

EXCESS PROFITS TAX

ESTIMATING THE POTENTIAL TAX REVENUE GAINS FOR THE EUROPEAN UNION

Evgeniya Dubinina, Javier Garcia-Bernardo, Petr Janský

Excess Profits Tax:
Estimating the Potential Tax Revenue Gains
for the European Union

Study for The Left in the European Parliament



B-1047 Brussels, Belgium
+32 (0)2 283 23 01
guengl-communications@europarl.europa.eu
www.left.eu

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EXECUTIVE SUMMARY

The COVID-19 pandemic strongly diminished countries' tax revenues. At the same time, also as a result of the pandemic, large corporations in specific sectors increased their profits.

To finance countries' economic recovery from the pandemic, politicians and experts have revived the idea of an excess profits tax: an additional tax levied by governments on corporations' excess profits. Excess profits taxes were originally proposed to fund war efforts in the First World War, and were implemented by countries including France, the United Kingdom and the United States.

In this study, we estimate the potential tax revenue gains from a tax on the excess profits of large multinational corporations. In a newly developed trend-adjusted average earnings approach, we compare profits in 2020 to profits from 2014-2019. We adjust for the trend in profit growth rates, which makes our results conservative in the sense that they result in lower potential tax revenue gains than without this adjustment. We apply the approach to the consolidated Orbis data for large multinational corporations with turnovers above \$100 million (€81 million) with subsidiaries in the European Union.

We estimate that large multinational corporations with a presence in the EU made excess profits of USD 447 billion (€364 billion) in 2020 (41.7% of their total profits in 2020). For example, MNCs headquartered in the United States made \$120 billion (€97 billion) of estimated excess profits and MNCs headquartered in Germany and France made \$19 (€15) and \$25 (€20) billion respectively of estimated excess profits. The vast majority of these profits were made by corporations in three sectors: manufacturing (41%), information (21%), and financial (16%). We further use country-by-country report data to estimate the excess profits arising from each EU member state. We find that MNCs' subsidiaries in Germany and France had the largest excess profits within the European Union, amounting to €10 billion in each country.

We find that EU member states could raise USD 6 billion (€4.8 billion) with an excess profits tax of 10% (\$18 billion or €14 billion with a 30% excess profits tax rate, \$30 billion or €24 billion with a 50% excess profits tax rate, and \$43 billion or €35 billion with a 70% excess profits tax rate). These research findings may be useful for policymakers addressing the question of how to finance economic recovery from the pandemic.

INTRODUCTION

The COVID-19 pandemic instigated an economic crisis and strongly diminished countries' tax revenues. At the same time, large corporations in specific sectors increased their profits as a result of the pandemic. For example, in the second quarter of 2020, US multinational corporations (MNCs) and small firms saw 39% and 85% declines in profits, respectively, whereas specific companies in industries like pharmacy, technology, utilities, and telecommunications were able to increase their earnings (Oxfam, 2020).

To finance countries' economic recovery from the pandemic, politicians and experts have revived the idea of an excess profits tax: an additional tax levied by governments on corporations' excess profits. Excess profits taxes were first proposed to fund war efforts in the First World War, and were implemented by countries including France, the United Kingdom and the United States. In this study, we estimate the potential tax revenue gains from a tax on the excess profits of large MNCs.

In this paper we use state-of-the-art methodology and the best available data to estimate the scale of excess profits and related potential tax revenue gains for the European Union. We use a trend-adjusted average earnings approach to estimate excess profits. We compare each company's profits in 2020 with average adjusted profits in 2014–2019. Our methodological innovation consists of adjusting the average profits by the company's growth trend, which makes it more realistic and means that our resulting estimates of excess profits are conservative. We apply this methodology to Bureau van Dijk's Orbis database as the best available data set for the EU member states. Specifically, we use consolidated data for all large MNCs with turnovers above \$100 million or €81 million with subsidiaries in the European Union during the 2014–2020 period. We restrict the sample to MNCs with turnovers above \$100 million (or €81 million) because profits are concentrated amongst the largest companies. We exclude companies without recent financial data and we exclude entities such as public authorities, states and governments

from the data. We use standard NACE codes to classify business sectors. Moreover, we use Country-by-Country Report data from the OECD to understand the share of profits attributable to the EU member states, which enables us to estimate the potential tax revenue gains for each member state.

We estimate that large MNCs made total excess profits of USD 447 billion or €364 billion in 2020 (14.7% of their total profits in 2020). The vast majority of these profits were made by MNCs in three sectors: manufacturing (41%), information (21%), and financial (16%). We show that governments from the European Union could collect \$6 billion or €5 billion excess profits tax revenue with a 10% excess profits tax rate, \$18 billion or €14 billion with a 30% excess profits tax rate, \$30 billion or €24 billion with a 50% excess profits tax rate, and \$43 billion or €35 billion with a 70% excess profits tax rate. These research findings may be useful for policymakers addressing the question of how to finance economic recovery from the pandemic.

This study provides the first comprehensive estimates of potential tax revenue gains from the implementation of an excess profits tax on subsidiaries within the European Union. Our calculations cover 8,292 MNCs with at least one subsidiary in the European Union, 1,763 of which have excess profits. Previous estimates have been limited to small country samples. Busby et al. (2021) estimate the cost of introducing an excess profits tax for corporations during the pandemic. However, the authors only consider Canadian corporations and forecast 2020 profits. Oxfam (2020) estimated excess profits at \$80 billion using a sample of the 25 most profitable US corporations (i.e. Microsoft, Johnson & Johnson, Facebook, Pfizer, Visa, etc.) using the corporations' financial statements collected from the Securities and Exchange Commission. Such systematic analysis of COVID-19 pandemic-related excess profits as we provide here became possible only very recently, as the balance sheets of many large multinational corporations for the year 2020 are now available through the Orbis database.

An excess profits tax in response to COVID-19 would be the first known use of such a tax in response to a pandemic, but excess profits tax has a history of being used in special circumstances, most prominently during the wars of the 20th century. Indeed, excess profits tax evolved from the war profits tax that was first proposed in Denmark and Sweden in 1915 on the excess profits made by traders exporting goods to Germany, and was later adopted in other countries including the United States and United Kingdom (Plehn, 1920). During the First World War, France introduced excess profits taxation (Assemblée Nationale, 2021), as did the British government with a 50 percent rate on profits above the normal pre-war level, which was then raised to 80 percent in 1917 to finance economic recovery (Dunnagan, 2020, Plehn, 1920). During World War II, 22 countries implemented temporary excess profits taxes (Oxfam, 2020), with tax rates of up to 100 percent (Canada) (Busby et al., 2021); the United States implemented an 80% excess profits tax on earnings exceeding 8% of tangible assets to finance wartime needs in 1918 (Christians and Magalhaes, 2020). Outside wartime, Germany used excess profits taxation after its unification (Abdel-Kader and de Mooij, 2020) and Japan implemented excess profits taxation in 2012 to finance reconstruction after a massive earthquake (Abdel-Kader and de Mooij, 2020).

The COVID-19 pandemic led to a decrease in tax revenue and increased the need for social and health spending; this combination forced governments to

find new revenue sources. As one such source, excess profits tax revenue could help governments to finance the economic recovery and cover the costs generated by the pandemic (Gaspar et al., 2021; Busby et al., 2021; Abdel-Kader and de Mooij, 2020; Christians and Magalhaes, 2020). By estimating the scale of the additional revenue for large multinational corporations with presence in the European Union, we contribute new evidence to a recent stream of pandemic-focused excess profits tax literature. Revenue potential is naturally only one of several crucial inputs into policy makers' decision-making about the introduction and design of an excess profits tax; it has, however, been missing from the public debate so far, at least in Europe. Other considerations include a variety of costs and benefits of such a tax, evaluation of which is beyond the scope of the current study although we briefly discuss some of them in the conclusion on the basis of the existing literature.

