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# Taxing windfall profits in the energy sector

Miroslav Palanský* Tijmen Tuinsma†

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**Abstract**

In this paper, we calculate the excess profits of energy and fossil fuel companies in the EU during the energy crisis on 2022-2023. A windfall tax on these profits was adopted, which we find could have generated €73.8 billion, nearly three times the officially reported collection. We document evidence for an avoidance response by large multinationals shifting profits to jurisdictions where the windfall profits tax was not in force. Using Czech country-by-country reporting data, we calculate the potential revenue of a permanent extension of the excess profits tax under different scenarios.

## 1 Introduction

Energy prices rose sharply in 2022 due to persistent supply–demand imbalances in the post-pandemic recovery, further exacerbated by Russia's invasion of Ukraine and the ensuing sanctions and countermeasures (Vernon and Baunsgaard, 2022). The surge in energy prices placed substantial financial pressure on households and firms, while fossil-fuel producers recorded extraordinary profits and rapidly rising share prices. This revived the policy debate on taxing profits that arise not from deliberate business decisions but from external shocks, crises, or sheer luck–commonly labelled windfall or excess profits.[1]

A standard policy response to such windfalls is the introduction of an additional tax levied only on profits above a normal, investment-sustaining level. Because the tax targets earnings not generated by marginal business effort, it is generally viewed as minimally distortionary, while its revenues can help ease the burden on crisis-affected households and support counter-cyclical fiscal measures (Vernon and Baunsgaard, 2022; Avi-Yonah, 2020; Azémar et al., 2022; Christians and Diniz Magalhaes, 2020; Hebous et al., 2022). For example, Dubinina et al. (2024) estimate that during the COVID-19 pandemic, a 10% tax on excess profits for large multinationals with activities in the EU could have raised $6 billion in additional revenue in 2020 alone, and François et al. (2022) propose a 33% tax on the rise in stock market capitalization of energy firms in the EU between January 2022 and September 2022, with €65 billion in potential revenue.

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[1]Alternative terminology includes non-routine, abnormal, super-normal, or residual profits (Christians, 2022). While nuanced differences between these terms may exist (depending on definitions), these terms are often used interchangeably. Throughout this paper, we will use excess and windfall profits interchangeably.

Windfall profits themselves are not new, and neither is their taxation. Historical precedents (often justified as curbing firms "trading on the world's misery") span the World Wars, the Korean War, the 1970s oil crisis, German unification, and various natural disasters in Australia and Japan (Hebous et al., 2022; Keith, 1951; Nicolay et al., 2023). For instance, during and after the First World War, an excess profits tax was implemented in at least 22 countries, with tax rates extending up to 95% in the US (Hebous et al., 2022; Plehn, 1920; Stamp, 1917).

The debate on excess profits taxation re-emerged during the COVID-19 pandemic (Avi-Yonah, 2020; Christians and Diniz Magalhaes, 2020; Hebous et al., 2022; Saez and Zucman, 2020). Even as the global economy fell into recession, several sectors accumulated exceptional profits. Dubinina et al. (2024) estimate that large multinationals that are active in the EU recorded $447 billion in excess profits in 2020 alone, around 42% of their total profits. Taxing such windfalls was proposed as a way to curb crisis-driven profiteering and finance pandemic-related expenditures, yet no country implemented an excess profits tax in that context.

The situation changed after Russia's invasion of Ukraine in 2022. The resulting spike in fossil-fuel prices generated massive windfalls in the energy sector precisely when governments were struggling to finance recovery spending, mitigate energy poverty, contain inflation, and maintain momentum in the transition to renewables. In response, the European Union adopted a regulation aimed at reducing electricity demand and redistributing surplus revenues from the energy sector.[2] Most Member States subsequently introduced a "solidarity contribution" or equivalent national measures, thereby temporarily taxing windfall profits recorded by energy companies (Vernon and Baunsgaard, 2022).

For example, Czechia introduced a tax on the windfall profits of fossil fuel companies and banks applicable from 2023 until 2025, expecting revenues of CZK 85 billion, CZK 39 billion, and CZK 25 billion for these three years respectively.[3] Actual revenues fell far short of these expectations. Public statements cite figures ranging from "up to five billion" collected (Finance Minister Zbyněk Stanjura)[4] to 39.1 billion[5] for 2023, but all available sources agree that collections were substantially below forecast. Moreover, a disproportionate share of the revenue came from the state-owned energy company ČEZ, while receipts from private firms were far lower than anticipated.

One plausible explanation is that some multinational groups subject to the tax adjusted their corporate structures to shift highly profitable activities to jurisdictions without a windfall tax, or increased their efforts to artificially shift profits away from jurisdictions in which they arise. Anecdotal evidence suggests that the energy group EPH relocated parts of its energy-trading operations-—and thus its profits-—to Switzerland.[6] Such behaviour is consistent with Chiocchetti and Moreau-Kastler (2025), who show that multinationals tend to book windfall

[2]See the Council Regulation (EU) 2022/1854 on an emergency intervention to address high energy prices: https://eur-lex.europa.eu/EN/legal-content/summary/emergency-intervention-to-address-high-energy-prices.html.

[3]See https://www.reuters.com/markets/europe/czech-finance-ministry-proposes-34-bln-windfall-tax-energy-banks-2022-10-06/.

[4]See https://www.euractiv.com/news/czechia-to-collect-significantly-less-windfall-tax-than-expected/

[5]See https://www.mfcr.cz/assets/attachments/2024-04-17_Macroeconomic-Forecast-April-2024.pdf.

[6]See e.g. https://www.reuters.com/business/energy/eph-shift-energy-trading-activities-czech-republic-after-windfall-tax-approved-2022-11-04/ or https://ekonomickydenik.cz/komu-stat-s-pomoci-windfall-tax-odsal-zisk-cez-zaplatil-30-miliard-za-nim-jsou-innogy-a-orlen-unipetrol/.

profits in low-tax jurisdictions. If this avoidance response is widespread, it materially weakens the revenue potential of windfall tax measures.

In this paper we study the excess energy profits during the energy crisis of 2022–2023 in the EU and, using Czech country-by-country data, with a focus on Czechia. We compare potential windfall tax revenues with officially reported collected proceeds of the solidarity contribution. Furthermore, we investigate whether energy firms exhibited a behavioural response to avoid the windfall profits tax. Finally, we provide a scenario analysis in which we estimate the potential revenue of a future permanent excess profits tax in Czechia. Based on these results, we conclude with robust policy recommendations for such proposals.

