



## **Measuring Import of Digitally Enabled Services to Private Consumers**

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Paper prepared for the 35th IARIW General Conference

Copenhagen, Denmark, August 20-25, 2018

Session 2A: The Digital Economy-Conceptual and Measurement Issues

TUESDAY, AUGUST 21, 14:00-17:30

IARIW  
Copenhagen  
2018

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## Introduction

With the increasing capacity of broadband connections, digitally delivered products have made its appearance in the international trade. Audiovisual products, such as Netflix, HBO, Spotify, etc. have won market shares by selling directly to the consumers (B2C). In addition, sales of software, apps to mobile devices and in-app purchases have moved from shelf to cloud. International trade in services is often compiled based on reports from enterprises (B2B), which does not cover direct imports by private consumers (B2C). In 2015, the European Union changed the legislation on VAT for telecommunication, broadcasting and electronic services to non-taxable persons to secure that local VAT was applied. To facilitate this, Mini One Stop Shop (MOSS) was introduced, allowing taxable persons to register sales to non-taxable persons in EU to tax authority in only one Member State (MS). The data and VAT is then distributed to the relevant tax authorities within the scheme via the MOSS network.

Using the information reported to the MOSS system the value, the nature, and the geographical counterpart of electronically delivered services to non-taxable persons can be estimated. This paper will assess the quality of the MOSS data, both regarding coverage and accuracy. Another aspect will be to assess the insights that can be made regarding the types of services that are sold directly to non-taxable persons.

## Mini One Stop Shop scheme<sup>1</sup>

Until 2014, supplies of telecommunication, broadcasting and electronic services by EU businesses to non-taxable persons, where taxes in the country of the supplier applying the VAT-rate of that country. For non-EU businesses however, the rules ensured taxation in the country of the customer. To level the playing field the European Union changed the legislation on VAT for telecommunication, broadcasting and electronic services to non-taxable persons to secure that local VAT is applied and that the revenue goes to the country of the consumer.

To facilitate the legislation the Mini One-Stop-Shop (MOSS) scheme was introduced and put into force on January 1<sup>st</sup>, 2015. Under the MOSS scheme, a taxable person in a MS (MS of identification), electronically submits quarterly MOSS VAT returns from non-taxable persons in other MS (MS of consumption). These returns, along with the VAT paid, are then transmitted by the MS of identification to the corresponding MS of consumption through the MOSS network. The VAT-rate follows the customers' domestic rates as supposed to before the legislation changed.

The MOSS scheme is optional but without the scheme, the supplier is required to register in each MS in which he supplies services to his customers. Non-EU taxable persons can also register and is free to choose its MS of identification. When choosing to register in the scheme all MS are included i.e. it is not possible to choose individual MS. It is important to note that, where a taxable person has a

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<sup>1</sup> More detailed information on MOSS can be found in the explanatory notes and the guidelines:

[https://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/taxation/vat/how\\_vat\\_works/telecom/explanatory\\_notes\\_2015\\_en.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/vat/how_vat_works/telecom/explanatory_notes_2015_en.pdf)

[https://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/taxation/vat/how\\_vat\\_works/telecom/one-stop-shop-guidelines\\_en.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/vat/how_vat_works/telecom/one-stop-shop-guidelines_en.pdf)

fixed establishment<sup>2</sup> in a MS, supplies of telecommunication, broadcasting and electronic services to non-taxable persons in that MS are declared through the domestic tax authorities and not through the MOSS scheme. If the fixed establishment supplies to other countries this must be declared through the MOSS scheme by the company in the MS of identification. An example of this could be the following:

- A taxable person is registered in the MOSS scheme and has a head office in UK and fixed establishments in Germany and Denmark.
- UK and Germany supply telecommunication, broadcasting or electronic services to Sweden and Denmark.
- The head office in UK declares its supplies in Sweden through the MOSS scheme, but the supply in Denmark must be declared outside the MOSS scheme by the domestic fixed establishment.

Table 1 provides an overview of some of the most common scenarios within the MOSS scheme. In scenario 1 the head office supplies telecommunication, broadcasting and electronic services to country B and the VAT is sent to the tax authorities in country B through the MOSS scheme. In scenario 2 there is a local resident (fixed) subsidiary (company B) in country B. As in the example above, it is company B who declares the VAT returns to the tax authorities in country B. Scenario 3 shows that if company B is considered a non-resident (not fixed) establishment the VAT must be declared through the MOSS scheme and in this case, it would be Company A who will declare the VAT.

