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Excess Profit Taxes: Historical Perspective and Contemporary Relevance

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Excess Profit Taxes: Historical Perspective and Contemporary Relevance

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ABSTRACT: This paper discusses the design of excess profits taxes (EPTs) that gained renewed interest following the COVID-19 outbreak and the recent surge in energy prices. EPTs can be designed as an efficient tax only falling on economic rent, like an allowance for corporate capital, and drawing some parallels with current proposals for reforming multinationals' taxation. EPTs can be permanent or temporary as an add-on to the corporate income tax to support revenue during an adverse shock episode. The latter reflects experiences with EPTs during and after the World Wars. Different from that era, though, profit shifting is now a challenge. Estimation using firm-level data suggest that, at present, locations of excess profit across countries are consistent with profit shifting practices by multinationals. Destination-based EPTs can address this concern. Estimates suggest that a 10 percent EPT on the globally consolidated accounts of multinationals (on top of the current corporate income tax), with the EPT base being allocated using sales, raises global revenue by 16 percent of corporate income tax revenues. The analysis suggests that international coordination would be desirable to mitigate the risks of profit shifting and tax competition. Eventually, EPTs could mark an evolution of corporate taxation toward a non-distortionary rent tax.

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WORKING PAPERS

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Introduction

In the early 20th century, the notion of 'trading on the world's misery' sparked a debate about the merits and demerits of 'excess profits taxes' (EPTs) levied following World War I in several European countries, Canada, and the United States.[1] About one century later, with the outbreak of the COVID-19 pandemic, the idea of EPTs resurfaced, with some scholars explicitly calling for adopting EPTs on revenue and redistribution grounds.[2] EPTs gained further relevance following Russia's war in Ukraine as the surge in energy prices resulted in windfall profits in the power and extractives sectors.

What is excess profit and how can EPTs be designed? This paper discusses design options of EPTs and their revenue implications. A distinction is made between a permanent and temporary EPT, and the focus in this paper is on a general EPT (rather than the extractive sector).[3] Here, the concept of excess profit is generally equivalent to economic rent, defined as returns in excess of the opportunity cost of the investment. In this sense, it is equivalent to returns over and above the risk-adjusted 'normal' returns. The paper briefly discusses various other terms commonly used to describe (some portion of) profits. The expression 'windfall profit', for example, typically refers to fortuitous gains from unanticipated events. For practical policy purposes, excess profits need to be measured, and thus the paper presents empirical proxies expressed as mark-ups above fixed returns to equity or total assets, or as profitability relative to prior years.

The source of economic rent can be firm-specific, mainly due to monopolistic power. Most firms in this category are multinational enterprises, although some domestic firms can have sizable economic rents. Some studies report that the concentration of firm market power has been increasing in recent years (De Locker et al., 2020; IMF, 2019a). Economic rent can also be location-specific, most notably the in extractives, other national assets, and to some extent in the telecommunication sector. In the extractive sector, rent taxation in the source country is already common (Baunsgaard and Vernon, 2022; IMF, 2012). Also, pre-pandemic, there have been calls to implement rent taxation at source in the telecommunication sector (Matheson and Petit, 2021).

The paper starts with a brief account of historical experiences with EPTs and next proceeds to argue that EPTs can in principle be designed as a permanent efficient rent tax. In particular, in the spirit of Boadway and Bruce (1984) and Devereux and Freeman (1991), EPTs can be designed as an allowance for corporate capital (ACC) system that provides tax deductions to capital irrespective of the financing mode (whether it is an equity- or debt-financed investment) while taxing economic rent.[4] As long as the allowance rate is appropriately calibrated at the normal return, the ACC does not influence the scale of investment or the allocation of investment between different assets—that is, the return that is needed for the investment to break even is not affected by the tax, and thus, ACC-alike EPTs would fall on excess returns leaving investment decisions unaffected at the margin. In practice, the tax on excess profits in the form of an ACC system would be designed as a tax on returns above a prespecified assets-based margin, which was indeed the design of several EPTs in the past.

[1] In 1920, the *American Economic Review* published several articles on EPTs, including: Adams (1920), Friday et al. (1920), Haig (1920), and Plehn (1920).

[2] See, for example, Avi-Yonah (2020), Christians and Magalhães (2020), and Saez and Zucman (2020).

[3] At present, EPTs are common as a permanent component of fiscal regimes for the extractive sector for governments to share in economic rents generated by extracting minerals, oil, or gas. The paper will only touch upon but not dwell on EPTs in this sector. See Baunsgaard and Vernon (2022) for a detailed discussion of taxing windfall profits in the energy sector.

[4] The resurgence of interest in rent taxation has been at the fore of the policy debate prior to COVID-19 (for example, Mirrlees, 2011; IMF, 2016; among several others).

Efficient rent taxation resolves the debt bias—a chronic problem with the existing corporate income tax (De Mooij, 2012; IMF, 2016). From an efficiency standpoint, the tax system should not favor debt-financed to equity-financed investments. The distortion stems from providing tax deductions for interest expense without analogous deductions for equity returns, thereby incentivizing corporate debt and raising instability risks. Concerns about high corporate debt have been a recurring theme following crises, including the global financial crisis and the pandemic.

