

Households' digital purchases in the balance of payments

The purpose of the balance of payments is to measure all economic transactions conducted between residents and non-residents over a given period of time, thus presenting an overview of the economy's various external trade links. This also includes cross-border digital trade. Digital services obtained by domestic households from foreign providers outside of Germany present a particular challenge here. Unlike in the case of enterprises, deliveries received by households usually remain far below the existing statistical reporting threshold in terms of value. In cooperation with the Federal Statistical Office, the Bundesbank has therefore developed an estimation approach to plug this gap in the balance of payments data. As from the 2014 reporting year, the results yielded by this approach are incorporated into the current account from 2019 onwards.

In the first instance, the selected two-step approach involves searching for existing freely available data sources for Germany's total turnover. Here, a distinction is made between five market segments: video on demand services, audio on demand services, software purchase and use, online gambling and cloud services. In a second step, the share of foreign enterprises' contribution to total turnover is determined in each case, as only this is relevant for the balance of payments.

Following this approach, digital purchases by German households from non-resident providers totalled around €5.8 billion in 2017. Although this accounts for only 2% of the expenditure on services recorded in the balance of payments, it still represents considerable growth – foreign digital purchases made by households have almost doubled since 2014. On balance, Germany's current account surplus relative to gross domestic product was 0.2 percentage point lower in 2017 than if households' digital purchases had been excluded.

From an international perspective, the German model is one of the first to attempt to capture such purchases in the balance of payments. The selected approach makes it possible to plug gaps in the official statistical data with freely available information, respond rapidly to new market developments, add new market segments at any time and supplement or swap data sources for market segments that have already been recorded. On the other hand, using freely available internet sources limits the extent to which quality checks can be conducted. It also makes the user reliant on publication decisions made by the sources themselves. This could potentially cast the provision of data for the official statistics into doubt. Ways of responding to these challenges still have to be devised. Cooperation with the data providers is of vital importance here.

■ Background

Digitalisation stimulates international trade

Digitalisation is also influencing international trade to an ever greater extent. As well as reducing barriers to market entry, it enables small and medium-sized enterprises, in particular, to market their services directly worldwide. From a consumer perspective, digitalisation is resulting in improved market transparency, which in turn is causing a shift in purchasing habits from domestic bricks and mortar retailers to online retailers domiciled abroad.

Consideration of new digital services insufficient in statistics to date ...

Furthermore, new digital services such as online shopping and the use of online software have emerged. The online provision of music, films and other content is still a relatively new market segment, too. These new digital services, directly provided by enterprises to final consumers, have thus far been insufficiently considered in the international trade statistics, the macroeconomic accounting systems utilised in the national accounts and the balance of payments statistics alike.

... as they are below the €12,500 reporting threshold

The reasons for this are essentially twofold. First, the value of such transactions is frequently below the national statistical reporting thresholds. In Germany, for example, cross-border services transactions only have to be reported if they exceed €12,500.¹ Second, it is not generally possible for consumers to easily identify non-resident providers and their country of domicile. Households' purchases of digital services from foreign providers have thus remained virtually unconsidered in the official statistics to date. However, as the purpose of the balance of payments is to give as complete a picture as possible of all transactions between resident entities and the rest of the world, this data gap must be closed.

Estimation approach should close data gaps

There are several possible ways to close data gaps. These include the introduction of a new comprehensive official data collection method: a sample survey or a new evaluation of the data already available, for example. The Bundesbank, in cooperation with the Federal Stat-

istical Office, has opted for the latter approach, as accessing existing data sources yields results comparatively quickly without imposing new reporting obligations on economic agents.

■ Conceptual framework

The international "Handbook on Measuring Digital Trade",² a joint publication by the OECD, the WTO and the IMF, serves as the basis for the estimation approach. First, it describes the conceptual framework used to define digital trade and its dimensions; second, it provides an overview of existing national and international approaches to the measurement of such trade. As such efforts are still in their infancy worldwide, there are plans to update the electronic version of the Handbook on a regular basis. In this way, newly devised or improved methods can promptly be made available to a wide circle of statisticians and users.

Framework based on "Handbook on Measuring Digital Trade"

The Handbook defines digital transactions as trade in goods and services that are digitally ordered, digitally delivered or platform enabled. Pursuant to this definition, households' purchases of digital services from non-resident providers, which are the focus of this article, represent only a subset of digital trade.

