

# **The French Digital Service Tax**

## An Economic Impact Assessment

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# Executive Summary

## **The French government has released a draft bill on the French Digital Service Tax**

- The French Digital Service Tax (DST) will apply to the revenue generated from online intermediation services and the sale of targeted digital advertising in France.
- The scope is limited to the largest internet companies (worldwide taxable revenue exceeding 750M€, and French taxable revenue over 25M€).
- The taxation rate will be 3%.
- The expected revenue yield from the DST is approximately 400M€ in 2019, with significant increases over time.

## **The increased tax burden will mostly be borne by consumers and businesses that use digital marketplaces – not large tech companies**

- We expect the large internet companies to pass on the increased tax burden. This will result in higher prices for consumer goods, and a reduced profit for businesses using digital platforms.
- According to our calculations, the total additional tax burden will be roughly 570M€ in 2019 – almost 50% more than the tax revenue raised.
- Approximately 55% of the total tax burden will be borne by consumers, 40% by businesses that use digital platforms, and only 5% by the large internet companies targeted.

## **DST administrative costs are forecast to be very high**

- Given the lack of available data, an accurate calculation of the tax base will be extremely difficult. We predict this will result in high levels of uncertainty. There may also be different interpretations of the law between taxpayers and the French Tax Administration ("FTA"), which will could translate into very high administrative costs.
- The current draft law creates the risk of multiple taxation. This could be challenged by taxpayers and lead to even higher administrative costs.

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# 1 - Context and Objectives

## 1.1. Context: the French digital service tax

Since the beginning of the 2010s, there has been a growing public discontent with the international tax regime. The notion that the current tax rules are outdated and allow some large Multinational Enterprises (“MNEs”) to implement large-scale tax avoidance scheme has gradually gained general acceptance. In a context of fiscal crisis, it has become politically unacceptable to have MNEs deemed not paying their “fair share” of tax and therefore depriving States of taxable revenues. This situation led the G20 countries to give a mandate to the OECD to propose a significant tax change (the BEPS initiative) and also led the European Commission to propose new tax directives.

The “digital economy” was a particular point of attention for both the OECD and the European Commission as some large digital companies have gained media attention as prime examples of tax optimizers. In addition, certain features of the digital economy (scale without mass, user contribution, etc.) challenged the traditional notions of permanent establishment and the application of the arm’s length principle and called for changes.

The problem proved however very complex and it quickly appeared that solving it would require significant changes in the current tax regime. On top of the technical difficulties, the fact that different key stakeholders (notably the US and EU Member States) had diverging views on the best solution made it even harder to reach a consensus. For these reasons, the action 1 of BEPS, concerning the digital economy, is still ongoing and after the publishing of several discussion documents, it is unsure that a global solution will be reached in the mid-term. While the European Commission also recognized the complexity of the topic, two directives were nonetheless proposed: one focused on a “long term” solution, and another describing a “short-term” interim solution based on a digital service tax (“DST”). The latter tax proposal was to be applied on the revenues generated by certain activities (digital advertising, transmission of personal data and marketplace intermediation). It was designed principally to serve an objective of tax equity (according to the European Commission), by ensuring that all “digital” companies pay their fair share of tax until the tax regime is changed to address in a more satisfying manner the challenges of the digital economy.

The European Digital Tax proposals have given way to long debates but failed to reach consensus because of diverging views between EU Member States on the appropriateness of the measures and because an increasing number of Member States voiced preference for a global solutions coordinated by the OECD. Therefore, France has decided to act unilaterally and create a DST that would be close to the original EU proposal, including a 3% tax on the turnover of certain activities (digital services, transmission of data, marketplace). A legislative proposal was presented on March 6 and was sent to Parliament where it will be discussed.

According to Minister of Finance Bruno Le Maire, the objectives of the tax is primarily to “*restore fiscal justice*”<sup>1</sup>. In addition, Bruno Le Maire considers that “*without the mobilization of France, the taxation of the digital giants would be stalled at the international level*” so that this tax is also a means for France to initiate a discussion on the taxation of the large digital companies at the OECD level.

## 1.2. Features of the French DST

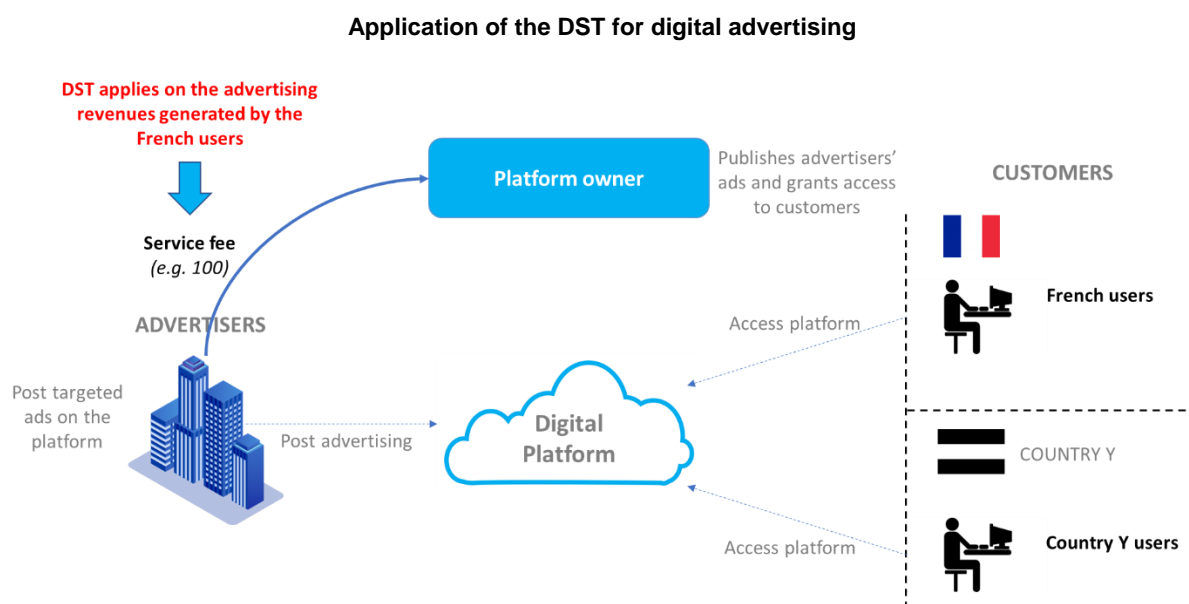
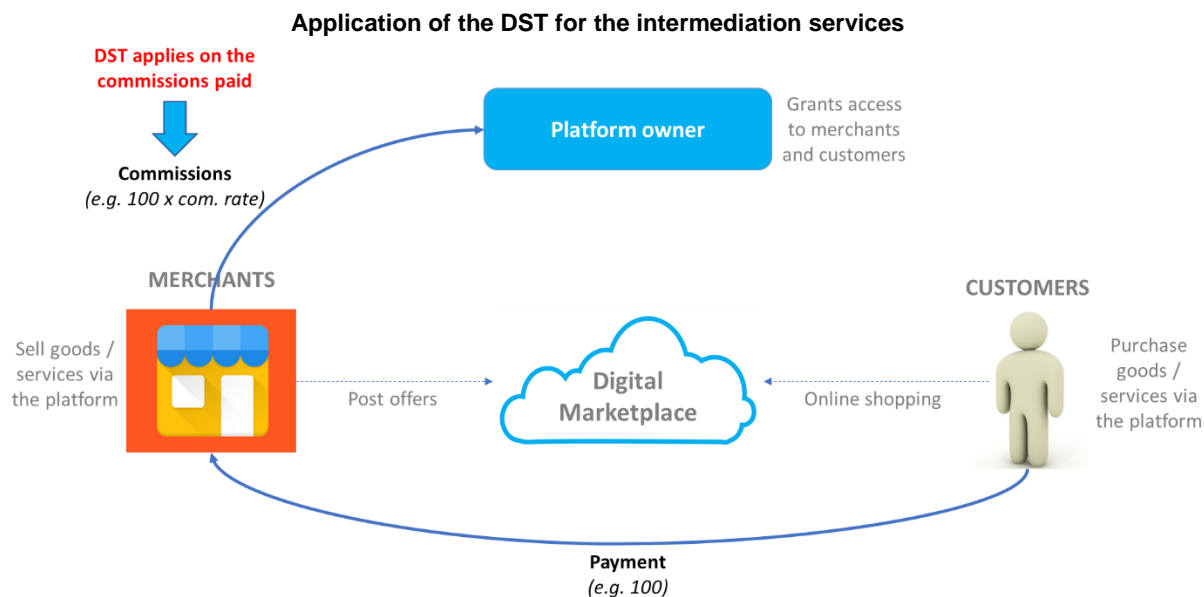
Based on the proposed legislation (enclosed in Appendix 1), the key features of the tax are the following:

- The tax base would be the revenue generated (i) by selling “personalized” digital advertising and (ii) by providing intermediation services (e.g. platform operating on a double-sided market like marketplaces).
- The tax rate would be a 3% flat rate.

<sup>1</sup> See interview of Bruno Lemaire in *Le Parisien* of March 2, 2019

- There would be a double threshold to be liable to the tax: worldwide taxable revenue of 750M€ and French taxable revenue of 25M€.
- According to the Minister of Finance, this tax would generate a revenue of circa 400M€ for the French Treasury in 2019, and should grow significantly in the following years.<sup>2</sup>

Two typical examples of application of the DST are displayed below:



<sup>2</sup> "Taxe Gafa" : ce que contient le projet de loi de Bruno Le Maire, La Tribune, March 7, 2019

## 1.3. Objectives of the report

Taj / Deloitte has been asked by the Computer and Communications Industry Association (CCIA) to perform an *ex ante* economic assessment of the tax. The objectives of our work is to obtain a high level quantitative understanding of the economic consequences of the implementation of the DST in France.

This report has been prepared independently by Taj/Deloitte and does not necessarily represent the views of CCIA or its members.

## 2 - Approach

For this exercise, we will make use of the standard practices for *ex ante* tax policy analysis. We will structure our analysis following a three-step approach:

- Analysis of the **tax incidence**: How will the tax affect the prices of goods and services in France and who will ultimately bear the burden of the tax?
- Analysis of the **distribution of the tax burden across economic agents**: How will the burden be spread between taxpayers, French firms using the digital platforms and consumers.
- Analysis of the **tax efficiency**, which includes two sub questions:
  - What are the total administrative costs for the tax, borne both by the administration (collection and litigation cost) and by the taxpayers (compliance costs)?
  - What distortion will the tax create in the French economy (e.g. certain companies will be favored vs. others, investments or employment will be lower than they would otherwise be, less digital services will be consumed by the households, etc.)?

In terms of methodology, in order to answer the three above-mentioned questions, we will make use of both non-controversial theoretical results and empirical arguments. We will use all pieces of available information, either academic or anecdotal evidences. When necessary, we will make assumption for the purpose of coming up with estimates. The purpose of our analysis is indeed not to obtain perfectly accurate numbers but rather orders of magnitude for the various points. We will perform quantitative analysis whenever possible and stay qualitative when there is no way to reach a reasonably precise quantitative conclusion.

The report is structured following the three questions above: Chapter 3 will deal about incidence, an analysis of the distribution of tax burden will be performed in chapter 4 and elements of tax efficiency will be presented in chapter 5.



## 3 - Tax Incidence

### 3.1. General Remarks

As stated by Stiglitz and Atkinson: “One of the most valuable insight that economics analysis has provided in public finance is that the person who effectively pays a tax is not necessarily the person upon whom the tax is levied. To determine the true incidence of a tax or a public project is one of the most difficult and most important task of public economics.”<sup>3</sup> This part of the report is dedicated to that difficult and important task for the case of the French DST.

In order to cope with the difficulty of the exercise, our analysis will rely on three simplifying principles:

1. **Use a reasonable segmentation of markets.** Economic analysis has shown that the incidence of a tax will be very much market specific. Indeed, the capacity of producers to shift a tax to their consumers will depend on (i) the price sensitivity of consumers (called “price elasticity of demand” in economics), (ii) the existence of barriers to entry on the producer side and the ease to expand output (called “supply elasticity”) and (iii) the nature of competition on the market. The DST will affect a very large number of markets that will be very different with regards to the three above mentioned parameters. It is of course impossible to perform a detailed analysis for all specific markets; on the other hand, treating all possible situations with one model would be too inaccurate. In the framework of this study, we have tried to reach an appropriate balance between tractability and accuracy by identifying a limited number of market categories that we have studied separately.
2. **Rely on a partial equilibrium approach.** The analysis of the incidence of a tax on soda, for example, can stay at the level of the soda market and study how the soda price will increase and how the demand for soda will react, which is called “partial equilibrium analysis”. The analysis can however go further: as the profit of soda companies is reduced, it will affect the dividend paid to their shareholders, who might then invest in another sector, which could reduce soda output and increase price further but also expand output and reduce price in another sector. Likewise, households will consume less soda and can spend the extra budget buying fruit juice, which might have an impact on the fruit juice market, etc. As shown in that example, a tax can potentially distort the whole price system in an economy, studying the global effects of a tax would relate to “general equilibrium analysis”. Even if the DST is likely to affect a large number of markets, considering the low level of the tax (expected to raise 400M€), we considered that it was reasonable to use partial equilibrium analyses on each different market, without looking at the secondary distortions created in the price system.
3. **Focus on the short term impact.** Lastly, there is a time element to tax incidence: Taxes can be passed on gradually over time to the consumers. Additionally, taxes have short term effects (change in price on the market) and longer term effects (changes in the incentives of the parties, impact on the investments on the market, etc.). Considering the French DST is only supposed to be a temporary solution, our study will focus on short term effects.

This part is structured as follows:

- We will first define the segmentation of markets on which our study will be built.
- For each of the three markets identified, we will then study the incidence of the DST.

<sup>3</sup> Atkinson A. and Stiglitz J., 1980. *Lecture on Public Economics*. McGraw-Hill, p.160

## 3.2. Identification of the markets

The French DST identifies two categories of taxpayers:

- **Marketplaces:** Firms which are providing intermediation services to two different categories of users for them to interact.
- **Digital advertising platforms:** Firms that are using personal data of internet users to sell ads targeted to a specific audience.

The effect of the DST will obviously be different for these two categories of taxpayers, which should be studied separately. In addition, some results of academic research (that will be described in the following chapters) led us to the conclusion that some key economic parameters, like price elasticity of demand, were different for marketplaces allowing users to trade goods and marketplaces allowing users to trade services. Finally the segmentation we have chosen is therefore the following:

1. Goods marketplaces
2. Services marketplaces
3. Digital advertisers

## 3.3. Incidence calculation

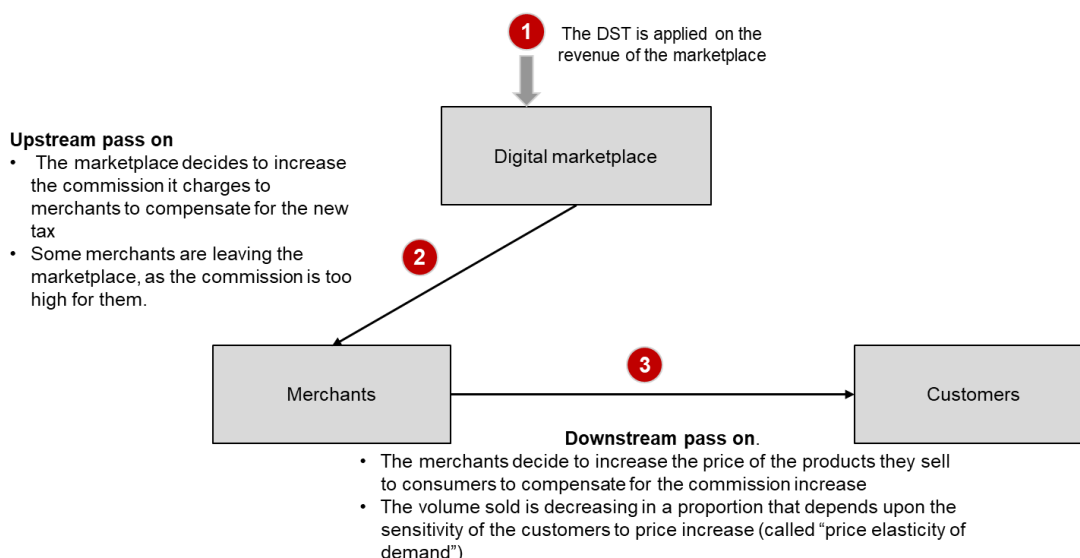
### 3.3.1. Incidence of the DST on goods marketplace

This category of firms includes all the marketplaces allowing merchants to sell products (goods or software) to customers. The typical business model of these marketplaces is to charge a commission to the merchants, calculated as a percentage of the turnover they generate through the marketplace (e.g. if a second hand bookshop sells worth of 100€ to consumers through the marketplace, it will pay a commission of 15%, 15€, to the marketplace). This category includes firms such as Amazon marketplace, Ebay, Leboncoin, Alibaba, Apple Appstore, etc.