Ongoing discussions mainly focus on EPTs as a temporary revenue-raising measure from a specific sector rather than a permanent or temporary economy-wide EPT. In May 2022, for instance, the UK announced a temporary tax on windfall profits of oil and gas producers following the spike in oil and gas prices. Greece and Romania introduced temporary taxes on electricity generators in late 2021 and 2022. Hungary introduced a temporary tax on certain electricity generators for 2022 and 2023. Spain is considering an EPT on banks and utilities. The discussion of an economy-wide (temporary or permanent) EPT, however, remains highly pertinent to the debate on tax design and mobilizing revenue. Economic and legal arguments lend more support to general EPTs over sector specific EPTs.

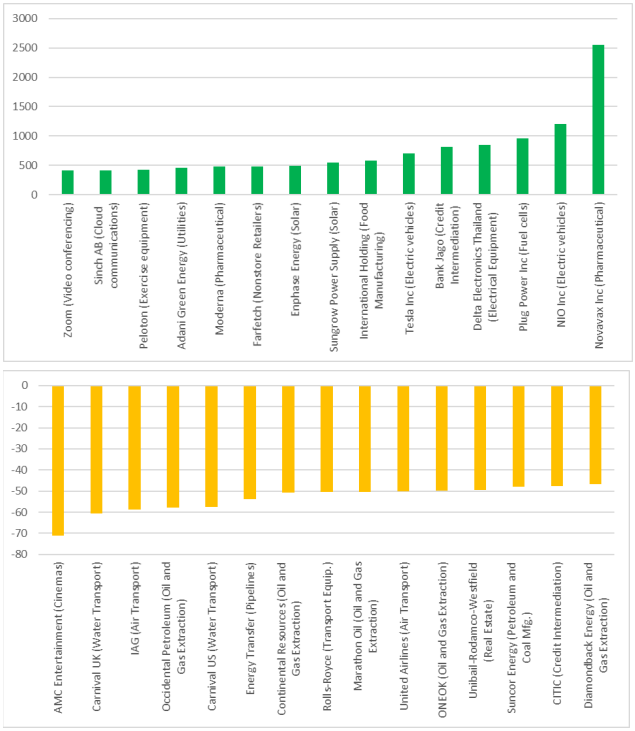
A temporary EPT is meant to help meet extraordinary financing needs following a large adverse shock (as now the case is to support vulnerable households in times of soaring energy prices) while maintaining social cohesion (by raising revenues from those who benefit from, or do well during, the episode of high prices). By the same token, since the beginning of the pandemic until March 2021, the fiscal measures to alleviate the extensive health and economic impacts have been unprecedented, globally amounting to USD 16 trillion in 2020 (IMF, 2021a). But to some extent the pandemic has had asymmetric effects on businesses, with some making high profits. In fact, in the year following the COVID-19 outbreak, stock prices of some firms in the information technology and pharmaceutical sectors—such as Zoom, Moderna, and Novavax—more than quadrupled (Figure 1). In contrast, stock prices in the air transport and accommodation sectors have dropped by more than 25 percent in the first half of 2020 and rebounded by the end of 2020 to a loss of 6 percent and 26 percent, on average, respectively. This pattern qualitatively illustrates that some companies have done very well out of the pandemic. However, while stock prices contain a signal about expected profits, the magnitude of this effect is better reflected in the concept of excess profits.

The advantage of permanent well-designed general EPTs is structurally restoring efficiency and automatically taxing economic rent without the need to identify profitable sectors or firms during specific episodes. In the first best scenario, the EPT, in the ACC-alike form, would eventually fully replace the corporate income tax. Yet, if in practice the first best is not attenable, a temporary EPT on top of the corporate income tax remains an important option to consider for raising revenue during large adverse shocks to the economy. Caution needs to be exercised, though, as temporary EPTs may affect investment decisions and hence are generally less efficient than a permanent EPT.[5] And as discussed in this paper, nowadays, EPTs (just like the corporate income tax) face international pressures in the form of profit shifting and tax competition. One advantage of an EPT relative to (temporarily or permanently) raising the corporate income tax rate is that it mainly falls only on economic rent whereas raising the corporate income tax rate would also fall on normal returns. There are, however, historical examples of 'solidarity levies' (or 'recovery charges') that took the form of a temporary surcharge on the corporate and/or personal income tax as, for example, in Australia in 2011 and Japan in

[5] The general argument for permanent (rather than temporarily) EPTs extends to the extractives (Baunsgaard and Vernon, 2022).

2012-14 following natural disasters, and in Germany in 1990 following the reunification (IMF, 2021b).[6] Overall, the efficiency argument lends support to an EPT design.