The rest of this study proceeds as follows. Sections 2 and 3 present the methodology and data we use. In particular, we explain how we adjusted the average earnings approach to estimate excess profits. Section 4 presents and discusses our results. We first discuss the estimates for all multinational corporations with a presence in the European Union and their excess profits across all countries, by sector and by headquarter country. We then focus on excess profits attributed to the EU member states and how much potential tax revenue gains. We conclude in section 5.

METHODOLOGY

In this section, we first introduce the average earnings approach, then compare it with the invested capital approach and, finally, we explain why we prefer the average earnings approach and how we modify it in our study. The average earnings approach and invested capital approach are the two main approaches to calculating excess profits in the existing literature. The average earnings approach involves calculating the excess profits tax base as the total net income during the pandemic or crisis period minus the average earnings during the previous few years, whereas the invested capital approach considers everything earned above a specified return rate on capital as excessive and subject to excess profits taxation (Christians and Magalhaes, 2020). Avi-Yonah (2020) considers the average earnings approach to calculating excess profits tax in a different way, claiming that the base for excessive profit tax could be calculated using the average earnings method by taking total income during the pandemic minus 95 percent of the average base-period average income (i.e. over a few years before the pandemic) plus 8 percent of the corporations' net capital addition (or minus 6 percent of net capital reduction). In the Tax Foundation report (1940), the authors mention a similar approach to using average earnings with a correction on new capital acquired, but the base in this case was taken as average earnings during the previous years alone plus a fixed sum of \$5 thousand.

Two other recent studies have used the average earnings approach to estimate potential excess profits tax revenues. For the 25 most profitable corporations in the United States such as Microsoft, Johnson & Johnson, Facebook, Pfizer, and Visa, Oxfam (2020) applies the average earnings approach to the companies' financial statements from the Securities and Exchange Commission to estimate an excess profits tax revenue of up to \$80 billion. For Canada, Busby et al. (2021) estimate the cost of introducing excess profits tax on corporations' extra profits during the COVID pandemic using the average earnings approach. The authors imply an additional 15 percent tax rate to the statutory corporate income

tax rate on profits generated during 2020 by Canadian corporations (which earned more than \$10 million in revenues in at least one year during 2016-2020) that exceed expected profits (the average profit for each firm during 2014-2019 multiplied by their 2020 total revenues). Busby et al. (2021) obtain a \$7.9 billion static cost estimate for additional tax revenue from such an excess profits tax for the year 2020. The authors used forecasts for corporations' profits in 2020 made using industry-level GDP growth projections because at the time of their study data on real profits was not yet available.

There are several historical and more recent studies that discuss the invested capital approach. According to Christians and Magalhaes (2020), the United States implemented an 80% excess profits tax on earnings above 8% of tangible assets to finance its wartime needs in 1918. On average, U.S. multinational companies earned 22% returns on assets during 2016-2019 (Christians and Magalhaes, 2020; Cobham et al., 2019), 8% as average return on assets, and the remainder as excess return on assets. Avi-Yonah (2020) mentions a corrected version of the same approach and argues that a fair return on invested capital is 8 percent on the first \$5 million, 6 percent on the next \$5 million, and 5 percent on invested capital beyond \$10 million. The amount of invested capital is all the cash and property investment in the corporation, all profits prior to the taxable year plus 50 percent of current debt, reduced by amounts distributed to stockholders other than earnings and profits (Avi-Yonah, 2020). Plehn (1920) highlights that the rate of return on capital could be arbitrarily declared as the normal profit rate and the government could tax anything that exceeds that as excess or (at that time) war profits. Great Britain set different normal rates for specific businesses in the 1920s (for risk or other peculiar reasons), i.e. the aircraft business had a 15 percent normal rate, 9 percent above the general rate (Plehn, 1920). In 1918, the United States stipulated an 8 percent normal rate of return on capital. The general rate of excess profits taxation was 30 percent for return on capital between 8 and 20 percent, and 65 percent for return on capital

above 20 (Plehn, 1920). During wartime, the tax rate on excess profits was 80 percent. According to Plehn (1920), from 1920 (for 1919 profits) onwards, the excess profits tax rate dropped to 20% for return on capital below 20 percent and 40% above that threshold. The authors of the Tax Foundation report (1940) suggest a maximum excess profit credit of 10% on invested capital and a minimum credit of not less than 6% on the first \$500 thousand of invested capital, plus 4% on the remainder of invested capital.

In our study we use the trend-adjusted average earnings approach for several reasons: first, this approach is easier for governments to implement as governments only need to know the MNCs' profits/losses in the current year and a few previous years (two previous years of profit/losses statement is enough to calculate MNCs' average earnings in comparison with the current year), whereas for the invested capital approach governments also need the MNCs' capital statements; second, for the invested capital approach, governments would need to estimate and establish the normal rate of return to capital in order to measure excess profits; third, in the average earnings approach there is only one measure that MNCs could manipulate (profit/losses) whereas in the invested capital approach there are two such measures (profits/losses and capital).

2.1 THE TREND-ADJUSTED AVERAGE EARNINGS APPROACH

The standard average earnings approach does not take into account the companies growth trends when estimating their average earnings before the extraordinary event. This likely results in an overestimation of their excess profits. In this study we develop a new trend-adjusted average earnings approach, which corrects for the estimated trend in growth rate and thus decreases the bias in the excess profits estimation (and hence is more conservative in the sense that it results in lower estimates of potential tax revenue gains). In this study, we estimate excess profits using this trend-adjusted average earnings approach.

The standard average earnings approach is calculated as follows:

$$E_i = Y_{i, 2020} - Y_{i, 2014-2019}$$

Where: E_i is the excess profit for company i ; $Y_{i, 2020}$ is the profit of company i in 2020; $Y_{i, 2014-2019}$ is the average profit of company i during the 2014-2019 period. The trend-adjusted average earnings approach with estimated growth rate is calculated as

$$E_i = Y_{i, 2020} - Y_{i, 2020, ctrf},$$

where $Y_{i, 2020, ctrf}$ is a counterfactual profit of company in 2020, calculated as:

$$Y_{i, 2020, ctrf} = 1/6 \sum_{t=0}^5 (Y_{i, 2014+t} + (6-t) \beta_i),$$

where β_i is the estimated yearly growth for the company, which we estimate as linear, and calculate from the regression:

$$Y_{i,t} = \alpha_i + \beta_i time_i + \epsilon_i.$$

We calculate the potential tax revenue by multiplying E_i by a potential tax rate. Given that profits are already taxed at the country level (at rates around 10–25%; only Germany had a statutory corporate income tax rate of 30% in 2021 and no EU member state had a statutory corporate income tax rate higher than that), we use a range of tax values between 10 and 70 percent. We then aggregate the potential tax revenues by headquarter country and by sector.

We then use additional information that enables us to attribute excess profit at the host country level. We calculate $S_{n \times m}$ as the share of activity (either number of employees or share of profits) of MNCs headquartered in the n headquarter countries in each of the m European host countries. We then take the product of the headquarter country level $E_{n \times 1}$ and $S_{m \times n}$ to obtain the excess profits ($E_{1 \times m}$) in each host country.