Table 1 VAT reporting in the MOSS scheme

Country A	Country B
① HM: Company A	Tax authorities
② HM: Company A	Tax authorities ← R: Company B
③ HM: Company A	Tax authorities NR: Company B

HM: Head office registered in the MOSS scheme R: Resident subsidiary NR: Non-resident subsidiary

→ VAT reported      → Supply of telecommunication, broadcasting or electronic services      □ Registered in MOSS

The data distributed through the MOSS network contains various information. First and foremost, it contains the VAT figures grouped by company and quarter, as well as the VAT rate applied. To accompany this data, information about each company follows. This information includes identification country, VAT-number, registration dates, address, etc. For non-EU businesses registered in a MS, the country of origin is also included in the data. There are no further division of the type of services, other than it must be within telecommunication, broadcasting and electronic services.

<sup>2</sup> For a fixed establishment to be considered as such, it should have a sufficient degree of permanence and a suitable structure in terms of human and technical resources to receive and use or to make the respective supplies. Simply having a VAT Identification number does not in itself mean that an establishment qualifies as a fixed establishment.

## Quality and accuracy

The MOSS scheme is an administrative source created for tax purposes. Therefore, preconditions must be taken to use it for statistical purposes. Below is a description of some of the inexpediciencies that should be accounted for before using the MOSS data.

### ***Total EU sales***

Tax authorities have the possibility to ask for the information of total EU sales for chosen companies. This makes it possible for tax authorities to check the level in their own country compared to the total EU level, which is useful tool for validation purposes. However, it creates problems for other users of the data. Depending on the size of the company, this could potentially have a large effect on the quality of the data. Dealing with this issue either requires effective communication between e.g. a statistical compiler and the tax authorities or a detection system. In the first delivery from the Danish tax authorities the total EU sale of a very large company was included, which luckily was impossible to overlook. This made us aware of the issue and an agreement was made with the tax authorities, to not include total EU sales in the delivery for statistical purposes. Furthermore, an error detection system was developed to look for large fluctuations on company level above a certain threshold.

### ***Companies not registered in MOSS***

As mentioned in the section on MOSS, companies are not obligated to enroll in the MOSS scheme. In the end, this means that companies have two options. Either they can register in the MOSS scheme or they can register in each country in which they supply telecommunication, broadcasting and electronic services. If the company chooses the latter, information about sales to non-taxable persons will not be straightforward to get a hold of. However, it is important to identify these companies to get the full picture of the import of telecommunication, broadcasting and electronic services by non-taxable persons.

As mentioned in the section about the MOSS scheme, it is very important to distinguish between fixed establishment or not. If the company is firmly based in the country and are having a "production", the sales of this company should not be included in the balance of payments. However, if the company simply have a VAT identification number it is not considered a resident and the sales of this company should be accounted in the balance of payments. In table 2, an overview of the scenarios of the MOSS scheme is presented like the one in the section on MOSS. Furthermore, this table includes how companies not registered in the MOSS scheme are reporting VAT. Also, an extra column is included in the table indicating if the scenario should be included in the balance of payments.

Table 2 Import of telecommunication, broadcasting and electronic services

Country A	Country B	Balance of payments
① HM: Company A	Tax authorities	Included
② HM: Company A	Tax authorities ← R: Company B	Not included
③ HM: Company A	Tax authorities NR: Company B	Included
④ H: Company A	Tax authorities ← R: Company B	Not included
⑤ H: Company A	Tax authorities ← NR: Company B	Included

H: Head office HM: Head office registered in the MOSS scheme R: Resident subsidiary NR: Non-resident subsidiary

→ VAT reported → Supply of telecommunication, broadcasting or electronic services

Registered in MOSS Not Registered in MOSS

The companies registered in the MOSS scheme have already been explained in the MOSS section. Scenario 1 and 3 should be included in the balance of payments and luckily this information should be available through the MOSS scheme. Scenario 2, where the resident subsidiary reports directly to the domestic tax authorities, are not a part of the MOSS scheme and should neither be included in the balance of payments as it is domestic sales.