Figure 1: Top and Bottom 10 Performer Companies and Industries (Jan-Dec 2020), Change in Stock Values (%)



Best & worst performing large cap stocks, by industry

Industry	2020 stock price increase (avg, %)
Crop Production	145.1
Nonstore Retailers	137.3
Building Material and Garden Equipment and Supplies Dealers	118.5
Electrical Equipment, Appliance, and Component Manufacturing	101.9
Publishing Industries (e.g. Zoom, Slack)	84.8
Furniture and Home Furnishings Stores	69.4
Other Information Services (e.g. Facebook, Netflix, Doordash)	67.9
Miscellaneous Manufacturing	66.7
Specialty Trade Contractors	64.3
Computer and Electronic Product Manufacturing	63.9
Insurance Carriers and Related Activities	-2.2
Personal and Laundry Services	-2.7
Performing Arts, Spectator Sports, and Related Industries	-4.1
Air Transportation	-6.2
Petroleum and Coal Products Manufacturing	-10.4
Support Activities for Mining	-10.9
Gasoline Stations	-15.3
Printing and Related Support Activities	-15.9
Oil and Gas Extraction	-22.6
Pipeline Transportation	-23.9

Source: Refinitiv, compiled by the authors. Note: The figures depict changes in stock values between the first trading day in January 2020 and the last trading day in December 2020, considering large cap stocks, i.e., those with a market capitalization greater than USD 10 billion. Note that the data do not include the recent episode of surging energy prices.

Focusing on multinational enterprises, without international coordination, there are two options for a unilateral EPT. One is to impose it on the unconsolidated account of the multinational affiliate (that is, based on assets located in the countries). But in the age of high importance of mobile and difficult-to-value intangible assets, the base of the EPT can easily be eroded. Tax competition over the legal residence of multinationals would remain a concern. To some extent, though, a global corporate minimum tax (if implemented) would put a floor on tax competition. Moreover, concerns about tax competition in the presence of an EPT can be also alleviated by adopting a temporary (rather than permanent) EPT, which somewhat weakens the argument for companies to relocate across borders—especially that many countries adopt exit taxes.

The other unilateral option is to impose the EPT based on the globally consolidated account of the multinational company and attribute a tax base to the country using sales by destination, for instance. This would effectively unilaterally introduce the destination-based tax principle and address the profit shifting concerns since total profits are ultimately reflected in the consolidated accounts of multinationals. While it is feasible in terms of economics, legally it would likely infringe on existing tax treaties. In practice, for any of those options, the legal

[6] Solidarity levies, or recovery recharges, are raised on high incomes or wealth to help meet the extraordinary financing needs following a large shock, while also supporting social cohesion (IMF, 2021b). Other notable examples of temporary surcharges to income taxes include the Revenue and Expenditure Control Act of 1968 in the United States to help finance the Vietnam War.

design of an EPT needs to be carefully integrated with the already adopted tax policy and treaty positions embodied within an existing tax system.

What is the case for international coordination of EPTs? A coordinated EPT on the consolidated accounts of multinationals significantly alleviates concerns about base erosion and tax competition. The same fundamental argument as for the corporate income tax coordination (IMF, 2022). A coordinated EPT would become a formulary apportionment approach, using sales by destination for allocating the tax base (except for location-specific rents to be taxed at source). Such design shares the key characteristic of *Pillar 1* under the 2021 *Inclusive Framework* agreement that consolidates a 'residual' profit of the multinational enterprise at the global level (defined as a predetermined profit margin of above 10 percent of global revenues) and allocates 25 percent of this residual to market countries (based on sales by destination).[7] Thus, by going a step further from a unilateral EPT on the consolidated account of the multinational company to a coordinated EPT across countries (and allocating the tax base to market countries), we end up with a destination-based system that is similar in nature to the allocation idea of *Pillar 1*. However, viewed through this lens, EPTs conceptually extend the scope of *Pillar 1* to capture the entire excess profit—rather than a portion of it—and all firms—rather than predefining in-scope firms based on a revenue threshold or economic activities. A deeper fundamental reform would be for the EPT to fully replace the corporate income tax, for example, by gradually lowering the corporate income tax rate (converging toward a zero-tax on the 'normal return') while possibly raising the tax rate on excess profit.

Using data on consolidated accounts of multinationals, the analysis indicates that, at present, locations of excess profit across countries are consistent with profit shifting practices by multinationals. Further, the findings suggest that if excess profit of multinationals is globally consolidated and allocated to countries based on a formula to replace the existing corporate income tax on the excess profit, then global tax revenue increases by over 4 percent of current global corporate income tax revenue. The resulting increase in the global effective tax rate is about 2.6 percent. Alternatively, if the EPT is for example imposed at 10 percent globally and allocated to countries on top of existing corporate income taxes on excess profit, the increase in global revenue is about 16 percent of current global corporate income tax revenue.

In conclusion, design options for EPTs ultimately hinge on the objective. It can be temporary to raise revenues from all highly profitable firms during significant adverse economic situations. Or EPTs can be designed to serve as a transition from a corporate income tax to a destination-based formulary apportionment with an allowance for normal return. This objective would contrast, but does not preclude, a temporary add-on EPT as a gateway for a bolder reform. Moreover, EPTs require careful preparation and legal drafting to address potential legal and administrative implementation challenges. Finally, note that an ACC design of EPTs (based on the globally consolidated account with the tax base being apportioned to market countries) is akin to, but remains distinct from, an ACC with a 'border-adjustment'. In the latter, revenues from exports are untaxed whereas costs of imported inputs are not tax deductible (Hebous and Klemm, 2020), following the cash-flow tax version of Devereux et al. (2020).