The analysis of the impact of the DST on this category of taxpayer has to be studied following a three-phase approach (as described in the diagram below):

1. **DST:** A tax is imposed on the marketplace, calculated as a percentage of its turnover
2. **Upstream pass-on:** The marketplace will have to make a decision about the share of the tax it will pass-on to its consumers (merchants) through an increase in the commission rate. In turn, the increase of the commission rate is likely to have an impact on the number of merchants using the marketplace (i.e. an increase in the commission rate will make the marketplace less attractive and some merchants may choose to leave it and use other ways to sell their products online).
3. **Downstream pass-on:** The merchants will now pay a higher commission than before. They will decide how much of that cost increase will be passed-on to their own consumers through an increase of the price of the goods they sell. Again, the price increase of the goods will trigger a volume effect, which magnitude will depend on the price elasticity of demand of the consumers.

### Analysis of the DST incidence for Goods marketplaces



The purpose of this chapter is to estimate quantitative values for the pass-on rates (upstream and downstream) and for the corresponding volume effect. We will start backwards by an analysis of the downstream pass-on.

#### 3.3.1.1. Downstream Pass-on

##### Assessment of the pass-on rate

- For a merchant, the commission charged by the marketplace is similar, economically speaking to a sales tax (*ad valorem*), as it is calculated on the turnover of the products<sup>4</sup>. An increase of the commission rate will therefore be similar to an increase in a sales tax, and the question then becomes: when a sales tax, imposed on merchants, is increased, what percentage of that sales tax is generally passed on to their consumers through a price increase?
- There is a very large theoretical body of literature that studies that question<sup>5</sup>. There is however no general answer: the pass-on rate mostly depends on the relative elasticities of supply and demand. In a perfectly competitive market (i.e. a market where merchants are reasonably small and they cannot set the market price), sales taxes are fully passed-on to consumer through a price increase (e.g. a sales tax of 10% will increase market prices by 10%). In imperfectly competitive markets, everything is possible, depending on the case, including undershifting of the sales tax (e.g. a 10% sales tax rate leads to a 7% price increase) and overshifting (e.g. a 10% sales tax rate leads to a 12% price increase).
- From an empirical standpoint, the usual assumptions taken in public finance<sup>6</sup> is that sales tax **are fully passed on to consumers** (100% pass-on rate). This assumption has been confirmed and sometimes nuanced by a large variety of empirical analyses, all leading to the conclusion that sales taxes are always passed on to a very large extend to consumers (between 60% and more than 100% depending on the cases):

<sup>4</sup> In the following calculation, we will leave aside the impact of the VAT, which is likely to create further distortions (as commissions is calculated based on the goods prices including VAT) of very limited importance.

<sup>5</sup> Fullerton D. and Metcalf G., 2002. "Tax incidence" in Auerbach and Feldstein (eds) Handbook of Public Economics vol.4. Elsevier

<sup>6</sup> See. Besley T. and Rosen H., 1998. "Sales tax and prices: an empirical analysis". NBER Working paper 6667

- A study performed by the International Monetary Fund ("IMF") shows that an increase of the standard VAT rate in Europe is fully passed-on to customers (pass-on rate of 100%).<sup>7</sup>
- A paper by Poterba<sup>8</sup>, leads to the conclusion that pass on rate for US State and Local Sales Taxes is generally 100%
- A study by Besley and Rosen<sup>9</sup> on the incidence of sales tax for 12 commodities in the US, shows that sales taxes are fully passed for half of the commodities and overshifting (pass-on rate of more than 100%) occurs in half of the cases.
- A paper by Doyle and Samphantharak<sup>10</sup> finds that 70% of a local gas tax holidays is passed on to consumers through price reduction.
- A paper by Bonnet and Requillart<sup>11</sup> underlined that a French tax on sodas has been largely passed-on to consumers, between 60 to 90% depending on the brands. Another paper on the same tax<sup>12</sup> contends that the soda tax has been passed on at least at 100%.
- Another academic study on taxes on beers in Europe over the 1996-2016 period<sup>13</sup> showed that, in average, *ad-valorem* sales taxes have been passed on at 70% to consumers.
- A recent paper by Hanson and Sullivan<sup>14</sup> confirms the generally accepted view that *ad valorem* taxes on cigarettes are overshifted to consumers (pass-on rate superior than 100%).
- Finally, a study from the French *Cour des comptes* on the financial transaction tax<sup>15</sup> (similar to the *Tobin tax*) shows that the tax has been fully passed on to consumers ("*contrary to one of its initial objectives, this taxation of purchases of shares puts no weight on the financial sector*" since investment services providers "*that performs the transaction [...] pass the cost on to their clients when they charge them transaction fees*", p.2).
- Based on these empirical results, we came to the conclusion that pass-on rates were different for each market, but they were generally high. The most classical assumption is a 100% pass-on rate, but certain markets showed a different pattern with pass-on rates ranging from 60% to more than 100%. We found no empirical study showing low pass-on rates for sales taxes. Considering that the merchants using marketplaces are operating in a large number of different markets, the average pass-on rate we should take into account for this study is an average of the different sectoral pass-on rates calculated above. It should be between 60% and 100%, probably close to 100%. In order to stay conservative, **we will use a downstream pass-on rate of 70%** to take into account the possibility that sectors with low pass-on rate are overrepresented in the mix.

<sup>7</sup> Benedek D., De Mooij R., Keen M. and Wingender P., 2015, "Estimating VAT Pass Through". IMF Working Paper (WP/15/214)

<sup>8</sup> Poterba J., 1996. "Retail price reactions to changes in State and Local Sales Taxes". National Tax Journal XLIX: 165-176.

<sup>9</sup> Op. cit

<sup>10</sup> Doyle Jr, Joseph J., and Krislert Samphantharak "\$2.00 Gas! Studying the effects of a gas tax moratorium." Journal of Public Economics 92.3 (2008): 869-884.(web)

<sup>11</sup> Bonnet C. and Requillart V., 2012, "Tax incidence with strategic firms on the soft drink market". TSE working paper 11-233

<sup>12</sup> Sevestre p., Téput M. and Vigneron A., 2012, "The impact of a "soda tax" on prices: Evidence from French micro data". Banque de France (revised May 2016).

<sup>13</sup> Ardalan A. and Kessing S., 2017, "Tax Pass-through in the European Beer Market". MAGKS Papers on Economics 201747.

<sup>14</sup> Hanson A. and Sullivan R., 2008. "the incidence of tobacco taxation: evidence from geographic micro-level data". Andrew Young School of Public Policy, research paper 08-30.

<sup>15</sup> <https://www.ccomptes.fr/sites/default/files/2017-09/20170704-refere-S2017-1860-financial-transaction-tax-and-its-management.pdf>

## Assessment of the price elasticity of demand

- The partial pass-on by the merchants of the raise in marketplace commission will increase the price of the goods sold on the largest marketplaces (Amazon, Ebay, etc.). This price increase is likely to be very limited (for instance, if the average marketplace commission is 15% of sales, a 3% increase would represent a raise of 0,45%, which represent 20c for a product of 50€), however consumers are likely to react, reduce their purchase or purchase from a cheaper competitor (online or brick and mortar).
- A recent paper by Baugh and al<sup>16</sup> estimates the impact of the application of sales taxes on online retail sales, implemented in most of the US states since 2012, whereas before that change online retailers were exempt from sales tax under certain circumstances. Internet retailers have had to apply the sales tax, which increased their price and reduced the volumes they sold. The paper estimates that a 1% sales tax applied on Amazon own sales<sup>17</sup> would result in a decrease of 1,2% to 1,4% of its revenue. Using the 1,2 revenue elasticity assumption, **we ended up with a price elasticity of demand of -2,2<sup>18</sup>** (meaning that a price increase of 1% would correspond to a volume decrease of 2,2%). We will use that assumption for the downstream price elasticity of demand.

### 3.3.1.2. Upstream Pass-on

#### Assessment of the price elasticity of demand for intermediation service

- The DST imposed on the marketplace can also be considered as a sales tax since it is calculated as a percentage of its revenue. The marketplace will then have to decide how much of that tax it will pass-on to its customers (the merchants) through an increase of the commission rate it charges. The optimal behavior of the marketplace will therefore depend on the reaction of the merchant and on the price elasticity of the demand for intermediation service (i.e. the service offered by marketplaces).
- We have not been able to find any empirical analysis of the elasticity of demand for platform services, and we doubt such analysis exists considering the private nature of the required information. However, we estimated that the reaction of merchants to a small increase in the commission rate would be very limited, for two reasons:
  - According to Sellbrite<sup>19</sup>, merchants are using several marketplaces at the same time (between 4 and 5) to perform their online sales. Considering there are some initial investments to set up the relationship with a new marketplace and that there is no marginal cost related to being present in a platform, the short-term incentives for leaving one platform because the commission rate has increased slightly are very small, even if the sales on that platform are slightly declining. In addition, a large number of merchants operating through marketplaces are very small to medium sized firms<sup>20</sup>, which cannot easily build a standalone online shop and which have therefore no credible alternative to marketplaces. Lastly, as we have seen, merchants will pass on a significant part of the commission increase to consumers and

<sup>16</sup> Baugh B., Ben-David I. and Park H., 2014, "Can taxes shape an industry? evidence from the implementation of the 'amazon tax'". NBER (revised January 2018).

<sup>17</sup> The paper analyzes the retail activity of Amazon and not its marketplace activity. In this example Amazon can therefore be treated as an online merchant.

<sup>18</sup> Let  $r$  be the rate of price increase (1%) and  $k$  be the rate of volume increase, we have  $(1+r)*(1+k)=(1-1,2\%)$ , based on which we can calculate  $k$

<sup>19</sup> <https://www.sellbrite.com/blog/analyzed-1160-ecommerce-sellers-heres-found/>

<sup>20</sup> In Germany, 60% of micro enterprises are selling products online through marketplaces, vs. 38% of large enterprises (cf. Destatis (2017) Unternehmen und Arbeitsstätten - Nutzung von Informations- und Kommunikationstechnologien). We have no reason to believe that the situation should be radically different in France.

will therefore only see a very small decrease in their profitability, which reduces even more the incentives to leave.

- Anecdotal evidence confirms that the reaction of merchants to a small increase in commission rate is likely to be limited:
  - In the US, a marketplace called Etsy increased very significantly its commission rate (from 3,5% to 5%, that is more than a 40% increase) and noticed that it did not lose a significant number of merchants<sup>21</sup> (See appendix 2 for full details).
  - Uber has recently increased its commission rate from 20% to 25%<sup>22</sup> in France (a 25% increase) without noticeable impact on the fleet of Uber drivers.
- Based on the previous arguments, we will consider that, in the short term, the demand for intermediation service is very much inelastic, to simplify our calculation **we will consider that the elasticity of demand is 0.**

### Assessment of the pass-on rate

- Based on the assumptions we have taken for the downstream pass-on behavior of merchants and the elasticity of demand for intermediation service, we can determine the optimal upstream pass-on decision for marketplaces.
- The revenue of the marketplace can be determined by the following equation:

$$R = p * q * k * (1 - t)$$

Where p and q are, respectively, the prices and the quantities of goods sold by merchants through the marketplace (p\*q therefore represent the revenue of the merchants), k is the average commission rate of the marketplace and t is the DST rate (3%).

- From the marketplace standpoint, an increase in the commission rate (k) will increase its revenue proportionally, but it will also increase p, the price of the goods sold through the marketplace, because of the downstream pass-on. Therefore, an increase of the commission is creating a double benefit for the marketplace, compensating the negative volume effect on q. This would lead to the conclusion that the marketplace should have incentives to implement a large pass-on of the tax.
- A mathematical analysis, described in Appendix 3, expands on that argument and shows that the optimal pass-on rate for the marketplace is 100% (or even more than 100%), and this result is robust to a change in the parameter we have used here.
- A large number of anecdotal evidence confirm this theoretical conclusion. For the past few years, taxes comparable to the DST have been passed-on fully downstream. The example of Netflix taxes can be quoted:
  - As noted by newspapers following the implementation of a new digital tax in Chicago targeting Netflix, the Company “*has said it will pass-on the cost of a new ‘cloud tax’ that will come into force in Chicago later this year to its subscribers*”.<sup>23</sup>
  - Australia implemented a 10% tax on digital downloads in 2017, called ‘Netflix Tax’. In reaction, Netflix raised its price to cover this tax, and adding more charges on top.<sup>24</sup>

<sup>21</sup> Etsy, investors presentation, December 2018

<sup>22</sup> <https://www.latribune.fr/entreprises-finance/services/transport-logistique/vtc-uber-entend-les-chauffeurs-et-monte-ses-prix-621305.html>

<sup>23</sup> “We will be adding it to the cost we charge subscribers,” a Netflix spokesman told DTVE sister title TBI, <https://www.digitaltveurope.com/2015/07/07/netflix-to-pass-on-cloud-tax-to-subscribers/>

<sup>24</sup> <https://www.news.com.au/entertainment/tv/australias-netflix-tax-which-digital-services-are-raising-their-prices/news-story/55f4c3c072b5a361fdd38f319be7ba0e>



- Based on the following arguments, **we will consider that the upstream pass-on rate will be set at 100%.**

### 3.3.2. Incidence of the DST on services marketplaces

This category includes marketplaces that connect consumers and service providers (e.g. Uber, Booking, expedia.com, etc.). Their business model is generally based on charging a commission to the service providers, based on the revenue they generate through the marketplace.

The reasoning to assess the DST incidence will be the same as for goods Marketplaces: marketplaces will shift part of the DST to service providers through an increase in the commission and, in turn, service providers will shift part of the commission increase to their consumers through a price increase.

We will first look at the situation on the downstream market (between the service provider and the consumers) and then study the situation on the upstream market.

#### 3.3.2.1. Downstream pass-on

##### Assessment of the pass-on rate

- We have been able to identify papers that estimate elasticities of supply and elasticity of demand for Uber<sup>25</sup> and for Airbnb<sup>26</sup>.
- Considering that a lot of marketplaces for services are concerned with leisure / tourism type of services (taxis, hotels, restaurants, plane tickets), we considered that the examples of Uber and Airbnb could be extrapolated to assess the elasticities of supply and demand for the services generally provided through a marketplace. We therefore estimated that the price elasticities of demand and supply on the downstream markets were the average of those of Uber and Airbnb.
- Using these parameters, it is possible to calculate directly the pass-on rate on the downstream market. All calculations are described in Appendix 4 and allow us to conclude **that the average pass-on rate on the downstream market is 76%.**
- We should note that this number probably underestimates the real pass-on rate, since, in certain cases, marketplaces will charge directly the DST to the end users (therefore leading to a 100% pass-on rate). This is for instance the case of Airbnb in France<sup>27</sup>. Indeed, for a couple of years, Airbnb has to collect a tourist tax in France, as hotels do, on behalf of cities. As a response, Airbnb, instead of increasing its commission rate for apartment owners, fully recharged the tourist tax to the tourists. To keep the calculation simple and conservative, we did not consider this kind of direct pass-on effect in our study.

##### Assessment of the price elasticity of demand

- Price elasticity of demand can be directly derived from the two above mentioned articles, for our calculation, **we used a value of -0,4.**

<sup>25</sup> Using Big Data to Estimate Consumer Surplus: The Case of Uber, NBER Working Paper, 2016

<sup>26</sup> Inferring Tax Compliance from Pass-through: Evidence from Airbnb Tax Enforcement Agreements, Department of Economics Working Papers 2018, McMaster University

<sup>27</sup> <https://www.airbnb.fr/help/article/318/how-do-taxes-work-for-guests>

### 3.3.2.2. Upstream pass-on

We used the same reasoning as for the goods marketplace, which is even more valid since the price elasticity of demand is lower than for goods.

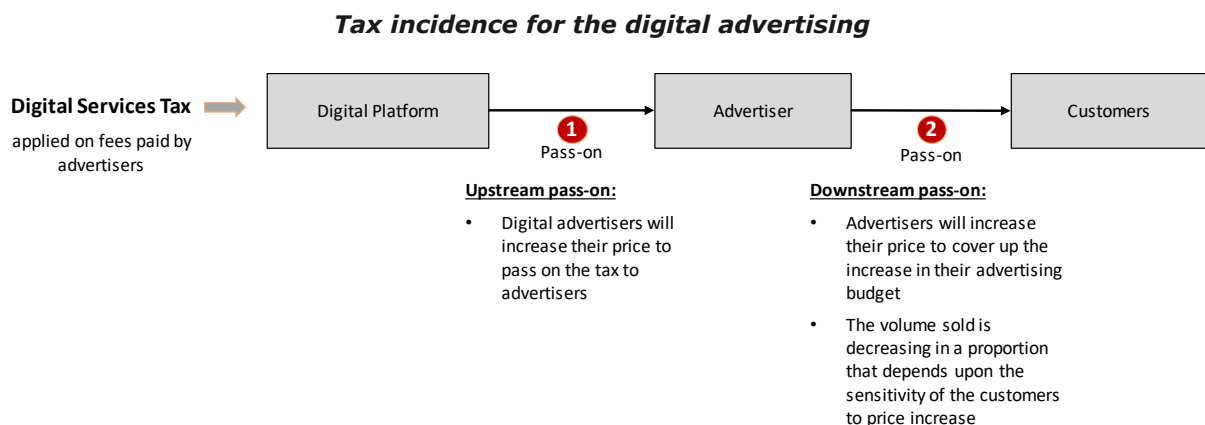
**We therefore concluded that the upstream pass-on rate would be 100% and the short term price elasticity of demand for intermediation service was 0.**

### 3.3.3. Incidence of the DST on digital advertising

The digital advertising value chain includes many intermediaries, particularly for programmatic advertising. However, for simplification purposes, we will consider that there is a direct relationship between the digital advertising platform and the advertiser who wants to buy targeted ads.

