

# TECHNICAL ANNEX: QUANTIFICATION OF THE ECONOMIC IMPACT OF REDUCED PERSONALISED ADVERTISING

TECHNICAL ANNEX TO THE RESEARCH NOTE “DISPROPORTIONATE REGULATION OF PERSONALISED ADS COULD HAVE SIGNIFICANT UNINTENDED CONSEQUENCES”  
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In the research note “Disproportionate regulation of personalised ads could have significant unintended consequences” (hereafter *the note*), we explore the potential risks associated with constraining the ability or incentive of EU firms to use personalised advertising.

Our initial analysis of this novel research question finds that a reduction in the use of personalised advertising would drastically change the way the internet works today (for publishers, consumers and advertisers) and would have far-reaching impacts across the EU economy (on all markets served by firms that buy personalised ads to most efficiently reach their target audience).

In this Technical Annex, we present preliminary estimates which quantify the potential negative impacts associated with a reduced use of personalised advertising and describe the methodology used for estimating the potential harm.

Quantifying the extent to which various policy proposals would reduce the use of personalised advertising, and the impact that this would have on the economy, is novel and an area which requires further research.

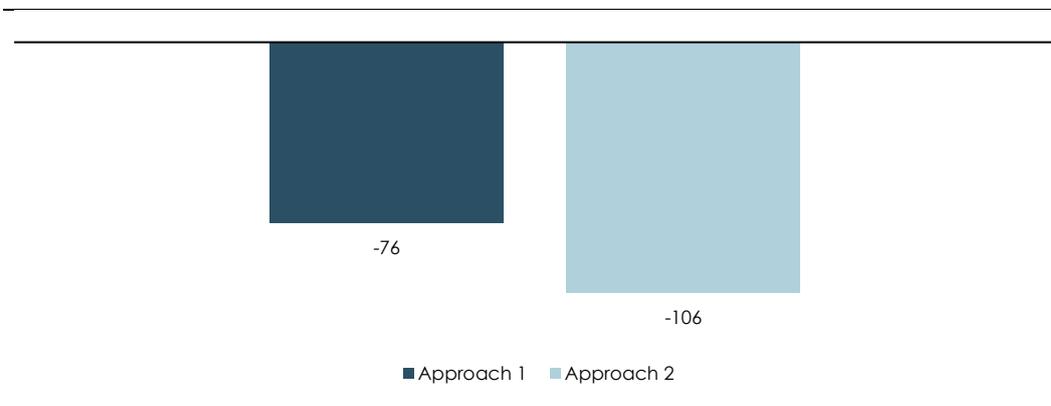
As a first estimate, we consider the potential impact of specific Articles in the draft version of the DSA (the transparency obligations: Articles 24 and 30) which would have the effect of reducing the use of personalised advertising.

We show the results of two separate methodologies constituting two separate attempts at estimating the potential harm:

1. The first approach explores the potential impact by building on literature which quantifies how regulation can restrict competition, and thereby reduce long-run economic growth
2. The second approach explores the potential impact by building on studies which quantify how advertising has a positive knock-on effect on broader economic activity

Based on these initial attempts, we find that reduced personalised advertising due to certain Articles of the DSA could reduce EU GDP by EUR 76-106 bn per year (averaged across a ten-year period, 2021-2030), see Figure 1.

**Figure 1**  
**Certain Articles of the DSA could lead to reduced economic activity**  
Impact on bn EUR



Note: According to our calculations, the negative impact would not be the same in every year but would increase during the period 2021-2030 due to growth in underlying GDP, as well as cumulative effects.  
Source: Calculations by Copenhagen Economics, based on initial attempts at quantification.

This corresponds to 0.22-0.30 per cent of EU GDP, or EUR 171-237 per EU citizen per year.

This quantification relates to the potential impact of regulation which would simply reduce the incentives to engage in personalised ads. It goes without saying that the potential impact of an outright ban on personalised ads could be even more extensive.