[7] In 2021, 137 countries reached a political agreement on a two-pillar reform of the taxation of multinationals. See OECD (2021).

This paper is structured as follows. Section II presents a brief historical account of EPTs. Section III discusses designs of efficient EPTs while Section IV presents estimation of revenue impacts of EPTs. Section V concludes.

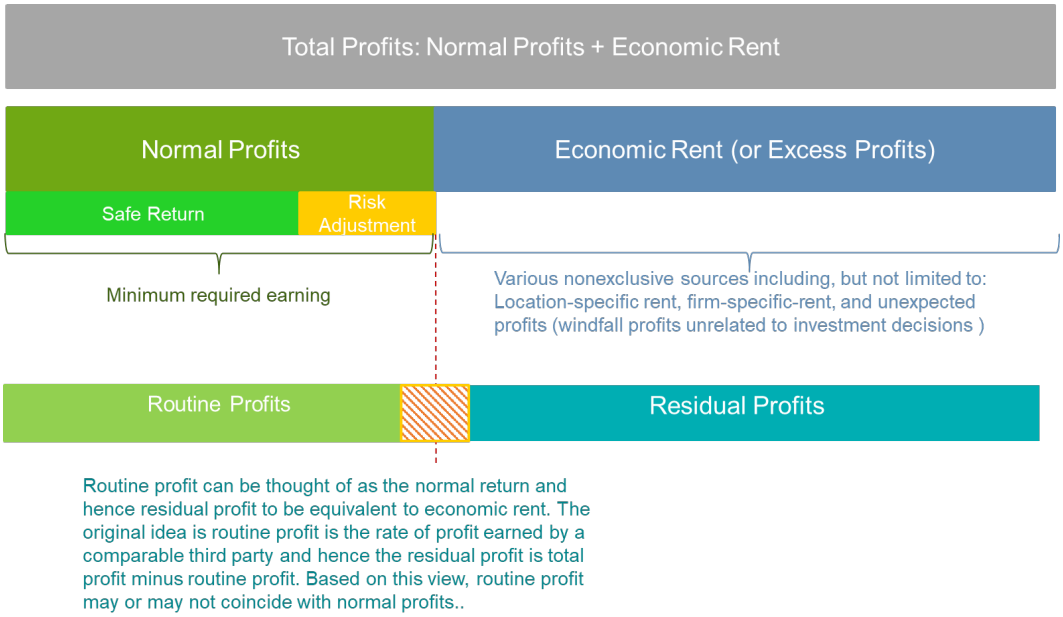
Excess Profit Taxes: Idea and Origin

Taxonomy of Profits: Clearing Up the Morass

There is a rich usage of various expressions for profits in the literature. To fix ideas and establish a common ground, we provide a short overview.[8] As illustrated in Figure 2, total profit can be thought of as the sum of two components: i) normal return (which is the sum of the safe return and a risk adjustment); and ii) economic rent (also referred to as supernormal profit). This distinction has traditionally appealed to economists. In this paper, excess profits and economic rent are viewed to be identical. Economic rent is rooted either in firm-specific characteristics (such as monopolistic power or location-specific rent (as is the case for natural resources).

Windfall profits refer to unanticipated, fortuitous, gains typically generated by exceptional unexpected events such as wars, natural disasters, or pandemics. In this sense, the investment took place without the anticipation of the windfall profits. Conceptually, windfall profit can be deemed to be a portion in excess of normal return, which in turn for a firm can be the entire excess profit or just a part of it (with the other part of excess profits being due to firm- or location-specific rent).

Figure 2: Breakdown of Total Profit



Note: Illustration by the authors. Residual profits can conceptually be deemed to equal economic rent, but generally are not necessarily equal. The relative importance of the various sources and the total size of economic rent are project specific.

[8] The aim here is not to review all existing definitions and concepts of profits.

Recent developments in the debate about reforming the taxation of multinationals introduced the terms residual and routine profits. This distinction is relevant to this paper insofar an EPT can be linked (and as we will discuss later designed in a compatible way) to the 2021 *Inclusive Framework* reform proposal or more general formulary apportionment reform options. In Beer et al. (forthcoming), routine profit is broadly equivalent to normal return while residual profit is equivalent to economic rent (and thus excess profits in this paper). This tends to be the departure point for economists when thinking of profits. Another view, inspired by practitioners, relates this distinction to the arm's length principle—that is, the notion that related party transactions should be priced as if they were between unrelated parties. In Devereux et al. (2020), routine profit is what a third party would expect to earn from performing specific functions (that is, the rate of profit earned by a comparable third party), whereas the residual profit is the difference between total profit and routine profit. Viewed this way, residual profit may or may not precisely coincide with the distinction between normal and excess returns. Devereux et al. (2020) argue that computing the routine and residual profit starting from the consolidated account of the multinational company (a top-down approach) should in principle yield the same result as a bottom-up approach (starting from activities at the affiliate level).