As for the marketplaces, the incidence of the DST has to be studied in a three phases approach (as described in the following diagram):

1. **DST.** A tax is imposed on the digital advertising platform, as a percentage of its turnover
2. **Upstream pass-on:** the digital advertiser will pass-on part of the tax to the advertisers by increasing the ad prices. There is potentially a corresponding volume effect, where the total amount of digital advertising is reduced, as advertisers reduce their digital investments and switch to non-digital media to support their advertising strategy
3. **Downstream pass-on:** in case of an absolute increase in their advertising spend, the advertisers may want to increase the price of the product they sell, in effect passing-on the cost increase to their consumers. There would be a corresponding volume effect, with a decrease in the volume of the purchased goods.



#### 3.3.3.1. Upstream pass-on

##### Assessment of the pass-on rate

- The DST can also be considered as an *ad valorem* sales tax for digital advertisers. The analysis described for the goods marketplace can be reproduced here and we can therefore expect a high pass-on rate to the advertisers.
- This conclusion has been substantiated by a natural experiment, since taxes on digital advertising have already been applied in other countries. Indeed, on June 1st, 2016, India has implemented an « *equalisation levy* »<sup>28</sup> tax targeting the trade

<sup>28</sup> <https://in.reuters.com/article/alphabet-facebook-india-advertising/in-india-google-races-to-parry-the-rise-of-facebook-idINKCN1LK07W>



of digital advertising space, which is similar to the DST. Even if, to our knowledge, no ex post assessment has been performed, it was generally anticipated that the digital platform would fully pass-on the tax to advertisers (*“nonresident digital giants are highly likely to increase the price at which they offer services so as to accommodate the imposition”*<sup>29</sup>), which has been confirmed through anecdotal evidence by Indian companies.<sup>30</sup>

- Based on that evidence, we have considered that **the upstream pass-on rate would be 100%.**

### Assessment of the price elasticity of demand for digital advertising

- The reaction of advertisers faced with an increase of the digital advertising price will notably depend upon the level of substitutability between digital and non-digital (e.g. TV or radio) advertising. If substitutability is high, advertisers will be likely to rebalance their marketing investments by putting more weight on traditional media and reducing their digital ad purchases to keep their overall budget constant. Conversely, if substitutability is low, advertisers will be more likely to maintain their volume of digital ad purchase (or reduce it marginally) despite the price increase.
- The topic of online/off line substitution is complex and there does not seem to exist, today, a general consensus among economists concerning the quantitative estimate of the cross price elasticities of demand<sup>31</sup>.
- Whatever the level of structural online/off-line substitutability, changing the media strategy of a group is very likely to be complicated. Media plans are decided far in advance with media agencies based on targeting objectives. If the digital ads price increases suddenly, even if there is some cross media substitutability, it can be expected that it will take some time for the advertisers to rebalance their budgets and come up with a new media strategy that achieves the same targeting objectives as before with another mix of media. In the short term (i.e. the first year of implementation of the tax), we can expect that purchase behavior will be sticky and that there will be limited substitutability.
- Furthermore, it has to be noted that (i) the digital advertising market is growing at a very high pace in France (+15% per annum over the last two years<sup>32</sup>, the trend is expected to continue in the future), (ii) the price increase will be limited (maximum 3%) and (iii) digital advertising is sometimes the only available advertising channel for small and medium enterprises (SMEs) which cannot buy TV or print ad space. Taking into account this very strong growth trend, and the increasing importance of a digital presence for firms, it can be expected that a small price increase is not likely to reduce significantly the overall demand for digital advertising.
- Based on the above arguments, we consider that the price elasticity of demand for digital advertising should be limited in the short term. For simplification purposes, **we took the assumption that the price elasticity of demand for digital advertising was 0.**

<sup>29</sup> Vijayvargiya a., 2016, “Equalization levy: Taxing the overseas digital giants”. Indian Journal of Tax Law, Volume III, Issue I.

<sup>30</sup> <https://www.moneycontrol.com/news/business/startup/budget-2017-internet-companies-ask-for-removalgoogle-tax-947646.html>

<sup>31</sup> For a view on the non substitutability: He X., Lopez R. and Liu Y., 2015, “Substitution between Online and Offline Advertising: Evidence from the Carbonated Soft Drink Industry”. University of Connecticut working paper. For a view on the substitutability: Goldfarb A. and Tucker C., 2011. “Substitution between offline and online advertising markets”. *Journal of Competition Law and Economics*, vol. 7: 37-44

<sup>32</sup> SRI, 21ème Observatoire de l’e-pub and SRI, 19ème Observatoire de l’e-pub

### 3.3.3.2. Downstream pass-on

#### Assessment of the pass-on rate

- There is an obvious correlation between advertising spend and price of products, since advertising is a way to create a differentiation for products and set up a higher mark-up on cost<sup>33</sup>, however the causal quantitative relationship between advertising investment and price is not clear in general.
- In order to estimate the downstream pass-on rate, we have been able to use a natural experiment studied in a paper of Rauch<sup>34</sup>. Austria recently decided to implement an *ad valorem* tax on advertising spend, in effect increasing the price of all advertising spaces. The article study the effects of that tax on the price level of consumption goods in Austria, and concludes that a 1% increase in the advertising budget of all Austrian firms led to an average price increase of 0,05%<sup>35</sup>.
- The results of that study can be used to determine the impact of the DST on the French price level, assuming a certain comparability of the French and Austrian market structures. Indeed, using the total revenue of the firms liable to the DST, we can calculate the increase in the advertising budget of the French firms and use Rauch results to estimate the average increase in the French price level.
- The details of the calculation are presented in Appendix 5. The conclusion is that the pass-on rate would be very high (around 300%), meaning that there would be an overshifting of the advertising cost increase into the product price. This result is consistent with the notion that advertising is an investment and firms will generally want to increase prices so as to recover that investment plus a profit margin.
- There might of course be differences in the French and Austrian market structures, however we can safely conclude from our analysis that a cost increase in advertising would be overshifted to consumers. To keep a conservative approach, we have chosen the minimal level of overshifting and have considered **that the downstream pass-on rate would be 100%.**

#### Assessment of the price elasticity of demand

- All kind of consumption goods and services are concerned by digital advertising, therefore the price of a very wide range of products and services will increase because of the DST.
- In order to estimate the average volume impact of the price increase, we have taken into account the average price elasticity of demand of different sectors of consumer goods and services, as calculated by Copenhagen Economics<sup>36</sup>. The calculation, shown in Appendix 6 **shows an average price elasticity of demand of -0,4.**

<sup>33</sup> "How-prices-ad-expenditures-and-profits-are-linked", Paul Farris and David J. Reibstein, Harvard Business Review

<sup>34</sup> "Advertising expenditure and consumer prices", International Journal of Industrial Organization, 31, pp. 331-341, Rauch, 2013

<sup>35</sup> The paper also noticed that the demand for advertising was elastic. However, it dealt with all form of advertising whereas we are only focused on digital advertising.

<sup>36</sup> Study on reduced VAT applied to goods and services in the Member States of the EU – Appendices, Copenhagen Economics, 2007

### 3.4. Synthesis

All our incidence assumptions are summarized in the following table:

	Upstream pass-on		Downstream pass-on	
	Pass-on rate	Price elasticity of demand	Pass-on rate	Price elasticity of demand
<b>Goods marketplaces</b>	100%	0	70%	-2,2
<b>Service marketplaces</b>	100%	0	76%	-0,6
<b>Digital advertising</b>	100%	0	100%	-0,4

## 4 - Distribution of the tax burden

According to the French government, the DST is supposed to yield 400M€ of revenue in 2019. It is a well-known economic result<sup>37</sup> that the economic burden imposed on agents will be in excess of this amount since the tax will interfere with economic decisions and distort efficient choice.

The question we will try to answer in this chapter is how the overall tax burden will be spread across three categories of economic agents: the taxpayers (large internet companies), the business firms using the services of the taxpayers and the French consumers.

For that purpose, we will first determine how much the tax will yield, for each category of taxpayer (§4.1). Then, we will use the incidence parameters calculated above to determine the impact of the tax on the prices and on the profits of the firms (§4.2) to finally conclude on an estimate of the total burden created by the DST and its distribution across categories of agents (§4.3).

### 4.1. Split of the Total Tax revenue per category of taxpayer

It is an impossible exercise to determine the exhaustive list of all firms liable to the DST, and the corresponding tax base, using only public information. Indeed, the revenue threshold are determined at group level whereas in many cases, groups do not communicate on worldwide revenue for the activities that are considered taxable under the DST. In addition, groups generally do not communicate on the turnover generated with French users.

In order to obtain a reasonable proxy for the tax base per category of taxpayers, we have therefore used a three-step approach:

1. We have started from the assumption that the estimate performed by the French government (400M€ of tax revenue) was accurate.
2. We have performed a bottom-up approach to identify the most exhaustive list of liable entities we could think of, and we have used proxy to estimate their taxable revenues (based on publicly available information (e.g. industry reports, annual reports, etc.) and the *Orbis* database<sup>38</sup>).
3. Since the taxable revenues obtained in the previous step led to tax revenues inferior to 400M€, we have grossed up our results proportionally to the size of each category to come up to the government estimates.

**For Step 2**, we applied the following approach<sup>39</sup>:

- i. Based on industry reports, discussions with industry experts, external databases and internet searches, we identified all companies that could potentially be subject

<sup>37</sup> See Musgrave R. And Musgrave P.1984. *Public Finance in Theory and Practice*. McGraw-Hill, chapter 14.

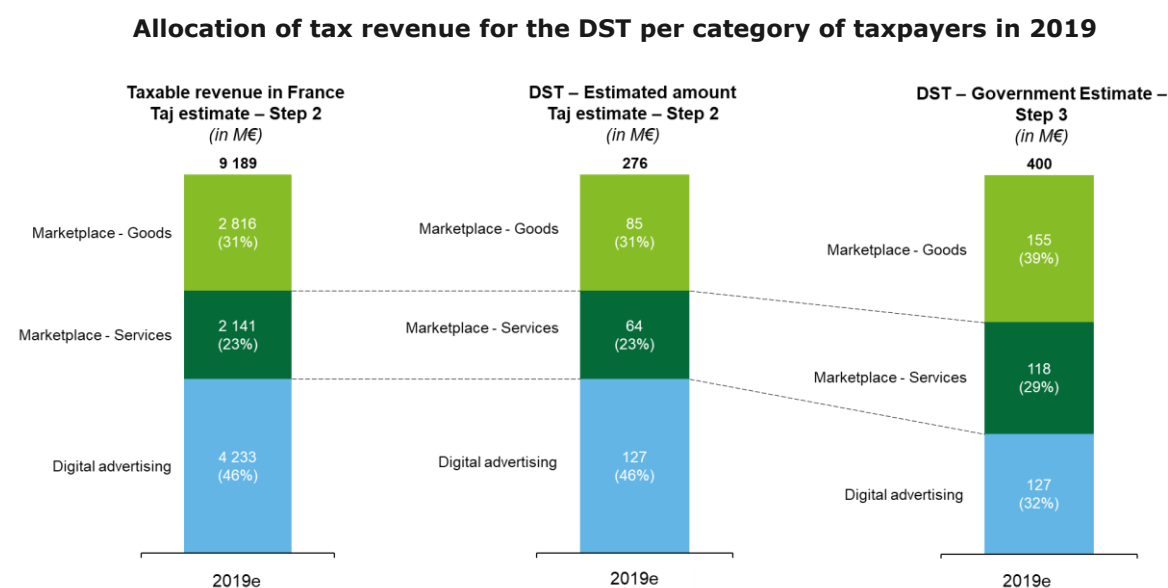
<sup>38</sup> *Orbis* is a Bureau Van Dijk database providing information (qualitative and financials) on around 300 million companies across the globe, sourced from more than 160 separate providers.

<sup>39</sup> The company groups are displayed in Appendix 7

- to the French DST within each category (goods marketplaces, services marketplaces and digital advertising);
- ii. For each company, we have reviewed several sources, including annual reports, to identify or estimate its global and French taxable revenues to determine if the company is within the scope of the DST or not;
- iii. For companies identified as being subject to the tax in France (see appendix 7), we applied a growth rate (specific by category of taxpayers) to the 2017 or 2018 figures so as to estimate the 2019 tax base;
- iv. Based on this tax base estimate and a 3% tax rate, we calculated the expected DST amount to be collected by the French Government in 2019 (circa 276 M€).

**For Step 3**, we aligned our DST estimate to the one of the government (i.e. 400M€) by allocating the difference in DST amount to be collected (i.e.  $400 - 276 = 124$ M€) by categories of taxpayers. Since we considered that we had already been exhaustive for the digital advertising segment (we considered that approximately 75% of the French digital advertising spend was liable to the DST), we allocated the residual between goods and services marketplaces based on their relative share of DST in our original bottom up calculation.

The results of our calculation are displayed in the diagram below:



## 4.2. Distribution of the total tax burden

In order to determine the distribution of the total tax burden, we have performed a comparison between two states of nature: the world without the DST (State “no DST”) and the world with the DST (State DST), *ceteris paribus*. In each state of nature, we will estimate the situation of three categories of economic agents potentially impacted by the tax: (i) the taxpayers (marketplaces and digital advertising companies), (ii) the firms using the services of the taxpayers and (iii) the consumers.

The tax burden for each category of agent will be calculated as the difference of their welfare in the two states.

- For the taxpayers and the firms using their services, the tax burden will be calculated as the difference in profit between the two states of nature. For instance, if taxpayers generate a profit of 100 € without the DST and of 80 € with the DST, we will consider that the DST will impose a burden of 20 € on them.
- For the consumers, the tax burden will be calculated as the difference of surplus<sup>40</sup> they derive from their consumption in each State of the Nature. The notion of consumer surplus is related to the price of the goods they purchase (the more expensive, the less surplus they will enjoy) and also to the quantities of goods purchased (the less goods, the less surplus they will enjoy). A graphical presentation of how consumer surplus is generally calculated in a partial equilibrium setting can be found in Appendix 8.

