of Consumption of Digital Trade (Internet products)

**Source: Bundesbank, Germany**

# Motivation

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- ❑ Considerable **growth of Internet products** (video streaming, online games, purchase of apps and cloud computing) by households
  - Close the gaps in official statistics to avoid an asymmetric recording in external statistics (BOP)
  
- ❑ Particularly **challenging to compile** business to consumer (B2C) micro-transactions because the measurement often falls outside of the traditional collection systems due to high thresholds
  - On the business side these thresholds might be of minor relevance, but entail many transactions
  
- ❑ To close these gaps the Federal Statistical Office (Destatis) and the Deutsche Bundesbank initiated a project in 2018 to improve the measurement of digital trade

# Estimation Approach

- **Possible ways to estimate:** (i) introduce a new sample survey (costly, burden to compilers); or (ii) **access existing data sources** (preferred for a start)



- **Bottom-up approach. Two steps, using:**

- ▶ Freely available data sources (total turnover on five categories);
- ▶ Share of foreign enterprises contribution to total turnover by case

- The online market was broken down into five categories and the work between the two institutions was assigned as follows:

a. *Video on demand*

b. *Music on demand*

c. *Buying and using software*

d. Gambling

e. Cloud computing

f. ....



Deutsche Bundesbank



Destatis



# Video on Demand

- **Video on demand (VoD)** essentially encompasses three different business models:
  1. Time-limited individual hire of professionally produced films, series or shows (transaction-based VoD or **TVoD**)
  2. Subscriptions to a video streaming service (subscription VoD or **SVoD**)
  3. Individual purchases of films or series as a direct download similar to the purchase of a DVD or blu-ray (electronic sell-through or **EST**)
- Estimates are based on a **2018 consumer panel**, which was carried out on behalf of Germany's national film funding institution
- Aggregate sales for **TVoD, SVoD and EST** for Germany in 2017 accounted for **€0.8 billion**
- The share of video on demand that is relevant for the balance of payments (non-resident providers) is estimated as being **38%\*** of total sales of **€290 million**

\* Source: Study of Goldmedia (German strategic consultancy firm)

# Music on Demand

- Source: Federal Music Industry Association (BVMI)
- German digital music sales account for **€0,7 billion** in 2017
- Included:
  - Music downloads
  - Audio streaming
  - Real tones
  - Digital audio books
- Roughly **90%** of sales from
- music on demand is generated by non-resident providers\*

Year	Sales in € bn, according to consumer panel	Sales in € bn, adjusted for resident providers
2008	0.140	0.126
2009	0.163	0.147
2010	0.203	0.183
2011	0.247	0.222
2012	0.294	0.265
2013	0.328	0.295
2014	0.371	0.334
2015	0.486	0.437
2016	0.604	0.544
2017	0.741	0.667

\* Source: Statista

# Buying and using Software

## *Mobile applications (incl. games) for smartphones and tablets*

- **Assumption:** the global market shares of Apple and Android stores are equivalent to their market shares in Germany.
- For the Android stores, using different sources, the assumption was made that 10% of sales are generated by German publishers and are not relevant to the balance of payments
- **Preliminary result:** The total amount of sales was estimated at € 1.11 billion
- **Adjustments** were made for sales billed via one of the two app stores (Android Stores and iTunes) for transactions which are included in the “video on demand” and “music on demand” segment.

## *Video games for PC / games consoles / online or browser games*

- For **estimation** purposes, sales were broken down into seven categories: (1) Games for PC /Mac; (2) Games for TV consoles; (3) Games for handhelds; (4) Games for mobile phones/ smartphones / tablets; (5) Subscriptions/monthly fees for online games; (6) Monthly fee for online networks; and (7) Spending on virtual goods in games.
- **Adjustments** were made, including correction for physical games; elimination of category “Games for mobile phones / smartphones / tablets“; correction for In-apps purchases; correction for German publisher

# Gambling

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- According to the German Interstate Treaty on Gambling of 2012, it is possible to play the following games of chance online:
  - Private sport and horse racing betting
  - Online casino games
  - Online poker
  - Online secondary lotteries
- The state governments' gambling supervisory authorities have been drawing up annual reports since 2014
  - Gross gambling revenue = wagers and stakes - winnings paid out
  - Gross gambling revenue also includes a portion of sales that is generated not online but at a gambling outlet
- In 2017, the gross online gambling revenue was €2,6 billion, representing about **21%** of the gambling revenue

# Estimation Approach: Cloud services

- A broad range of IT services, such as extra storage space for hosting a website or backing up data
- Although households get a certain amount of free storage space free of charge from their internet provider some of them buy *extra space*
- To calculate ***purchases of extra storage space*** by households a model was developed which uses information from
  1. ICT survey which contains information on cloud usage
  2. Internet research on storage space provide free of charge by different providers prices for cloud purchases
  3. Share of German providers
- Assumption: around **5%** of cloud users do indeed purchase storage space from abroad

# Results

- In 2019, estimated digital trade of German households amounted to € 7.4 billion

€ Mill	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Apps</b>	11	65	171	308	392	659	929	1,080	1,109	1,139
<b>Games</b>	258	344	390	339	370	589	690	812	995	1,219
<b>Video</b>					46	57	161	207	292	412
<b>Music</b>	146	182	222	264	295	334	437	544	667	779
<b>Gamb</b>				330	1,322	1,344	1,839	2,046	2,594	2,824
<b>Cloud</b>	0	37	51	64	87	123	155	184	218	258
<b>Total</b>	415	628	834	1,305	2,512	3,106	4,211	4,873	5,875	6,632