We note that these figures are not directly comparable to those reported by the European Commission in its overall impact assessment of the DSA, see Part 1 of “Impact assessment of the Digital Services Act”, paragraph 189:<sup>1</sup>

*“The macroeconomic impacts of [the DSA] are estimated at a 0.6% increase of GDP (EUR 81.7 billion). An alternative model following a different methodology estimates a EUR 76 billion increase in EU GDP over the 2020-2030 period for a package of measures broadly equivalent to [the DSA].”*

This is because the Impact Assessment of the Commission seeks to assess the combined benefits associated with the entire package of Articles in the DSA and not just Articles 24 and 30 (which are the focus of this exercise). It is not clear which portion of the macro-economic benefits in the overall assessment (if any) can be ascribed specifically to these Articles to enable a comparison. The analysis of potential harm described in this analysis is relevant since there is no evidence that the Commission has considered any drawbacks of reducing the use of personalised ads.

<sup>1</sup> <https://digital-strategy.ec.europa.eu/en/library/impact-assessment-digital-services-act>

## **A.1 REDUCED ADVERTISING WOULD MEAN LESS COMPETITIVE MARKETS AND HENCE REDUCED LONG-RUN ECONOMIC GROWTH**

### **A.1.1 Economic literature finds that regulation can restrict competition, harming productivity**

As explained in the note, advertisers use digital advertising as a way to compete for consumers' attention and spending power. By reducing the incentives of advertisers to engage in personalised advertising, certain articles of the DSA could reduce the potential for competitive tension on markets where advertising otherwise currently facilitates competition.

In practice, the DSA could be associated with anti-competitive constraints by hindering entry and expansion, see section 3.B in the note, and/or if less informed consumers are less able to facilitate effective competition, see section 2.C in the note.

Economic literature finds that regulation which reduces the ability of firms to compete can harm productivity (since firms have less incentive to innovate and improve when faced by less competitive pressure from rivals).

Arnold *et al.* (2011)<sup>2</sup> study the relationship between anti-competitive regulation and multi-factor productivity (MFP) in a cross-country analysis. Based on panel data which tracked the development of regulation over time across OECD countries, the authors found that a higher degree of regulation (as captured by the OECD's Product Market Regulation – PMR – index) was associated with slower growth in MFP.

The OECD's PMR index captures the extent of regulation for countries across the world via more than 1,000 objective questions. Some of these questions relate to restrictions on advertising, see Box 1.

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<sup>2</sup> Arnold, Nicoletti, and Scarpetta, S. (2011), Regulation, resource reallocation and productivity growth, *Nordic Economic Policy Review*, 2(2), 61-97.

**Box 1 Restrictions on advertising already contribute to the OECD's PMR index**

OECD's PMR indicator is a measure of countries' anti-competitive regulatory stance. A high PMR score implies a high degree of anti-competitive regulation.

The PMR indicator consists of many objective questions with several concerning advertising, including:

- **Q7a.2.7:** *Are sales promotions allowed to be held, or allowed to be publicly advertised, as seasonal sales, only during one or more specific periods of the year?*
- **Q7a.3.7:** *Are there restrictions (either by law or by self-regulation) on advertising of prices and/or discounts on prices of non-prescription medicines by pharmacies and/or any other retail outlet allowed to sell such medicines?*
- For 5 different professions:
  - **Notaries, Q8b.4.7:** *Provided advertising is neither false, misleading or deceptive, are there restrictions on advertising and marketing by notaries and/or notary firms (whether imposed by law or self-regulation by professional bodies, or a combination of the two)?*
  - **Accountants, Q8c.4.7:** *Provided advertising is neither false, misleading or deceptive, are there restrictions on advertising and marketing by professionals and/or professional firms (whether imposed by law or self-regulation by professional bodies, or a combination of the two)?*
  - **Architects, Q8d.4.7:** *Provided that advertising is neither false, misleading or deceptive, are there restrictions on advertising and marketing by professionals and/or professional firms (whether imposed by law or self-regulation by professional bodies, or a combination of the two)?*
  - **Civil Engineers, Q8e.4.7:** *Provided advertising is neither false, misleading or deceptive, are there restrictions on advertising and marketing by professionals and/or professional firms (whether imposed by law or self-regulation by professional bodies, or a combination of the two)?*
  - **Estate agents, Q8f.4.7:** *Provided that advertising is neither false, misleading or deceptive, are there restrictions on advertising and marketing by professionals and/or professional firms (whether imposed by law or self-regulation by professional bodies, or a combination of the two)?*