We collected data on multinational corporations from Bureau van Dijk's Orbis database. Orbis is the best available data source for multinational corporations with a presence in the European Union and, at the same time, Orbis has the best coverage for Europe among all world regions (Garcia-Bernardo, Janský & Tørsløv, 2021). We restricted our sample to companies with operating revenues (turnover) above \$100 million (€81 million) and with at least one subsidiary in the European Union. We excluded companies without recent financial data, and also excluded companies classified by Orbis as "public authorities, states and governments". We use the standard NACE Rev. 2 codes for business sectors. Our data covers 8,292 MNCs with at least one subsidiary in the European Union, 1,763 of which have excess profits.

We use Country-by-Country Report data from the OECD (2021) to understand the share of profits attributable to the EU member states. We preprocessed this data as in Garcia-Bernardo & Jansky (2021). For each headquarter country (or home

country, i.e. the country in which the multinational corporation has its headquarters or its parent company), we calculated the share of profits and the share of employment (Tables A3 and A4 in the Appendix) within each host country (i.e. country where a subsidiary of the multinational corporation is located). Turnover is not suitable for the purpose of attributing profits to the EU member states, as there is no data on the source of turnover, but only on the place where it is booked and, as a consequence, turnover is heavily affected by profit shifting. Until data on source-based turnover is available, information on employees is most suitable for attributing profits to the EU member states since it reflects real economic activity and is least likely to be affected by profit shifting.

Our results are estimated in US dollars and, when we discuss the estimated values in euros for illustrative purposes, we use the spot exchange rate of 1.2271 US dollars to 1 euro for 31 December 2020 reported by the European Central Bank (2020).

04

GLOBAL EXCESS PROFITS AND TAXES

To begin with, we apply the standard average earnings approach and the trend-adjusted average earnings approach to the data. Table A1 presents the comparison of summary statistics for these two approaches. The standard average earnings approach (which does not account for company growth) yields 2,526 MNCs with excess profits in comparison with 1,763 when we use the trend-adjusted average earnings approach. The standard average earnings approach does not take into account the MNCs' growth rates and therefore overestimates their excess profits: the total excess profits made by MNCs with at least one subsidiary in the European Union are calculated as \$702 billion or €572 billion using the standard average earnings approach, whereas with the trend-adjusted average earnings approach these estimates are \$447 billion or €364 billion. In contrast, the highest excess profit among MNCs is underestimated when using the standard average

earnings approach: \$42 billion or €34 billion in comparison with \$47 billion or €38 billion with the trend-adjusted average earnings approach.

Applying the trend-adjusted average earnings approach detailed in section 2, we estimate that multinational corporations with a presence in the European Union made excess profits of \$447 billion (€364 billion) in total in the year 2020. We find excess profits for multinational corporations headquartered in all countries. If an excess profits tax were to be applied to these excess profits to finance economic recovery after the pandemic, governments worldwide could raise up to \$300 billion (€244 billion) with a 70% excess profits tax rate (Table 1). These estimates are based on the total global profits of all multinational corporations with a presence in the European Union, i.e. any multinational corporation with at least one subsidiary in the European Union.

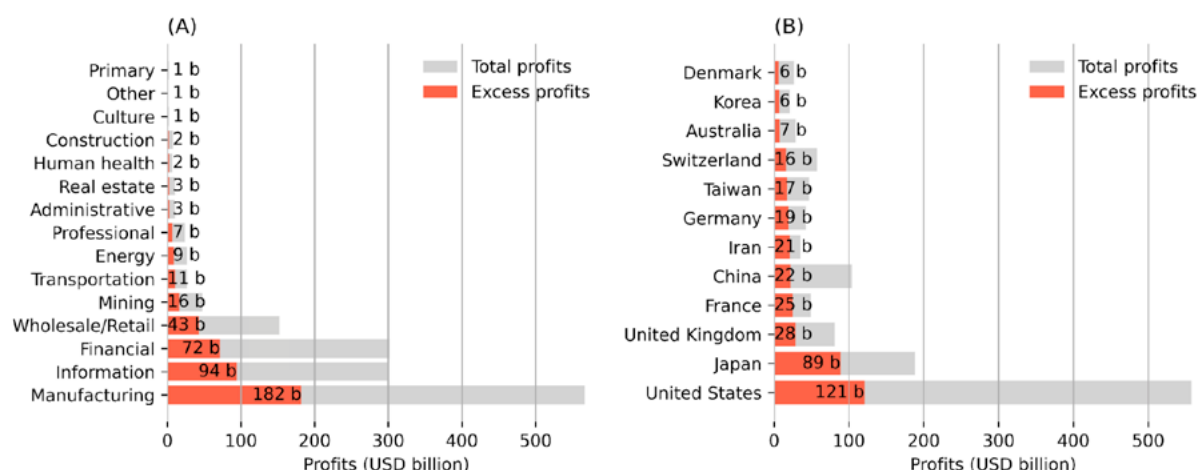
Table 1. Excess profits tax revenue for various tax rates on excess profits earned by MNCs with European Union subsidiaries and operating revenue (turnover) of more than \$100 million

	Tax rate						
	10%	20%	30%	40%	50%	60%	70%
Excess profits tax revenue, billion USD	45	90	134	179	224	268	313

Notes: We use the selected tax rates for illustrative purposes only. Source: Authors on the basis of the Orbis data.

Next, we break down the MNCs' excess profits by sector. Excess profits in 2020 are concentrated in manufacturing (NACE code C), where they amounted to \$182 billion or €148 billion (41% of the sector's total profits), the information and communication sector (NACE code J), where they amounted to \$94 billion or €76 billion (21 % of the total), and the financial sector (NACE code K), where they amounted to \$72 billion or €58 billion (16 % of the total).

Figure 1. Excess profits (in red) and total profits (in grey) of MNCs with European Union subsidiaries and operating revenues (turnover) larger than \$100 million, by (A) industry and (B) headquarter country.



Notes: We use NACE Rev. 2 industry codes. Source: Authors on the basis of the Orbis data.

Next, we investigate the location of the MNCs' headquarters for those MNCs that made excess profits in 2020. The United States (\$121 billion or €98 billion) and Japan (\$89 billion or €72 billion) are the countries with the largest excess profits (Figure 1B). MNCs headquartered in all other countries made excess profits of below \$30 billion (or €24 billion): the United Kingdom (\$28 billion or €23 billion), France (\$25 billion or €20 billion), China (\$22 billion or €18 billion), Iran (\$21 billion or €17 billion), Germany (\$19 billion or €168 billion), Taiwan (\$17 billion or €14 billion), and Switzerland (\$16 billion or €13 billion). The complete list of countries presented in Table A2 in the Appendix.

Table 2. Excess profit per industry. The excess profit attributable to the company/companies with the highest excess profit is annotated as "Top 1", "Top 2", etc.

Sector	Number of companies	Excess Profit (USD billion)	Herfindahl index (%)			Excess profit (% total)				
			Excess Profit	2020 Profit	Expected 2020 Profit	Top 1	Top 2	Top 3	Top 4	Top 5
Manufacturing	836	182.1	2.0	1.3	1.4	6.4	12.6	17.6	21.5	24.8
Information	172	94.3	27.3	10.6	11.8	49.9	59.4	68.8	74.0	77.0
Financial	262	71.6	2.1	2.2	2.7	4.8	9.3	13.6	17.7	21.9
Wholesale/Retail	149	42.9	9.6	9.6	11.2	20.4	38.0	47.4	53.5	58.1
Mining	18	16.0	16.0	19.8	29.8	22.1	42.8	63.1	73.3	81.7
Transportation	45	10.7	7.1	7.4	10.8	11.1	22.0	32.6	41.9	50.8
Energy	22	9.4	14.8	11.5	13.2	24.2	46.5	59.3	69.1	77.0
Professional	117	6.6	5.1	9.9	15.5	12.8	22.8	31.1	38.0	42.7
Administrative	30	2.9	21.3	15.7	15.2	42.3	55.9	61.8	67.4	72.7
Real estate	21	2.7	20.5	37.1	48.7	31.0	56.0	75.3	81.3	86.6
Human health	17	2.5	26.0	22.1	22.7	36.5	69.8	77.9	85.5	88.9

Table 3. Excess profit per headquarter country. The excess profit attributable to the company/companies with the highest excess profit is annotated as "Top 1", "Top 2", etc.