Companies not registered in the MOSS scheme must register in the country of consumption and report directly to the domestic tax authorities. Scenario 4 and 5 in table 2 shows how resident (fixed) and non-resident (non-fixed) establishments both must report to the tax authorities. The difference is that for the fixed establishment the reported sales should not be included in the balance of payments as this is domestic sales.

To sum up table 2, almost every scenario is either covered by the MOSS scheme and if not, it should not be included in the balance of payments. However, in scenario 5 the supply should be included in the balance of payments, but this is obviously not covered by the MOSS scheme. The non-resident establishment (ex. a company with a VAT identification number and no activity) has no employees and no activity so they will not be included in the international trade in services survey. The entity is properly only present in the country to report VAT, which means that the only information given is VAT returns. This makes it impossible to identify the type of service or if the service has been provided to private consumers. This could potential course problems as some large companies chose to organize this way.

### Missing reports

The MOSS data contains registration and termination dates making it possible to identify missing quarterly reports. To account for companies that does not supply services regularly, only companies above a certain threshold, hence expected to have regularly supply, will be account as missing. In table 3 the number of quarterly reports is presented. In 2017, 13 thousand quarterly reports of supply to Danish customers were made. If the registration and termination dates are used without accounting for companies not having supplied anything to Danish customers, 11 thousand missing reports are identified in 2017. However, setting a threshold for missing reports on respectively 1 million and 5 million DKK per quarters yields a much lower number of missing reported quarters on respectively 26 and 12 missing

reports in 2017. The threshold is compared with the average value of the available reports on company level.

**Table 3** Number of missing quarters (Q)

Year	Reported Q	Missing Q	Missing Q (avg. > 1MM)	Missing Q (avg. > 5MM)
2015	11.188	6.486	15	8
2016	13.603	8.924	18	13
2017	13.313	11.353	26	12

Using the same method as above but on values, the results in table 4 shows that in 2017 the companies with an average value per quarter above 1 million and 5 million accounts for almost the entire missing value. This is good news as there are very few and that these companies are expected to supply services continuously. Since it is just a few companies that accounts for almost all of the missing values, it is feasible to go through the list and determine if the companies did not report or if there is another explanation. One explanation that are important to have in mind is that the company could have made a local fixed establishment. As explained before, when making such an establishment you must report directly to the domestic tax authorities through this establishment.

**Table 4** Estimated value for missing quarters

Year	Reported value	Missing	Missing (avg. > 1MM)	Missing (avg. > 5MM)
2015	3.285.268.495	498.375.558	472.839.438	463.681.342
2016	3.794.278.237	721.694.078	682.452.307	676.230.462
2017	4.366.518.573	899.766.691	830.242.970	798.361.165

Going forward, missing values per quarter above 5 million will be included in the results as they have all been validated as missing reports.

### **Service types in MOSS**

The MOSS data contains supply of telecommunication, broadcasting and electronic services. However, there are no further distribution between the different services. The balance of payments and national account requires a further distribution; hence a manual classification is needed. The information available for such a classification is the name of the companies and the VAT number. The name can give some sort of indication of which services the companies provide, and this can be used to classify the reported information. Table 5 shows that by classifying the 60 largest companies (by value), we were able to classify 90 % of the total reported value. For some companies it is quite straightforward to classify the services, but if the company provides multiple services it becomes more complicated. In our case we estimated the split for some companies that we know provides multiple types of services. In the result section the results of the classification will be presented allocated by the BPM6 classification. A much more detailed classification can be made by using the same method as above, but because of confidentiality reasons this have not been done in this paper.

Some of the classified services should not be included in telecommunication, broadcasting or electronic services in the balance of payments. An example of such a service is booking fees. If a Danish resident books a room through Airbnb he will pay a fee to Airbnb and VAT. However, the spending of the Danish resident abroad is already covered in the travel item in the balance of payments. This

means that the reported values from Airbnb and similar companies that are already covered by the travel item, should be excluded to avoid double counting.