Private purchases of services from non-resident enterprises just one component of digital trade

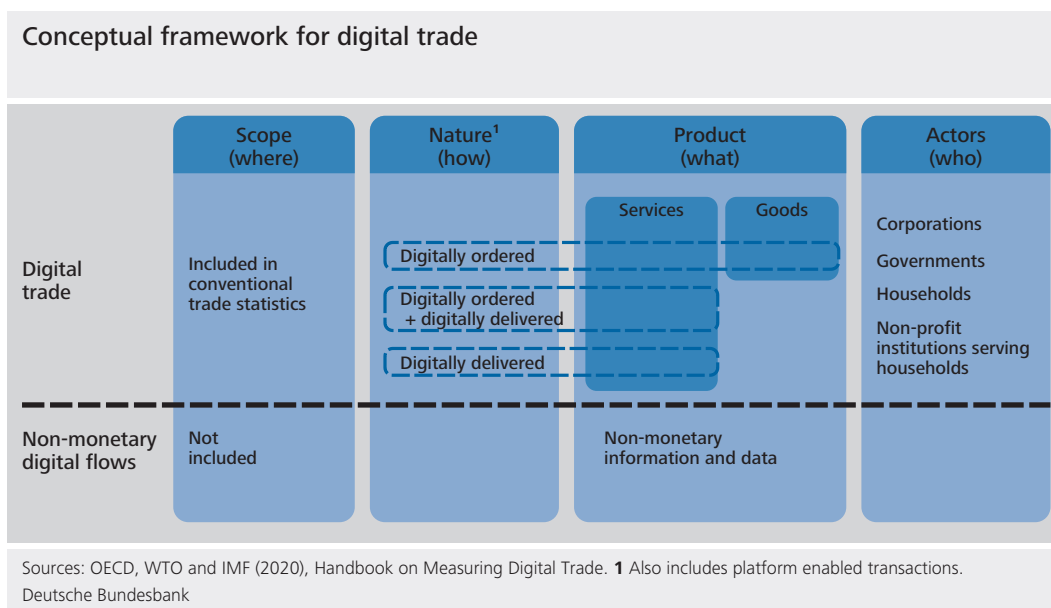
■ Estimation approach

The estimation approach for households' digital purposes uses freely available market data. In the absence of a single data source for all digital services, a variety of data sources are referred to, each of which usually covers only one particular market segment. Accordingly, the estimation approach differentiates between

Estimation approach differentiates between five market segments

¹ The legal basis is provided by Section 11(2) of the Foreign Trade and Payments Act (*Außenwirtschaftsgesetz – AWG*) and, building on this, Sections 67 et seq. of the Foreign Trade and Payments Regulation (*Außenwirtschaftsverordnung – AWW*).

² See Organisation for Economic Co-operation and Development, World Trade Organization, International Monetary Fund (2020), hereafter referred to in short as "the Handbook".



digital services in five market segments: namely video on demand services, audio on demand services, software purchase and use, online gambling and cloud services.

Other business models include transaction-based video on demand services, where customers pay providers to stream video content for a limited period or a limited number of times. The electronic sell-through model gives users the right to permanently access a video in exchange for a one-off download fee. The sales figures for this market segment are taken from a study carried out by the market research institution Gesellschaft für Konsumforschung (GfK) on behalf of the German Federal Film Board (FFA).³ The study puts total sales for video on demand services at around €0.8 billion in 2017. To calculate the foreign share with relevance to the balance of payments, we use a regional breakdown of video on demand providers available on the market.⁴ According to this, just over one-third was attributable to cross-border transactions in 2017.

Total sales for video on demand amount to around €0.8 billion, one-third of which is generated by foreign providers

Two-step estimation for each market segment

Digital sales relevant to the balance of payments are estimated in a two-step process which is reliant on data being available for the years 2014 to 2017. First, total sales are determined for the individual market segments. In a second step, the share of foreign enterprises' contribution to total turnover is determined in each case, as only this is relevant for the balance of payments.

Avoiding double counting of payments and omitting non-digital sales

Several problems emerge in practice. For instance, some of the data sources for individual segments overlap, with the result that payments may be counted twice. Other datasets also contain sales which were not generated online and which therefore do not count towards digital trade. In such cases, corrections must be made accordingly.

Audio on demand allows users to download music, audio books and other audio material

Modules of the estimation approach

Video on demand services give users instant access to video content of their choice. Users generally pay a subscription to access content.

³ See Bundesverband Audiovisuelle Medien e.V. (2016).
⁴ See, for example, Goldmedia (2016). In the absence of other information, the estimate assumes that this share remains constant over time. This is undoubtedly a restrictive assumption for a market that is still young and dynamic. Netflix, for instance, has only been available in Germany since September 2014, while other foreign providers have disappeared from the market. The share of video on demand providers domiciled in Germany continues to be monitored so that the weighting can be adjusted for new information.