Headquarter country	Number of companies	Excess Profit (USD billion)	Herfindahl index (%)			Excess profit (% total)				
			Excess Profit	2020 Profit	Expected 2020 Profit	Top 1	Top 2	Top 3	Top 4	Top 5
United States	291	120.6	2.7	2.9	3.3	7.4	14.7	21.0	26.9	30.9
Japan	198	88.8	29.2	10.6	7.4	53.0	58.5	63.7	67.2	70.1
United Kingdom	121	27.9	5.0	6.2	8.4	11.7	21.6	29.8	36.7	41.9
France	45	25.2	27.1	18.6	15.0	44.9	67.4	75.9	84.0	90.4
China	163	22.0	2.7	6.7	9.0	6.3	12.0	17.2	22.2	26.5
Iran	5	21.1	26.6	26.3	27.0	42.7	58.4	73.8	89.1	100.0
Germany	63	19.4	38.8	16.1	16.2	60.0	74.5	80.6	84.1	87.5
Taiwan	79	17.1	15.6	20.8	24.8	35.7	45.9	52.2	57.8	63.3
Switzerland	28	16.1	20.2	23.7	27.1	27.5	51.7	73.9	86.4	91.0
Australia	14	7.3	32.2	30.4	38.1	48.4	70.8	89.2	94.1	96.2
Korea	57	6.4	7.1	5.5	6.2	14.6	28.2	38.4	47.7	52.1
Denmark	59	6.1	29.3	27.5	27.1	49.0	69.2	78.2	82.9	84.9
Canada	35	5.5	8.3	10.4	11.9	18.0	28.7	38.3	46.6	53.5
Sweden	90	5.5	7.1	5.5	6.8	15.2	30.0	38.8	47.0	52.0
Finland	46	4.4	61.6	27.5	9.3	78.2	82.3	85.9	87.4	88.8

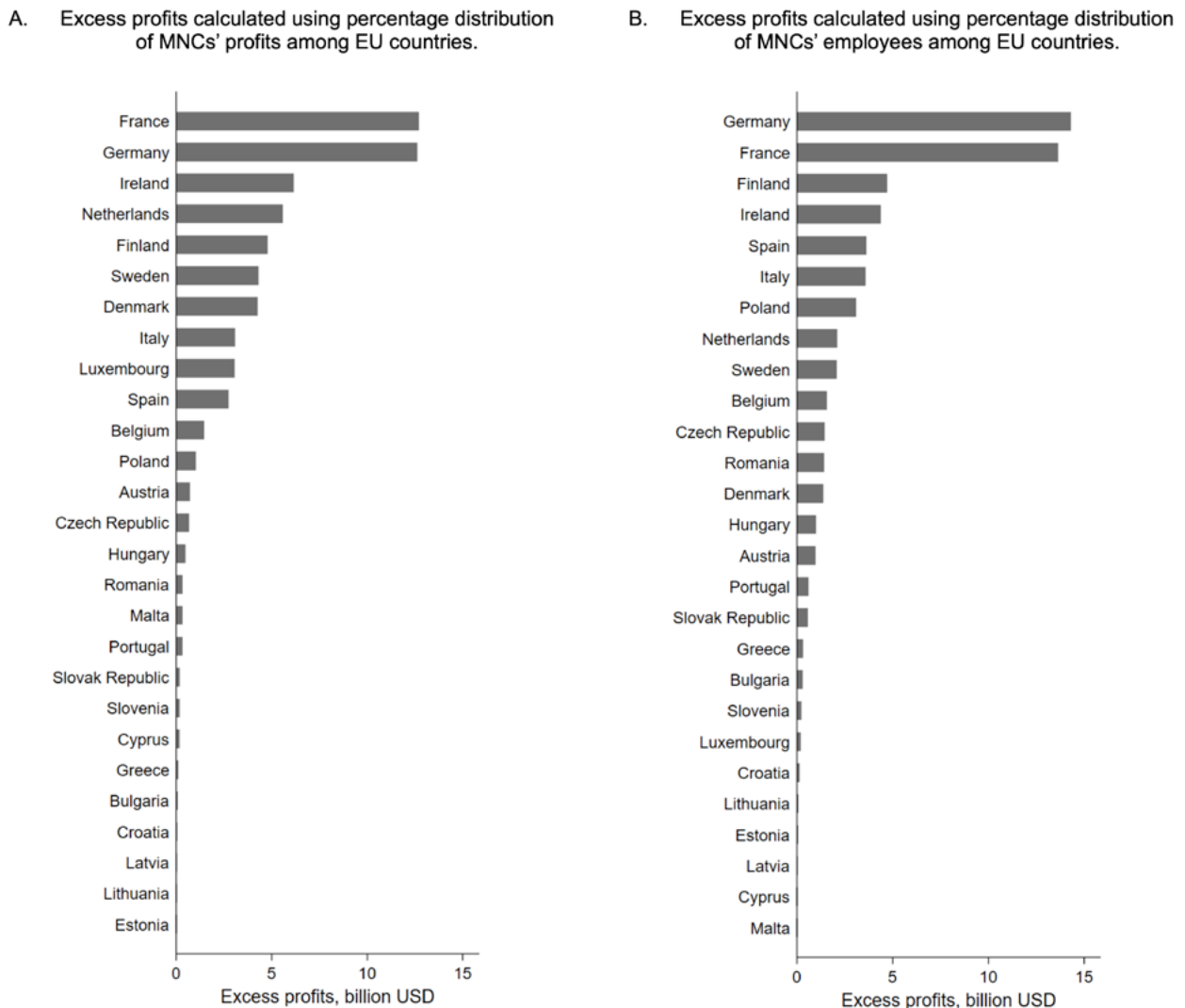
EUROPEAN UNION'S EXCESS PROFITS AND TAXES

Finally, we investigate the extent to which these results are driven by individual companies (Tables 2 and 3). We find that in the information and communication sector one company was responsible for 50% of the sector's excess profits in 2020, while the top five companies (by excess profits) were jointly responsible for 77% of the sector's excess profits (Table 2). The manufacturing and financial sectors were the least concentrated (although these are also the sectors with the largest number of firms with excess profits). In those two sectors, the top five companies were responsible for less than 25% of the sector's total excess profits (Table 2). Excess profits were also highly concentrated in the mining, energy, real estate and human health sectors, where the top five companies were responsible for over 75% of excess profits in each sector (Table 2). The concentration of excess profits (measured using the Herfindahl index, which is defined as the sum of squared shares of all firms in an industry and is used in the industry concentration literature, e.g. Bajgar et al, 2019) was much larger than expected (based on real 2020 profits compared to expected 2020 profits) in the information and administrative sectors (Table 2). The picture is similar when we classify companies by their headquarter country (Table 3): excess profits in 2020 were extremely concentrated in Japan, France, Germany, Switzerland, Finland, Australia and Denmark, while only moderately concentrated in the United States, the United Kingdom and China. These last three countries were,

however, also the ones where the largest numbers of companies with excess profits were located. Concentration of excess profits (measured using the Herfindahl index) was larger than expected (based on 2020 profits compared to expected 2020 profits) in Japan, France, Germany and Finland (Table 3).