Table 5 **Classification (60 largest companies)**

Year	% classified
2015	89 %
2016	89 %
2017	90 %

### ***Non-taxable persons***

The final consumer is in the MOSS scheme referred to as a non-taxable person. This term covers private individuals or a legal person such as a public authority. These public authorities might also be buying telecommunication, broadcasting and electronic services which will have to be reported by the companies selling the services via the MOSS scheme. However, since the public authorities have a business registration number where might be a change that they are in the survey on international trade in services and therefore double counting might be a risk. This is very difficult to identify but it is assumed that most of the supply reported through the MOSS system consumed by private persons. In the balance of payment, it is double counting that pose a risk, but in the National account distinction between private person and public authority matters. To estimate the spilt between private person and public authority a very detailed classification of the services is needed. Excluding supply from companies to public authorities is easy. Ex. gaming sites, dating sites and most audiovisual services providers can be assumed to only provide to private persons. The companies supplying services which might be for both private person and public authorities, like anti-virus and cloud services, there are still no possibility to estimate the share.

## **Results**

### ***Before MOSS***

The supply of digital services provided directly to private consumers have increased greatly in the past several years. This supply must be captured in the balance of payments and national account. Before the MOSS data became available, estimates were made based on various sources. The estimation was split into five categories, streaming, apps, gambling, games and others. The sources used to estimate these categories differs from surveys conducted by NGO's to international statistics fitted to Denmark. The country distribution was estimated too from the location of the largest providers and payment card data.

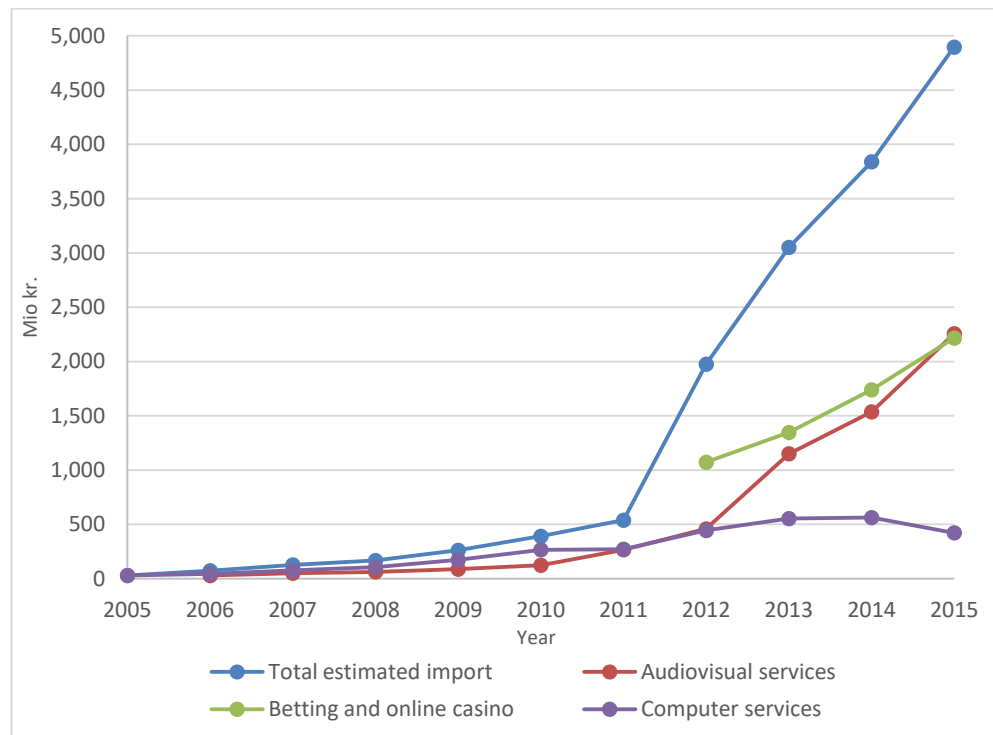
Online betting and gambling was liberalized in Denmark in 2012. This meant that foreign suppliers have entered into the Danish market and took a fair amount of the market share. Common for all betting and gambling services is that they must report to the Danish gambling authorities. Using this data, it is possible to separate the Danish supply of betting and gambling services from the foreign part and then add country distribution from payment card information.

The results of the estimates are presented in graph 1. The results indicate, as expected, that the import of digital enables services has increased greatly from 2005 until 2015. Especially from 2011 and onwards a huge increase has occurred



due to the increasing capacity of broadband connections and new popular players entering the market. The preliminary estimates were of course uncertain due to the lack of quality sources, but then again from 2005 until 2011-12 the values did not play constitute a large part of the total import of these services.