In order to provide a quantitative assessment of the distribution of tax burden, we have proceeded as follows, for each category of taxpayers:

- 1) Calculation of the key parameters in the "DST" State:
  - a. New commission rates / new advertising prices
  - b. New consumer prices
  - c. New volume of consumer consumption
  - d. New profit of taxpayers and firms using taxpayers' platforms
- 2) Calculation of the tax burden for each category of users
  - a. Profit of taxpayers in the non DST State minus profit of taxpayers in the DST State
  - b. Profit of firms in the non DST State minus profit of firms in the DST State
  - c. Consumer surplus in the non DST State minus consumer surplus in the DST State

#### 4.2.1. For the Goods Marketplaces

Denote:

- $\pi_p$  = Profit of the taxpayer
- $\pi_m$  = Profit of the merchants
- $C$  = Consumption
- $p$  = Price
- $q$  = Quantity
- $k$  = Commission rate
- $t$  = DST rate
- $VC_m$  = Variable cost of the merchants
- $FC_p$  = Fixed costs of the taxpayer
- $FC_m$  = Fixed costs of the merchant

Each variable will have the index 1 in the non DST State and the index 2 in the DST State

We will make the following assumptions:

- The commission rate  $k$  will be set at 15%, based on the average commission rate on Amazon marketplace<sup>41</sup>
- The consumption will be calculated based on the taxable revenue of marketplaces as defined in §4.1 divided by the commission rate
- The gross profit of the merchants will be set at 40%, meaning that the variable costs of the merchant  $VC_m$  will be 60% of revenue. In order to determine that

<sup>40</sup> A definition of consumer surplus is given in any microeconomic manual, for instance Varian H., 1992. *Microeconomic Analysis*. Norton & Company

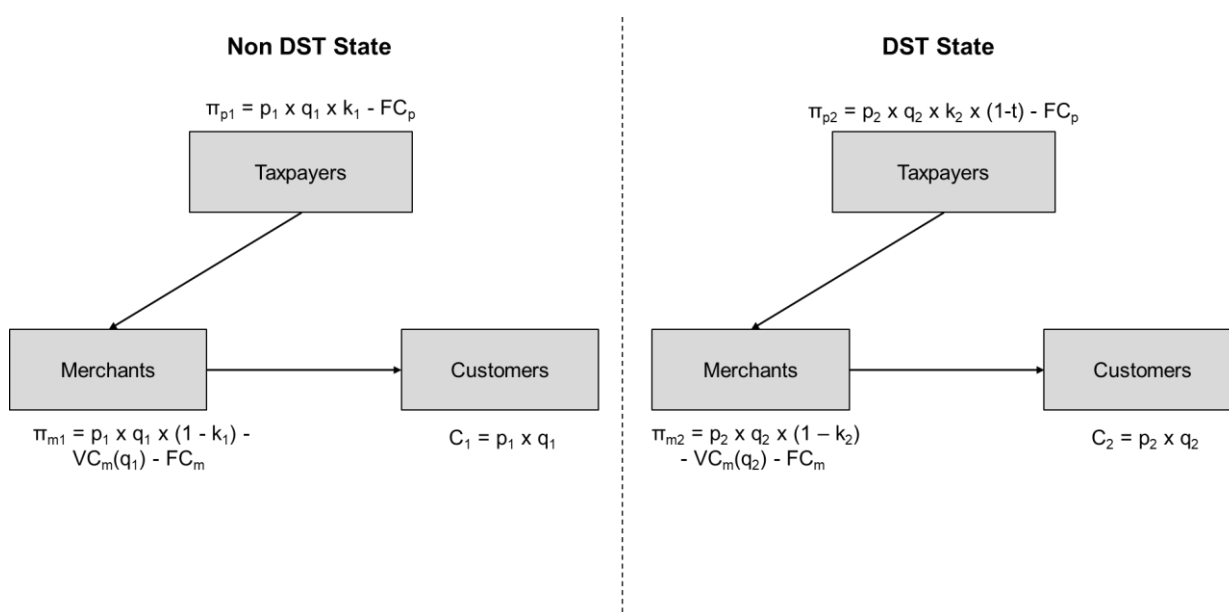
<sup>41</sup> <https://sellercentral.amazon.com/gp/help/external/200336920>

figure, we used the *Diane* database<sup>42</sup> and downloaded the last financial statements of 99,334 companies registered under an industry code related to retail trade<sup>43</sup>. We then calculated the gross margin of each company and derived the median of the observations which led to a value of 39,2%. For sake of simplicity, we rounded that number to 40%.

- We considered that the cost structure of taxpayers was completely fixed in the short term (no variable costs), which is a reasonable estimate considering their commission-based business model.

The two States we have compared, with the formula for the profit of the firms and the consumption of the households are described in the following diagram:

### Comparison of the two States for Goods Marketplaces



- The burden of the consumer can be calculated as  $q_2 (p_2 - p_1)$
- The burden for the merchants can be calculated as  $\pi_{m2} - \pi_{m1}$ <sup>44</sup>
- The burden for the taxpayers can be calculated as  $\pi_{p2} - \pi_{p1}$

The numerical application is described in the table below:

<sup>42</sup> Diane is a Bureau Van Dijk database providing company accounts, ratios, activities, scanned annual reports, descriptive information, ownership and management information for over 1.4 million companies in France. Data were downloaded on February 28, 2019.

<sup>43</sup> We used the following Nace codes: 47.4 - Retail sale of information and communication equipment in specialised stores, 47.5 - retail sale of other household equipment in specialised stores, 47.6 - Retail sale of cultural and recreation goods in specialised stores, and 47.7 - Retail sale of other goods in specialised stores

<sup>44</sup> This calculation focus on the merchants that were operating through a marketplace. Since part of the volume of sales they have lost through the price increase can be captured by other French firms (part of it can also be captured by foreign firms), the total burden, for the whole French economy, might be lower than what we have calculated here.

**Total burden distribution: Goods marketplace (2019, M€)**

Assumptions		
(A)	DST rate	3%
(B)	Initial commission rate	15%
(C)	Upstream pass on	100%
(D) = (B) x (1+(A)) x (C)	New commission rate	15,5%
(E)	Downstream pass on	70%
(F)	Price elasticity of demand	-2,2
(G)	Gross margin merchants (%)	40%

Total burden calculation		
<b>For the consumers</b>		
(a)	Consumption (p1q1)	34 466
(b) = (E) x ((D)-(B))	Downstream price pass-on	0,3%
(c) = (b) x (F)	Volume effect	-0,7%
(d) = (a) x (b) x (1+c)	<b>Loss of consumer surplus</b>	<b>108</b>
<b>For the merchants</b>		
(a)	Gross revenue - non DST (p1q1)	34 466
(e) = (a) x (1-(B))	Net revenue merchants - non DST	29 296
(f) = (e) x (G)	Gross margin merchants - non DST	11 719
(g) = (a) x (1+(b)) x (1+(c))	Gross revenue - DST (p2q2)	34 335
(h) = (g) x (1-(D))	Net revenue merchants - DST	29 031
(i) = (h) x (G)	Gross margin merchants - DST	11 612
(j) = (f) - (i)	<b>Reduction in merchants profit</b>	<b>106</b>
<b>For the taxpayers</b>		
(k) = (a) x (B)	profit - non DST	5 170
(l) = (g) x (D) x (1-(A))	profit - DST	5 146
(m) = (k) - (l)	<b>Reduction in taxpayer profit</b>	<b>24</b>
(n) = (d) + (j) + (m)	<b>Total burden</b>	<b>238</b>

## 4.2.2. For the Marketplaces of services

Denote:

- $\pi_p$  = Profit of the taxpayer
- $\pi_m$  = Profit of the merchants
- $C$  = Consumption
- $p$  = Price
- $q$  = Quantity
- $k$  = Commission rate
- $t$  = DST rate
- $VC_m$  = Variable cost of the merchants
- $FC_p$  = Fixed costs of the taxpayer
- $FC_m$  = Fixed costs of the merchant

Each variable will have the index 1 in the non DST State and the index 2 in the DST State

We will make the following assumptions:

- The commission rate  $k$  will be set at 15%, based on the average commission rates applied by Booking.com, Uber and Airbnb.



- The consumption will be calculated based on the taxable revenue of marketplaces as defined in §4.1 divided by the commission rate.
- The gross profit of the merchants will be set at 90%, meaning that the variable costs of the merchant  $VC_m$  will be 10% of revenue. This is based on the fact that a lot of the service providers using marketplace have a cost structure that is very much fixed in the short term (for hotels the variable costs are consumables, for taxis, the cost of fuel, etc. this variable element is generally small, representing less than 10% of revenues).
- We considered that the cost structure of taxpayers was completely fixed in the short term (no variable costs), which is a reasonable estimate considering their commission-based business model.

The burden calculation methodology is the same as for the goods marketplace, we can therefore proceed with the numerical application:

**Total burden distribution: Services marketplace (2019, M€)**

Assumptions		
(A)	DST rate	3%
(B)	Initial commission rate	15%
(C)	Upstream pass on	100%
(D) = (B) x (1+(A)) x (C)	New commission rate	15,5%
(E)	Downstream pass on	76%
(F)	Price elasticity of demand	-0,6
(G)	Share of fixed costs	90%

Total burden calculation		
<b>For the consumers</b>		
(a)	Consumption (p1q1)	26 202
(b) = (E) x ((D)-(B))	Downstream price pass-on	0,3%
(c) = (b) x (F)	Volume effect	-0,2%
(d) = (a) x (b) x (1+c)	<b>Loss of consumer surplus</b>	<b>89</b>
<b>For the merchants</b>		
(a)	Gross revenue - non DST (p1q1)	26 202
(e) = (a) x (1-(B))	Net revenue merchants - non DST	22 272
(f) = (e) x (G)	Gross margin merchants - non DST	20 045
(g) = (a) x (1+(b)) x (1+(c))	Gross revenue - DST (p2q2)	26 238
(h) = (g) x (1-(D))	Net revenue merchants – DST	22 184
(i) = (h) x (G)	Gross margin merchants – DST	19 966
(j) = (f) - (i)	<b>Reduction in merchants profit</b>	<b>79</b>
<b>For the taxpayers</b>		
(k) = (a) x (B)	profit - non DST	3 930
(l) = (g) x (D) x (1-(A))	profit – DST	3 932
(m) = (k) - (l)	<b>Reduction in taxpayer profit<sup>45</sup></b>	<b>-2</b>
(n) = (d) + (j) + (m)	<b>Total damages</b>	<b>167</b>

<sup>45</sup> A negative reduction in taxpayer profit means that the DST will actually increase slightly the taxpayers profit

### 4.2.3. For the Digital advertisers

Denote:

- $n_a$  = Profit of advertisers
- $C$  = Consumption
- $p$  = Price
- $q$  = Quantity
- $AF$  = Advertising service fee
- $t$  = DST rate
- $VC_a$  = Variable cost advertiser
- $FC_a$  = Fixed costs advertisers
- $K$  = Average advertising budget of a firm as a percentage of its Revenue

Each variable will have the index 1 in the non DST State and the index 2 in the DST State

We will make the following assumptions:

- The consumption, i.e. the revenue of the firms buying targeted advertising services from taxable digital advertising platforms, will be calculated based on the taxable revenue of digital advertisers (as calculated in §4.1) divided by the average digital advertising budget of a firm expressed as a percentage of its turnover.<sup>46</sup>
- The gross profit of the advertisers will be set at 75%, meaning that the variable costs of the advertisers  $VC_a$  will be 25% of revenue. In order to determine that figure, we used the *Diane* database and downloaded the last financial statements of 26,209 companies registered under an industry code related to manufacturing of BtoC products or to passenger transportation<sup>47</sup>. We then calculated the gross margin of each company and derived the median of the observations which led to a value of 76,5%. For sake of simplicity, we rounded that number to 75%.

The two states we have compared, with the formula for the profit of the firms and the consumption of the households are described in the following diagram:

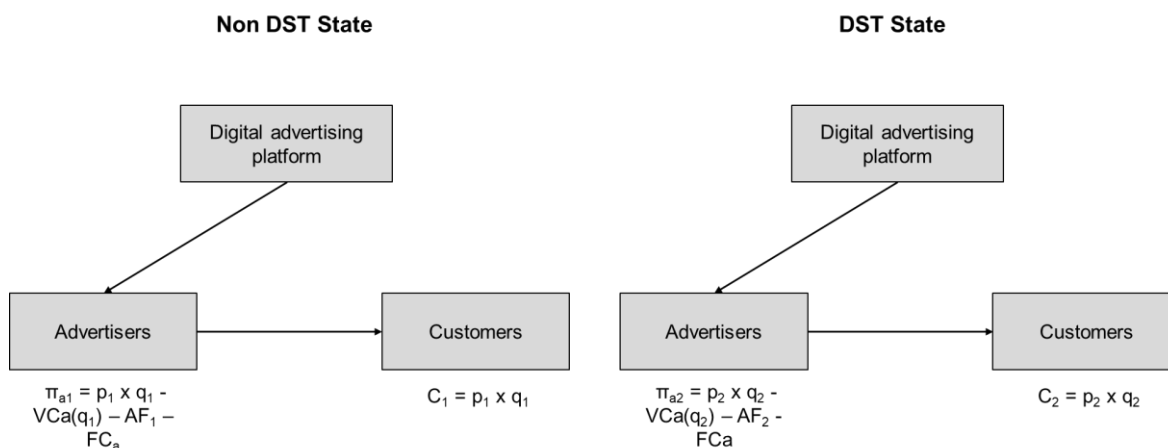
<sup>46</sup> Based on observations from:

- Schonfeld & Associates, Inc: 2018 Advertising To Sales Ratios by Industry Sector (<https://saibooks.com/advertising-sales-ratios/>) and 2018 Advertising-to-Sales Ratios (<https://www.aaaa.org/wp-content/uploads/2017/06/Schonfeld-Ad-to-sales-by-industry-list.pdf>)
- Gartner, Inc.: <https://www.gartner.com/marketing/research/the-2018-2019-cmo-spend-survey-spotlight.html>. A rate of 2.4% is obtained by multiplying the share of 2018 marketing budget as a percentage of revenues (11,2 %) to the share advertising spend in total marketing budget (21 %).

We then estimated the total advertising budget (all media) being 3% of companies' total revenues. In addition, we estimate digital advertising spend to represent 36% of the total advertising budget of French companies based on SRI (21ème Observatoire de l'e-pub) and on Statista (total advertising spending in France). Therefore, digital advertising budget represents 1,1% of the total revenues of companies.

<sup>47</sup> We used the following Nace codes: 14 - Manufacture of wearing apparel; 15 - Manufacture of leather and related products; 18 - Printing and reproduction of recorded media; 20.3 - Manufacture of paints, varnishes and similar coatings, printing ink and mastics; 20.4 - Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations; 21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations; 25.7 - Manufacture of cutlery, tools and general hardware; 26 - Manufacture of computer, electronic and optical products; 27 - Manufacture of electrical equipment; 29 - Manufacture of motor vehicles, trailers and semi-trailers; 30 - Manufacture of other transport equipment; 31 - Manufacture of furniture; 32 - Other manufacturing; 49.1 - Passenger rail transport, interurban; 50.1 - Sea and coastal passenger water transport; and 51.1 - Passenger air transport.

### Comparison of the two States for Digital advertising



- The burden of the consumer can be calculated as  $q_2 (p_2 - p_1)$ .
- The burden for the advertisers can be calculated as  $\pi_{m2} - \pi_{m1}$ .
- Assuming that the digital advertising platforms would pass-on entirely the tax cost to advertisers, and there is no corresponding reduction in demand for digital advertising (elasticity of demand of 0), the increase in the digital platform's revenue would therefore exactly match the DST and they will bear no tax burden<sup>48</sup>.

The numerical application is described in the table below:

#### Total burden distribution: Digital advertising (2019, M€)

Assumptions		
(A)	DST rate	3%
(B)	Upstream pass on	100%
(C)	Downstream pass on	100%
(D)	Price elasticity of demand	-0,4
(E)	Total expenditure on digital advertising	4 233
(F)	Share of digital advertising spending (% of revenues)	1,1%
(G)	Share of variable costs	25%

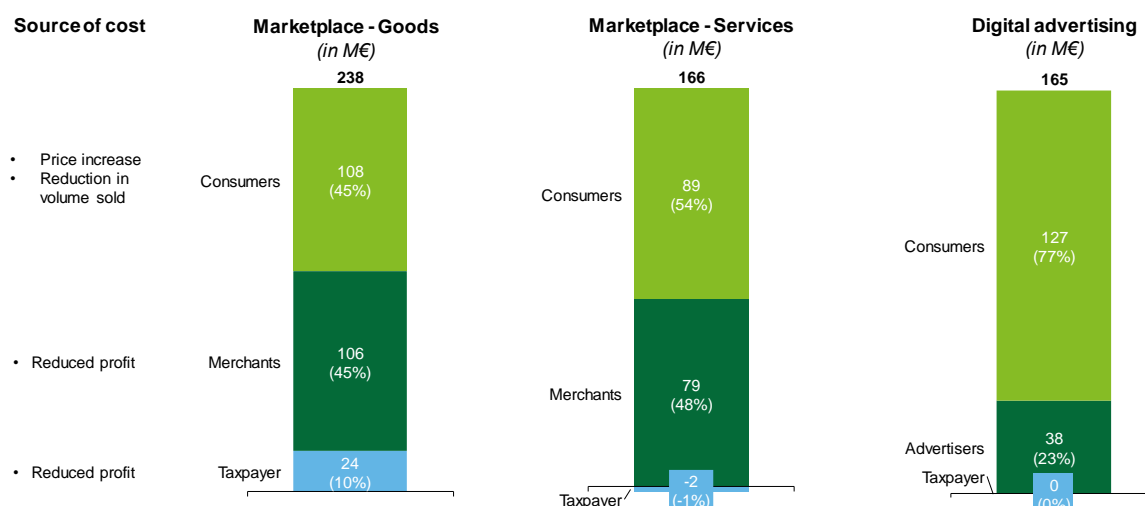
Total burden calculation		
<b>For the consumers</b>		
(a) = (E) / (F)	$p_1 q_1$	394 876
(b) = (E) x (A) x (B) x (C) / (a)	Downstream price increase	0,03%
(c) = (b) x (D)	Volume effect	-0,01%
(d) = (a) x (b) x (1+c)	<b>Loss of consumer surplus</b>	<b>127</b>
<b>For the advertisers</b>		
(a)	Revenue of advertisers - non DST	394 876
(e) = (a) - (E)	Revenue of advertiser minus advertising costs - non DST	390 643
(f) = (a) x (G)	Variable costs of advertisers - non DST	98 719
(g) = (a) x (1+(b)) x (1+(c))	Revenue of advertisers – DST	394 952
(h) = (g) - (E) x (1+(A)x(B))	Revenue of advertiser minus advertising costs – DST	390 592
(i) = (f) x (1+(c))	Variable costs of advertisers - DST	98 706
(j) = (e) - (h) + (f) - (i)	<b>Reduction in advertiser's profit</b>	<b>38</b>
(k) = (d) + (j)	<b>Total damages</b>	<b>165</b>

<sup>48</sup> We should however note that the cost described here does not include any compliance related cost (e.g. IT investments to be performed by digital platform to comply with the requirements of the FTA in terms of data availability), which might be significant, as described in chapter 5 below

### 4.3. Synthesis of the results

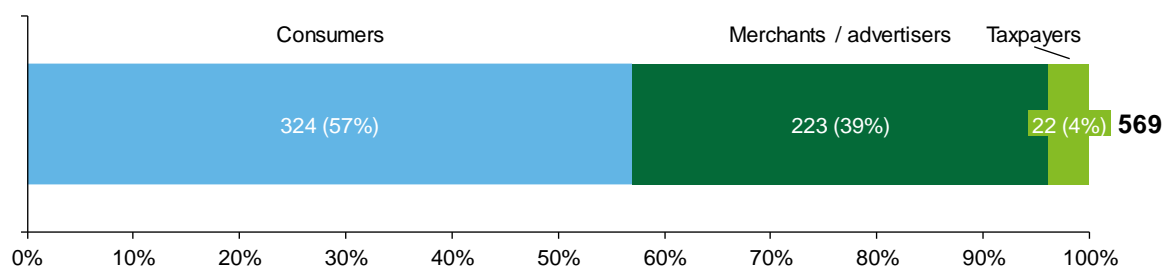
The distribution of the total burden related to the DST for each category of taxpayer is displayed in the diagram below:

**Distribution of total burden per type of taxpayers and per type of affected agent<sup>49</sup>**  
**2019**



The aggregation of total burden across the different economic agents is shown in the diagram below:

**Distribution of total burden per type of affected agent<sup>50</sup>**  
**2019**



As shown in this diagram:

- Households are likely to bear a cost of 320M€, related to an overall increase in the price level similar to what would have been obtained with a consumption tax. This cost will be borne by all households equally, which has regressive features
- Business firms are expected to bear a cost of 220 M€ due to a reduction in corporate profit, close to what would have been obtained through an increase in CIT rate. This cost will likely concern all firms using marketplaces (including a large number of SMEs) as well as firms buying internet ads (all sizes, but also including a lot of small enterprises). It is to be noted that French SMEs already

<sup>49</sup> Compliance costs for digital platforms have not been considered at our modelling and are further discussed on section 5 of this report.

