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Taxation of Digital Platforms

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Abstract

Tech giants such as Google and Facebook generate significant amounts of advertising income, which is mainly reported in low-tax countries. This has created a policy discussion of how to re-align the location of value creation and taxation. The success of the business model of these digital platforms relies on the existence of indirect network effects, which are the prime reason why platforms exist and generate advertising income. To account for these effects, conventional tax policy needs to be adjusted. This includes an adjusted concept of nexus that should rely on the location of users, which generate the relevant indirect network effects. The recent EU proposal of a digital service tax goes in this direction and constitutes a policy option for other countries.

JEL classification: D43; H21;H22; L13

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1. Introduction

The increasing importance of services provided by digital platforms like Google, Facebook, and YouTube exemplifies the value that digitalization creates in the economy. Similarly, the sale of digital and non-digital goods via platforms like Amazon and Apple has experienced tremendous growth over the last decade. The rise in income of digital platforms is related to the use of intellectual property rights and/or the growing demand for advertising via platforms. Although this a positive reflection of the value added digital platforms generate, the income is primarily reported in low-tax jurisdictions, which has fueled the policy discussion of how to re-align the location of value creation and taxation. Different policy proposals have been developed in recent years, ranging from OECD Base Erosion Profit Shifting (BEPS) proposal (OECD, 2013), the recent OECD report on the digital economy (OECD, 2018) to the more specific proposal of a digital service tax in the European Union (EU) (European Commission, 2018).

This paper evaluates the rationale and effects of taxing digital platforms. The focus of the paper will be on two-sided digital platforms that are at the heart of the policy discussion (Google and Facebook, for instance).¹ They are not different to traditional businesses with respect to their tax avoidance preference, but are different in important other dimensions. Most notably, they capitalize on user contributions due to indirect network effects, which results in significant amounts of advertising income. Indirect network effects have non-conventional implications for the evaluation of taxes and the design of tax policies. In this paper, we discuss these implications and relate them to tax policies. We start out by reviewing the basic characteristics of the business model two-sided digital platforms use. We then turn to the issue of how to modify the concept of nexus for these digital platforms, which traditionally requires a physical presence in a country to be able for a country to tax them, followed by an evaluation how the two-sidedness of digital platforms leads to unconventional tax responses and efficiency implications. We finally discuss international implications of taxing digital platforms and review different tax policy proposals for digital platforms. Overall, the analysis provides a foundation for the approach laid down by the European Union to tax digital platforms based on the revenues generated by users of the platform in the respective country.

2. Two-Sided Digital Platforms – A Different Business Model

Before discussing tax policy implications, it is helpful to first provide a brief review of the business model of two-sided digital platforms to understand why they are so different as compared to traditional businesses. In a two-sided digital market, two distinct groups of customers or users interact

¹ E-commerce is closely-related to digital platforms. See e.g. Agrawal and Fox (2017) for an analysis of tax policy issues in the context of e-commerce.

through a digital platform with each other. The demand of each group to join a platform depends on the size of the other group. These across-groups interdependencies are referred to as indirect network effects.² A variety of industries are characterized by such demand spill-overs. Social networks and the media industry are two important examples.³ Indirect network effects do not only depend on the number of users, but also on the “quality” of users. Advertisers would like to reach the “right” users and to target their advertising to users that are most receptive to their advertising efforts. Platforms can generate information about the user side by using methods of artificial intelligence and use this information to channel advertisement more fine-tuned to users. In that sense, user data is the key asset of the platforms to generate advertising income. In many cases, most if not all of the platforms’ income is earned on one side of the platform only. For example, Google and Facebook follow a zero-pricing strategy on the user side and charges advertisers for “accessing” their users.

It is important to note that the critical feature that makes two-sided digital platforms different for policy analysis is not the existence of indirect network effects per se. Rochet and Tirole (2006) offer a refined definition of a two-sided market. Rather than only requiring the existence of cross-group spill-overs, they point to the relevance of the price structure, the platform charges towards both groups, for the market outcome. When the two groups can undo any change in the price structure the platform implements, the market outcome will not change and the price structure is neutral. In many important examples of digital platforms such as Google or Facebook, this will not be the case, since there is no direct negotiations between users of Google or Facebook and firms that place advertisements via these platforms. Differently, digital platforms such as ebay or Airbnb do not pass the test of two-sidedness. Any change in prices ebay charges its sellers and buyers on their platform can be neutralized by the two groups, just because sellers and buyers directly interact via the platform and can adjust the price payment between them accordingly.⁴ This paper focuses on two-sided platforms that pass this test.