A Brief Historical Account of Excess Profit Taxes

Historically, EPTs were in general successfully implemented in terms of administrability and generating revenues. Throughout the last century, a few EPTs were temporarily invoked on top of the existing corporate income tax during specific episodes, notably but not only during (and following) World Wars I and II in Europe and the United States. In the early phase of World War I, 22 countries adopted some kind of EPTs (Arnold, 2014). Table 1 summarizes selected EPTs. For example, one of the earliest EPTs in Europe was adopted in 1915 in Denmark[9] and was popularly known as the *Gulasch* tax (stew tax) in reference to food exporters to Germany who were granted an exceptional permit to trade with Germany. It was based on the average profitability of the 3 years ending before World War I or a 5-percent allowance for assets. This Danish EPT had a progressive rate structure ranging from 8 to 20 percent. Similarly, another example is the "excess profits duty" of Great Britain in 1918-1926. The tax was 80 percent of the amount of profits above the "pre-war standard of profits", defined as either the average profit of any two of the last three years prior to the World War I, or as a statutory percentage of the capital at the end of the last pre-war year. During the rearmament period before World War II, the UK again introduced an EPT. Also, Canada and the United States reembraced EPTs in 1940. The EPT was reenacted in 1950 in the United States (Keith, 1951).

In some countries, such as Canada and Italy, the agricultural sector was excluded from EPTs during and following World War I (Stamp, 1917). Unlimited carry-forward of unused excess profits credits was allowed in a few countries like the UK, while Canada and the United States limited the carryforward period to two and five years, respectively (Musgrave and Seligman, 1944).

Details of EPTs varied across countries and time (in several cases even within an episode in a country[10]) but shared the common reasoning of inferring excess profits from the difference between actual profits and what is deemed to be normal returns to assets. One way to determine 'normal profit' (above which the excess is measured) was to define it as the average profit of the two or three years before the beginning of the war. The other way was to consider profits exceeding a fixed percentage of capital as excess profits. Scholars, such as

[9] Keen and Slemrod (2021) indicate that the state of Georgia adopted a kind of EPT during the Civil War of 1861 in the United States.

[10] As Plehn (1920) puts it: "*So kaleidoscopic and rapid were the changes in the forms of [EPTs] in different countries that an attempt to describe them, save at undue length, would be confusing in the extreme*". Yet, a humble attempt is in Table (1).

Lent (1951), attribute the choice between the two methods of calculating EPTs to the choice between a tax imposed only on windfall gains (that is on war-profits) and a tax on excess return more generally.

Ultimately, however, historical examples of EPTs were mainly motivated by revenue needs, while often the stated objective was to wipe 'war profits'. According to Arnold (2014), for 1910-1914 in the UK, the pre-tax average return to equity was 10.14 percent compared to more than double this figure at 25.78 percent for 1915-1918. The corresponding after-tax return ratios were 9.77 percent and 14.8 percent, respectively. In the UK, Billings and Oats (2014) report that EPT revenue was 32 percent of total revenues in 1918 (or 4.5 percent of GDP). In the United States, revenues from the EPT in 1943, for example, reached approximately 22 percent of total receipts, or 2.2 percent of GDP (Ratchford, 1945).[11] Fast forward to today's EPTs, for example, the increase in the windfall profit tax under the 2022 UK Energy (Oil and Gas) Profits Levy Bill is estimated to raise extra revenue of £5bn in the first 12 months of its operation (total receipts were £718.2bn in 2021), while the cost of the government's package to support the cost of living is estimated at £37bn (House of Lords Library, 2022).

Table 1: Examples of Excess Profits Taxes

State (year)	Description of the Tax
Canada (1916)	A tax of 25 percent on profits in excess of 7 percent of capital.
Canada (1940)	A tax of 75 percent on return exceeding 10 percent of capital. This excess profit tax was accompanied by a minimum tax of 22 percent (later raised to 30 percent) of total profits.
Denmark (1915)	Popularly known as the *Gulasch* tax (stew tax in reference to exporters to Germany) was based on the average of the 3 years ending before World War I or a 5-percent allowance for assets. The EPT had a progressive rate structure ranging from 8 percent to a top rate of 20 percent on profits exceeding 20 percent of asset.
France (1915)	Standard profit is calculated as either 6 percent of capital or the average profit in the 3 pre-war years. Excess profit (profit above standard profit) is taxed at a rate of 60 percent.
Germany (1915)	Standard profit is calculated as either 6 percent of capital or by taking the average profit in the 5 pre-war years *after eliminating* the best year and the worst year. Excess profit (profit above standard profit) is taxed at a rate of 50 percent.
Holland (1916)	War profit is defined as profit exceeding the average of the three preceding years. The EPT had a progressive rate structure ranging from 10 to 30 percent. An allowance for capital of 5 percent was allowed under some circumstances.
Italy (1915)	An allowance of 8 percent of capital was provided. The EPT had a progressive rate structure ranging from 12 to 35 percent.

[11] To convert the numbers to percent of GDP, for England, the 1918 GDP is taken from ourwalrdindata.org. Total receipts and the GDP in 1943 in the United States are obtained from the American Presidency Project.