<sup>50</sup> Compliance costs for digital platforms have not been considered at our modelling and are further discussed on section 5 of this report.

pay corporate income tax at a high rate (around 31%)<sup>51</sup> that would be even increased taking into account the impact of the DST.

- Taxpayers (large internet companies) should be able to shift almost all the burden downstream, and bear only a small residual burden.

<sup>51</sup> « Adapter l'Impôt sur les Sociétés à une société ouverte ». Rapport du Conseil des Prélèvements Obligatoires, 2016.

## 5 - Efficiency Considerations

As mentioned by Musgrave<sup>52</sup>, two main elements of social cost related to the implementation of a new tax can be distinguished:

- Collecting the tax is not free, as it requires new administrative efforts to calculate the tax, collect it, control that the agents are not trying to evade the tax and litigate when there is an uncertainty in the law. From the taxpayer side, the new tax will also entail compliance costs (preparing the necessary information for the Tax Administration to assess the taxable basis) that needs to be taken into account.
- Implementing a tax creates a change in the price system and therefore creates distortions in the functioning of the markets and in the incentives of the agents, which usually impair the productive efficiency of the economy and have a negative impact on global welfare.

We will perform an analysis of both type of efficiency costs.

### 5.1. Administrative costs

The administrative costs include three categories of costs:

- Administrative costs incurred by the FTA to operate
- Administrative costs incurred by the taxpayers to comply with their obligation
- Litigation costs

In order to reduce at a minimal level all administrative costs, it is generally recommended that taxes should be as clear as possible and rely on a taxable base that is easy to compute for taxpayers and easy to control by the tax administration.

The objectives of the DST is to tax the revenue generated by large internet companies with French audience or with the contribution of French agents. This is a very ambitious aim, since it is extremely difficult to measure in a non-ambiguous way the contribution of the French agents to the profit of a marketplace or a digital advertising platform.

That intrinsic complexity appears in the current drafting of the law, which is sometimes confusing. We believe that this is likely to create a lot of legal uncertainties for taxpayers and the Tax Administration, give way to a large number of diverging interpretations as to the taxable base should be calculated and, finally, increase significantly the overall administrative cost of the DST.

Even if it is impossible at this point to give a quantitative estimate of the total administrative cost, we will try to give a few examples of the difficulties that will be raised by the current proposed legislation. More specifically, three points of difficulties will be detailed below:

- The difficulties to identify all taxpayers
- The difficulties to calculate the taxable base
- The risks of multiple taxations

<sup>52</sup> Musgrave, op. cit., chapter 14

### 5.1.1. Identification of the firms liable to the DST

- There are first certain ambiguities in the definition of the taxable services (§II of the current proposed legislation), which is a first step to determine whether a firm is below or above the thresholds:
  - The draft bill refers to advertising that are « targeted based on the characteristics of the viewer ». but no definition of “targeting” is given. Would contextual targeting<sup>53</sup> for display advertising be considered « targeted » in the DST sense?
  - Different business models exist for intermediation activities. A hotel booking system (a platform between hotels and travelers) could be invoiced based on a commission fee on the transaction, or based on a technology license paid by the hotels to access the automated booking system. Would both type of flows be included in the DST? Likewise, a lot of internet advertising is compensated based on “revenue sharing” contracts instead of simple advertising fee. Would both type of flows be considered alike?
- Assessing if a company is above the worldwide threshold (750M€ worldwide) will be extremely challenging, particularly for conglomerates that have several potentially taxable businesses in different countries but do not report the worldwide revenue they generate per activity. Large media groups that sell digital ads in many countries and sometimes own local marketplaces are typical examples. In order to determine whether they meet the thresholds or not, it will be necessary to add a lot of different revenues belonging to different business units (marketplace fee in business A in country X, targeted digital add for business B in countries Y and Z, etc.) and accounted for in different accounting systems. At this point, there does not seem to exist a systematic way of identifying all companies liable to the tax. This will be a problem both for the FTA, which will have to send detailed data requests to firms outside of the EU to obtain the necessary information and for the firms themselves that will need to perform an auto assessment to avoid the risk of being reassessed.
- Likewise, it will be very difficult to assess if a company is above the French threshold (25M€) as the way the “French based” revenue should be calculated is very confusing. We will focus on this point in the next chapter.

At this point, we have not been able to determine the exact list of companies liable to the tax and we believe doing that exercise will require a lot of resource from the FTA, and generate significant cost and uncertainties for firms, which will have to do their own assessment, which might be different from the FTA’s.

### 5.1.2. Calculation of the taxable base

#### 5.1.2.1. Original text

Before looking at the current wording of the proposed legislation, it is interesting to look at the previous draft<sup>54</sup> to understand the nature of the difficulties related to the calculation of the “French based” revenue.

The previous draft of the DST mentioned that the tax base concerned:

<sup>53</sup> Contextual advertising is based on the characteristics of the expected audience of a specific section of a webpage, e.g. the ad space of the economics & business pages of a newspaper online should attract a different audience than the sports page

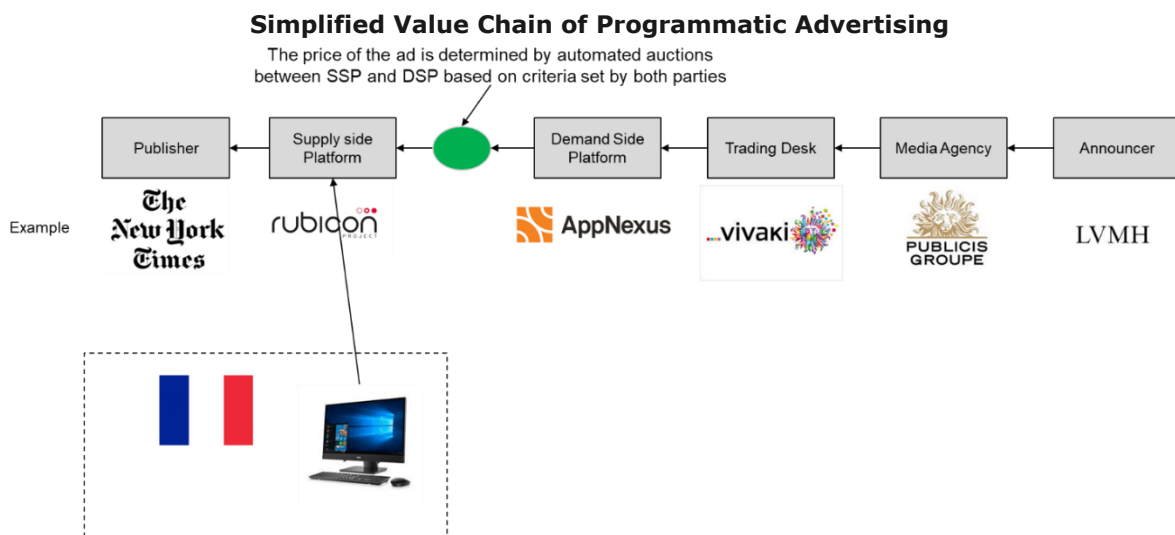
<sup>54</sup> A draft version of the DST has been circulated by the Minister of Finance in February

- For the marketplaces, the revenue generated with French agents on one side or the other of the platform (e.g. either French merchants or French households)
- For digital advertising, the revenue generated by selling targeted advertising to French households (for digital advertising).

That drafting would have made it extremely difficult to assess the taxable base, particularly for digital activities.

Indeed, a lot of digital advertising currently takes place under the “programmatic” format<sup>55</sup>, which relies on supply side platforms, which are automated sales entities and demand side platforms that gather the requirements of buyers and automatically operate the purchase of ad spaces based on their criteria.

With programmatic advertising, each time an internet user, with certain characteristics, is opening a webpage with an advertising space, there is a real time auction to determine what advertiser interested in the characteristics of the viewer will have a right to use that space to broadcast its advertising, the highest bid winning the auction (see diagram below).



In that type of situation, the only way to establish the revenues of a publisher generated with French audience would be to make a link, for each advertising space, between the IP address of the viewer and the result of the auction in terms of price. That information is obviously not public; in addition, it is likely that the technical service providers operating along the value chain do not currently store it, which would make it impossible for the FTA to assess the taxable basis for FY 2019. Even for the following years, assessing the tax base would imply that the FTA should be provided by each Supply Side Platforms operating in the world, with a file with doing the IP/price reconciliation for all companies liable to the tax.

Even though this is not impossible, practically implementing the original draft of the DST would require IT investment from EU and non-EU companies that are costly. Not to mention the additional work of the FTA to build an IT interface with the data providers. As a side note, we can mention that there is a doubt on the capacity of the FTA to enforce these developments with non EU players and also to perform audit of the information provided. Of course, all this would raise the administrative cost of the DST at a very high level.

<sup>55</sup> See [https://en.wikipedia.org/wiki/Real-time\\_bidding](https://en.wikipedia.org/wiki/Real-time_bidding)



### 5.1.2.2. Current text

Probably in order to address the difficulty identified above, the final write up of the bill provides that the taxable base of firms liable to the DST should be calculated using a proxy, with the following formula:

Taxable base = worldwide taxable revenue \* percentage of French contribution

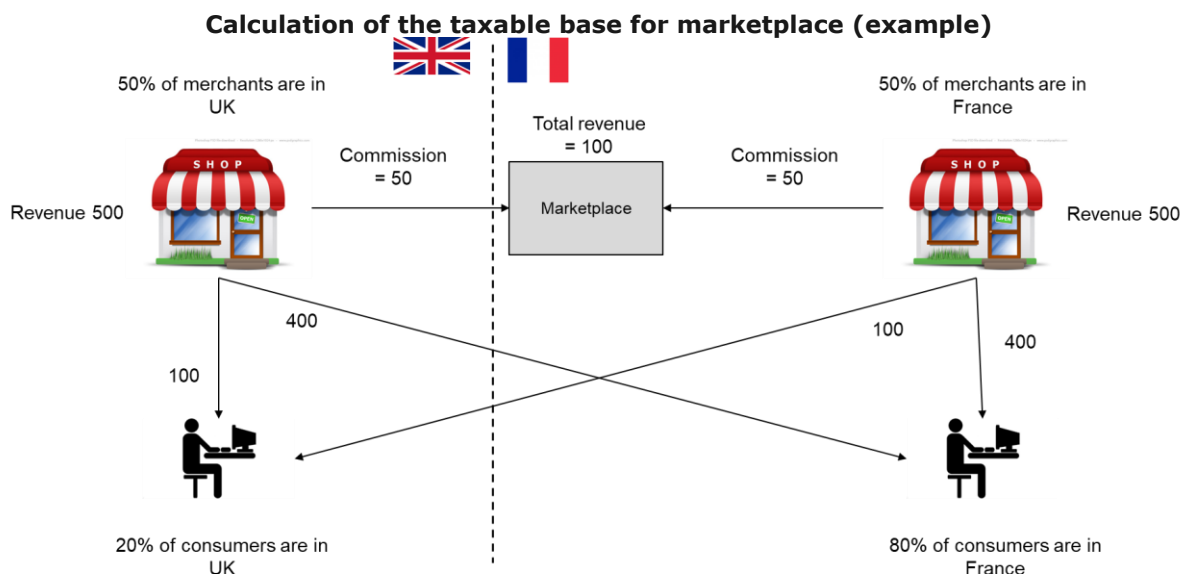
The French contribution is to be calculated differently depending on the type of taxpayer:

- For marketplaces, it is the share of the transactions of goods or services for which one of the users of the digital platform is located in France. If there is no underlying transaction, the percentage of French contribution will be calculated based on the proportion of users of the platform who are located in France.
- For the digital advertising, the allocation key is the "proportion of total advertisements that have been watched by a user located in France".
- The text adds that, independently from the previous point, there would be a specific allocation key concerning the transmission of personal data, which is the proportion of French users on the platform.

This drafting is likely to create many uncertainties, and raise difficulties that seem very hard to solve.

**For the marketplaces**, the notion of "proportion of transactions for which one of the party is in France" should be defined further:

- Should it be calculated in value or in number of transactions?
- For double sided markets, there is at least two ways to calculate the "proportion of transactions for which one of the party is in France". One would be based on the share of French merchants operating through the marketplace, and the other the share of users. In the example below, where 50% of the merchants operating through a marketplace are in the UK and 50% are in France, but where 80% of the clients are in France and 20% in the UK, it is hard to tell whether the taxable basis should be 50 or 80:



- Whatever the choice, practically calculating the allocation key for France would require to obtain from the platforms the total number of transactions involving a French agent. If this information is not currently stored in the IT systems, it will require new developments from the platforms and make it difficult to assess the

2019 taxable base. Questions of privacy should also be addressed, as complying with this new law would require that marketplaces store private information, related to all purchase made by each French users, for a number of years<sup>56</sup>.

- There is a last point concerning the ability of platforms to identify that a user is located in France. IP address, or network ID (for mobile users) could be used, however they are not perfect indicators, as, for instance, users operating through a VPN<sup>57</sup> would not be captured by the current system.

### **For the digital advertising platforms**

The new wording does not change the complexity compared to the original writing. Indeed, the only way to determine “the proportion of total advertisements that have been seen by a French audience” is to calculate the absolute value of advertising spend that concern a French audience. There does not seem to exist any reasonable shortcut to evaluate the advertising revenue that is allocable to France based on the total revenue generated by a digital advertising platform. Advertisements are not homogeneous, their price may differ wildly from one user to another, so any simple proxy like number of internet users in France divided by worldwide number of internet users would be meaningless.

At this point, the legal uncertainty concerning the way taxable base will be calculated for digital advertising is therefore total.

## **5.1.3. Risk of multiple taxation**

The current wording of the law is likely to create risks of economic multiple taxation, that is: the same tax base (intermediation fee or digital advertising spend) might be taxed several times. Double taxations are obviously likely to create challenges on the taxpayer side, which would increase the overall administrative costs.

### **5.1.3.1. For digital advertising**

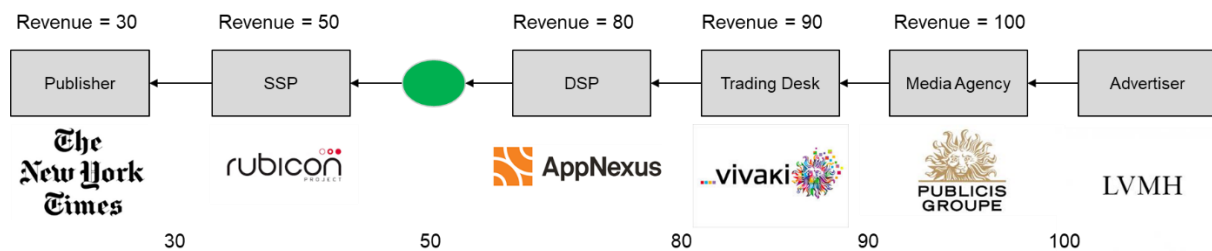
As previously mentioned, the advertising value chain includes several intermediaries between the advertiser and the publisher.

