



STATISTICS

Status Report on the Work of the Subgroup on the Treatment of Free Products

**UNECE WEBINAR OF THE GROUP OF EXPERTS ON NATIONAL
ACCOUNTS**

WEBINAR 3: DIGITALIZATION

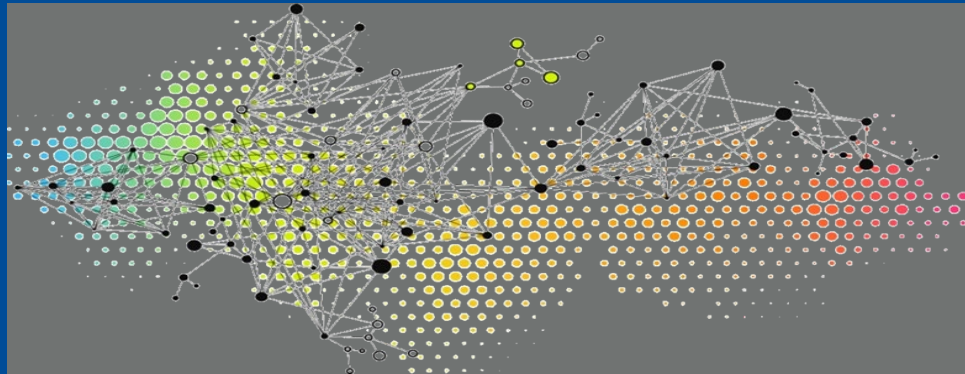
14 SEPTEMBER 2020

Marshall Reinsdorf

Senior economist

Statistics Department, IMF

Views expressed are those of the author and should not be attributed to the IMF, its Management, or its Executive Directors



Introduction

Free products supplied by market producers have been a key part of the debate over possible mismeasurement of the digital economy

- Some claim that the proliferation of free products in the digital economy means that price is no longer the sole satisfactory measure of value of outputs of market producers
- Others regard the free products as an issue just for measurement of price and volume

This presentation will discuss the recommendations and debate concerning free products

Outline of the presentation

- I. Introduction
- II. Free assets: The Case of Software
- III. Free assets: The Possible Case of User-generated Content
- IV. Free services of platforms in GDP
 - A. The Barter Approach
 - B. The Bundling Approach
- V. Free platforms and indicators of price and volume growth

Free Assets: Software

Open source software

- Software has gradually moved towards open source
- Greenstein et al. valued open source software at Microsoft's price for equivalent software, while Robbins et al. valued it at the hypothetical cost of the developers' time
 - ▶ The developer's time approach implies that **only the software original is an asset**
- **Most open source software may be developed by employees and hence already included in cost-based estimates of own-account investment in software**

Bundling of free software

- Free software is often a means of selling services or upgrades and add-ons
 - ▶ The revenue from the bundle fully covers the supplier's costs of production
- Free apps for smartphones that show ads and collect users' data resemble free platforms, which some propose to treat as a special case of bundling

Free Assets: User-generated content

User-generated content is within the GDP production boundary if and only if it generates income for its creator (e.g. from advertising), or at least is expected to do so

Are there circumstances that would make user-generated content an asset for the platform?

Free (Commercial) Platforms

Recording free (commercial) platforms in GDP level is a topic of debate

One side of the debate favors the **Barter Approach**

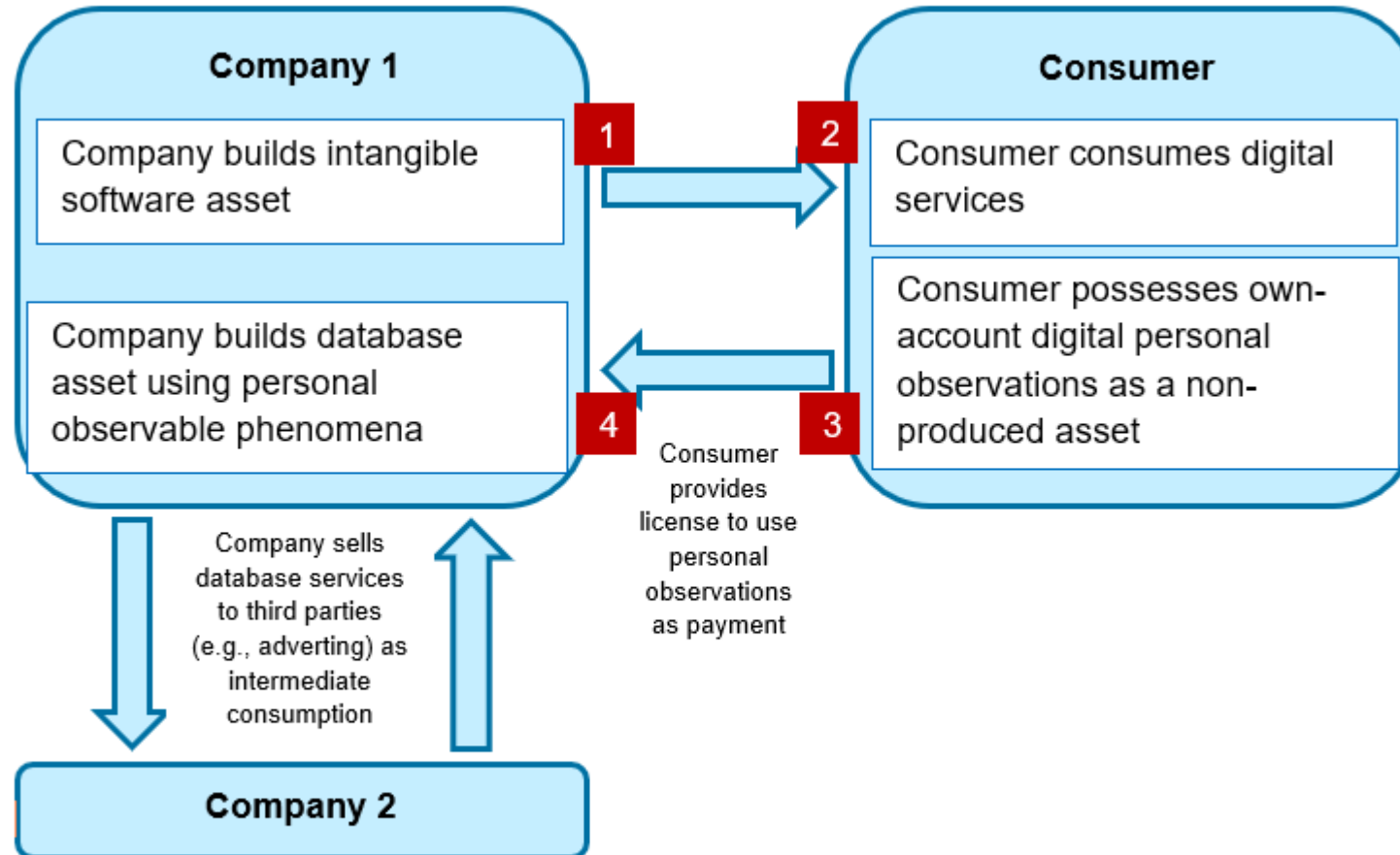
- In exchange for access to the “free” content, platform users supply (1) their attention for viewing ads and/or (2) a license to collect data on their activities and characteristics
- Barter transactions \Rightarrow need to impute implicit purchases of the free content