State (year)	Description of the Tax
New Zealand (1916)	The excess profit tax was imposed on profits in excess of the average pre-war years (considering three or two--out of the three--or only one pre-war year) or alternatively a tax on the excess of 8 percent for capital. The rate of the tax was 45 percent.
Russia (1916)	Allowance of 8 percent of capital was provided. The EPT had a progressive rate structure ranging from 20 to 40 percent, with an upper cap of a combined corporate income tax and EPT of 50 of percent.
Spain (1916)	A progressive EPT schedule: 20 percent tax on profits in excess of 7.5 percent (but less than 20 percent) of capital; 25 percent tax on the portion exceeding 20 percent (but less than 35 percent) of capital; 30 percent tax on the portion exceeding 35 percent (but less than 35 percent) of capital; 35 percent tax on the portion exceeding 35 percent of capital (but less than 20 percent); 40 percent tax on the portion exceeding 50 percent of capital.
UK (1915–1926)	The "excess profits duty" of Great Britain. In 1918, the tax was 80 percent of the amount of profits above the "pre-war standard of profits", defined as either the average profit of any two of the last three years prior to World War I, or as a statutory percentage (ranged from 6 to 8 percent) of the capital at the end of the last pre-war year. The taxpayer might use whichever base was the larger.
United States (1917–1921)	Based on the act of 1918, there were two taxes: the "war-profits tax" and the "excess-profits tax", the largest of which was paid by the taxpayer: • The excess-profits tax was imposed on the difference between actual profit and normal profit defined as an arbitrary allowance of $3,000 plus 8 percent of the capital used in the taxable year. The tax scale was progressive with two rates of 30 and 65 percent. • The war profits tax was imposed on the difference between normal profits defined as the average profits of the three pre-war years (1911, 1912, and 1913) plus or minus, as the case might be, 10 percent of the increase or decrease in the invested capital of the taxable year over the average invested capital of the same three pre-war years. The tax rate was 80 percent.
United States (1940–1943)	Similar to the design of 1917-1921, but the taxpayer is required to use the method that yields the smallest amount of the EPT. The tax rate varied during this period ranging from 30 to 95 percent.

Sources: Complied by the authors based on Plehn (1920), Pruefer (1941), Ratchford (1945), Stamp (1917), A.L.P (1917), and Tolmie and Leach (1941). See also Keen and Slemrod (2021). Note: In most cases, exact rates and bases changed frequently. The table summarizes general designs, as of a particular point of time.

Existing EPTs and the Extractive Sector

At present, EPTs are common in the extractive sector by incorporating an instrument in the fiscal regime to target economic rents in the upstream extraction. For oil, gas, and minerals, EPTs are typically administered at the project rather than entity level. Economic rent in this sector is specific to a given deposit that is relatively cheap to exploit due to its geological characteristics.

Today, at least 32 countries have EPTs in the extractive sector, predominately calculated as profit above either a benchmark rate of return or a specified ratio of cumulative revenue to cumulative expenses (that is, an "R-factor")[12], both on a cash flow basis with no deductions for interest. The EPT is applied either before or after the corporate income tax, depending on the country—with the EPT often being deductible from the corporate income tax when the EPT is measured before it—, and vice versa. All EPTs have a fixed tax rate that is paid once a specified project's profitability threshold is met (average rate of 25 percent and threshold of 14 percent), with the threshold generally thought to be around an international company's hurdle rate for investment, incorporating any country-specific risks. Additionally, some EPTs have increasing rates as profitability rises. The average top EPT rate is 58 percent and the top profitability threshold of 28 percent.[13] A detailed discussion of fiscal regimes and EPTs in the extractive sector is beyond the scope of this paper. Baunsgaard and Vernon (2022), Daniel et al. (2010), Wen (2018), and IMF (2012) provide detailed analyses.

To name a few selected examples:

- Australia's Petroleum Resource Rent Tax was introduced in 1987. It is a cashflow tax of 40 percent with losses carried forward at the long-term bond rate plus five percent and no financing cost deductions—Sierra Leone, Timor-Leste, and others have similarly designed taxes.

- In Ghana, the Additional Oil Entitlement (AOE) was introduced in 2000. It is a cashflow tax with uplift on losses, imposed after corporate income tax, and multiple tax tiers. At each tier, the AOE rate and uplift progressively increases with a deduction for AOE paid on lower tiers such that the AOE rate increases as the project's return increases. AOE parameters are biddable at the contract/license level (Resource Contracts, 2022).

- Norway's Special Petroleum Tax was introduced in 1975. Its rate is 56 percent, and the tax base is equal to that of the corporate income tax but with an additional deduction of 21 percent of capital costs, limited interest deduction, and losses carried forward at the risk-free interest rate (as of January 2022). It is calculated at the company level and ring-fenced around oil and gas activities in Norway. There is currently a proposal to adopt an R-based cash flow tax.

- The United Kingdom's Supplementary Charge was introduced in 2002. It is a tax of 10 percent on a company's profits from extraction activities, without allowing for deductions for financing cost. There are however investment and new filed allowances. Capital expenditure receives a 62.5 percent investment allowance.