## 2 Background – EU Regulation 2022/1854

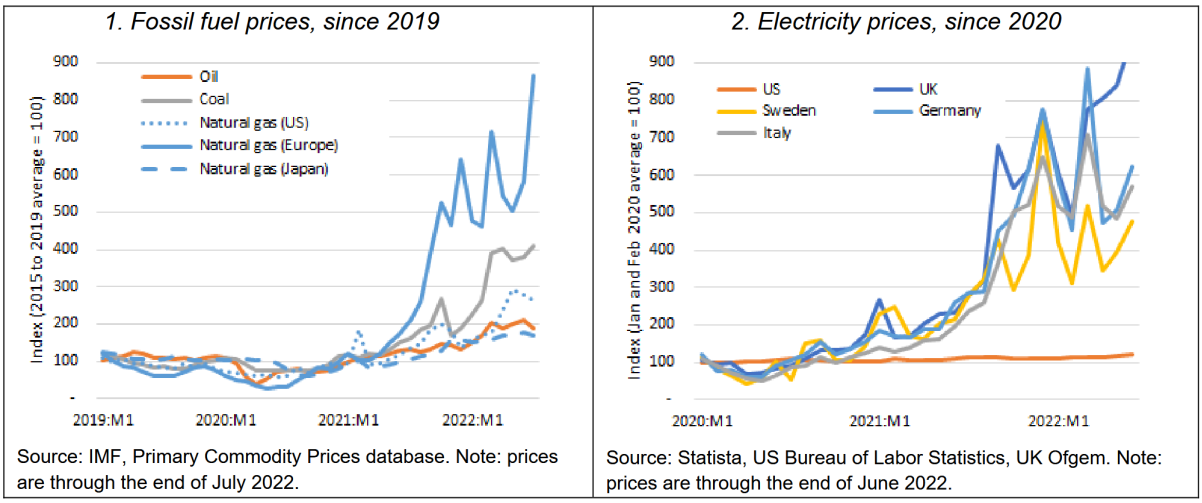
On 6 October 2022, the European Council adopted *Regulation 2022/1854 on an emergency intervention to address high energy prices*. The regulation acknowledges the exceptionally high prices in the electricity markets, mainly driven by the price rise for gas, which is a key input in electricity generation. The Russian invasion in Ukraine, and consequent sanctions and counter-measures, significantly reduced gas supply. The war also introduced uncertainty regarding the supply of other commodities including coal and petroleum (European Council, 2022). Additional factors exacerbating the imbalance in energy supply and demand included extremely high summer temperatures, which increased cooling demand, and the related drought, which reduced hydropower generation and nuclear energy generation (due to insufficient cooling water).

These imbalances resulted in a surge in electricity prices across all EU member states, which necessitated a policy response. Figure 1 copied from Vernon and Baunsgaard (2022) documents a large increase in gas prices, alongside significant increases in coal and oil prices, translating into extreme electricity price spikes. The regulation continues to acknowledge that companies operating in these sectors experienced sharp increases in profits without corresponding changes in cost structures or investment levels. Therefore, it introduces a solidarity contribution as a redistributive measure, requiring firms with surplus profits contribute proportionally to the financing of the energy crisis response.[7]

The solidarity contribution is in essence a tax on excess or windfall profits. Any definition of excess profits rests on the underlying assumption of a (firm-specific) benchmark level of 'normal' or 'routine' profits (Hebous et al., 2022). This comprises a safe return plus a risk adjustment, reflecting minimum earnings required to sustain investment. Profits exceeding these normal or routine returns are windfall or excess profits and are usually considered economic rent. They may consist of location-specific rent, firm-specific rent, and windfall profits due to unforeseen external events. Figure 2 from (Hebous et al., 2022) provides an illustration of the distinction between normal and excess profits. In historical applications of excess profits taxation, normal or routine profits are usually defined based on average profits over several preceding years or on an assumed normal rate of return to investments. The EU's energy solidarity contribution is implemented using the historical average definition of normal profits. Normal profits are

[7] In addition, the regulation included measures to reduce energy demand and imposed a cap on electricity market revenues at 180 EUR per MWh.

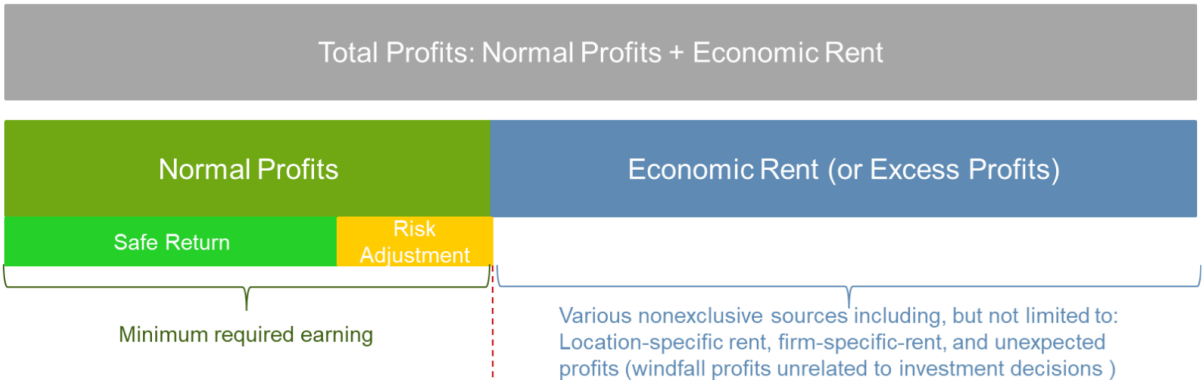
**Figure 1**




*Notes*: copied from Vernon and Baunsgaard (2022).

calculated using the average profits of the four fiscal years preceding the energy crisis (2018-2021).[8] A 20% margin is added on top, and profits recorded in 2022 or 2023 that exceed this margin are subject to the solidarity contribution. The applicable tax rate is determined by the Member States, subject to a minimum rate of 33%, and is levied in addition to regular corporate income taxes and other applicable charges. Member States may also implement equivalent national measures in lieu of the solidarity contribution.

**Figure 2**




*Notes*: copied from Hebous et al. (2022).

In Table 1 we summarise the differences between member states in the adoption of the solidarity contribution or equivalent national measures. Fifteen member states have implemented the solidarity contribution, of which ten apply the minimum tax rate of 33%. Five member states apply higher rates, ranging from 40% to 80%. Six countries that apply the solidarity contribution do so both in 2022 and 2023. Six others only apply it in 2022, while three apply it only in 2023. In addition, eight member states have adopted equivalent national measures.

[8]Negative averages are replaced by zero such that companies that makes losses that are smaller than their 2018-2021 average losses are not considered to make windfall profits.