Source: <https://www.oecd.org/economy/reform/indicators-of-product-market-regulation/>

Specifically, Arnold *et al.* (2011) find that an increase in the PMR index of 1.25 points (corresponding to the difference between the most and least regulated countries in Europe) is associated with a reduction in the growth rate of MFP of 1.4 percentage points<sup>3</sup>, when also controlling for other factors.

<sup>3</sup> The figure of 1.25 is inferred from Arnold *et al.* (2011). The study explains that a PMR reduction of one standard deviation leads to an increase of 1.4 percentage points in MFP growth. According to the study, a standard deviation in PMR equals the distance between Greece and the "best practice" country in the EU. We assume that the study used the PMR index from 2008 as the most recent data points, meaning that "best practice" most likely refers to the Netherlands (the country with the lowest PMR indicator in 2008). Hence, we infer that a standard deviation is equal to the distance between PMR of Greece and the Netherlands, corresponding to 1.25 points on the PMR scale.

Other studies have found similar results:

- Daveri *et al.* (2010) find that regulation which protects incumbents from new entries is associated with weaker competitive pressure and less productivity growth in the most regulated industries.<sup>4</sup>
- Klapper *et al.* (2006) find that regulation curbs entry and lowers the labour productivity growth of incumbents.<sup>5</sup>

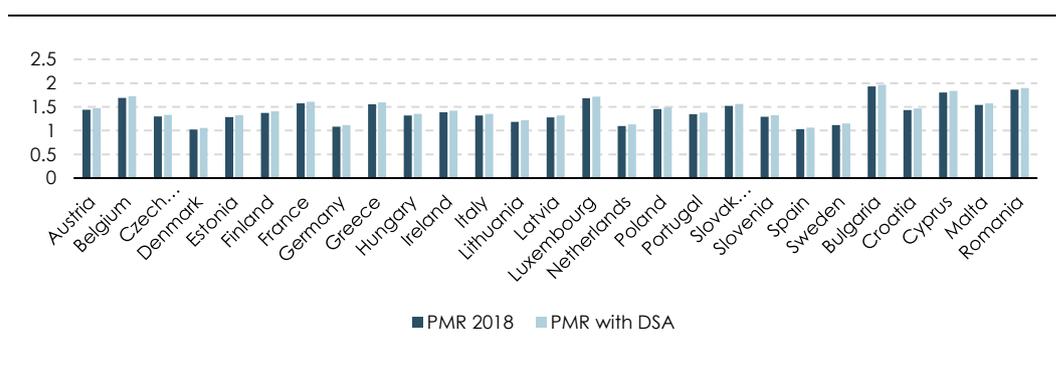
It is also broadly accepted in the economic literature that increased competitive pressure is associated with a positive impact on productivity (and vice versa). According to a literature review by Holmes (2010), nearly all papers studying competition and productivity find that increases in competition lead to increases in industry productivity.<sup>6</sup>

### A.1.2 The impact could be a reduction in GDP of EUR 76 bn per year

We build on the aforementioned literature to explore the potential impact of certain Articles of the DSA due to a restriction in competition across many markets in the economy. Competition would be restricted by reduced personalised advertising *inter alia* due to a reduced ability to enter new markets, and less informed consumers.