In response to surging energy prices, the UN (2022) and others called for windfall taxes on oil and gas companies. The European Commission (2022) proposed temporary solidarity contribution" on excess ("surplus") profits from defined activities in the fossil fuel sector. One prominent recent example of a windfall tax (that was announced in May 2022) is the United Kingdom's Excess Profits Levy (on top of the Supplementary Charge). The UK's EPL taxes company-level profit from production activities at 25 percent, with immediate expensing and an 80 percent allowance on new investment. The tax expires at the earlier of December 2025 or once oil and natural gas prices return to "normal" levels. The EPL does not apply to the electricity generation sector. There are other precedents for temporary taxes in the extractives during high-price episodes. One example is the United States Crude Oil Windfall Profit Tax (1980-1988) that applied to revenues of domestic producers when crude oil prices exceeded a specified level. The tax did not target excess profits since it

[12] The R-factor is a crude proxy for excess profit because it does not account for the time value of money. To compensate for this, the R-factor threshold that triggers the excess profit tax is generally higher, all else equal.

[13] Carry arrangements where a state equity interest is funded by a loan that is repaid by project post-tax profits are roughly economically equivalent to an EPT but not included in these statistics.

applied to revenue and, since it only applied to domestic production (not imports), producers could not pass-through the tax to consumers. Evidence suggests that the poor design of the tax reduced supply (Rao, 2018).

Designing an EPT

A Primer

We start by illustrating the fundamental idea of an efficient profit tax.[14] Consider *Economic Profit*, which is equal to revenue (*Y*) minus deductible costs (*W*), for example, wages, minus return to equity (*rK*), and depreciation (δK).

$$Economic\ Profit = Y - W - rK - \delta K. \qquad (1)$$

Maximizing profit yields the famous result that in the absence of taxation, the optimal choice of capital (*K*) is given by equating the marginal product of capital (Y_K) with the cost of capital (derived from the first-order condition):

$$Y_K = r + \delta. \qquad (2)$$

Taxing economic rent (or, economic profit), with a rate τ is non-distortionary because equation (1) becomes:

$$(1-\tau)Economic\ Profit = (1-\tau)[Y - W - rK - \delta K], \qquad (3)$$

thereby leaving the optimality condition, $Y_K = r + \delta$, unaffected.

In contrast, the corporate income tax (CIT) base, disallows the deduction of rK: Thus,

$$(1-\tau)\ Profit = \underbrace{(1-\tau)[Y - W - \delta K]}_{CIT\ Base} - rK, \qquad (4)$$

and hence the optimality condition, analogues to (2), becomes:

$$Y_K = \delta + r/(1-\tau). \qquad (5)$$

Equation (5) shows the fundamental point that corporate income taxes raise the cost of capital—that is, the return needed for the investment to break even.[15]

There are two broad ways to make the taxation of business income efficient: cash-flow taxation and providing allowances for normal returns. The former provides full expensing without allowing interest deductions. In other words, instead of allowing for a depreciation of capital over a period of time, it allows deducting the *total* cost of investment immediately.[16] Cash-flow designs are studied in substantial literature and hence are not further

[14] For simplicity, the summary here abstracts from dynamics and other details as the purpose here is to illustrate the main point.

[15] The corporate income tax allows the deduction of interest expense (but not return to equity), thereby distorting the financial structure. For an overview of the empirical evidence on the impact of corporate taxation on firm behavior, see, for example, Devereux and Griffith (2002) and Jacob (2022).

[16] This is the so-called R-base cash-flow tax, with the tax base being 'real businesses'. There are various versions of cash-flow taxes with different bases. All these versions are extensively studied in the literature (see, for example, Bond and Devereux 2003; EC, 2015; and Mirrlees, 2011). A cash-flow tax does not require knowing '*r*'. Neutrality is assured by carrying losses forward at the safe rate (Fane, 1987; Bond and Devereux, 1995). Cash-flow taxes pose transitional challenges, and thus there is little experience with an *economy-wide* implementation—although some countries adopt cash-flow taxes as special regimes for small businesses or for the natural resources sector.

considered in this paper. Rather, we will focus on the similarities between EPTs and allowances for normal returns.

Allowances for normal returns can be either i) an allowance for corporate capital (ACC), which gives a tax deduction irrespective of the financing mode (debt or equity); or an allowance for corporate equity (ACE), which provides deductions for notional return to equity in parallel to existing interest deductions. In this sense, the ACC or ACE restores equation (3) by providing a deduction *rK* (for *both* interest expense and return to equity). Allowances for normal returns imply: i) restoring the neutrality in the tax treatment of debt and equity; and ii) a zero marginal effective tax rate (METR) on a new investment that just reaches the breakeven point (that is, the pre- and after-tax returns are the same, leaving the normal return untaxed). Hence, these taxes are efficient by taxing only rent. Note that such a tax is also neutral with respect to inflation. For example, distortion to the value of equity or assets due to inflation would be offset by a corresponding change in the value of deduction. Detailed discussions of allowances of normal returns (ACE or ACC) can be found in several papers, including Boadway and Bruce (1984), Devereux and Freeman (1991), Hebous and Ruf (2017), Keen and King (2002), IMF (2016), and Mirrlees (2011).

Major historical examples of EPTs, as summarized in Table (1), were a form of an ACC by taxing returns to assets above a predetermined threshold. Except for these examples, the ACC as a general system has been rather uncommon. There are recent real-world ACE experiences without notable implementation challenges—either as an overall corporate tax system (including in Belgium, Croatia, or Italy) or tailored toward the natural resources sector that exhibits large location-specific rent. Hebous and Klemm (2020) outline countries with ACE systems and the choices of the rate and the allowance.