Four of these impose tax rates between 33% and 60% on taxable profits rather than surplus profits. The remaining four rely on alternative tax bases: Spain levies the contribution on net turnover; Belgium charges per tonne of crude oil processed; Estonia also applies a per-tonne levy on the relevant resource, with rates adjusted quarterly within a predefined minimum and maximum range;[9] and Hungary applies a modified corporate income tax on energy suppliers, increasing over time from 31% to 41%, as well as a levy on the differential between global market prices and the price of Russian crude oil, with rates rising from 40% to 95%. Five of these equivalent national measures apply in both 2022 and 2023, one applies only in 2022, and two apply exclusively in 2023.[10]

**Table 1.** Solidarity contribution – details per member state

| Member State | Rate | Base | Years | Note |
|---|---|---|---|---|
| Austria | 40% | Surplus profits | 2022-2023 | |
| Belgium | €6.90 | Per tonne of crude oil processed[a] | 2022-2023 | Equivalent national measure |
| Bulgaria | 33% | Surplus profits | 2022-2023 | |
| Cyprus | NA | NA | NA | Did not implement regulation |
| Czech Republic | 60% | Taxable profits | 2023-2025 | Equivalent national measure |
| Germany | 33% | Surplus profits | 2022-2023 | |
| Denmark | 33% | Surplus profits | 2023 | |
| Estonia | variable | Value created by mineral resource | 2022 | Equivalent national measure |
| Spain | 1.2% | Net turnover | 2022-2024 | Equivalent national measure |
| Finland | 33% | Surplus profits | 2023 | |
| France | 33% | Surplus profits | 2022 | |
| Greece | 33% | Surplus profits | 2022 | |
| Croatia | 33% | Surplus profits | 2022 | |
| Hungary | 31-41%, 40-95% | Corporate income, Oil price spread | 2022-2024 | Equivalent national measure |
| Ireland | 75% | Surplus profits | 2022-2023 | |
| Italy | 50% | Taxable profits | 2023 | Equivalent national measure |
| Malta | NA | NA | NA | No companies in scope |
| Lithuania | 33% | Surplus profits | 2023 | |
| Luxembourg | NA | NA | NA | No companies in scope |
| Latvia | NA | NA | NA | No companies in scope |
| Netherlands | 33% | Surplus profits | 2022 | |
| Poland | 33% | Surplus profits | 2022 | |
| Portugal | 33% | Taxable profits | 2022-2023 | Equivalent national measure |
| Romania | 60% | Surplus profits | 2022-2023 | |
| Sweden | 33% | Taxable profits | 2023 | Equivalent national measure |
| Slovenia | 80% | Surplus profits | 2022-2023 | |
| Slovakia | 55% | Surplus profits | 2022 | |

*Notes*: details of the adoption of the solidarity contribution by member state. Sources: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52023DC0768.
[a] With a minimum of 33% of surplus profits: https://www.ey.com/en_be/technical/tax/tax-alerts/2022/energy-alert-further-measures-to-deal-with-the-exploding-energy-prices.

[9] See https://economy-finance.ec.europa.eu/system/files/2023-05/ET_SWD_2023_606_en.pdf
[10] Hungary and Spain extended their national measures until 2024, and Czechia until 2025.

Finally, Malta, Luxembourg and Latvia reported to have no companies in scope, and Cyprus did not implement the regulation.

# 3 Data

In this paper we use two distinct datasets, both with their advantages and limitations, to study excess profits. The first dataset is Orbis, the most complete commercially available firm-level dataset comprising financial information, ownership links, and industry classifications. More than 100 countries and over 400 million firms are covered in Orbis. It is widely being used in studying a variety of topics, including those relating to profits and tax (avoidance), as well as studies of windfall profits (Dubinina et al., 2024; Janský, 2023; Johannesen et al., 2020).

Orbis has extensive coverage especially of large and European firms , making it suitable for our purposes. Nevertheless, Bajgar et al. (2020) describe important limitations of the Orbis dataset to take into account. Orbis does not cover the full population of firms, even in the best-covered countries. Therefore it is not nationally representative, and we are only able to establish lower bound estimates of excess profits using Orbis. Our further applications of Orbis fulfill the conditions identified by Bajgar et al. (2020) under which Orbis can be used: we do not compare across countries but rather take a multi-country perspective; we study the best performing firms and multinationals rather than lesser performing corporations; and we focus on within-firm changes rather than the entire distribution.

Secondly, we use confidential Czech country-by-country reporting data in collaboration with the Czech Financial Administration. The advantage of using this is that it is administrative data, thus covering all firms in scope. This scope is however limited to large multinationals (annual revenue exceeding €750 million) operating in Czechia. It therefore is only suitable to draw inference about this type of firm, and findings cannot be generalised to a broader population of firms.

# 4 Methodology

To calculate excess profits during the energy crisis, we follow the definition that is used in the EU regulation. Normal profits are defined as the firm-level average profits between 2018-2021 (the four years preceding the energy crisis). A 20% margin is applied on top, and any profits recorded that exceed this margin are considered windfall profits. To calculate the potential revenue of taxing these excess profits, we apply the minimum 33% tax rate following the regulation.

In addition, we study the behavioural response of multinationals trying to avoid the windfall profits tax. We do so by studying their profit misalignment, i.e., by measuring whether their profit allocation across countries aligns with their economic activity distribution in those countries. We construct multinational-jurisdiction level measures of misalignment of economic activity and reported profit. As an example, let us consider company A which operates in 10 countries around the world and reports a global consolidated profit of 20 million EUR. Of this, 4 million EUR (4/20=20%) in profit is reported in Czechia, but the company has 40% of its global activity (measured by a formula using number of employees, revenues, and tangible

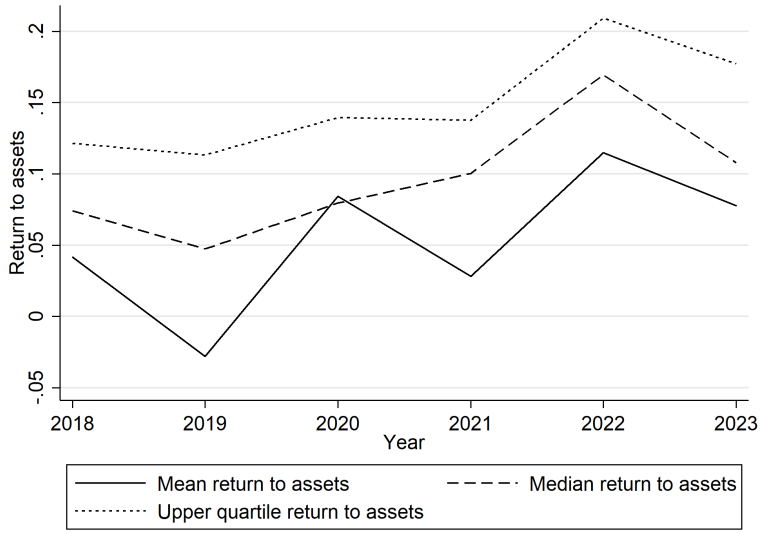
assets with equal weights) in Czechia. If reported profits were perfectly aligned with economic activity, company A would have reported 8 million EUR in profit in Czechia (i.e. apportioned profit); its profit misalignment is thus -4 million EUR. We then calculate the share of these misaligned profits on the apportioned profits to obtain a measure of profit shifting. This measure is regressed on a binary variable indicating whether the jurisdiction applied a windfall profits tax in a given year.