² Indirect network externalities typically exist in addition to direct network externalities (Katz and Shapiro, 1994). The latter reflect within-group interdependencies because the individual value of using e.g. Facebook is increasing in the number of other Facebook users.

³ The fact that network industries also share features with two-sided markets (e.g. the software industry and web portals) has implications for the appropriate pricing policy. See Evans et al. (2006) for an illuminating discussion of how the economic aspects of two-sidedness were mistakenly ignored during the dot.com boom phase - a failure that may have contributed to the failure of numerous dot.com firms.

⁴ Ebay acts “only” as an e-intermediary between seller and buyers. See e.g. Agrawal and Fox (2017) for an analysis of taxation and e-commerce issues.

3. Tax Policy Implications

3.1 Location of Value Creation: A Dual Role of Users

Traditional methods of corporate taxation rely on the notion that profits are taxed at the location where they have been created. Such source-based tax systems are difficult to sustain in a world in which firms can allocate their profits via profit shifting strategies to low-tax jurisdictions (Gresik, 2001). A policy to limit profit shifting is to compare reported profits with the level of economic activity in a given jurisdiction in which the firm has some establishment (so called nexus). This comparison primarily tries to “see through” the production function and to use input measures such as labor and capital to get an idea of value creation in a jurisdiction.⁵ In the context of two-sided digital platforms, the comparison becomes somehow meaningless. Labor and capital are not the prime input factors in generating value added. As detailed above, the value creation occurs on both sides of the platform with different inputs. Users enjoy the value created by the service the platform offers (such as Google search or interaction via Facebook). The service is produced primarily by using intellectual property rights such as software. At the same time, using the service creates an audience that advertisers can use for economic or political campaigning. This creates value for advertisers, which capitalize on advertising revenues for the platform.

Allocating the stream of advertising income to the jurisdiction where it is deemed to be created is a taxing task and pretty much at the core of the policy discussion around digital platforms. In general, the location of servers, the creation of the software, the location of intellectual property rights as well as the usage of it might be used as the location where the value added is created. These locations typically fall apart and, in many cases, are easily adjustable to save on taxes via profit shifting in a source-based corporate tax system.⁶

An alternative would be to use the second main input factor in value creation: the users. On two-sided digital platforms, users take a dual role. They are consumers of a service provided by the platform. At the same time, they are input factors in the creation of value on the advertiser side of the platform. The value of users for advertisers is magnified by the use of software (artificial intelligence) that uses characteristics of users to improve the targeting of advertisements. Advertising revenues should reflect the increase in value to advertisers, given the fine-tuned pricing of advertising space that digital platforms use in practice. The location of users is not overly mobile and presumably not so much

⁵ Formula apportionment systems are widespread at the subnational level. Such a system of a Common Consolidated Corporate Tax Base (CCCTB) has been recently endorsed at the European level to limit profit shifting within the European Union (European Commission, 2016).

⁶ There is a growing body of literature showing that the location of intellectual property rights is tax sensitive and intellectual property rights are used for profit shifting. See Karkinsky and Riedel (2012); Griffith et al. (2014); Koethenbueger et al. (2018).

responsive to their role in allocating profits, given the fact that the pecuniary prices users pay are zero in many cases and a shifting of taxes onto users via an adjustment in price payments is not possible.⁷

Multiple concerns are frequently raised in the context digital platform taxation. First, there are concerns that a user-based tax assignment is a special treatment of two-sided digital platforms, which is inconsistent with the tax treatment of other businesses. In the light of principles that underlie current assignment of taxes, a user-based tax system may well not be classified as a ring-fenced system. The location of critical input factors is used to assign tax bases in current tax systems. As explained above, for advertising-driven platforms users become the critical input factor and their location is then to be used to assign taxing rights. Second, many policy proposals (to be reviewed below) recommend taxes on revenues rather than corporate taxes. In the context of two-sided platforms, the distinction between the two becomes more blurred since marginal cost of providing services via platforms (such as advertising space) is negligible, if not zero. At least in the short run, the behavioral responses to the two forms of taxation are the same. Digital platforms incur large fixed cost due to the development of software and the implementation of the platform. This implies that they incur losses in the beginning of their operation, which get differently treated under a revenue-based and profit-based tax system. In a profit-based tax system, losses can be carried forward, but loss carry-forward provision are only available for a limited number of years in most tax systems. Another consideration that becomes relevant in this context is that digital platforms strategically “underprice” their services in the starting phase to create a sufficiently large user base and to drive rival platforms out of business (Evans et al., 2006). From an efficiency perspective, this leaves the question open whether losses due to strategic pricing and the associated creation of market power should be subsidized by providing a loss offset.