Finally, we use CBCR data to estimate the share of excess profits originating from each EU member state (see methods). Figure 2 shows the excess profits by host country, calculated using the share of the MNCs' profits in that country (Figure 2A) and the share of the MNCs' employees in that country (Figure 2B). When excess profits are attributed according to employee shares, MNCs made their largest excess profits in Germany (\$14.3 billion or €11.6 billion) and France (\$13.6 billion or €11 billion), followed by Finland (\$4.7 billion or €3.8 billion), Ireland (\$4.3 billion or €3.5 billion), Spain (\$3.6 billion or €2.9 billion) and Italy (\$3.5 billion or €2.8 billion). When excess profits are attributed according to profit – which are distorted by profit shifting – then the largest excess profits apparently originated in France (\$12.6 billion or €10 billion), Germany (\$12.6 billion or €10 billion), Ireland (\$6.1 billion or €4.9 billion), the Netherlands (\$5.5 billion or €4.4 billion, in comparison to \$2.1 billion or €1.7 billion when profits are attributed according to employee shares) and Luxembourg (\$3.1 billion or €2.5 billion in comparison to \$0.1 billion or €0.08 billion when profits are attributed according to employee shares).

Figure 2. Excess profits of MNCs' with subsidiaries in the EU with operating revenues of more than \$100 million



Notes: We present the estimates by host country; EU members states only. Source: Authors on the basis of the Orbis data.

Figure 3 (Panel A and Panel B) and Tables A5-A6 present the potential excess profits tax revenue that governments could collect, using various excess profits tax rates for illustration. When excess profits are distributed according to the reported location of profits (Figure 3A), the total excess profits tax revenue for all EU member states together would be \$6.5 billion or €5 billion with a 10% tax rate, \$18.5 billion or €15.1 billion with a 30% tax rate, \$32.7 billion or €26.6 billion with a 50% tax rate, and \$45.8 billion or €37 billion with a 70% tax rate. When excess profits are distributed according to the location of the MNCs' employees (Figure 3B), the total excess profits tax revenue for all EU member states together would be \$6.2 billion or €5 billion with a 10% tax rate, \$19.6 billion or €15.9 billion with a 30% tax rate, \$30.9 billion or €25 billion with a 50% tax rate, and \$43.2 billion or €35 billion with a 70% tax rate. As an illustrative comparison, the estimated revenue potential gain for the 70% tax rate is, for example, equivalent to around 80% of the total amount of grants offered to states (\$338 billion or €275 billion over 7 years, or \$56 billion or €45 billion per year) or 38% of the annual Recovery and Resilience Facility budget (\$723.8 billion or €589 billion over 7 years).

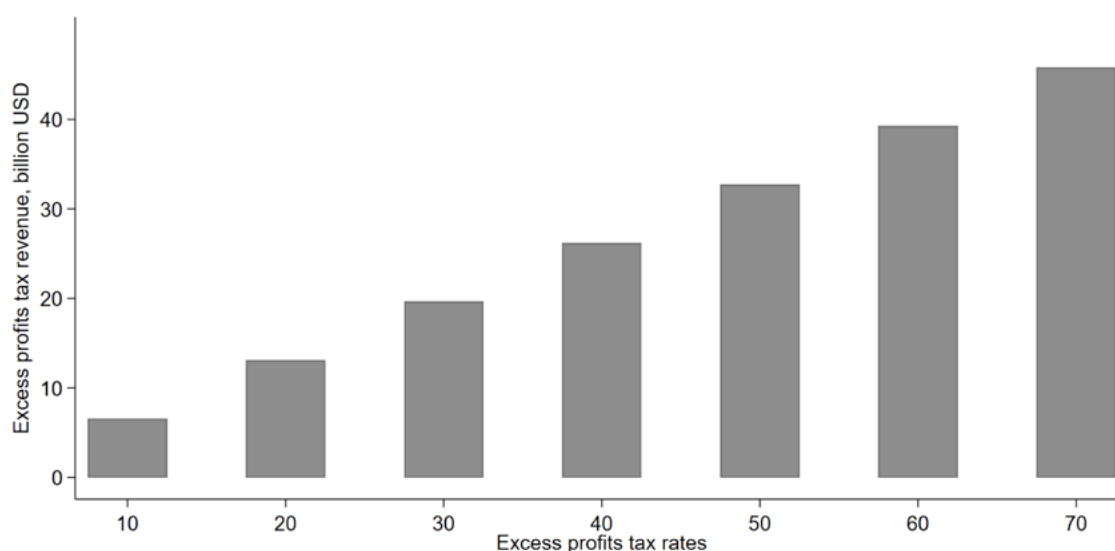
Table 4. Excess profits tax revenue across all EU member states arising from MNCs with European Union subsidiaries and operating revenue (turnover) of more than \$100 million.

Tax rate:		10%	30%	50%	70%
billion USD	profits	6.54	18.53	32.69	45.76
billion EUR	profits	5	15.1	26.6	37
billion USD	employees	6.18	19.61	30.89	43.24
billion EUR	employees	5	15.9	25	35

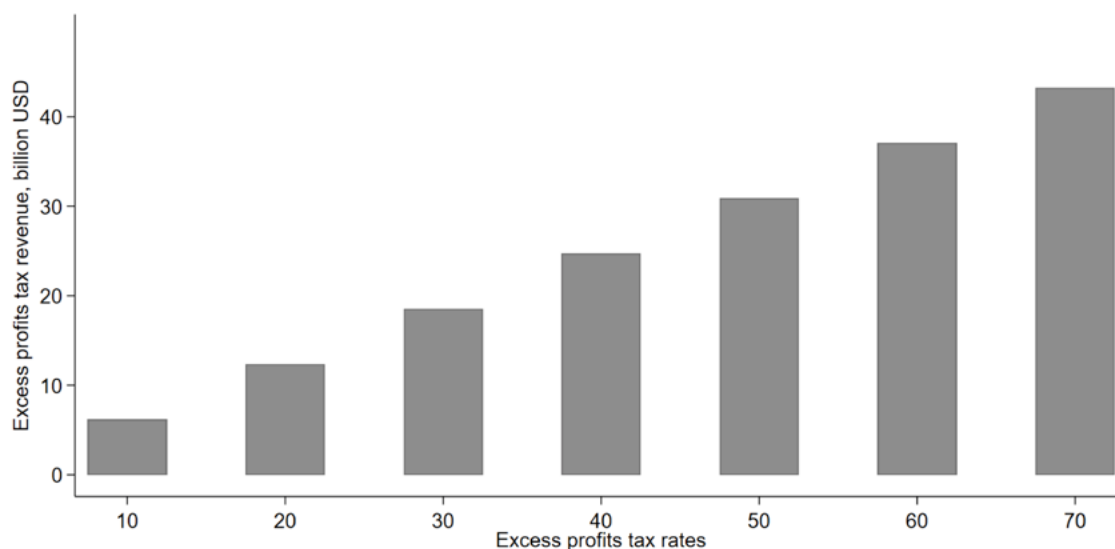
Notes: We use the selected tax rates for illustrative purposes only. Source: Authors on the basis of the Orbis data.

Figure 3. Excess profits tax revenue from MNCs with EU subsidiaries and operating revenue of more than \$100 million

Panel A. Calculated using reported percentage distribution of MNCs' profits among EU countries.