When the advertiser decides to spend an advertising budget of 100, this 100 flows through the intermediaries, who each take a commission, until it reaches the publisher (see diagram below):

<sup>56</sup> This point has been raised in Escribano, Eva, “A Preliminary Assessment of the EU Proposal on Significant Digital Presence: A Brave Attempt that Requires and Deserves Further Analysis (August 1, 2018). Almudí Cid, J.M; Ferreras Gutiérrez, J.; Hernández González-Barreda, P. (2018): Combating Tax Avoidance in the EU: Harmonisation and Cooperation in Direct Taxation (Alphen aan den Rijn: Kluwer Law International), Forthcoming. “Thirdly, the fact that suppliers of digital services will be obliged to track and store for years the location of their users (as revealed by their IP addresses) in order to comply with the proposed Directive rises concerns from a data protection perspective. Indeed, IP addresses are deemed to be personal data for the purposes of both the recently repealed Directive on data protection and the EU regulation on the matter currently on force insofar they allow users to be precisely identified, as it is indeed confirmed by the EC in its own website”.

<sup>57</sup> [https://en.wikipedia.org/wiki/Virtual\\_private\\_network](https://en.wikipedia.org/wiki/Virtual_private_network)

### Value chain of digital advertising

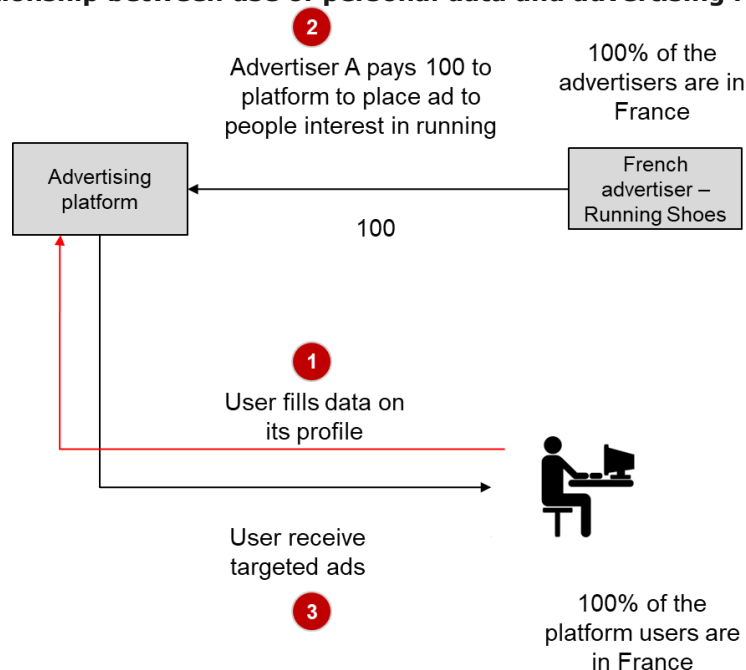


In the example above, if the turnover of all intermediaries is taxed at the DST, the taxable base will be 370 for a « real » advertising spend of 100.

The magnitude of the risk will probably depend on accounting standard concerning revenue recognition for the intermediaries (whether they recognize the full investment or just the commission), even if, in the current wording of the law, the tax base is based on “cash collection” (*encaissement*) and not on turnover, which increases complexity<sup>58</sup>.

In addition to this, the fact that the transmission of private data and the digital advertising revenues are somehow separated in the new version of the text (since two different allocation keys are mentioned) creates the risk that both flows should be taxed separately, which would automatically result in a double taxation, as described in the following chart:

### Relationship between use of personal data and advertising revenue



In that example, French users would fill in personal data in an advertising platform (flow 1). The advertising platform would then use that information to sell targeted ads to its clients (flow 2). For instance it would propose to a running shoes company to target only users that wants to participate in a marathon (flow 3).

<sup>58</sup> It is to be noted that, in the tax impact assessment performed by the government, the double taxation issue seems to have been spotted, but no clear remedy is proposed, ([www.assemblee-nationale.fr/15/pdf/projets/pl1737-ei.pdf](http://www.assemblee-nationale.fr/15/pdf/projets/pl1737-ei.pdf))

Based on that example, if we were to distinguish between the “digital advertising” and the “personal data collection” activities, we would obtain the following taxation under DST:

- For the « digital advertising » activity
  - The advertising platform has sales of 100
  - 100% of its sales is generated by French users
  - The taxable base for DST is therefore 100
- For the « collection of personal data » part
  - The advertising platform has a revenue of 100
  - 100% of its users are French
  - The taxable base for DST is therefore 100

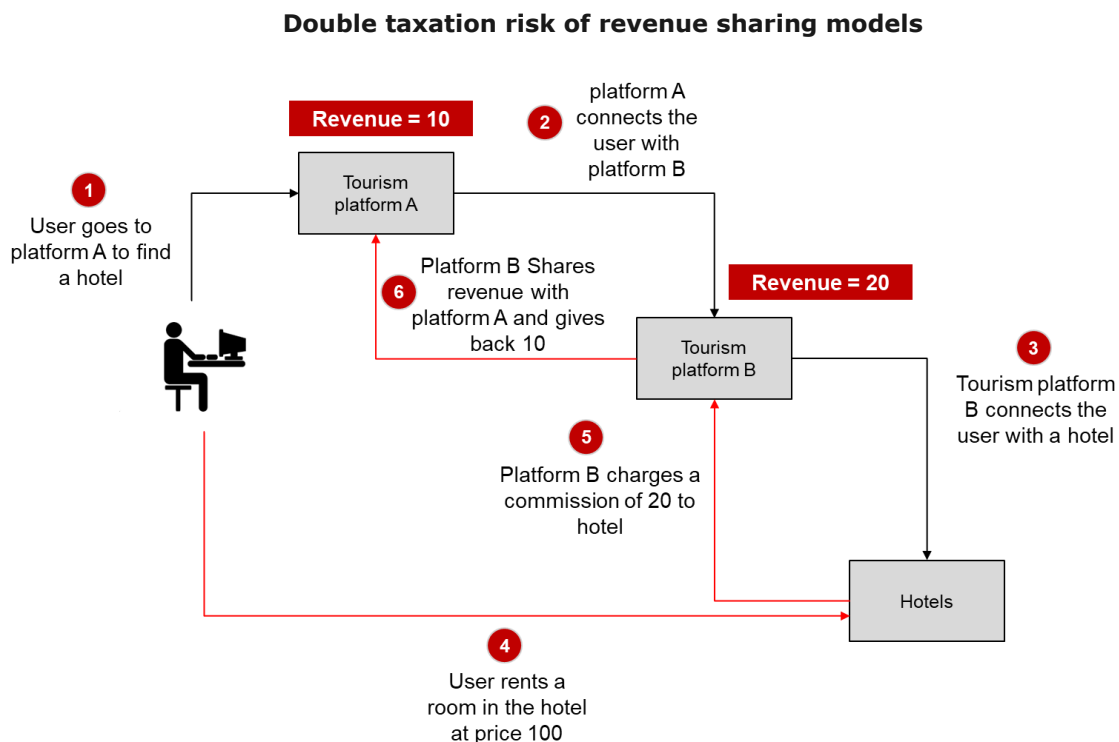
In that example, the total taxable base for DST would be 200 for a revenue of 100, resulting in an immediate double taxation.

As shown here, the notion that “transmitting data” should generate a taxable revenue different from the digital advertising sales raises a conceptual problem, as both activities are strongly interconnected and the data are used to enhance the value (and therefore the price) of the advertising offer. In addition, not all data transmitted to a platform is actually monetized (some personal data is not used as part of an advertising offer) so using data as an independent tax base will always increase the tax burden of a digital advertising platform.

### 5.1.3.2. For marketplaces

Marketplaces sometimes connect users with other marketplaces, (e.g. Expedia can redirect to Booking.com). In that situation, revenue share models are generally used, which might trigger double taxation risk under the DST.

An example of double taxation is given in the chart below:



In that example, a user goes to platform A to find a hotel (flow 1), that platform connects the user with a platform B (flow 2), which finally connects the user with an hotel (flow 3). The user rents a room in the hotel at the price of 100 (flow 4). According to the commercial agreements in place, the hotel gives back to platform B an intermediation fee of 20 (flow 5) and platform B shares that commission with platform A on a 50% / 50% basis (flow 6).

If the hotel is located in France, the question is whether only platform B should be liable to the DST on a revenue of 20, or if platform A should also be liable, with an additional tax base of 10. In the latter case, a double taxation would be obtained.

### 5.1.3.3. Multiplication of national DSTs

This report only focuses on the French DST. However, it can be noted that if other countries were to enact DSTs working in the same fashion as the French DST (i.e. based on a share of worldwide turnover calculated based on an allocation key), it would multiply the risk of multiple taxation if all countries do not agree on a common framework. For instance, taking the marketplace example described above (§5.1.2.2, p.30), if the UK considers that the marketplace revenue should be allocated based on the proportion of merchants located in the UK, and France considers that it is the proportion of households buying goods that should be used, the UK will tax 50% of the revenue of the marketplace and France 80%, leading to a multiple taxation.

### 5.1.4. Conclusion on administrative costs

The examples described above are in no way exhaustive. The purpose of this part was to show that the current wording of the law was likely to create many legal uncertainties for taxpayers and the Tax Administration. Parliamentary debates can certainly help correcting some of the issues raised above; however, we believe that due to the intrinsic complexity of the DST, the tax will necessarily be complex and take into account many specific cases, which will lead to a very high administrative cost.

Measuring precisely the amount of administrative cost for the DST is obviously impossible at this stage of the process. To give an order of magnitude of these costs, we can however make a comparison with Corporate Income Tax, which is another kind of rather complicated tax that gives way to a large amount of disagreement between taxpayers and tax administrations. Slemrod has estimated that the compliance cost, borne by US firms related to corporate income tax amounted to 23,7% of the total amount of tax collected<sup>59</sup>. Using this as a proxy for DST would give an additional cost of 95M€ to be borne by taxpayers.

## 5.2. Long Term Economic Distortions

As explained in the introduction of this report, we have focused on the short term distortions that would be created by the tax, namely a change in the prices of the product and the profits of the firms. On the longer term, the tax (if it is maintained) is likely to create competitive distortions between firms, which might hinder the productive efficiency of the French markets.

Considering the level of uncertainty surrounding the final wording of the tax, it is impossible to propose an accurate quantitative assessment of the loss of welfare that could be due to these competitive distortions, we can however mention a list of potential negative long term effects of the DST:

<sup>59</sup> Slemrod J., 2004. Written testimony submitted to the Committee on Ways and Means, Subcommittee on Tax Simplification. Washington, DC, June 15.

- Discrimination between marketplace operators and vertically integrated distributors. In all the situations where firms selling through a marketplace are competing with vertically integrated distributors (either online or offline), the tax might create an advantage for the vertically integrated distributor, who does not have to pay the tax. This advantage might create competitive distortions, particularly for marketplaces involved in the trading of goods, where the competition with other channels of distribution is likely to be stronger than for services.
- Discrimination between EU and non-EU marketplace. Even if all marketplaces should be liable to pay the tax, it is likely that it will be more difficult to enforce the payment of the tax for non-EU marketplaces. Non-EU non-compliant marketplaces would therefore obtain an advantage compared to EU marketplaces since they would be able to propose more attractive financial conditions to their clients. This competitive advantage might prove particularly important for emerging markets due to the “chicken and egg” effect often seen in marketplaces<sup>60</sup> (attracting more vendors make the marketplace more attractive for potential clients, who have more choice, which in turn makes the marketplace more attractive for other vendors, etc.). In certain situations, the advantage obtained by non-EU platform could become critical to win the competitive battle against EU marketplaces.
- Export discrimination. French vendors operating through a platform to sell in a foreign Country might be disadvantaged compared to foreign vendors operating through the same marketplace to sell products to local customers. Suppose that a French vendor is competing with a German vendor on a marketplace to sell a widget to a German client. The commission generated by the French vendor would be liable to a DST, which would ultimately increase its price. Conversely, the revenue generated by the German vendor would not be taxed, which would create an advantage for the German vendor (somewhat comparable to a tariff).
- Slow down of the digitalization of French SMEs. The tax will make platforms less attractive, particularly for SMEs, since platforms are likely to increase their commission to compensate the effect of the tax. This might reduce the access to Internet Sales to a lot of SMEs which do not have enough capacity to build an e-commerce website. Considering the benefits of digital investment, this may reduce the productivity of French economy.

Each of these effects should be analyzed separately once a final version of the tax has been issued.

As a concluding remark, we can state that, from a macroeconomic standpoint, we should however note that the tax is likely to have a small yield compared to the size of the French economy, and the macroeconomic effects of the tax on employment and growth should therefore be limited. However, from a microeconomic standpoint, the tax could have important effects on certain specific markets and for certain specific actors.

<sup>60</sup> Caillaud, B. et Jullien, B. (2003) “Chicken & egg: Competition among intermediation service providers”, The RAND Journal of Economics, pp. 309-328

# Appendix 1– Proposed legislation<sup>61</sup>

## « Chapitre II

### « **Taxe sur certains services fournis par des grandes entreprises du secteur numérique**

« Art. 299. – I. – Il est institué une taxe due à raison des sommes encaissées par les entreprises du secteur numérique définies au III, en contrepartie de la fourniture en France, au cours d'une année civile, des services définis au II.

« II. – Les services taxables sont :

« 1° La mise à disposition, par voie de communications électroniques, d'une interface numérique qui permet aux utilisateurs d'entrer en contact avec d'autres utilisateurs et d'interagir avec eux, notamment en vue de la livraison de biens ou de la fourniture de services directement entre ces utilisateurs. La mise à disposition d'une interface numérique par une personne qui l'utilise à titre principal pour fournir aux utilisateurs des contenus numériques, des services de communication ou des services de paiement est exclue des services taxables ;

« Sont également exclus les services financiers réglementés, listés par arrêté du ministre chargé de l'économie, lorsqu'ils sont fournis par des prestataires de services financiers qui sont soumis soit à l'agrément et à la surveillance en application de mesures d'harmonisation européenne de réglementation des services financiers, soit à des cadres de surveillance considérés comme équivalents, conformément à un acte juridique de l'Union européenne, à ces mesures d'harmonisation ;

« 2° Les services commercialisés auprès des annonceurs, ou de leurs mandataires, visant à placer sur une interface numérique des messages publicitaires ciblés en fonction de données relatives à l'utilisateur qui la consulte et collectées ou générées à l'occasion de la consultation de telles interfaces. Ces services peuvent notamment comprendre les services d'achat, de stockage et de diffusion de messages publicitaires, de contrôle publicitaire et de mesures de performance ainsi que les services de gestion et de transmission de données relatives aux utilisateurs.

« Sont exclus des services taxables les services mentionnés aux 1° et 2° fournis entre entreprises appartenant à un même groupe, au sens du dernier alinéa du III.

« III. – Les entreprises mentionnées au I sont celles, quel que soit leur lieu d'établissement, pour lesquelles le montant des sommes encaissées en contrepartie des services taxables lors de l'année civile précédant celle mentionnée à ce même I excède les deux seuils suivants :

« 1° 750 millions d'euros au titre des services fournis au niveau mondial ;

« 2° 25 millions d'euros au titre des services fournis en France, au sens de l'article 299 *bis*.

« Pour les entreprises, quelle que soit leur forme, qui sont liées, directement ou indirectement, au sens du II de l'article L. 233-16 du code de commerce, le respect des seuils mentionnés aux 1° et 2° s'apprécie au niveau du groupe qu'elles constituent.

<sup>61</sup> Full text available at : <http://www.assemblee-nationale.fr/15/projets/pl1737.asp>

« Art. 299 bis. – I. – Pour l'application du présent chapitre :

« 1° La France s'entend du territoire national, à l'exception des collectivités régies par l'article 74 de la Constitution, de la Nouvelle-Calédonie, des Terres australes et antarctiques françaises et de l'île de Clipperton ;

« 2° L'utilisateur d'une interface numérique est localisé en France s'il la consulte au moyen d'un terminal situé en France.

« II. – Les services taxables mentionnés au 1° du II de l'article 299 sont fournis en France au cours d'une année civile si :

« 1° Lorsque l'interface numérique permet la réalisation, entre utilisateurs de l'interface, de livraisons de biens ou de prestations de services, une telle opération est conclue au cours de cette année par un utilisateur localisé en France ;

« 2° Lorsque l'interface numérique ne permet pas la réalisation de livraisons de biens ou de prestations de services, un de ses utilisateurs dispose au cours de cette année d'un compte ayant été ouvert depuis la France et lui permettant d'accéder à tout ou partie des services disponibles sur cette interface.