The issue of whether to tax revenues or profits is not new and has received some prominence in the context of natural resource taxation. Therein, a tax on revenues is frequently used, albeit at a low rate to minimize the potential disadvantage that arises from not deducting cost (Cui, 2018). A low rate of tax might be a policy option for digital platforms as well, an issue to which we return in Section 4. A final issue is whether current tax treaties accommodate the possibility to tax revenues at source. Cui (2018) offers an interpretation of a user-based revenue tax on digital platforms that is line with tax treaties. Current tax treaties allow governments to tax location-specific rents. Advertising revenue might be interpreted as location-specific rents where users are location specific factors that generate these rents.

⁷ Becker et al. (2018) and Cui (2018) relate this idea to the definition of nexus (relying on physical presence) and how it needs to be modified from a legal perspective, for instance.

3.2 Tax Responses by Digital Platforms

Two-sided digital platforms use a business model that has unconventional implications for (i) how two-sided digital platforms respond to public policies and (ii) the demand for corrective policies.

Turning to the policy responsiveness first: Two-sided digital platforms frequently receive income streams from the two sides that are subject to different taxes. An example is the media industry where advertising income is subject to the general value added tax (VAT) while the VAT that applies to the sales of media outlets (newspaper or magazines) differs from the general VAT rate. A different example is a multinational platform that earns or reports its income stream in different tax jurisdictions, which differ in tax rates. In these environments, indirect network externalities modify the way the platform responds to taxes. For instance, the business model of a digital media platform will entail that a higher tax rate on revenues from selling media content will result in a lower price for the media content and a higher number of readers. This is contrary to the standard tax response, which entails a higher price and a lower number of users. The different response is rooted in the existence of positive indirect network effects. A higher number of readers makes the platform more attractive for advertisers and generates higher advertising revenues in response. Thus, tax avoidance takes the form of shifting revenues from the more heavily taxed side to the less heavily taxed side of the platform via quantity increases on the more heavily taxed side (Kind et al., 2008, 2010; Kind and Koethenbueger, 2018).⁸

The welfare effects of these responses might be equally unconventional. While a tax is distortionary in the absence of other sources of inefficiency, two-sided digital platforms are imperfectly competitive markets and thereby characterized by market power. They exist to capitalize on indirect network effects and this benefit becomes larger the larger the two sides of the platform. As such, taxes have a corrective role to play in these markets: to counteract the underprovision of quantities due to market power and the under- or overprovision tendency due to an imperfect internalization of (inframarginal) indirect network effects.⁹ Thus, quantities might be overprovided. Even when the underprovision tendency dominates, the tax policy might be unconventional and might involve a tax just to increase quantities.

The predictions still need to receive empirical support. The tax policies in EU member countries (to be reviewed below) might well serve as a testing ground in future work. At the moment, the theoretical

⁸ Two-sided platforms also challenge other well-known and policy-relevant insights in public finance such as the revenue and welfare dominance of ad valorem taxes (Kind et al., 2009).

⁹ More precisely, platforms account for the marginal indirect network effects when setting prices. But, these might differ from inframarginal ones. In a situation in which users are ad-averse and users with a higher willingness to pay for media content are those that are most averse to advertising, the marginal negative indirect network effect is smaller (in absolute value) than the inframarginal ones. This in isolation implies an overprovision of advertising (Kind et al., 2008).

insights are at least to be interpreted as a critical assessment of any tax analyses that neglect the basic reason why two-sided digital platforms exist.