Finally, we estimate the potential revenue of future permanent excess profits taxation as proposed by some actors in Czechia. As opposed to a temporary windfall profits tax, such as the solidarity contribution during the energy crisis, a permanent tax on excess profits cannot base its measure of normal profits on historical averages. Such averages would either become outdated (i.e. using 2018-2021 averages made sense for calculating excess profits in 2023-2025, but would become less representative of normal profits as time passes) or take in years with excess profits (i.e. using 2022-2025 averages to calculate normal profits for 2026 would include energy crisis years with excessively high profits). Therefore, a better option is to base permanent excess profits on assumed normal rates of return (Nicolay et al., 2023).

The decision on what is deemed a normal rate of return is a political one. The simplest option is to assume a fixed normal return on assets, such as the 8% return on capital used in the excess profits tax of the US in 1918 (Plehn, 1920), potentially with a small allowance on top. Other options may follow inflation plus some additional return, or follow market returns. For simplicity, in this section, we assume a fixed normal rate of return on assets. We fix this normal rate of return at 10%, based on our data and related examples. In Figure 3, we present the average, median, and upper quartile of returns to assets in the Czech energy and fossil fuel sector over time. Prior to the energy crisis, the average return on assets was volatile but mostly around 5%, while the median was between 5% and 10%. The upper quartile was between 12 to 15%. Note that in 2022, during the energy crisis, these rates of return were significantly higher. This indicates that in normal times, a tax on profits exceeding a normal rate of return of 10% would not apply to the mean or median Czech energy company. Only roughly the upper tertile in terms of returns to assets, i.e. one in three firms, would be subject to excess profits tax in non-crisis times with this assumed normal rate of return.

Next, we use the Czech country-by-country reporting data to estimate excess profits tax revenues based on historical profits using this normal rate of return, two different tax rates (the minimum rate in the EU regulation of 33% and the 60% rate that Czechia applied instead), different avoidance scenarios, and different scopes of sectors targeted. In the scenarios where we assume avoidance, this is done at the scale described in the previous section (a 1.6 percentage point misalignment when the tax rate is 60%, scaled down accordingly when the tax rate is 33%). We also simulate scenarios in which internationally an agreement is reached to implement unitary taxation and public country-by-country reporting. Unitary taxation ensures multinational profits are allocated to jurisdictions according to their activities there (i.e. there is no profit misalignment), and public country-by-country reporting ensures full transparency on this allocation. This makes profit shifting and misalignment impossible.

**Figure 3.** Return to assets trends for Czech energy and fossil fuel companies




# 5 Windfall profits and revenues 2022-2023

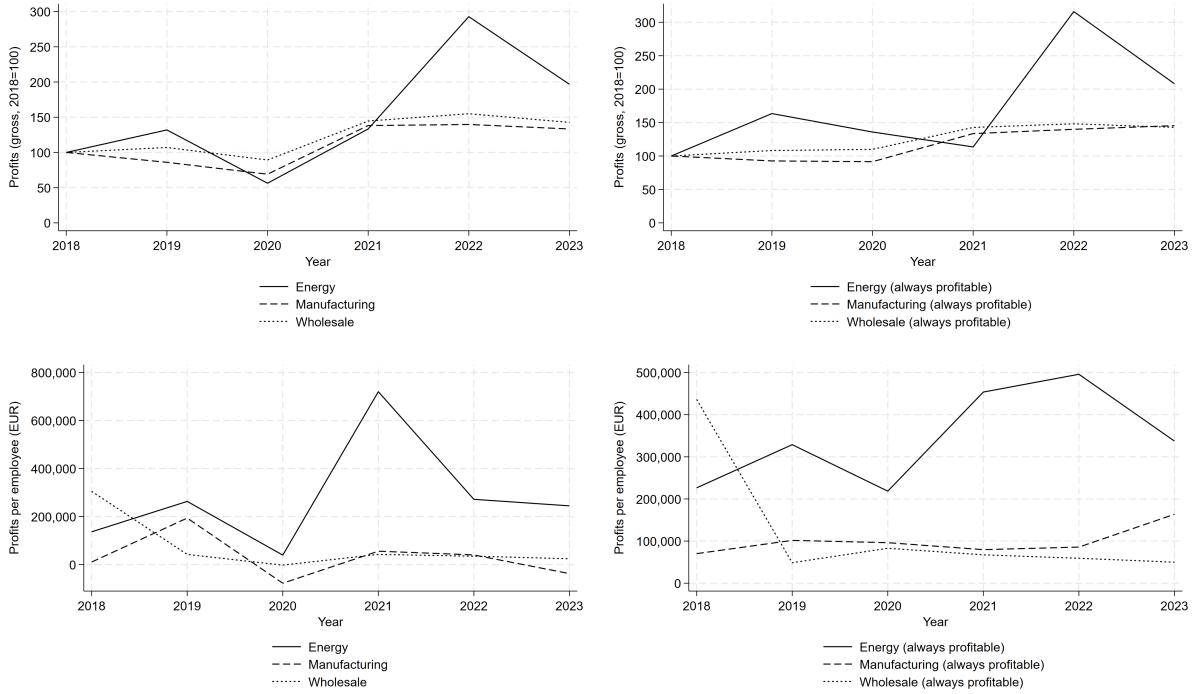
In this section, we first analyse Orbis data to calculate excess profits in the fossil fuel and energy sector, and calculate potential windfall tax revenues. Next, we compare these figures to official reported revenues from the solidarity contribution and equivalent national measures. Finally, we analyse Czech country-by-country data for a more detailed view on large multinationals in this country.

Using data from Orbis including firm financials (consolidated and unconsolidated), ownership, and industry classification, in this section we provide estimates on windfall profits and potential windfall tax revenues for each EU member state. We have access to Orbis data from 2018–2023, thus covering the four pre-energy crisis years to calculate the average or routine profits upon which the solidarity contribution is based, and covering the two energy crisis years.

To illustrate the excessive profits recorded in the energy sector, we present Figure 4 with the average consolidated profits for a balanced panel of global ultimate owner firms in the EU for 2018–2023. We show the average profits of energy firms (normalised at 2018=100), and for comparison we present the same for manufacturing firms and the wholesale sector. See Table 4 in the Appendix for the industry classifications we use to define the energy and fossil fuel sector. In the top left graph, firms are included independent of whether they are profitable. Here, the energy sector is slightly harder hit by the pandemic in 2020. Next, in 2021, all three sectors have recovered to profits at a level above pre-pandemic levels. However in 2022–2023, profits in the energy sector increase spectacularly, while the manufacturing and wholesale profits remain stable.