« III. – Les services taxables mentionnés au 2° du II de l'article 299 sont fournis en France au cours d'une année civile si :

« 1° Pour les services autres que ceux mentionnés au 2° du présent III, un message publicitaire est placé au cours de cette année sur une interface numérique consultée par un utilisateur localisé en France ;

« 2° Pour les ventes de données qui ont été générées ou collectées à l'occasion de la consultation d'interfaces numériques par des utilisateurs, des données vendues au cours de cette année sont issues de la consultation d'une de ces interfaces par un utilisateur localisé en France.

« IV. – Lorsqu'un service taxable mentionné au II de l'article 299 est fourni en France au cours d'une année civile au sens du II ou III du présent article, le montant des encaissements versés en contrepartie de cette fourniture est défini comme le produit entre la totalité des encaissements versés au cours de cette année en contrepartie de ce service et le pourcentage représentatif de la part de ces services rattachée à la France évalué lors de cette même année. Ce pourcentage est égal :

« 1° Pour les services mentionnés au 1° du II du présent article, à la proportion des opérations de livraisons de biens ou de fournitures de services pour lesquelles l'un des utilisateurs de l'interface numérique est localisé en France ;

« 2° Pour les services mentionnés au 2° du II du présent article, à la proportion des utilisateurs qui disposent d'un compte ayant été ouvert depuis la France et permettant d'accéder à tout ou partie des services disponibles à partir de l'interface et qui ont utilisé cette interface ;

« 3° Pour les services mentionnés au 1° du III du présent article, à la proportion des messages publicitaires placés sur une interface numérique consultée par un utilisateur localisé en France ;

« 4° Pour les services mentionnés au 2° du III du présent article, à la proportion des utilisateurs pour lesquels tout ou partie des données vendues ont été générées ou collectées à l'occasion de la consultation, lorsqu'ils étaient localisés en France, d'une interface numérique.

« Art. 299 ter. – Le fait générateur de la taxe prévue à l'article 299 est constitué par l'achèvement de l'année civile au cours de laquelle l'entreprise définie au III de l'article 299 a encaissé des sommes en contrepartie de la fourniture en France de services taxables.

« Le redevable de la taxe est la personne qui encaisse les sommes. La taxe devient exigible lors de l'intervention du fait générateur.



« Art. 299 quater. – I. – La taxe prévue à l'article 299 est assise sur le montant, hors taxe sur la valeur ajoutée, tel que défini au IV de l'article 299 *bis*, des sommes encaissées par le redevable, lors de l'année au cours de laquelle la taxe devient exigible, en contrepartie d'un service taxable fourni en France.

« Toutefois, ne sont pas prises en compte les sommes versées en contrepartie de la mise à disposition d'une interface numérique qui facilite la vente de produits soumis à accises, au sens du paragraphe 1 de l'article 1<sup>er</sup> de la directive 2008/118/CE du Conseil du 16 décembre 2008 relative au régime général d'accise et abrogeant la directive 92/12/CEE, lorsqu'elles présentent un lien direct et indissociable avec le volume ou la valeur de ces ventes.

« II. – Le montant de la taxe est calculé en appliquant à l'assiette définie au I un taux de 3%.

« Art. 299 quinquies. – Pour l'application du présent chapitre, les sommes encaissées dans une monnaie autre que l'euro sont converties en appliquant le taux de change publié au *Journal officiel* de l'Union européenne le premier jour de l'année au cours de laquelle la taxe est devenue exigible.

« Art. 300. – I. – La taxe prévue à l'article 299 est déclarée et liquidée par le redevable selon les modalités suivantes :

« 1° Pour les redevables de la taxe sur la valeur ajoutée soumis au régime réel normal d'imposition mentionné au 2 de l'article 287, sur l'annexe à la déclaration mentionnée au 1 du même article déposée au titre du mois de mars ou du premier trimestre de l'année qui suit celle au cours de laquelle la taxe est devenue exigible ;

« 2° Pour les redevables de la taxe sur la valeur ajoutée soumis au régime réel simplifié d'imposition prévu à l'article 302 *septies* A, sur la déclaration annuelle mentionnée au 3 de l'article 287 déposée au titre de l'exercice au cours duquel la taxe est devenue exigible ;

« 3° Dans tous les autres cas, sur l'annexe à la déclaration prévue au 1 de l'article 287, déposée auprès du service de recouvrement dont relève le siège ou le principal établissement du redevable, au plus tard le 25 avril de l'année qui suit celle au cours de laquelle la taxe est devenue exigible.

« II. – La taxe est acquittée dans les conditions prévues à l'article 1693 *quater*, sauf par les redevables soumis au régime réel simplifié d'imposition prévu à l'article 302 *septies* A, pour lesquels elle est acquittée dans les conditions prévues à l'article 1692. Sans préjudice des dispositions prévues aux articles L. 16 C et L. 70 A du livre des procédures fiscales, elle est recouvrée et contrôlée selon les mêmes procédures et sous les mêmes sanctions, garanties, sûretés et privilèges que les taxes sur le chiffre d'affaires. Les réclamations sont présentées, instruites et jugées selon les règles applicables à ces mêmes taxes.

« III. – Tant que le droit de reprise de l'administration est susceptible de s'exercer, conformément à l'article L. 176 du livre des procédures fiscales, les redevables conservent, à l'appui de leur comptabilité, l'information des sommes encaissées mensuellement en contrepartie de chacun des services taxables fournis, en distinguant celles se rapportant à un service fourni en France, au sens des II et III de l'article 299 *bis* et, le cas échéant, celles exclues de l'assiette en application du second alinéa du I de l'article 299 *quater*, ainsi que les éléments quantitatifs mensuels utilisés pour calculer les proportions prévues au IV de l'article 299 *bis*.

« Ces informations sont tenues à la disposition de l'administration et lui sont communiquées à première demande.

« IV. – Lorsque le redevable n'est pas établi dans un État membre de l'Union européenne ou dans tout autre État partie à l'accord sur l'Espace économique européen ayant conclu avec la France une convention d'assistance administrative en vue de lutter contre la fraude et l'évasion fiscales ainsi qu'une convention d'assistance mutuelle en matière de recouvrement de l'impôt, il fait accréditer auprès du service des impôts compétent un représentant assujéti à la taxe sur la valeur ajoutée établi en France qui s'engage à remplir les formalités au nom et pour le compte du représenté et, le cas échéant, à acquitter la taxe à sa place. » ;

2° À la section II du chapitre I<sup>er</sup> du livre II, il est rétabli un II *quater* ainsi rédigé :

« II *quater*

« *Régime spécial de la taxe sur certains services fournis par des grandes entreprises du secteur numérique*

« Art. 1693 *quater*. – I. – Les redevables de la taxe prévue à l'article 299 autres que ceux soumis au régime réel simplifié d'imposition prévu à l'article 302 *septies* A acquittent cette dernière au moyen de deux acomptes versés lors de l'année où elle devient exigible et au moins égaux à la moitié du montant dû au titre de l'année précédente.

« Le premier acompte est versé lors de la déclaration de la taxe devenue exigible l'année précédente.

« Le second acompte est versé :

« 1° Pour les redevables de la taxe sur la valeur ajoutée soumis au régime réel normal d'imposition mentionné au 2 de l'article 287, lors du dépôt de l'annexe à la déclaration mentionnée au 1 du même article 287 déposée au titre du mois de septembre ou du troisième trimestre de l'année ;

« 2° Dans les autres cas, au plus tard le 25 octobre, lors du dépôt de l'annexe à la déclaration prévue au 1 de l'article 287 déposée auprès du service de recouvrement dont relève le siège ou le principal établissement du redevable.

« II. – Les redevables qui estiment que le paiement d'un acompte conduirait à excéder le montant de la taxe définitivement dû peuvent surseoir au paiement de ce dernier ou minorer son montant. Si le montant de la taxe est supérieur de plus de 20 % au montant des acomptes versés, l'intérêt de retard prévu à l'article 1727 et la majoration prévue à l'article 1731 sont applicables.

« III. – Le montant de taxe dû est régularisé lorsqu'elle est déclarée. Le cas échéant, les montants à restituer aux redevables sont imputés sur l'acompte acquitté lors de cette déclaration puis si nécessaire sur celui acquitté postérieurement la même année ou, en cas d'absence ou d'insuffisance des acomptes, remboursés.

« Art. 1693 *quater* A. – En cas de cessation d'activité du redevable, le montant de la taxe prévue à l'article 299 qui est dû au titre de l'année de cessation est établi immédiatement. Elle est déclarée, acquittée et, le cas échéant, régularisée selon les modalités prévues pour la taxe sur la valeur ajoutée dont il est redevable ou, à défaut, dans les soixante jours suivant la cessation.

« Art. 1693 *quater* B. – I. – Un redevable de la taxe prévue à l'article 299 qui n'est pas soumis au régime réel simplifié d'imposition prévu à l'article 302 *septies* A peut choisir de déclarer et d'acquitter la taxe pour l'ensemble des redevables du groupe, au sens du dernier alinéa du IV de l'article 299, auquel il appartient. Dans ce cas, l'article 1693 *ter* ne s'applique pas à cette taxe.

« Cette option est exercée avec l'accord de l'ensemble des redevables du groupe concerné.

« II. – Le redevable recourant à l'option prévue au I la formule auprès du service des impôts dont il dépend. Elle prend effet pour les paiements et remboursements intervenant à compter de la déclaration déposée l'année suivant la réception de la demande par ce service.

« III. – L'option est exercée pour au moins trois années.

« Le redevable renonçant à l'option formule sa décision auprès du service des impôts dont il dépend. Elle prend effet pour les paiements et remboursements intervenant à compter de la déclaration de l'année déposée l'année suivant la réception de la demande par ce service.

« L'option s'applique pour la taxe due par tout nouveau membre du groupe concerné. En cas de désaccord de ce dernier, il est renoncé à l'option dans les conditions prévues à l'alinéa précédent.

« IV. – La déclaration déposée par le redevable recourant à l'option mentionne les montants dus par chaque membre du groupe.

« V. – Le redevable recourant à l'option prévue au I obtient les remboursements de la taxe due par les redevables membres du groupe consolidé, le cas échéant, par imputation des montants dus par les autres membres et acquitte les droits et les intérêts de retard et pénalités du chapitre II du livre II en conséquence des infractions commises par les redevables membres du groupe.

« VI. – Chaque redevable membre du groupe est tenu solidairement avec le redevable recourant à l'option prévue au I au paiement de la taxe et, le cas échéant, des intérêts de retard et pénalités correspondants que le redevable recourant à l'option prévue au I est chargé d'acquitter, à hauteur des droits, intérêts et pénalités dont il serait redevable si l'option mentionnée au I n'avait pas été exercée. » ;

3° À l'article 302 *decies*, après les mots : « des articles », est insérée la référence : « 299, » ;

4° À la première phrase du 3° du III de l'article 1609 *sexdecies* B, après le mot : « sommes » sont insérés les mots : « , déduction faite des montants de la taxe prévue à l'article 299 dus au titre des services mentionnés au 2° du II de ce même article, ».

II. – Le livre des procédures fiscales est ainsi modifié :

1° Le I *ter* de la section II du chapitre premier du titre II de la première partie est ainsi rétabli :

« I *ter*

« *Taxe sur certains services fournis par des grandes entreprises du secteur numérique*

« Art. L. 16 C. – L'administration fiscale peut demander au redevable de la taxe prévue à l'article 299 du code général des impôts des justifications sur tous les éléments servant de base au calcul de cette taxe sans que cette demande constitue le début d'une vérification de comptabilité ou d'un examen de comptabilité.

« Cette demande indique expressément au redevable les points sur lesquels elle porte et lui fixe un délai de réponse qui ne peut être inférieur à deux mois.

« Lorsque le redevable a répondu de façon insuffisante à la demande de justifications dans le délai prévu par celle-ci, l'administration fiscale lui adresse une mise en demeure d'avoir à compléter sa réponse dans un délai de trente jours, en précisant les compléments de réponse qu'elle souhaite. » ;

2° Le B du I de la section V du chapitre premier du titre II de la première partie est complété par un article L. 70 A ainsi rédigé :

« Art. L. 70 A. – Lorsque le redevable s'est abstenu de répondre à la demande de justifications ou de compléments prévue à l'article L. 16 C dans le délai fixé par l'administration fiscale, n'a pas complété sa réponse ou l'a complétée de manière insuffisante dans les trente jours de la réception de la mise en demeure prévue au dernier alinéa du même article, l'administration fiscale peut établir d'office la taxe prévue à l'article 299 du code général des impôts. »

III. – La taxe prévue à l'article 299 du code général des impôts due au titre de l'année 2019 donne lieu au paiement d'un acompte unique, acquitté dans les conditions que l'article 1693 *quater* du même code prévoit pour le second acompte.

Il est égal au montant de la taxe qui aurait été liquidée sur la base des sommes encaissées en 2018 en contrepartie du ou des services taxables fournis en France.

IV. – L'option prévue à l'article 1693 *quater* B du code général des impôts peut, pour la taxe prévue à l'article 299 du même code due au titre de l'année 2019, être exercée jusqu'au 30 septembre 2019 et prend effet à partir du premier paiement à compter de cette date.

## Appendix 2 – Extract of Etsy annual report discussing the impact of transaction fee increase

In its investor presentation released on December 2018<sup>62</sup>, Etsy presented the impact of the recent increase of its commission rate from 3.5% to 5% and concluded that such rise did not lead to the loss of a significant number of sellers.

### Screenshot 1:

In July we introduced a new pricing model

We have seen no significant increase in seller churn...

3.5% to 5%

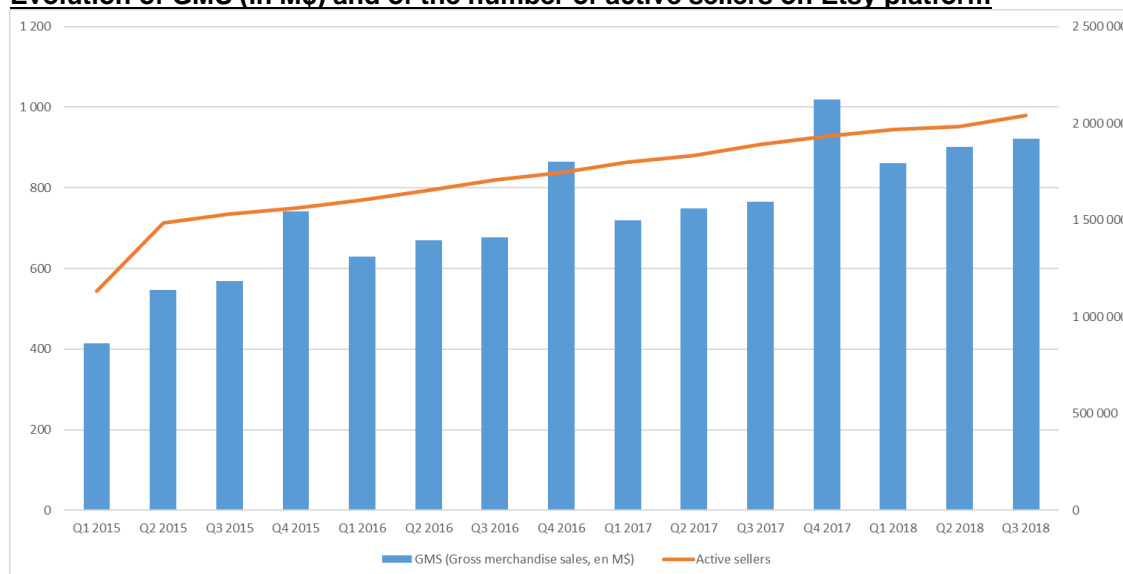
Changes to our pricing model effective July 16, 2018:

- The transaction fee increased from 3.5% to 5%
- The transaction fee is now applied to the shipping price in addition to the cost of the item
- Introduced monthly subscription packages

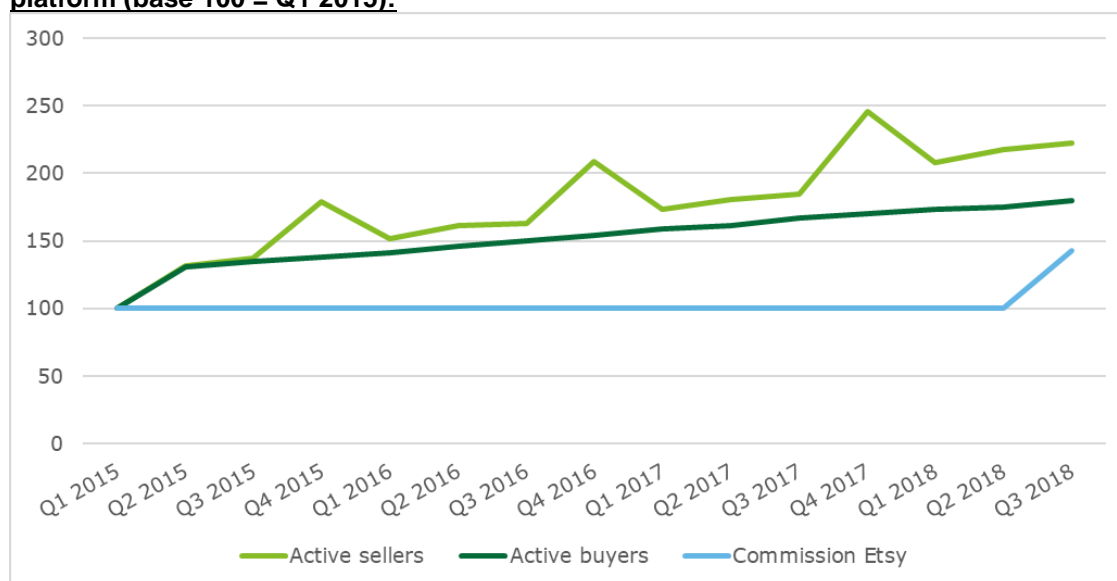
<sup>62</sup> [https://s22.q4cdn.com/941741262/files/doc\\_presentations/2018/Investor-Presentation\\_December-2018.pdf](https://s22.q4cdn.com/941741262/files/doc_presentations/2018/Investor-Presentation_December-2018.pdf)

In addition, quarterly results presentations<sup>63</sup> provide information on the evolution of the number of active sellers and of gross merchandise sale ("GMS") made through the Etsy platform:

### Evolution of GMS (in M\$) and of the number of active sellers on Etsy platform



### Evolution of GMS (in M\$), of the commission rate and of the number of active sellers on Etsy platform (base 100 = Q1 2015):



<sup>63</sup> <https://investors.etsy.com/financials/quarterly-results/default.aspx>

# Appendix 3 – Calculation of optimal Upstream Pass-on for marketplace for goods

## Definition:

$$\begin{aligned}\alpha &= \text{upstream pass on rate} \\ k &= \text{commission rate applied by marketplace} \\ t &= \text{DST rate} \\ r &= \text{downstream pass on rate} \\ T &= t \times k \\ \varepsilon_D &= \text{price elasticity of demand} \\ R &= \text{marketplace revenue} \\ P &= \text{price} \\ Q &= \text{quantity sold/purchased}\end{aligned}$$

## Calculations:

If we consider that the cost structure of a platform is fixed, maximizing its short term profit will be exactly similar to maximizing its revenue.