3.3 International Tax Policy

Digital platforms require a sufficiently large amount of indirect network effects to exist and, hence, tend to operate in different countries (e.g. Facebook, Google, Netflix). The international dimension of firm operation has tax implications. Multinational platforms have the possibility to avoid paying taxes in one country by shifting profits to another, low-tax country (Dharmapala, 2014). In the context of digital platforms, one way of avoiding taxes is to use royalty payments to shift profits to a low-tax country. In the context of e.g. social media, the royalty payment reflects the use of intellectual property such as software (artificial intelligence) or marketing services. As for any other firm, tax differentials across countries incentivize platforms to strategically adjust the payment upwards and to report more income in the low-tax country. Two-sided digital platforms, which earn advertising income on one side of the platform operation, may organize the profit shifting differently. Advertising contracts are directly located in low-tax countries and the users in various countries are exposed to the advertising that follows from the contract. The strategic location of contracts and thereby advertising income leaves (almost) no reported income in those countries where users are located (apart from the country of contract location).

The issue of profit shifting is not new and not restricted to digital platforms. In recent years, multiple policies have been discussed around the globe to combat profit shifting, including the implementation of so-called arm's-length prices and the apportionment of profits of an international firm to the different countries in which the firm operates. All these policies have proven to be difficult to implement in practice and they become even more difficult to implement for two-sided digital platforms. However, digital platforms offer a policy solution that is not available in standard industries, both due to their unique "production function" for advertising revenue and the way taxes work in such industries.

In detail, the concept of arm's-length prices requires to use the royalty payment for the calculation of tax obligations that unrelated firms use for the pricing of a similar transaction (OECD, 2017). Since e.g. social media firms are quite large, there are only a few and there is almost no external market that can be used as a benchmark. This applies to the use of intellectual property, which by construction is unique. It also applies to the "sale" of attention of users to advertisers, since e.g. Facebook users are quite unique in terms of media usage and cannot straightforwardly be compared with magazine readers and the advertising prices that are charged to access their attention. Also, any policy that tries to infer the internal price that should be charged in the absence of tax saving motives (e.g. by inferring the cost

structure of the two-sided digital platform) might yield erroneous outcomes.¹⁰ In the absence of taxes, internal prices of a two-sided platform do not only reflect marginal costs (if at all, since marginal costs are close to zero in two-sided digital platforms), they also reflect indirect network effects (Schindler and Schjelderup, 2010). This renders the OECD guidelines in calculating the “tax-free” internal price difficult to apply.

A frequently discussed policy to assign tax bases among countries is to implement a formula apportionment system. If applied universally, royalty payments between divisions of the digital platform do not influence the overall amount of profit and tax-related profit-shifting incentives would be absent. Applied to digital platforms, it emphasizes the role of users for tax assignment. The general underlying idea is to use critical input factors, which serve as an indicator of real economic activity, for tax assignment. For digital platforms, one critical input factor are users. Another critical input factor are algorithms. The latter are public inputs and have no location-specific values that can be used to allocate income of the digital platform to the different countries, leaving users as the relevant metric for tax assignment. A limitation of this proposal is that it implies a reallocation of taxable profits across countries, which undermines incentives of low-tax countries or home countries of the digital platforms to support such a proposal. A lack of international cooperation to address the issue of profit shifting might well incentivize countries to focus on user-dependent revenue assignment, which by construction neglects reported costs and thereby royalty payments. This is the essence of many tax proposals that are reviewed next.

4. Recent User-Based Tax Reform Proposals

There are different proposals how to implement a user-based allocation of tax bases. One would entail to locate all advertising contracts that relate to users in a specific country, in the platform affiliate in the respective country. Partly going in this direction, the United Kingdom (UK) has recently implemented the UK Diverted Profits Tax that requires UK advertisers on digital platforms to sign the contract with the UK platform affiliate (Cuevas et al., 2017). The proposal satisfies the user-based allocation rule only partially. Taxing advertising income earned with UK users only happens when UK advertisers target domestic users. A further potential drawback of such a proposal is that profit-shifting incentives are not fully eliminated. The platform still has the possibility to adjust royalty payments the e.g. UK platform division has to pay to its parent company in a low-tax country. For instance, in the context of Facebook it is hard to judge whether a royalty payment is justified based on non-tax

¹⁰ There exist various forms of how to implement such a concept, all of which try to get a good assessment of the cost of producing the good or service that is internally traded (OECD, 2017). The marginal cost of producing the good or service is the metric underlying the arm’s-length pricing policy because this is the pricing strategy firms use in competitive markets.

reasons, given the lack of an arm's-length relationship tax authorities can use as a counterfactual. It is only when the tax is not a profit tax but a sales tax that the royalty payment does not lower the tax payment.