This excessive rise in energy profits is also clear in the top right graph, where we focus firms that recorded positive profits in every year from 2018–2023. The pandemic affected these firms' profits similarly little across the three industries, however, in 2022 the energy firms in

**Figure 4.** Profits and profitability trends – by industry




*Notes*: these figures show the trend in consolidated profits and profitability from 2018–2023 for our Orbis sample of global ultimate owner firms in the EU. Trends are shown separately for the energy, manufacturing, and wholesale sector. The top two graphs show the trends in profits relative to their 2018 levels. The bottom two graphs show profitability trends, measured in profits per employee (in €). The graphs on the left are for our full sample, the graphs on the right exclude firms that recorded losses (negative profits) in any of our sample years.

this sample increased their profits by a factor of 3. This shows that the excessive profits are not a compensation for slightly larger losses in the energy sector during the pandemic, but rather a windfall affecting the full sector independent of pandemic losses.

A similar story appears when we graph profitability (profits per employee) in the bottom two graphs. After a dip in profitability that is largest in the energy sector in 2020, profitability of energy firms multiplies by a factor of 4 relative to pre-pandemic levels while profitability of manufacturing and wholesale firms remains at non-excessive levels.

When we zoom in on the energy and fossil fuel sector and divide it into the mining and extractive sector, the electricity sector, and the gas sector,[11] we observe differences in the levels of excessive profits rises. These trends are presented in Figure 6 in the Appendix, clearly showing that the gas sector experienced a massive peak in profits in 2022, reaching 1500% of 2018 levels. However, 2022 profits in the mining and extractive sector were also three times as high as in 2018, and in 2023 the electricity sector recorded double their 2018 profits.

Next, we calculate the excess profits of energy and fossil fuel companies in each EU member state. We use unconsolidated financial data for this analysis.[12] We follow the same definition of excess profits that is used to define the solidarity contribution in the EU regulation: routine

[11] Respectively B5–C19, D35.1.X, and D35.2,X in Table 4.

[12] We use unconsolidated data to prevent potential double counting of subsidiaries' profits when using consolidated data.

profits are defined as the average profits during 2018–2021. A 20% margin is applied on top of this average, and any profits recorded above this margin in 2022 or 2023 are deemed excess profits. The results are presented in Table 2.

**Table 2.** Excess profits and tax revenues in the energy and fossil fuel sector (in million €, rounded)

| | Excess profits | | | Potential revenue | | | Reported rev. | Diff. |
|---|---|---|---|---|---|---|---|---|
| **Member State** | **2022** | **2023** | **Total** | **2022** | **2023** | **Total** | **Total** | **Total** |
| Austria | 2,208 | 3,536 | 5,744 | 729 | 1,167 | 1,896 | 97 | -1,799 |
| Belgium | 987 | 827 | 1,814 | 326 | 273 | 599 | 595 | -4 |
| Bulgaria | 1,900 | 418 | 2,318 | 627 | 138 | 765 | 154 | -611 |
| Cyprus | 8 | 2 | 10 | 3 | 1 | 4 | 0 | -4 |
| Czech Republic | 2,684 | 2,340 | 5,024 | 885 | 772 | 1,657 | 1,564 | -93 |
| Germany | 10,752 | 36,677 | 47,429 | 3,549 | 12,104 | 15,653 | 113 | -15,540 |
| Denmark | 10,146 | 2,093 | 12,239 | 3,348 | 691 | 4,039 | 55 | -3,984 |
| Estonia | 75 | 52 | 127 | 25 | 17 | 42 | 123 | 81 |
| Spain | 21,678 | 17,776 | 39,454 | 7,156 | 5,867 | 13,023 | 1,479 | -11,544 |
| Finland | 2,299 | 2,039 | 4,338 | 759 | 673 | 1,432 | 0 | -1,432 |
| France | 3,187 | 16,797 | 19,984 | 1,051 | 5,543 | 6,594 | 67 | -6,527 |
| Greece | 3,391 | 2,371 | 5,762 | 1,119 | 782 | 1,901 | 631 | -1,270 |
| Croatia | 191 | 300 | 491 | 63 | 99 | 162 | 0 | -162 |
| Hungary | 1,106 | 1,196 | 2,302 | 365 | 395 | 760 | 351 | -409 |
| Ireland | 439 | 1,233 | 1,672 | 145 | 406 | 551 | 267 | -284 |
| Italy | 13,399 | 6,484 | 19,883 | 4,422 | 2,140 | 6,562 | 6,310 | -252 |
| Lithuania | 319 | 643 | 962 | 105 | 212 | 317 | 0 | -317 |
| Luxembourg | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA |
| Latvia | 242 | 335 | 577 | 80 | 111 | 191 | NA | NA |
| Malta | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Netherlands | 13,596 | 2,433 | 16,029 | 4,487 | 802 | 5,289 | 5,629 | 340 |
| Poland | 7,818 | 8,736 | 16,554 | 2,580 | 2,882 | 5,462 | 6,927 | 1,465 |
| Portugal | 806 | 1,373 | 2,179 | 266 | 453 | 719 | 8 | -711 |
| Romania | 4,370 | 3,325 | 7,695 | 1,442 | 1,097 | 2,539 | 1,258 | -1,281 |
| Sweden | 1,751 | 5,422 | 7,173 | 578 | 1,789 | 2,367 | 0 | -2,367 |
| Slovenia | 82 | 462 | 544 | 27 | 152 | 179 | 1 | -178 |
| Slovakia | 1,324 | 2,058 | 3,382 | 437 | 680 | 1,117 | 520 | -597 |
| **Total** | **104,758** | **118,928** | **223,686** | **34,574** | **39,246** | **73,820** | **26,149** | **-47,671** |

*Notes*: excess profits in the energy and fossil fuel sector. Calculated as the profits exceeding a 20% margin on top of the 2018-2021 firm-level average profits. Potential revenues are calculated as the minimum 33% tax rate on excess profits. Reported revenues are taken from the EU *Report on Chapter III of Council Regulation (EU) No 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices* (COM(2025) 237 final).

The results show that in many member states, windfall profits in the energy and fossil fuel sector were significant. In smaller countries, excess profits were still generally in the hundreds of millions, while energy companies in the larger member states recorded billions of excess profits. In 2022, the total excess profits reached over €104 billion and in 2023, this figure was over €119 billion. For the two energy crisis years, this brings the total windfall profits to over €223 billion. Applying the minimum 33% tax rate on this figure shows that fossil fuel and energy companies could have contributed over €73 billion to the recovery of the energy crisis.