Audio on demand sales amount to €0.7 billion, 90% of which is generated by foreign providers

from an internet provider, or to stream audio content. The Bundesverband Audiovisuelle Medien (Federal Association for Audiovisual Media) puts sales for digital audio content at around €0.6 billion in 2016.⁵ On the basis of these data, sales of roughly €0.7 billion are projected for 2017.⁶ In contrast to the video on demand segment, digital audio content is mostly provided by non-resident providers. About 90% of the sales calculated for 2017 are therefore relevant to the balance of payments.

Revenue for mobile applications stands at €1.2 billion, 95% of which is generated by foreign providers

The purchase and use of software can be broken down into two sub-categories: mobile applications and video games for PCs or other games consoles. According to information from providers of app market data,⁷ sales for mobile apps on the German market amounted to roughly €1.2 billion in 2017. There are no data on the foreign share, but the app stores can provide a rough idea: for purchases from the Apple store, the foreign enterprise Apple is always the counterparty, meaning that all sales conducted there are relevant to the balance of payments. The situation is less clear-cut for purchases from Android stores, because this platform also sells third-party apps from domestic and foreign providers. Taking into account the world market shares of both app stores, as well as additional data, the foreign share probably comes to around 95%, which is roughly equivalent to €1.1 billion.

94% of sales for video games are generated by foreign providers

According to data provided by the Association of the German Games Industry (GAME), total spending on video games amounted to approximately €1.9 billion in 2017. This figure needs to be adjusted for the share of software that is not provided digitally. Moreover, in-app game purchases are deducted, since they are already included in the mobile applications segment mentioned above. According to GAME, the foreign share relevant to the balance of payments is 94%, resulting in remaining sales of just under €1 billion with relevance to the balance of payments for sales of games provided digitally.⁸

The state governments' gambling supervisory authorities publish annual reports that include benchmark figures for the German gambling market, which encompasses private online sports and horse racing betting, online casino games, online poker and online secondary lotteries.⁹ Data for 2013 to 2016 on gross gambling revenue (stakes minus winnings paid out) with non-residents, which corresponds to German expenditure on gambling, was taken from the annual reports. For the most part, these figures were only adjusted for the sales generated on site at German gambling outlets. Sales for 2017 were approximated using the rate of change in tax revenue from betting and lotteries.¹⁰ They amount to around €2.6 billion in 2017.

Gambling sales generated by foreign providers amount to €2.6 billion

Cloud services, which encompass a broad range of IT services such as extra storage space for hosting a website or backing up data, are usually provided by service providers over the internet. To calculate private domestic purchases of storage space from foreign providers, a model was developed based on data from the survey on the private use of information and communication technologies (ICT survey) carried out by the Federal Statistical Office.¹¹ Prices for storage space were calculated by analysing website cloud service providers' websites. Because the overwhelming majority of the internet providers are domiciled in Germany, only around 5% of cloud users buy storage from foreign providers. This figure comes to approximately €0.2 billion for 2017.

Sales for cloud services generated by foreign providers come to around €0.2 billion

■ Overall results

On balance, digital purchases by German households from non-resident enterprises came

⁵ See Bundesverband Musikindustrie (2017).

⁶ See PricewaterhouseCoopers (2018).

⁷ See App Annie (2018).

⁸ See GAME – Bundesverband der deutschen Games-Branche e.V. (2018).

⁹ See Gambling supervisory authorities of the state governments (2018).

¹⁰ See Tax statistics from the Federal Statistical Office.

¹¹ See Federal Statistical Office (2018).

Sales relevant to the balance of payments in all market segments*

€ billion

Market segment	2014	2015	2016	2017	2018	2019
Video on demand	0.057	0.161	0.207	0.292	0.412	0.532
Digital audio content	0.317	0.416	0.516	0.634	0.779	0.924
Software	1.263	1.636	1.882	2.099	2.358	2.619
of which: Mobile applications	0.674	0.946	1.070	1.104	1.139	1.174
of which: Video games	0.589	0.690	0.812	0.995	1.219	1.443
Gambling	1.344	1.839	2.046	2.594	2.824	3.055
Cloud services	0.123	0.155	0.184	0.218	0.258	0.299
Total	3.104	4.207	4.835	5.837	6.632	7.427

* The figures shown here for 2018 and 2019 were calculated on the basis of the 2016/2017 growth rate. They will be revised as soon as up-to-date sources become available.