As an initial attempt, we assume that the relevant Articles of the DSA (which would reduce the use of personalised advertising) would be equivalent to an increase in the PMR index of 0.035 points in all countries (equivalent to the average distance in regulation between EU-27 countries in 2018), see Figure 2.

**Figure 2**  
**The impact of the DSA could be equivalent to a small increase in regulation**  
PMR index, 0-6



Note: 0 is equivalent to no regulation and 6 is equivalent to full regulation.  
Source: Copenhagen Economics, based on OECD PMR data for 2018.

<sup>4</sup> Daveri, Lecat, and Parisi (2016), Service Deregulation, Competition, and the Performance of French and Italian Firms, *Scottish Journal of Political Economy*, 63(3), 278-302.  
<sup>5</sup> Klapper, Laeven, and Rajan (2006), Entry regulation as a barrier to entrepreneurship, *Journal of financial economics*, 82(3), 591-629.  
<sup>6</sup> Holmes, and Schmitz Jr (2010), Competition and productivity: a review of evidence. *Annual Review of Economics*, 2(1), 619-642.

We apply this assumption to the results of Arnold *et al.* (2011) to explore the potential impact of the Articles of the DSA on productivity and long-run economic growth.

Scaling down the estimate of Arnold *et al.* (2011), we find that an increase in the PMR index of 0.035 would be associated with a reduction in the growth rate of MFP of 0.05 percentage points. Since MFP contributes directly to GDP growth, this would mean that these Articles of the DSA would be associated with a 0.05 percentage point lower annual GDP growth rate.

Assuming an average GDP growth rate of 2 per cent from 2021 to 2030 in the status quo, this implies that these Articles of the DSA would lead to a reduction of the growth rate to 1.95 per cent.

The impact of this lower GDP growth rate would be a reduction in GDP of EUR 76 bn per year (when averaged across a ten-year period 2021-2030).<sup>7</sup> This is equivalent to an average reduction of 0.22 per cent of GDP per year, or a reduction of EUR 171 per capita per year.

## **A.2 REDUCED ADVERTISING WOULD HAVE A NEGATIVE KNOCK-ON IMPACT ON ECONOMIC ACTIVITY**

### **A.2.1 Studies find that advertising has a positive knock-on effect on economic activity**

As explained in the note, advertising can stimulate demand by making consumers aware of products that they otherwise would not have found, see section 2.B in the study. Total volumes on a given market would thus likely be reduced if/where personalised advertising is reduced and/or becomes less effective.

According to various studies that have explored the relationship between advertising and overall economic activity, spending on advertising is correlated with higher levels of economic activity at a macro level.

The relationship between spending on advertising and overall economic activity is often captured via a *GDP multiplier*, which measures the average increase in GDP that is associated with an increase in ad spend.

A Deloitte study from 2017 finds a GDP multiplier of advertising in the EU of 6.97, meaning that every EUR 1 spent on advertising is associated with an increase in GDP of EUR 6.97.<sup>1</sup> This GDP multiplier was estimated using an augmented model of economic growth and annual data for 35 countries during the period 1998 - 2014.

Based on another similar study, conducted by IHS Markit, it is possible to back out an even higher GDP multiplier of digital advertising of 13.<sup>8</sup>

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<sup>7</sup> We depart from the GDP per capita in EU-27 in 2020 from OECD (EUR 31,700) and use the population of EU-27 (448 million) which is kept constant over the period.

<sup>8</sup> See IHS (2017, The Economic Contribution of Digital Advertising in Europe) and IAB (2020, Adex Benchmark 2019 report). The GDP multiplier is calculated by dividing the 2015 GVA of digital advertising spending by the digital advertising spending in 2015.