Panel B. Calculated using percentage distribution of MNCs' employees among EU countries.



Notes: The relationship between tax rates and potential revenue is modelled as a linear one. Source: Authors on the basis of the Orbis data.

06

CONCLUSION

Since early 2020, countries' tax revenues have been substantially affected by the COVID-19 pandemic. An excess profits tax could be implemented to finance the economic recovery and cover some of the costs of the pandemic. We have estimated the excess profits made during the pandemic by the biggest MNCs with a presence in the European Union, using the newly developed trend-adjusted average earnings approach. To provide estimates of the tax revenue potential these excess profits represent, we have also suggested possible tax bases and tax rates that could be used for an excess profits tax.

We have found that large multinational corporations with a presence in the EU made excess profits totalling USD 447 billion (€364 billion) worldwide in 2020, and that the largest shares of these excess profits were made by MNCs' headquartered in the United States (\$120 billion or €97 billion) and Japan (\$88 billion or €71 billion). We have further estimated that MNCs' subsidiaries in the European Union generated \$60 billion of those excess profits, of which the largest shares were in Germany and France (both \$13 billion or €10 billion).

Our findings show that governments in the European Union could collect up to \$6 billion (€4.8 billion) in excess profits tax revenue with a 10% excess profits tax rate, \$18 billion (€14.6 billion) with a 30% tax rate, \$30 billion (€24 billion) with 50% excess profits tax rate, and \$43 billion or €35 billion with a 70% excess profits tax rate. How corporations would behave in response to such additional taxation (e.g. whether profit shifting to tax havens would increase) is beyond the scope of this study. Our findings may be useful for policymakers addressing the question of how to finance economic recovery from the pandemic. If EU policy makers were to introduce such a tax, they could consider obtaining relatively modest revenues for each individual member state or agreeing it as a new EU tax-based resource with which to finance the recovery or the EU budget.

For the EU as a whole, regardless of whether it were to be implemented as an EU own resource or new revenue source for individual member states, such an excess profits tax is comparable to other recently introduced or discussed new taxes. Depending on the chosen tax rate, an excess profits tax could result in €5 billion to €35 billion in new revenue, although likely for one year only. For comparison, the European Commission estimates a revenue of €7 billion per year from the plastics own resource, which was introduced in 2021 and consists of a national contribution based on the amount of non-recycled plastic packaging waste (European Commission, 2018b). Another example is an interim tax on certain revenue from digital activities that could generate an estimated €5 billion in revenues a year for member states if the tax was applied at a rate of 3% (European Commission, 2018a).

The COVID-19 pandemic led to a decrease in tax revenue and increased the need for social and health spending, and this combination forced governments to find new revenue sources. As one such source, excess profits tax revenue could help governments to finance economic recovery and cover the costs generated by the pandemic (Gaspar et al., 2021; Busby et al., 2021; Abdel-Kader and de Mooij, 2020; Christians and Magalhaes, 2020). By estimating the scale of that potential additional revenue, we contribute new evidence to a recent stream of pandemic-focused excess profits tax literature.

The revenue potential we have estimated in this study is a crucial input into policy makers' decision-making about the introduction and design of an excess profits tax. Besides the potential revenues, further important considerations include a variety of costs and benefits of such taxation. Their evaluation is beyond the scope of the current study, however we discuss them here very briefly on the basis of the existing literature. On the one hand, there are several advantages to an excess profits tax. Excess profits tax is designed to capture additional profits that were made, due to

external events, at a time when other businesses could not operate during the crisis (Collier et al., 2020; Christians and Magalhaes, 2020). Additionally, excess profits tax or windfall tax is non-distortive and economically efficient in one-time ex-post form (Collier et al., 2020). Furthermore, Christians and Magalhaes (2020) argue that excess profits taxes have better prospects of covering public spending due to the pandemic than consumption-based taxes. Moreover, Oxfam (2020) proposed that a COVID-19 pandemic profits tax could help with several issues simultaneously: it would hold incentive for a price increase on necessary goods and services after the crisis, redistribute the oversized profits, decrease the financial and market power of companies with excessive profits from the pandemic, and raise revenue to pay for key equalizing public services or fund healthcare workers during the pandemic.

Despite these strengths in its favour, arguments have also been raised against the introduction of an excess profits tax, one of which is that an excess profits tax is, like any other tax, susceptible to tax avoidance. Indeed, an excess profits tax could encourage MNCs

to implement tax avoidance schemes (e.g. acquiring loss-making companies or shifting profits to tax havens). As a consequence, Avi-Yonah (2020) recommends adopting mandatory consolidation at the above 50% level, including foreign subsidiaries and restricting corporations from acquiring corporations with losses to offset profits. Such tax avoidance is, however, less likely during the pandemic: Collier et al. (2020), for example, argue that political and public tolerance for profit shifting decreased during the pandemic, since any company that fails to pay its fair share of tax is deemed to be particularly reprehensible at a time of national crisis. Last, but not least, corporations' owners could shift any increase in their tax burden onto workers or consumers; the incidence of the excess profits tax is as unclear as that of other corporate taxes studied in the academic literature (Clausing, 2013, Suárez Serrato & Zidar, 2016, Fuest et al, 2018). These arguments could be addressed through design features of the excess profits tax or complementary regulatory measures, but it is beyond the scope of this study to discuss these.

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APPENDIX

Table A1. Comparison of standard average earnings approach estimates and trend-adjusted average earnings approach estimates.

Statistic	Standard average earnings approach	Trend-adjusted average earnings approach
Number of companies with excess profits	2,526	1,763
Total excess profits, billion USD	702	447
Total excess profits, billion EUR	572	364
Mean of the excess profits among MNCs, billion USD	0.27	0.25
Mean of the excess profits among MNCs, billion EUR	0.22	0.203
The highest excess profit among MNCs, billion USD	42	47
The highest excess profit among MNCs, billion EUR	34	38
The lowest excess profit among MNCs, million USD	0.01071	0.00288
The lowest excess profit among MNCs, million EUR	0.00873	0.00235

Table A2. Excess profits by headquarter country earned by MNCs with European Union subsidiaries and operating revenue (turnover) of more than \$100 million.

#	Headquarter Country	Excess profits, billion USD	#	Headquarter Country	Excess profits, billion USD
1	United States	120.566	35	Austria	0.350
2	Japan	88.762	36	Chile	0.300
3	United Kingdom	27.919	37	Poland	0.299
4	France	25.234	38	Saudi Arabia	0.296
5	China	22.042	39	Greece	0.290
6	Iran	21.142	40	Hungary	0.288
7	Germany	19.419	41	Russia	0.242
8	Taiwan	17.083	42	Lithuania	0.166
9	Switzerland	16.053	43	Slovenia	0.163
10	Cayman Islands	13.336	44	New Zealand	0.143
11	Australia	7.312	45	Malta	0.141
12	Korea	6.443	46	Iceland	0.115
13	Denmark	6.073	47	Kazakhstan	0.107
14	Canada	5.464	48	Mexico	0.103
15	Sweden	5.460	49	Egypt	0.068
16	Finland	4.364	50	Gabon	0.060
17	Other	4.135	51	Marshall Islands	0.053
18	Netherlands	4.048	52	Colombia	0.050
19	India	3.970	53	Sri Lanka	0.030
20	Ireland	3.691	54	Andorra	0.028
21	Bermuda	2.943	55	Romania	0.026
22	Luxembourg	2.688	56	Latvia	0.024
23	Italy	2.554	57	Philippines	0.023
24	Spain	2.129	58	Croatia	0.020
25	Singapore	1.708	59	Cyprus	0.017
26	Brazil	1.650	60	Qatar	0.017
27	Norway	1.411	61	Vietnam	0.015
28	Hong Kon	1.392	62	Pakistan	0.014
29	Thailand	1.144	63	Serbia	0.008
30	Belgium	1.105	64	Bangladesh	0.006
31	Malaysia	0.973	65	Indonesia	0.005
32	Portugal	0.748	66	Macedonia	0.005
33	Israel	0.561	67	British Virgin Islands	0.001
33	Turkey	0.417			

Table A3. Percentage distribution of profits among EU host-countries by MNCs' headquarter countries.