Deutsche Bundesbank

Purchases of digital services by German households from foreign providers came to €6 billion in 2017

to around €6 billion in 2017. Although this accounts for only 2% of the expenditure on services recorded in the balance of payments, it still represents considerable growth – digital purchases from abroad by households have almost doubled since 2014.

Online gambling the dominant force

Online gambling is the market segment that generates the largest volume of sales with relevance to the balance of payments, with a share in total sales of over 40%. It is followed by purchases of video games and mobile applications for mobile phones, smartphones and tablets, which together account for 35%.

Estimated digital service imports by households ...

The level of the estimated expenditure and its dynamic growth underline how significant these purchases are to the balance of payments. Although the prices of the digital services purchased by households often amount to just a few euros or even merely a few cents, together, they actually add up to a considerable volume of service imports.

... are relevant to the current account balance

Germany's current account balance directly reflects the estimated values for private purchases of digital services. The data gap concerns the expenditure side, in particular. On the receipts side, most of the revenue generated by German companies that provide digital services to private customers abroad is assumed to be

captured, the reason being that, in practice, enterprises often also report micro amounts.

According to the estimates applied to the current account for 2014 onwards, private purchases of digital services reduce Germany's current account surplus by between €3 billion and €7 billion. For instance, Germany's current account surplus relative to GDP was 0.2 percentage point lower in 2017 than if households' digital purchases had been excluded.

■ Conclusion

From an international perspective, the German model is one of the first to attempt to capture households' digital purchases in the balance of payments. The figures obtained using this method provide an initial indication of the scale and dynamics. The granular approach selected allows market segments that were not previously included to be factored in, provided that the relevant sources are available. It is also relatively simple to supplement or exchange data sources for market segments that have already been captured.

The advantage of using freely available internet data is that data gaps in the official statistics can be closed quickly and cost-effectively.

The estimates have reduced the current account balance since 2014

Estimation provides first indication of scale and dynamics

Advantages and disadvantages of freely available internet data

However, there are also a number of disadvantages. For instance, there is a risk that the data provider in question will stop producing the data or stop making them available to the public. In addition, checking the quality of internet data is not necessarily a simple process, since most of the information is taken from the results of surveys that were not carried out by official bodies. Besides this, some of the information is only available with a time lag of several years, meaning that the data need to be extrapolated to the current end.

Freely available data do not meet all requirements

Added to this is the fact that the data that are freely available at present do not meet all the requirements of the balance of payments. They

are not broken down by country, for example. Initial analyses show that a country structure of digital purchases cannot be identified on the basis of the current data sets. For this reason, the estimated sales are shown under the item "countries not identified". Developing an appropriate method for breaking digital purchases down by country is a task that still needs to be tackled.

The approach presented here should be seen as the first step towards capturing internationally traded digital services in the official statistics. Many challenges remain. Cooperation with the data providers will play a key role in overcoming these challenges.

Cooperation with data providers essential to progress

■ List of references

App Annie (2018), <https://www.appannie.com/de/>

Bundesverband Audiovisuelle Medien e. V. (2016), Der Home Video Markt im Jahr 2016, https://www.bvv-medien.org/fileadmin/user_upload/businessreports/JWB2016.pdf

Bundesverband Musikindustrie (2017), Musikindustrie 2016 in Zahlen, http://www.musikindustrie.de/fileadmin/bvmi/upload/02_Markt-Bestseller/MiZ-Grafiken/2016/BVMI_ePaper_2016.pdf

Federal Statistical Office (2018), Private Haushalte in der Informationsgesellschaft – Nutzung von Informations- und Kommunikationstechnologien.

Federal Statistical Office, tax statistics of the Federal Statistical Office from 2013 to 2017.

Gambling supervisory authorities of the state governments (2018), 2016 Annual Report of the gambling supervisory authorities of the state governments.

GAME – Bundesverband der deutschen Games-Branche e.V. (2018), database.

Goldmedia (2016), Amazon is leading pay-VOD usage in Germany; Netflix has established itself as a clear No 2, <https://www.goldmedia.com/en/news/info/article/pay-vod-to-become-billion-euro-market-in-germany/>

Organisation for Economic Co-operation and Development / World Trade Organization / International Monetary Fund (2020), Handbook on Measuring Digital Trade, Version 1.

PricewaterhouseCoopers (2018), Nach dem Streaming kommt die Blockchain: Hype oder echte Chance für die Musikindustrie, <https://www.pwc.de/de/technologie-medien-und-telekommunikation/blockchain-in-der-musikindustrie.html>