# Conclusions

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- Bottom-up approach delivers a good proxy for service debits of households which are provided via the Internet
- Estimation model is flexible and expandable
  - e.g. platform fees will be included in a next step
  - implementation of other categories / subcategories (e.g. Data Provider etc.)
- Country breakdown is still to be calculated
- Main data sources and data providers are known, which simplifies data updates in the future
- The project is seen as a first step to better measure the Internet based micro-transactions in BOP
- Further, it builds one piece of work to provide data on digital trade according to the definitions of the Handbook of Digital Trade

# **Ireland:** Estimation of Consumption of Online Services by Households

**Source: Central Statistics Office, Ireland**



# Background

## □ Online expenditures by households is of policy importance.

- Households are switching from physical to online activities, and from domestic to non-resident providers
- Consumption patterns also change with the arrival of new online products and various circumstances; for example, the consumption patterns changed during Covid

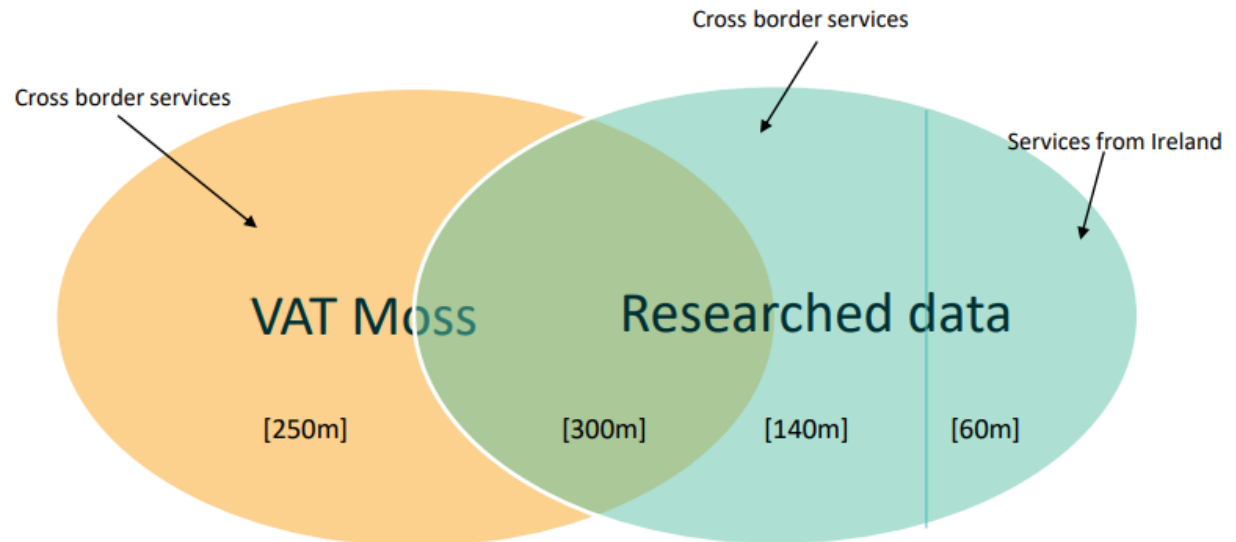
## □ Measurement challenge for statisticians

## □ Two independent approaches to estimates these services, for both the cross-border and domestic transactions

- **VAT Moss - 'Mini-one-stop-shops'**  
administrative data

Method used since 2016 services for BOP item  
**1.A.b.11 Personal, cultural, and recreational services, Debits**

- **Research data**



Note: data not finalised and figures are given for illustrative purposes

# Methodology of estimation: two approaches combined

## VAT Moss

- ‘Mini-one-stop-shops’ administrative data – a **bottom-up approach**
- **Company based**
- **Cross-border transactions**
- Reliable values
- **Estimation method:**
  - Companies *can* register in one EU member state, where the VAT payments are collected by the tax authorities and distributed to other member states
  - Data are collected by the Tax authorities
  - About 2000 companies identified for 2020
  - CSO searched the company names on the Web to
    - (i) categorise the activities and
    - (ii) assign country to non-EU companies
- **Limitations:** incomplete data source (companies are not obliged to channel tax through the VAT Moss)

## Research data – a top-down method

- A **top-down approach**
- **Product based**
- **Cross-border & domestic transactions**
- **Estimation method:**
  - CSO conducted an information-gathering focus group exercise to identify:
    - (i) the *main types of online services* that households buy online, and
    - (ii) the *big providers* of these services
  - Collected additional information to fill in the gaps where companies choose not to use the VAT Moss system
- **Limitations:** potentially incomplete; assumptions needed to derive values; mixed accuracy)

# Household expenditure on online services Ireland

**Results** recorded under the following main categories of services:

- Video streaming
- Online gaming
- Music streaming
- Data storage/software and services
- Online gambling
- Dating
- Audio books and podcasts
- Wellbeing/hobbies

# Conclusions

- ❑ Information on cross border online sales of services to households are challenging to collect
- ❑ The exercise shows that data on household expenditure on online services may be available from administrative records (e.g., VAT)
- ❑ In the absence of administrative data, or where the administrative data are incomplete, estimates based on publicly available sources can also be made
- ❑ The results are necessary as an important component of the BOP and respond to user and public policy needs
- ❑ Plans to publish the first results of the research experiment

## Questions and grey areas

- ❑ Where are these services best placed in the EBOPs classifications?
- ❑ What types of services should be recorded?