The proposed EU digital service tax (DST) goes in this direction, which by and large is a tax on sales that result from active user participation (European Commission, 2018). Some EU member states support the idea, while some states conclude that the challenges digitalization creates for tax policy are not exclusive to the digital economy and do not require special policies. Given the controversy, the proposal has not been implemented, which has prompted a subset of EU member states to take country-specific actions that reflect the value of users for platforms. For instance, a tax rate of 3 percent applies to revenues generated from online intermediation services and the sale of targeted digital advertising in France. It applies to large internet companies with worldwide taxable revenue exceeding 750 million Euro, and French taxable revenue over 25 million Euro. The same tax rate will be levied in Austria and is levied in Italy, albeit with a lower domestic revenue threshold. As of 2020, the UK has announced to introduce a 2 percent tax on the revenues of search engines, social media platforms and online marketplaces, which derive value from UK users. International and domestic revenue thresholds apply.¹¹

The proposed tax policies reflect the importance of users in generating platform revenues, but also tend to include digital platforms, which only act as intermediaries between buyers and sellers, such as ebay and Airbnb. They do not satisfy the aforementioned stringent definition of two-sided markets (where users cannot neutralize changes in the price structure the platform chooses). These digital platforms earn most of their income via fees rather than advertising income and are not so much different in behavior as other non-platform industries (Grinberg, 2018). A stringent definition of digital platforms that are subject to the DST is also advisable to prevent the inclusion of industries that e.g. use digital market places to sell their products/services, but do not share the basic characteristics of two-sided platforms.

The inclusion of thresholds is compatible with the idea of reducing administrative costs and compliance costs of tax collection (as is typical for related tax policies such as VAT). In the context of digital platforms, it also addresses the concern that platforms incur large fixed costs and only become profitable with a certain size of operation, i.e. magnitude of indirect network effects. Thus, the threshold-dependent revenue tax most likely does not fall on loss-making platforms.

Finally, a revenue tax has the disadvantage of creating production inefficiencies since costs are not deductible.¹² As reviewed in Section 3.2, the issue is familiar from natural resource taxation, where a

¹¹ See OECD (2018) for an overview of policy proposals, for instance.

¹² In the context of two-sided markets, production inefficiencies will most likely not occur in the short run, since the marginal cost of putting out ads is virtually zero.

low rate of tax is frequently chosen to address the inefficiency. The low tax rates embedded in the different tax reforms are compatible with this line of reasoning.

5. Conclusion

The recent rise of tech giants such as Google and Facebook generates significant amounts of value added, some of which capitalizes in advertising income these firms earn. The platforms' advertising income has increased tremendously over time, but are mainly reported in low-tax countries. This has fueled the discussion how these internationally-operating firms ought to be taxed.

Although the basic policy concern is well known, the business model these digital platforms use is different to that of traditional industries. It relies on the existence of indirect network externalities that are the prime reason why they generate advertising income. Any evaluation of tax policies ought to account for this. This includes that an adjusted concept of nexus should be implemented. It should rely on the location of users, i.e. the definition of nexus based on physical presence should be adjusted to include the notion of a digital presence in a country. The recent EU proposal of a DST builds on this insight. Following this proposal, various EU member countries unilaterally implemented such a tax.

Finally, recent tax policy proposal include the introduction of a destination-based tax system (DBT), possibly supplemented by a cash-flow tax (Auerbach et al., 2017). The DBT implies a shift of taxing rights, away from the norm of taxing profits at source to the idea of taxing profits in the country of final consumption. The issue of where this stream of income has been generated is no longer of relevance for taxation, provided all countries simultaneously adopt a DBT. However, a DBT implies a reallocation of tax revenues and this change in revenues will be higher than the ones that are associated with a DST. To the extent that the DST-related changes are perceived as a political obstacle, the concern may well become even more relevant in the context of a DBT. Thus, the DBT might not become effective in the near future, leaving the issue of how to tax income of digital platforms in a source-based tax system policy relevant. The DST is one option to address the issue.

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