Note that Orbis data does not have perfect coverage. Therefore, this figure is likely an underestimate as we may be missing firms or observations that can only have increased the potential revenue from windfall profits taxation.

In a stocktaking report published in 2025, the European Commission reports the collected proceeds of the solidarity contribution for 2022-2023. We compare these figures to the potential revenues we calculated. The total revenues were under €17 billion in 2022 and nearly €10 billion in 2023, thus totalling just over €26 billion.[13] This falls nearly €48 billion short of the potential revenue had all member states implemented the solidarity contribution in both years, at the minimum 33% tax rate, and applying to all firms with their main operations in the sectors detailed in Table 4. In conclusion, although its revenue was significant, the EU regulation only generated about a third of its potential in tax collection.

Some differences in revenue collection between countries become apparent. The Netherlands and Poland are the only two countries collecting more than our calculations. This may be due to incomplete coverage in Orbis of energy firms located in these countries. Some countries, mainly Belgium, Czechia, and Italy, were able to collect very significant portions of our calculation potential revenue. On the other hand, three of the largest EU economies in Germany, Spain, and France, were together only able to collect €1.65 billion out of their calculated potential €35.3 billion. Other countries also were not able to generate revenues close to our calculated potentials.

Several reasons may explain why most countries did not raise as much windfall profits tax revenue as they could have. Firstly, only applying the tax in one of the two years is a policy choice that diminishes the revenues, while Figure 4 shows that both 2022 and 2023 were years in which the energy and fossil fuel sectors recorded excessive profits. Secondly, it may be the case that we define the energy and fossil fuel sectors more broadly than the countries have done in the implementation of the solidarity contribution or equivalent national measures. We argue that our potentially broader definition should be applied, to ensure that all firms are covered that create negative environmental externalities (the polluter pays principle), and because Figures 4 and 6 show that in our sector definition, all parts of the energy and fossil fuel sector clearly recorded excessive profits during the energy crisis. Thirdly, companies may have succeeded in avoiding to record windfall profits in those jurisdictions that apply the solidarity contribution by shifting their profits to countries that do not apply the solidarity contribution. We explore this avoidance response in Section 6.

## 6 Behavioural avoidance response

Next, we study the international misalignment of the profits of multinational companies and whether windfall profits taxation affected this misalignment. When profits are fully aligned, the ratio of profits in a country relative to the multinational's global profits is equal to the ratio of its activities (measured by a formula using the number of employees, revenues, and tangible assets with equal weights) in that country relative to its global activities. Profit misalignment is the difference between these ratios. We analyse profit misalignment using confidential country-by-country reporting data in collaboration with the Czech Financial Administration, as this data provides the most detailed information on multinationals' global activities. This dataset

[13] Including the countries' own estimates, this may increase to €28.7 billion (see https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52025DC0237). Our conclusions about the unreached potential remain the same if this number is used

contains financial information on every large multinational company (with a consolidated global turnover exceeding the CbCR threshold of 750 million EUR) that has an active subsidiary in Czechia, covering the period from 2016 to 2023. Our hypothesis is that companies try to avoid paying windfall taxes by shifting a larger share of their profits to tax havens.

For our independent variable, we construct a dataset of windfall taxes implemented in individual EU countries (i.e. when they were implemented and which sectors they applied to) to determine which companies were in scope of the new tax. We then run a regression estimating the impact of windfall taxes on the level of profit shifting.

The results are presented in Table 3. Using a sample of 4,604 multinational-jurisdiction pairs comprising 32 large energy and fossil fuel multinationals with activities in Czechia, we find that multinationals decreased their profit misalignment by 1.6 percentage points in country-years where the EU's windfall profits tax applied, controlling for time trends and multinational-specific characteristics. This shows that multinational companies shifted profits away from jurisdictions with the windfall profits tax in response, presumably to avoid the tax.

**Table 3.** Windfall tax effects – Energy sector in Czech CbCR data

| | (1) | (2) | (3) |
|---|---|---|---|
| Outcome | Misaligned profits ratio | Misaligned profits ratio | Misaligned profits ratio |
| Windfall tax | -0.012*** | -0.015*** | -0.016*** |
| | (0.004) | (0.005) | (0.005) |
| Year FE | No | No | Yes |
| Multinational FE | No | Yes | Yes |
| Observations | 4,604 | 4,604 | 4,604 |
| $R^2$ | 0.002 | 0.002 | 0.002 |

*Notes*: *** p<0.01, ** p<0.05, * p<0.1, standard errors in parentheses.

# 7 Potential revenue of future excess profits taxation in Czechia – scenarios

In Czechia, there are proposals to make a windfall profits tax in the fossil fuel sector permanent. The argument is that this sector creates large negative externalities in environmental damage and pollution. When, at the same time, profits are excessive, the question rises why polluters are not made to pay for the damage they cause. In the absence of proposals that call for full compensation of fossil fuel companies' negative externalities, a permanent windfall profits tax creates some progressivity in the corporate income taxation to generate revenue that may help mitigate the environmental damage caused. Additionally, a permanent excess profits tax takes away the risk of avoidance of a temporary tax, for example by timing investment during the tax phase with returns materialising only after the tax has expired.

As opposed to a temporary windfall profits tax such as the solidarity contribution during the energy crisis, a permanent tax on excess profits cannot base its measure of normal profits on historical averages. Such averages would either become outdated (i.e. using 2018-2021 averages

made sense for calculating excess profits in 2023-2025, but would become less representative of normal profits as time passes), or take in years with excess profits (i.e. using 2022-2025 averages to calculate normal profits for 2026 would include energy crisis years with excessively high profits). Therefore, a better option is to base permanent excess profits on assumed normal rates of return (Nicolay et al., 2023).

Throughout this section, we will make several assumptions to create scenarios and calculate potential revenues in these scenarios. These assumptions will be made on the assumed normal rate of return, the tax rate, and the avoidance response.

The decision on what is deemed a normal rate of return is a political one. The most simple option is to assume a fixed normal return on assets, such as the 8% return on capital used in the excess profits tax of the US in 1918 (Plehn, 1920), potentially with a small allowance on top. Other options may follow inflation plus some additional return, or follow market returns. For simplicity, in this section we stick with the option to assume a fixed normal rate of return to assets.

For most of this section, we assume a normal rate of return of 10% based on our data and related examples. In Figure 3 we present the average, median, and upper quartile of returns to assets in the Czech energy and fossil fuel sector over time (based on unconsolidated Orbis data). Pre-energy crisis, the average return to assets was around 5%, while the median was between 5 and 10%. The upper quartile was between 12 to 15%. Note that in 2022, during the energy crisis, these rates of return were significantly higher. This indicates that in normal times, a tax on profits exceeding a normal rate of return of 10% would not apply to the mean or median Czech energy company. Only roughly the upper tertile in terms of returns to assets, i.e. one in three firms, would be subject to excess profits tax in non-crisis times with this assumed normal rate of return.