The other side favors the **Bundling Approach**

- Free services are paid for indirectly via mark-ups on the advertised products
- Thus they are already in GDP

Barter of license to observe and record the user's activities in exchange for the free content

Figure 1: Barter of Personal Observable Phenomena for “Free” Services



Source: Adapted from Heys (2020).

Imputed value of the license to collect data on the user represents a rent for access to a non-produced asset

Imputed value of the free digital services consumed by the platform user is an output of the platform that increases its value-added

Own-account investment in a long-lived database could also be a new output

SNA 2008 already counts selling the database services to third parties as output

Background on Bundling of Cross-subsidized Outputs

Cross-subsidized outputs of ordinary (non-platform) businesses are common

- Free/subsidized outputs help sell other outputs at a mark-up
 - ▶ E.g. Cheap printer and over-priced ink cartridges; Freemium software/subscriptions
- Supplier's output can be measured by the revenue from the bundle with no need for special procedures
 - ▶ Mark-ups on some items fund the subsidies on other items
 - ▶ "Correcting" the subsidized (possibly free) price without simultaneously correcting the marked-up price would overstate the supplier's output
- *Although not a problem for measuring the supplier's output, cross-subsidized prices could be a problem for measuring the **uses** of the output that affects GDP if free/subsidized fixed assets are funded by mark-ups on services and supplies*

Bundling Approach to Free Platforms

Platforms are service providers that facilitate interactions between two or more parties

2-sided platforms usually have a subsidized side, which is often free, and a funder side

- The users on the free side increase the value of the platform to those on funder side, making them willing to pay the mark-ups that fund the subsidies
- For example, advertisers need to reach an audience with their message, so the platform offers free content to assemble the audience
- Everyone downloaded Adobe's pdf reader because it was free, creating a large audience that made Adobe's pdf editors a must-have for distributors of content and forms

The platform's funders usually recover the cost of the platform's services as part of platform-enabled transactions with those on the subsidized side

- Mark-ups on products they sell fund advertisers' spending on marked-up platform services

Users of the free services pay for those services indirectly

The platform has a positive net operating surplus without any need for imputed output

Some of the Arguments in the Debate

The proponents of the bundling approach to free platforms argue that:

- The free services are paid for indirectly
- Enjoyment of free products offered as lure to bring users to the platform so that their data can be collected and their attention can be monetized doesn't meet the SNA criteria to be a transaction; users don't agree to collection of their *observable phenomena* as an inducement to get platform to supply the free services

The proponents of the barter approach reply that:

- The platform produces unrelated services to more than one customer (e.g., search services in exchange for personal observable phenomena and advertising services in exchange for cash), and one service cannot necessarily be combined with the other
- SNA conditions for a transaction **are** satisfied. Mutual agreement is implied by the household's use of the platform; complete understanding of terms and conditions is not required for a transaction to take place.

Free Products and Price and Volume Growth

GDP level focuses on productive activities that generate income (or, in some cases, free up income)

Changes in consumer surplus are relevant for measures of **price and volume growth** of household final consumption

Making an item free, or adding a new free item to the bundle, reduces the quality-adjusted price of the bundle

Compiling a quality-adjusted deflator for household final consumption expenditures that accounts for changes in the availability of free products may require assumptions and techniques that would be more suitable for a supplementary indicator than for official measures of GDP price and volume growth (e.g. Brynjolfsson et al., 2019 and 2020)