EU member states / headquarter countries	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary
Australia	0.01	0.08	≈ 0			0.01	0.06			0.27	1.32	≈ 0	≈ 0
Austria	65.26												
Belgium		7.47								0.33	0.46		
Brazil	2.92	0.02								0.03	0.32		
Canada										0.26			
China	≈ 0	0.03	≈ 0	≈ 0	0.02	0.01	≈ 0		≈ 0	0.07	0.29	0.01	0.07
Denmark	0.22	0.21	0.03	0.03		0.13	67.11	0.06	1.34	0.84	1.52	0.04	0.27
Finland									100				
France	0.16	02.02	0.07	0.02		0.68	0.13		0.09	45.79	2.89	0.09	0.34
Germany	1.18	0.97	0.10	0.09		1.53	0.18	0.01	0.48	1.34	50.90	0.13	0.65
Greece												4.83	
India	0.01	0.32		≈ 0		0.05			0.01	0.06	0.71	≈ 0	≈ 0
Indonesia	≈ 0									0.01			
Ireland													
Italy	0.63	0.19	0.22	0.36	0.10	0.73	0.12	≈ 0	0.09	2.27	4.55	0.06	0.21
Japan	0.06	0.19	≈ 0	≈ 0	0.16	0.06	0.04	≈ 0	0.02	0.16	0.68	≈ 0	0.04
Latvia					0.01	0.18		0.09					
Luxembourg		3.67	0.01	0.06	0.65	0.27	0.28	≈ 0	02.08	3.93	07.05	0.07	0.25
Malaysia													
Mexico	4.25	0.05		0.03		0.07	0.08		≈ 0	0.13	0.33		0.10
Netherlands													
Poland			0.03										
Singapore											0.04		
Slovenia				2.73									
Spain	0.11	0.15		0.01	0.02	0.02	0.11	≈ 0	0.07	1.77	1.50	0.07	0.03
Sweden													
Switzerland	0.41	0.10	0.07	0.02		0.21	0.04	≈ 0	0.66	0.92	2.24	0.05	
United States	0.01	0.29	0.01	0.01		0.06	0.05	≈ 0	0.03	0.24	0.34	0.02	0.16

Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovak Republic	Slovenia	Spain	Sweden
0.18	0.05			0.10	0.01	0.06	0.02	0.01	≈ 0	≈ 0		0.05	0.03
				4.34		1.17	0.05		0.01			0.55	
				02.07		1.37		0.15					
						0.45							
0.08	0.02			0.06	≈ 0	0.09	0.01		≈ 0	≈ 0		0.01	0.05
0.61	0.45		0.03	0.16		02.05	0.45	0.02	0.07	0.06	0.03	0.22	2.54
0.72	2.51	0.01		2.18	0.13		0.82	0.64	0.58	0.18		2.85	0.37
0.71	1.25	0.01	0.02	2.35	1.41	2.50	0.64	0.27	0.36	0.41	0.05	1.24	0.72
0.01	0.08	≈ 0	≈ 0	0.01	≈ 0		0.05	≈ 0	0.04	≈ 0		0.11	0.08
	≈ 0				≈ 0							≈ 0	
100													
0.94	58.86	≈ 0	≈ 0	2.61	0.01	1.18	0.36		0.20	0.33	0.02	8.85	0.10
0.30	0.18	≈ 0	≈ 0	0.01	≈ 0	0.98	0.07	0.01	0.04	≈ 0	≈ 0	0.22	0.09
		74.48	0.17						0.05	02.08	0.13		0.19
		0.14	0.01			10.25	1.50	0.25	0.05	0.07	0.04	03.03	21.80
				0.35									
		≈ 0	≈ 0		≈ 0		0.03	0.01	0.01	0.08	0.22	1.53	0.02
						29.92							
							91.78						
						0.47							
											86.59		
0.87	0.67	≈ 0	≈ 0		0.23	1.23	1.13	1.52	0.10		0.01	43.04	
													56.43
0.06	0.37	≈ 0	0.01	2.39	0.04	0.48	0.38	0.08	0.15	0.05	0.11	0.61	0.52
1.45	0.35	≈ 0	0.01	1.23		1.97	0.15	0.03	0.02	0.03	≈ 0	0.19	0.05

Table A4. Percentage distribution of employees among EU host-countries by MNCs' headquarter countries.

country	Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary
Australia	0.02	0.10	0.01		≈ 0	0.02	0.02		0.02	1.52	0.75	0.01	0.01
Austria	32.67												
Belgium		24.24								9.34	5.23		
Brazil	0.03	≈ 0								0.08	0.17		
Canada										0.70			
China	0.01	0.04	≈ 0	≈ 0	≈ 0	0.02	0.01		≈ 0	0.09	0.23	0.01	0.02
Denmark	0.73	0.88	0.09	0.11	0.01	0.78	17.43	0.23	1.37	2.94	4.45	0.22	1.14
Finland									100				
France	0.24	1.42	0.09	0.04		0.65	0.13		0.10	40.03	3.76	0.08	0.38
Germany	1.89	0.64	0.33	0.28	0.01	2.35	0.33	0.05	0.21	2.30	45.11	0.27	1.55
Greece												40.95	
India	0.01	0.07	≈ 0	≈ 0	≈ 0	0.08	0.02	≈ 0	0.03	0.15	0.44	≈ 0	0.13
Indonesia	≈ 0									0.10			
Ireland													
Italy	0.82	0.30	0.44	0.78	0.03	0.71	0.12	0.02	0.15	2.52	3.50	0.23	0.58
Japan	0.07	0.27	0.06	≈ 0	≈ 0	0.26	0.04	≈ 0	0.05	0.58	0.92	0.01	0.19
Latvia					0.07	0.60		0.37					
Luxembourg	0.38	02.09	0.15	0.08	0.01	0.68	0.22	0.02	0.18	9.71	6.73	0.04	0.26
Malaysia													
Mexico	0.41	0.03	0.18	0.11	≈ 0	0.19	0.06	≈ 0	≈ 0	0.25	0.39		0.16
Netherlands													
Poland			0.12										
Singapore											0.29		
Slovenia				05.01									
Spain	0.14	0.16	0.05	0.06	≈ 0	0.35	0.04	≈ 0	0.03	1.52	1.81	0.16	0.06
Sweden													
Switzerland	1.20	0.54	0.44	0.12		01.05	0.35	0.09	0.43	3.27	7.38	0.24	0.45
United States	0.08	0.29	0.05	0.01	≈ 0	0.27	0.09	0.01	0.06	01.02	1.52	0.04	0.21