An assumed normal rate of return of 10% is more generous to companies than the finding of Cobham et al. (2019) that US multinationals on average earn 8% routine profits (and 14% non-routine profits, see also Christians and Diniz Magalhaes (2020)). This 8% is also used in Pillar 2 of the Inclusive Framework agreement on the global corporate minimum tax, which defines an income exclusion from this tax (a carve-out) of 8% of tangible assets. Our normal rate or return is higher, in line with US GILTI provisions of a minimum tax on the low-taxed foreign income of multinationals exceeding a 10% return on tangible assets (Hebous et al., 2022; Clausing, 2024).

We will assume two potential tax rates on excess profits in this section. One is the minimum tax rate of 33% from the EU regulation's solidarity contribution, the second is the 60% rate that Czechia applied instead. One can also imagine a more progressive scheme in which excess profits below a certain return to capital (e.g. 15%) are taxed at the 33% rate, and excess profits above this return are taxed at the higher 60% rate. Revenue estimates for such a progressive scheme will lie between the estimates in which the lower rate or the higher rate applies to all excess profits. We study scenarios in which either only the energy sector is targeted by the windfall profits tax, or where the tax applies to all sectors.

Next, we will make some assumptions on the response by firms trying to avoid the excess profits tax. As we found in Section 6, multinational energy firms in the EU responded to the

solidarity contribution by shifting some of their profits away from countries that applied the solidarity contribution. This was also anecdotally confirmed by the Czech energy company EPH shifting profits to Switzerland in response to Czechia's windfall profits tax. In scenarios in which the tax rate is 60% (equal to the applied tax rate in Czechia in 2023-2025) we will assume an avoidance response equal to our main estimate found in Section 6, i.e. a profit alignment decrease of 1.6 percentage points. In scenarios where the tax rate is 33%, we scale this down proportionally to $\frac{33\%}{60\%} = 55\%$ of 1.6 percentage points – 0.88 percentage points.

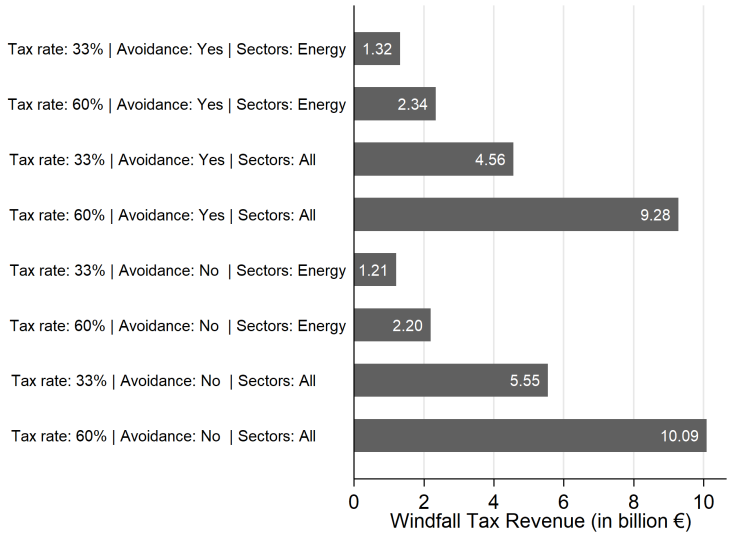
Finally, we also simulate scenarios in which internationally an agreement is reached to implement unitary taxation and public country-by-country reporting. Unitary taxation ensures multinational profits are allocated to jurisdictions according to their activities there (i.e. there is no profit misalignment), and public country-by-country reporting ensures full transparency on this allocation. This makes profit shifting and misalignment impossible, therefore this eliminates the avoidance response and sets profit misalignment to zero in these scenarios.

Throughout this section, we employ Czech country-by-country reporting data since this is more complete than Orbis data and thus will provide a more accurate prediction of excess profits tax revenues. The country-by-country reporting data includes all large multinationals (at least €750 million in revenue) with activity in Czechia, which represent the vast majority of profits.

The results of our scenario analysis are summarised in Figure 5. First, we examine the scenarios in which only the energy sector is targeted by the windfall profits tax. If avoidance is not prevented, a tax rate of 33% is projected to generate €1.32 billion. The 60% tax rate generates an additional billion in revenue. Taking away tax avoidance and profit shifting, such that profits become perfectly aligned with activities, somewhat surprisingly actually generates lower revenues. The lower tax rate would in this case generate €1.21 billion, the higher tax rate would again generate one billion more. Perfect profit alignment would decrease the revenue of this tax because historically, actual energy profits in Czechia have been slightly higher than expected based on activities (i.e. there was positive misalignment). This is likely largely due to the large state-owned energy firm ČEZ. Therefore, perfectly aligned profits would slightly decrease the energy profits recorded in Czechia in the baseline period, with the difference shifting to countries where previously misalignment was negative.

Next, we look at the scenarios where the excess profits tax applies in all sectors. At a tax rate of 33% and without closing avoidance loopholes, this tax is expected to generate €4.56 billion. Closing the avoidance loopholes would be economically significant: this can increase the revenue figure by one billion. At a 60% tax rate, the revenue is projected at €9.28 billion with avoidance, or €10.09 billion without tax avoidance.

**Figure 5.** Windfall tax revenues in Czechia by scenario




# 8 Conclusion and policy implications

During the energy crisis of 2022-2023, the EU adopted a regulation on a solidarity contribution to apply to windfall profits in the energy and fossil fuel sector. In this report, we quantify these windfall profits. We show that during the energy crisis, profits in the relevant sector were three times higher than in pre-crisis years, indicating significant windfalls. Profitability per employee also rose spectacularly. At the minimum statutory rate, these profits could have generated more than seventy billion euros in tax revenue. Actual collections were less than half of this amount, indicating substantial unrealised potential. Part of this difference is likely due to the national definitions of the sector to which the solidarity contribution applies being too narrow. We argue that under the "polluter pays principle" this definition should have been broader, including all energy and fossil fuel sector firms that produce significant negative externalities (pollution, environmental damage) while recording excessive profits.