Graph 1 Private import estimates before MOSS



### MOSS results and revisions

With the MOSS scheme there is a new possibility to more precisely estimate the import of telecommunication, broadcasting and electronic services to private consumers. The results are presented in table 6 and includes the identified missing values and the values identified from non-resident companies not registered in the MOSS scheme. As betting and gambling services are not a part of the MOSS scheme, the results have not been affected by the arrival of the MOSS scheme and therefore not included in the results. The results reveals an increase in the import of both computer and audiovisual services as expected. Computer services increased with 21 % from 2015 to 2016 and 15 % from 2016 to 2017. These results supports the perception that the digital economy is still increasing its market shares or at least that private consumers increasingly buys directly from companies abroad. Also the audiovisual services have increased a lot. This is again a clear sign of services moving from shelf to cloud. Streaming services are getting more and more popular and are capturing market shares from e.g. flow television and hardcopies of music.

The results from the MOSS scheme constitutes an important part of the total services items it represents. The computer services estimated from the MOSS scheme constitutes around 6 % of the total computer service item in the Danish balance of payments. This is a large share considering it is private consumers' direct import. Audiovisual services constitutes an even larger share of the total. Almost 30 % of the imported audiovisual services are bought directly by private consumers. This is large share considering that many telecommunications companies offers streaming services through the subscription. These results supports that it is important to estimate the private import of digital enabled services.

Table 6 Results derived from MOSS data

BPM6 item	BPM6 text	2015	2016	2017
		Mio. kr.		
1.A.b.11.1	Audiovisual and related services	1.211	1.422	1.760
1.A.b.9.1	Telecommunications services	47	27	-
1.A.b.9.2	Computer services	2.505	3.024	3.477
1.A.b.9.3	Information services	42	87	84
Not classified	Not classified	372	412	424
Excluded	Excluded	61	95	122

When comparing the results from the initial estimation, with the results derived from the MOSS data, it is clear that there are some differences. Table 7 presents the differences in the 2015 estimates. The non-classified reports from the MOSS data from table 6 are, in table 7, considered to be computer services. The results shows that audiovisual services were overrated in the initial estimation. The reason could be that many telecommunications companies are providing this service through subscriptions. This means that it is not the private consumer that imports this services, but the companies. Computer services however, has increased a lot with the introduction of the MOSS data. A combination of MOSS data covering a lot of companies and more precise estimates for the biggest companies has resulted in a huge increase of 2.4 billion DKK compared to the initial results.

Table 7 Comparison between the initial results and the results derived from the MOSS data 2015

BPM6 item	BPM6 text	New estimate	Initial estimate	Revisions
		Mio. kr.		
<b>Total</b>		<b>4.177</b>	<b>2.639</b>	<b>1.449</b>
1.A.b.11.1	Audiovisual and related services	1.211	2.216	-1.005
1.A.b.9.1	Telecommunications services	47	-	47
1.A.b.9.2	Computer services	2.877	423	2.454
1.A.b.9.3	Information services	42	-	42

Having access to the MOSS source, has made it possible to more precisely capturing the import of private consumers. As the results show this is a still increasing marked and it is therefore very valuable to have a good and reliable source despite its shortcomings. The MOSS data have improved the estimates and ensured a continuous source for the import of telecommunication, broadcasting and electronic services by non-taxable persons. It is important to handle the data with care as you never know how the companies chooses to organize. Setting up a system for checking the data is crucial to ensure that the results is reliable and that missing data is not

## **Future work**

### ***Validation of Danish exporters***

The MOSS data can be used for other purposes than estimating telecommunication, broadcasting and electronic services. Getting access to the companies registered in the MOSS scheme with identification country in Denmark (i.e. reports from Denmark), could prove to be a valuable source. With this data the ITSS survey reports could be validated against the Danish exporters registered in MOSS. This data have not yet been requested from the tax-authorities, so it is still unclear whether the data would be available.

### ***Better estimation methods for type of service***

Currently the classification of services is done manually. A possibility is to compare the MOSS data with the European business register to get some additional information on the companies. A much needed information is the NACE codes, which could provide valuable information of the primary type of services provided by the companies. However, the data in the European business register is still not sufficient enough to connect the two sources properly.