Germany	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Poland	Portugal	Romania	Slovak Republic	Slovenia	Spain	Sweden
0.11	0.07				≈ 0	≈ 0	0.06	0.11	0.06	≈ 0	≈ 0		0.13	0.06
					0.43		2.32	0.94		0.39			0.74	
	0.06				0.01		0.04		0.17				0.11	
							0.36						0.23	
≈ 0	0.06				≈ 0	≈ 0	0.03	0.02	≈ 0	0.01	≈ 0		0.03	0.14
0.36	0.66	0.08	0.37		0.04		1.35	03.08	0.64	0.31	0.51	0.15	2.85	2.37
0.18	2.41	0.02			0.19	≈ 0	1.17	2.31	0.68	1.26	0.22		3.51	0.49
0.22	1.51	0.04	0.07		0.14	0.02	01.02	2.37	0.45	1.68	1.12	0.16	2.11	0.66
0.07	0.06	≈ 0	0.04		≈ 0	≈ 0	0.33	0.19	0.02	0.05	0.02		0.13	0.09
	≈ 0						≈ 0	≈ 0					≈ 0	
100														
0.10	51.11	0.01	0.02		0.06	0.02	0.68	1.23	0.32	1.77	0.55	0.18	02.06	0.21
0.04	0.30	≈ 0	0.01		0.01	≈ 0	0.27	0.33	0.06	0.31	0.06	0.01	0.32	0.08
		57.28	0.40							0.90	1.99	0.21		0.48
0.11	4.19	0.08	0.03		1.26		0.97	2.51	0.60	1.43	0.11	0.03	3.43	0.58
					≈ 0		0.01							
≈ 0	0.05	0.02	≈ 0		≈ 0	≈ 0		0.77	0.05	0.08	0.04	0.03	04.05	0.01
							13.62							
								85.98						
							0.21							
												61.66		
0.11	0.81	≈ 0	0.01		0.02	0.01	0.25	1.30	2.22	0.24	0.08	0.01	42.36	0.07
														22.59
0.25	2.00				0.10		0.59	2.40	0.29	0.70	0.27	0.36	1.30	0.85
0.40	0.49	0.01	0.02		0.03	≈ 0	0.43	0.64	0.11	0.22	0.13	0.01	0.47	0.15

Table A5. Excess profits tax revenue originating from MNCs' subsidiaries in EU countries calculated using percentage distribution of profits among EU countries.

Host Country	Excess profits tax revenue, billions USD							
	Excess profits, billions USD	10% tax rate	20% tax rate	30% tax rate	40% tax rate	50% tax rate	60% tax rate	70% tax rate
Romania	0.32	0.03	0.06	0.10	0.13	0.16	0.19	0.23
Germany	12.61	1.26	2.52	3.78	5.04	6.31	7.57	8.83
Malta	0.32	0.03	0.06	0.10	0.13	0.16	0.19	0.22
Italy	3.07	0.31	0.61	0.92	1.23	1.54	1.84	2.15
Ireland	6.15	0.61	1.23	1.84	2.46	3.07	3.69	4.30
Austria	0.72	0.07	0.14	0.22	0.29	0.36	0.43	0.50
Denmark	4.26	0.43	0.85	1.28	1.71	2.13	2.56	2.99
France	12.70	1.27	2.54	3.81	5.08	6.35	7.62	8.89
Greece	0.11	0.01	0.02	0.03	0.04	0.05	0.07	0.08
Slovak Republic	0.19	0.02	0.04	0.06	0.07	0.09	0.11	0.13
Luxembourg	3.06	0.31	0.61	0.92	1.22	1.53	1.83	2.14
Spain	2.73	0.27	0.55	0.82	1.09	1.37	1.64	1.91
Portugal	0.32	0.03	0.06	0.09	0.13	0.16	0.19	0.22
Hungary	0.48	0.05	0.10	0.14	0.19	0.24	0.29	0.34
Poland	1.02	0.10	0.20	0.31	0.41	0.51	0.61	0.71
Sweden	4.30	0.43	0.86	1.29	1.72	2.15	2.58	3.01
Netherlands	5.57	0.56	1.11	1.67	2.23	2.79	3.34	3.90
Belgium	1.46	0.15	0.29	0.44	0.58	0.73	0.88	1.02
Bulgaria	0.07	0.01	0.01	0.02	0.03	0.04	0.04	0.05
Czech Republic	0.67	0.07	0.13	0.20	0.27	0.33	0.40	0.47
Croatia	0.05	0.01	0.01	0.02	0.02	0.03	0.03	0.04
Finland	4.78	0.48	0.96	1.43	1.91	2.39	2.87	3.34
Cyprus	0.17	0.02	0.03	0.05	0.07	0.08	0.10	0.12
Estonia	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Slovenia	0.18	0.02	0.04	0.05	0.07	0.09	0.11	0.13
Lithuania	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Latvia	0.03	0.00	0.01	0.01	0.01	0.01	0.02	0.02
Total	65.37	6.54	13.07	19.61	26.15	32.69	39.22	45.76

Table A6. Excess profits tax revenue originating from MNCs' subsidiaries in EU countries calculated using percentage distribution of employees among EU countries.

Host Country	Excess profits tax revenue, billions USD							
	Excess profits, billion USD	10% tax rate	20% tax rate	30% tax rate	40% tax rate	50% tax rate	60% tax rate	70% tax rate
Romania	1.41	0.14	0.28	0.42	0.56	0.71	0.85	0.99
Germany	14.31	1.43	2.86	4.29	5.72	7.15	8.58	10.01
Malta	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Italy	3.58	0.36	0.72	1.07	1.43	1.79	2.15	2.50
Ireland	4.37	0.44	0.87	1.31	1.75	2.19	2.62	3.06
Austria	0.97	0.10	0.19	0.29	0.39	0.48	0.58	0.68
Denmark	1.37	0.14	0.27	0.41	0.55	0.68	0.82	0.96
France	13.63	1.36	2.73	4.09	5.45	6.82	8.18	9.54
Greece	0.31	0.03	0.06	0.09	0.12	0.15	0.19	0.22
Slovak Republic	0.58	0.06	0.12	0.17	0.23	0.29	0.35	0.40
Luxembourg	0.19	0.02	0.04	0.06	0.08	0.10	0.11	0.13
Spain	3.62	0.36	0.72	1.09	1.45	1.81	2.17	2.54
Portugal	0.60	0.06	0.12	0.18	0.24	0.30	0.36	0.42
Hungary	0.99	0.10	0.20	0.30	0.40	0.50	0.59	0.69
Poland	3.09	0.31	0.62	0.93	1.24	1.55	1.86	2.17
Sweden	2.08	0.21	0.42	0.62	0.83	1.04	1.25	1.45
Netherlands	2.11	0.21	0.42	0.63	0.84	1.05	1.26	1.47
Belgium	1.56	0.16	0.31	0.47	0.62	0.78	0.94	1.09
Bulgaria	0.30	0.03	0.06	0.09	0.12	0.15	0.18	0.21
Czech Republic	1.44	0.14	0.29	0.43	0.58	0.72	0.86	1.01
Croatia	0.14	0.01	0.03	0.04	0.06	0.07	0.08	0.10
Finland	4.71	0.47	0.94	1.41	1.88	2.35	2.82	3.29
Cyprus	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Estonia	0.06	0.01	0.01	0.02	0.02	0.03	0.04	0.04
Slovenia	0.23	0.02	0.05	0.07	0.09	0.11	0.14	0.16
Lithuania	0.08	0.01	0.02	0.02	0.03	0.04	0.05	0.05
Latvia	0.04	0.00	0.01	0.01	0.02	0.02	0.03	0.03
Total	61.77	6.18	12.35	18.53	24.71	30.89	37.06	43.24



The Left in the European Parliament
Rue Wiertz 43 B-1047 Brussels
www.left.eu