Another explanation for the difference in potential and collected revenue is a tax avoidance response. In this report, we quantify this avoidance response. Controlling for time trends and multinational-specific characteristics, we show that large EU multinationals in the energy sector reduced profit misalignment by 1.6 percentage points in countries where the solidarity contribution applied. The policy lesson to be learnt from this is that future proposals for windfall or excess profits taxation should entail strong international cooperation in order to close avoidance loopholes. The EU regulation made the mistake to leave too much freedom to the member states in applying the solidarity contribution or equivalent national measures at different rates and at different times (2022 and 2023, or only one of these years), thus creating opportunities for avoidance by shifting profits between countries or investment strategies to shift profits over time. Future excess profits taxation will suffer from the same loopholes that

currently exist for general corporate income tax avoidance, which should be closed by initiatives including public country-by-country reporting and unitary taxation.

Finally, we provide estimates for a future permanent excess profits tax in Czechia. Our proposal introduces progressiveness in the corporate income tax rate, targeting economic rents. Profits above a normal rate of return to capital of 10% in this sector are taxed at a higher rate. We estimate that although only one in three Czech energy companies exceed this rate yearly, and depending on certain assumptions significant revenues can be collected from such a tax. In our most ideal scenarios in which the tax rate on fossil fuel profits exceeding a return to capital of 10% is 60%, we estimate that during normal years the potential revenue is €2.2-2.3 billion depending on international anti-tax avoidance frameworks. If the windfall profits tax would apply in all sectors, the potential revenue is €9.3-10.1 billion.

In conclusion, policy makers intending to introduce progressiveness in the corporate tax system or tax economic rents in the form of windfall profits should take the following recommendations into account:

- Introducing an excess profits tax permanently, with a rules-based definition of normal profitability, applicable across all sectors, emerges as an attractive policy choice from an economics perspective. Taxing excessive windfall profits does not affect business or investment decisions, but it does make business taxation more progressive, causing the most profitable companies to contribute slightly more. Restricting the tax to energy companies misses significant sources of economic rents in other industries and complicates enforcement.

- Closing avoidance channels is essential. Public country-by-country reporting, stronger anti-avoidance rules, and coordinated work towards the adoption of unitary taxation would significantly limit the profit-shifting responses documented in this report.

- The excess profits tax should be integrated with a broader fiscal strategy that supports the transition to a cleaner and more resilient energy system, strengthens energy-poverty relief, and ensures that extraordinary private gains contribute to shared public goals.

- Finally, successful implementation requires adequate administrative capacity. Tax authorities should develop specialised capabilities to audit excess profits, assess intra-group transactions, and monitor the behaviour of multinational groups during periods of economic volatility. With a stable legal framework, stronger transparency requirements, and coordinated international standards, excess profits taxation can play a lasting role in creating a more efficient, equitable, and resilient tax system.

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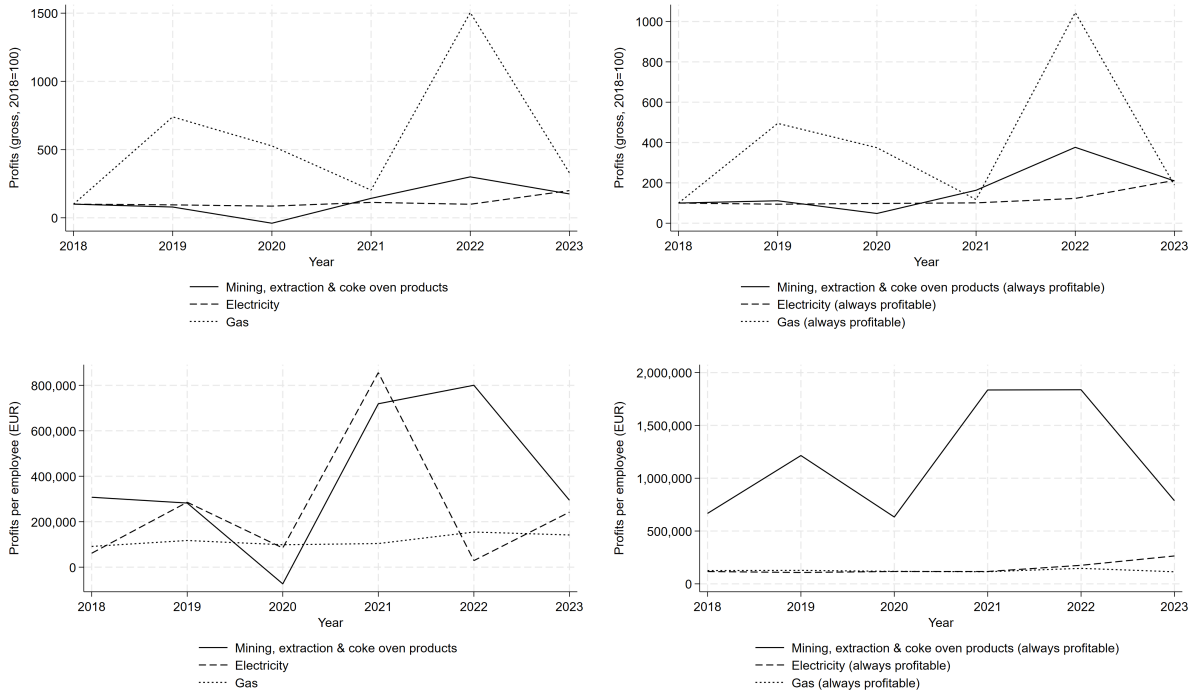
# Appendix

**Table 4.** Energy and fossil fuel sector classifications

| NACE code | Name of sector |
|---|---|
| B5.1.0 | Mining of hard coal |
| B6.1.0 | Extraction of crude petroleum |
| B6.2.0 | Extraction of natural gas |
| B9.1.0 | Support activities for petroleum and natural gas extraction |
| B9.9.0 | Support activities for other mining and quarrying |
| C19.1.0 | Manufacture of coke oven products |
| C19.2.0 | Manufacture of refined petroleum products |
| D35.1.0 | Electric power generation, transmission and distribution |
| D35.1.1 | Production of electricity |
| D35.1.2 | Transmission of electricity |
| D35.1.3 | Distribution of electricity |
| D35.1.4 | Trade of electricity |
| D35.2.0 | Manufacture of gas; distribution of gaseous fuels through mains |
| D35.2.1 | Manufacture of gas |
| D35.2.2 | Distribution of gaseous fuels through mains |
| D35.2.3 | Trade of gas through mains |
| D35.3.0 | Steam and air conditioning supply |

**Figure 6.** Profits and profitability trends – by industry




*Notes*: these figures show the trend in consolidated profits and profitability from 2018–2023 for our Orbis sample of global ultimate owner firms in the energy and fossil fuel sector in the EU. Trends are shown separately for the mining and extractive sector, the electricity sector, and the gas sector. The top two graphs show the trends in profits relative to their 2018 levels. The bottom two graphs show profitability trends, measured in profits per employee (in €). The graphs on the left are for our full sample, the graphs on the right exclude firms that recorded losses (negative profits) in any of our sample years.