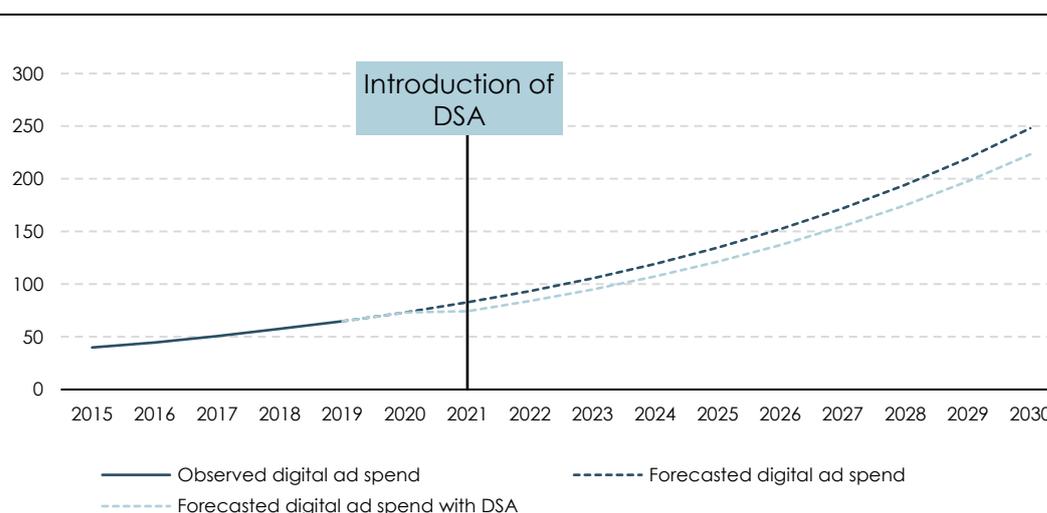
### A.2.2 The impact could be a reduction in GDP of EUR 106 bn per year

We build on the aforementioned studies to explore the potential impact of certain Articles of the DSA, which would lead to a reduction in spending on digital advertising, which would have a negative knock-on effect on economic activity. Economic activity would be reduced by reduced personalised advertising since demand could be stifled on many markets across the economy.

Even if the impact of the DSA were a reduction in spending on digital advertising of just 10 per cent, this could have a substantial knock-on impact on economic activity.

We forecast spending on digital advertising in a baseline scenario where spending continues to grow at a rate of 13 per cent<sup>9</sup> per year in the period 2021-2030 and compare this to an alternative where spending is 10 per cent lower in every year, see Figure 3.

**Figure 3**  
**The impact of the DSA could be a 10 per cent reduction in spending on digital ads**  
bn EUR



Source: Copenhagen Economics, based on data from IAB, Adex benchmark 2019 report.

Combining the assumption that spending on digital advertising would be reduced by 10 per cent with the GDP multiplier of 6.97, we can identify the potential impact of certain Articles of the DSA on economic activity.

According to this methodology, a reduction in spending on digital advertising of even just 10 per cent would be associated with a reduction in GDP of EUR 106 bn per year (averaged over a ten-year period 2021-2030).<sup>10</sup> This is equivalent to an average reduction of 0.30 per cent of GDP per year, or a reduction of EUR 237 per capita per year.

<sup>9</sup> The growth rate has been stable between 12 and 14 per cent over the last 5 years, see IAB (2019, Adex benchmark 2019 report).

<sup>10</sup> We depart from the GDP per capita in EU-27 in 2020 from OECD (EUR 31,700) and use the population of EU-27 (448 million) which is kept constant over the period.

*A brief note on consultancy research: As is standard in our field of professional services, research is designed so that (i) the client chooses the research question; (ii) we analyse and address the question to the best of our knowledge; (iii) findings and conclusions are our own. Professional services independence is ensured via a diversified portfolio of business, spanning across public sector and private clients across industries. For further information, see [www.copenhageneconomics.com](http://www.copenhageneconomics.com). We remain available for and appreciate any questions or comments.*