Revenue, as a function of the upstream pass-on rate  $\alpha$ , is expressed as follows:

$$\begin{aligned}R &= P_0 \left(1 + \frac{\Delta P}{P}\right) Q_0 \left(1 + \frac{\Delta Q}{Q}\right) k(1 + \alpha t)(1 - t) = P_0 Q_0 k(1 + r\alpha t k)(1 + \varepsilon_D r\alpha t k)(1 + r\alpha t)(1 - t) \\ &= R_0(1 - t)(1 + \alpha r T)(1 + \alpha r \varepsilon_D T)(1 + \alpha t) \\ &= R_0(1 - t)[1 + \alpha(\varepsilon_D r T + r T + t) + \alpha^2(r^2 T^2 \varepsilon_D + \varepsilon_D r T t + r T t) + \alpha^3 r^2 T^2 \varepsilon_D t]\end{aligned}$$

The derivative with respect to  $\alpha$  is :

$$R' = R_0(1 - t)[\varepsilon_D r T + r T + t + 2\alpha(r^2 T^2 \varepsilon_D + \varepsilon_D r T t + r T t) + 3\alpha^2 r^2 T^2 \varepsilon_D t] = R_0(1 - t)[C + \alpha B + \alpha^2 A]$$

Where:

$$\begin{aligned}A &= 3r^2 T^2 \varepsilon_D t \\ B &= 2(r^2 T^2 \varepsilon_D + \varepsilon_D r T t + r T t) \\ C &= \varepsilon_D r T + r T + t\end{aligned}$$

Then, we looked at that sign of  $C + \alpha B + \alpha^2 A$  to identify the sign of the derivative. The discriminant is therefore:

$$\Delta = B^2 - 4AC$$

The roots of the derivative are:

$$\begin{aligned}\alpha_1 &= \frac{-B + \sqrt{\Delta}}{2A} \\ \alpha_2 &= \frac{-B - \sqrt{\Delta}}{2A}\end{aligned}$$

**Numerical application :**

Based on assumptions on DST rate, price elasticity of demand, downstream pass-on, etc. described in this report, our calculations led to the following results:

Parameters	Value
T	0,45%
A	-4,20747E-06
B	-0,000425402
C	0,024468293
$\Delta$	5,92765E-07
$\alpha_1$	40,94035228
$\alpha_2$	-142,0466534

The derivative is positive (opposite sign of A) within the interval defined by its roots, including in the [0,1] interval.

Therefore, Marketplace's revenue is rising in the [0,1] interval and is maximized for a pass-on of 1 (i.e. 100%).

# Appendix 4 – Calculation of Downstream pass-on for marketplace for services

## Definition:

$p$  = price determined by merchant  
 $t$  = ad valorem tax applied on  $p$   
 $p_0$  = price paid by customer

## Calculations:

Equilibrium condition:

$$\begin{aligned} D(p_D) &= S(p) \\ D(p(1+t)) &= S(p) \\ D((1+t)p) - S(p) &= 0 \end{aligned}$$

Differentiate :

$$\begin{aligned} [D'((1+t)p)(1+t) - S'(p)]dp + D'((1+t)p)pdt &= 0 \\ \frac{dp}{dt} &= \frac{D'((1+t)p)p}{S'(p) - D'((1+t)p)(1+t)} \end{aligned}$$

Apply elasticity definition and the fact that  $D(p(1+t)) = S(p)$ :

$$\begin{aligned} \varepsilon_S &= \frac{S'(p)p}{S(p)} \\ \varepsilon_D &= \frac{D'(p_D)p_D}{D(p_D)} \\ \frac{dp}{dt} &= \frac{\varepsilon_D}{\varepsilon_S(1+t) - \varepsilon_D} p \end{aligned}$$

Assuming  $t = 0$  (no initial tax)

$$\frac{\frac{dp}{p}}{dt} = \frac{\varepsilon_D}{\varepsilon_S - \varepsilon_D}$$

On the other hand, with  $p_D = p(1+t)$ :

$$\begin{aligned} \frac{dp_D}{dt} &= \frac{dp}{dt}(1+t) + p \\ \frac{\frac{dp_D}{p_D}}{dt} &= \frac{dp}{dt} \frac{1+t}{p(1+t)} + \frac{p}{p(1+t)} \\ \frac{\frac{dp_D}{p_D}}{dt} &= \frac{dp}{dt} \frac{1}{p} + \frac{1}{(1+t)} \\ \frac{\frac{dp_D}{p_D}}{\frac{1}{1+t}} &= \frac{\frac{dp}{p}}{\frac{1}{1+t}} + 1 \end{aligned}$$

Therefore:

$$\text{consumer pass on} = \text{seller pass on} + 1$$



**Numerical application:**

Based on research studies, we estimated price elasticities of demand and supply on marketplaces for services:

	Price elasticity of demand	Price elasticity of supply
Uber	-0.55 <sup>64</sup>	1.72 <sup>65</sup>
Airbnb <sup>66</sup>	-0.52	1.75
<b>Average</b>	<b>-0,535</b>	<b>1,735</b>

Therefore, based on these average elasticities, we have computed the seller pass-on as follows:

## 1. Consumer pass-on:

$$\begin{aligned}\frac{\frac{dp}{p}}{dt} &= \frac{\varepsilon_D}{\varepsilon_S - \varepsilon_D} \\ &= \frac{-0,535}{1,735 + 0,535} \\ &= -24\%\end{aligned}$$

## 2. Seller pass-on:

$$\begin{aligned}\text{consumer pass on} &= \text{seller pass on} + 1 \\ &= -24\% + 1 \\ &= \mathbf{76\%}\end{aligned}$$

<sup>64</sup> Using Big Data to Estimate Consumer Surplus: The Case of Uber (NBER Working Paper, 2016) (<http://www.datascienceassn.org/sites/default/files/Using%20Big%20Data%20to%20Estimate%20Consumer%20Surplus%20at%20Uber.pdf>)

<sup>65</sup> The Value of Flexible Work: Evidence from Uber Drivers (NBER Working Paper, 2017) ([https://www.anderson.ucla.edu/faculty\\_pages/keith.chen/papers/Final\\_NBER17.pdf](https://www.anderson.ucla.edu/faculty_pages/keith.chen/papers/Final_NBER17.pdf))

<sup>66</sup> Inferring Tax Compliance from Pass-through: Evidence from Airbnb Tax Enforcement Agreements (Department of Economics Working Papers 2018, McMaster University) (<https://socialsciences.mcmaster.ca/econ/rsrch/papers/archive/2018-06.pdf>)

# Appendix 5 – Calculation of the digital advertising pass-on into product prices

		Assumptions (in M€)
(A)	Total advertising spending in France	13 948
(B)	GDP France 2017	2 291 700
(C)	Total consumption in France	1 191 000
(D)	Share of consumption subject to advertising	70,3%
(E)	Digital advertising spending - before DST	4 233
(F)	DST rate	3,0%
(G)	Upstream pass on	100,0%
		Calculations
(a) = (E) x (1+(F)) x (G)	Digital advertising spending - after DST	4 360
(b) = (A) - (E)	Variation of budget for digital advertising spending	127
(c) = (b) / (A)	as a percentage of total advertising spending	0,9%
(d) = (c) x (h)	Price variation to consumers	0,046%
(e) = (C) x (D)	Total consumption subject to advertising	837 248
(f) = (d) x (e)	Increase in price consumption following DST	381
= (f) / (b)	<b>Share of tax recharged to consumers</b>	<b>300%</b>

## Appendix 6. Determination of price elasticity on demand

Based on a study performed by Copenhagen Economics<sup>67</sup>, we have determined an average price elasticity of demand (-0,4) using European sectoral price elasticities of sectors purchasing digital advertising:

Consumption category	Own-Price elasticity	Purchase digital advertising space?
Accommodation services	-1,9	Yes
Actual rentals for housing	-0,1	No
Alcoholic beverages	-0,4	No
Audio-visual, photographic and information	-0,7	Yes
Catering services	-0,1	Yes
Clothing	-0,6	Yes
Electricity, gas and other fuels	0,0	Yes
Financial services n.e.c.	-0,2	Yes
Food	-0,4	Yes
Footwear	-0,4	Yes
Furniture and furnishings, carpets and other	-0,3	Yes
Glassware, tableware and household utensils	-0,6	Yes
Goods and services for routine household maintenance	-0,6	Yes
Hospital services	-0,1	No
Household appliances	-0,4	Yes
Household textiles	-0,2	Yes
Imputed rentals for housing	-0,2	No

<sup>67</sup> Study on reduced VAT applied to goods and services in the Member States of the EU – Appendices, Copenhagen Economics, 2007

Consumption category	Own-Price elasticity	Purchase digital advertising space?
Insurance	0,1	Yes
Maintenance and repair of the dwelling	0,1	Yes
Medical products, appliances and equipment	-0,4	Yes
Newspapers, books and stationery	-0,4	Yes
Non-alcoholic beverages	-0,4	Yes
Operation of personal transport equipment	-0,3	Yes
Other major durables for recreation and culture	0,0	Yes
Other recreational items and equipment	-0,2	Yes
Other services n.e.c.	-0,2	Yes
Outpatient services	-0,7	No
Package holidays	-1,0	Yes
Personal care	-0,3	Yes
Personal effects n.e.c.	-0,8	Yes
Postal services	-0,3	Yes
Pre-primary and primary education	-0,3	No
Purchase of vehicles	0,3	Yes
Recreational and cultural services	-0,3	Yes
Social protection	0,1	No
Tobacco	-0,4	No
Tools and equipment for house and garden	-0,1	Yes
Transport services	-0,3	Yes
Water supply and miscellaneous services	0,9	No
<b>Average elasticity (for categories purchasing digital advertising space)</b>	<b>-0,4</b>	

## Appendix 7. List of hypothetical liable entities

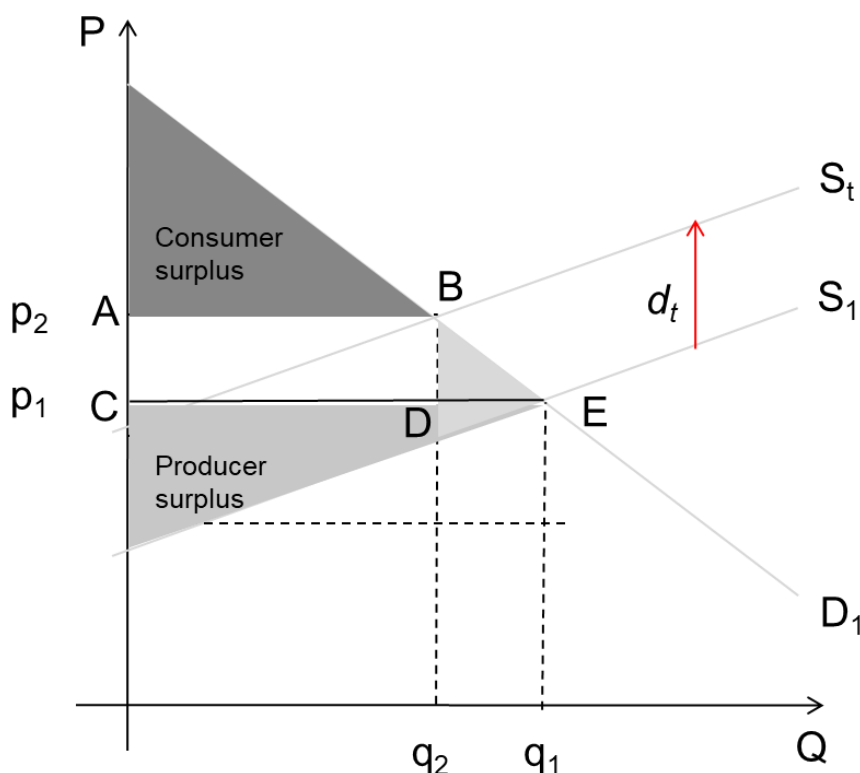
Category	Companies	
Marketplace - Goods	<ul style="list-style-type: none"> <li>• Alibaba</li> <li>• Amazon</li> <li>• Apple</li> <li>• Ebay</li> <li>• Google</li> </ul>	<ul style="list-style-type: none"> <li>• Groupon</li> <li>• Rakuten</li> <li>• Schibsted</li> <li>• Wish</li> <li>• Zalando</li> </ul>
Marketplace - Services	<ul style="list-style-type: none"> <li>• Amadeus</li> <li>• Airbnb</li> <li>• Axel Springer</li> <li>• Booking</li> <li>• Expedia</li> <li>• Match.com</li> </ul>	<ul style="list-style-type: none"> <li>• Randstad</li> <li>• Recruit</li> <li>• Sabre</li> <li>• Travelport worldwide</li> <li>• Uber</li> </ul>
Digital Advertising	<ul style="list-style-type: none"> <li>• Amazon</li> <li>• Critéo</li> <li>• Ebay</li> <li>• Facebook</li> </ul>	<ul style="list-style-type: none"> <li>• Google</li> <li>• Microsoft</li> <li>• Twitter</li> <li>• Verizon</li> </ul>

## Appendix 8. Calculation of consumer surplus in partial equilibrium

As shown in the figure below, the tax is shifting the supply curve upward and the equilibrium moves from its original position, defined by a price  $p_1$  and quantities sold  $q_1$  to a new position defined by a price  $p_2$  and quantities sold  $q_2$ .

The imposition of the tax reduces the consumer surplus by (i) the area of the rectangle ABCD, which represent the loss of surplus due to the price increase, for the consumers that still purchase the commodities, and (ii) the area of the triangle BDE, which represents the loss of surplus due to the reduction in overall consumption.

For the purpose of our analysis, considering that the tax rate as a percentage of the product price will be very small (for instance a 3% tax on a 15% commission will result in 0,45% tax rate on sales), the BDE triangle is likely to be very small. We will therefore neglect its value and calculate surplus loss only as the area of ABCD.



This study reflects the result of an ex ante economic analysis of the French DST as of March 2019. The analyses detailed in this document have been performed based on multiple sources of information, which limitations in terms of completeness, accuracy or reliability have been mentioned whenever necessary.

Deloitte Taj has performed that study on a best endeavours basis, using public data which have not been audited pursuant to the applicable professional standards. The conclusions of this report should therefore be considered by the reader solely as one source of information among others. Where forecast data are reported in this study, these have been included or assessed on the basis of assumptions whose achievement cannot be granted by Deloitte Taj.

Deloitte Taj does not express any opinion or assurance in this study concerning the opportunity to enact a Digital Service Tax, from an economic, political or any other standpoint. This study has been carried out upon request of the CCIA Europe. Deloitte Taj cannot be held liable for any damage resulting from the use of the information contained in this report by any third party. Each reader should make his or her own opinion. If the reader chooses to rely upon any matter included in this study, he or she shall do so at his or her own risk and shall take responsibility for any decision made on the conclusions of that study.

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