Computation of Excess Profits

As the "true" normal return is unobserved, in practice, an imputed rent on assets (or equity) is required. Two feasible options are:

$$ACC\ Based\ Excess\ Profits\ =\ EBIT - \underbrace{r \times (Total\ Assets)}_{Allowance} \qquad (6)$$

$$ACE\ Based\ Excess\ Profits\ =\ Pretax\ Profits - \underbrace{r \times (Total\ Equity)}_{Allowance} \qquad (7)$$

The ACC-based EPT defines the allowance based on total assets whereas the ACE-based EPT defines it based on equity. In principle, in both cases the base of the allowance can be either the total book value or the change of the value compared to a reference year. The resulting amount of the allowance is deducted from the EBIT (earnings before interest and taxes) in the case of the ACC-based EPT and from the pre-tax profits (after considering interest expense deductions) in the case of the ACE-based EPT.

The allowance rate (*r*) is in practice predetermined. For instance, it was 8 percent in the EPTs of the US during World War I and II, and recently 10 percent on specific tangible assets under the so-called GILTI provision.[17] One can also draw a parallel to Pillar 2 of the Inclusive Framework agreement that defines a substance-based income exclusion from the global corporate minimum tax, called a carve-out, (transitionally) to be a deduction of 8 percent of tangible assets and 10 percent of payroll. Pillar 1 is another example of a notion of excess profit, defined as profit exceeding 10 percent of revenue. A more neutral approach would be to follow the ACE or

[17] The GILTI (global intangible low-taxed income) was introduced in the 2017 Tax Cuts and Jobs Act. It is in some sense an example of a recent attempt to define 'excess' profit.

ACC. Countries that introduced an ACE regime, such as in Belgium, link the allowance to the yields on long-term government bonds.

If the EPT is meant to tax only a portion of the rent, as a way to capture only windfall profits or ensure that the tax does not apply to normal returns, then the allowance rate should be in principle higher than the normal rate of returns (*r*). This choice of (*r*) results in an EPT with a negative marginal tax rate because a firm's tax savings from investment exceeds its cost of capital (a situation referred to in the jargon as 'gold-plating'), potentially resulting in investment brought forward in time and causing unviable projects before tax to become viable. What matters for this effect is that the effective tax rate is higher in earlier than in later periods. And thus the incentive is greater the higher the EPT rate and the higher the allowance rate (IMF, 2012).

In theory, the resulting portion of excess profits subjected to the tax is the same according to both computation methods: ACC-based EPT or ACE-based EPT (Annex 2). However, in practice they can be nonequivalent because of differences between firm-specific costs of debt and equity. To some extent, the ACC-based EPT has some advantages to the ACE-based EPT. First, the line between equity and debt can be blurry complicating the computation of the ACE-based allowance. For example, hybrid securities combine characteristics of both debt and equity. However, an ACE-based EPT is still relatively easy to implement because the allowance is simply deducted from the corporate income tax base and many countries have rules to distinguish debt and equity that are used to compute debt-equity ratios (used to limit interest deductions if the debt-equity ratio exceeds a specific threshold; the so-called thin-capitalization rules). Second, importantly, if the EPT is temporary, an ACE-based EPT could be more prone to tax planning through temporarily converting debt of the affiliate into equity until the tax is abolished and then converting it back to debt.

The treatment of negative excess profits (that is, 'losses') influences the EPT's efficiency features and revenue gains. In principle, if negative excess profits are carried forward with uplift equal to *r* or the tax value of losses are refunded, then the EPT remains neutral to investment. Without an uplift on prior period losses or refund, the EPT would not account for the lost net present value between the time of the loss and when excess profits are realized, leading to normal returns being taxed and impacting marginal investment decisions.[18]

General vs Sector-Specific EPT

General EPTs—implemented through appropriately designed and drafted domestic tax law instruments—avoid an ad hoc distorting 'pick-and-choose' approach. The EPT design would thus target excess profits of all companies. Even for war EPTs, it proved extremely difficult to draw a line of demarcation to capture only excess profits of manufacturers of munitions or specific traders. With the spread of excess profit across the economy, in the words of Plehn (1920): "*So post hoc easily became propter hoc and all profits were drawn into the net*". Moreover, putting aside fiscal regimes for the extractive sector, specific design challenges emerge with the use of sector specific taxes and potential distortions associated with ring-fencing. In case of positive externalities (such as R&D activities), cost-based tax incentives can be used (such as accelerated depreciation allowances and income tax credits) that are found in the literature to be more effective and efficient than reduced corporate income tax rates or exempting excess profits form the EPT (Alstadsæter, 2018; EC, 2014).

[18] Alternatively, corporate income tax liabilities could be reduced in lieu of a refund, although this would create bias against firms without existing positive income under the corporate income tax. For the extractives, for example Norway provides a refund equal to the tax value of losses during the exploration period, while all other rent-targeting taxes provide uplift on prior period losses.

Temporary versus Permanent EPTs

A temporary EPT is motivated by a temporary economic shock that generates windfall profits, especially if this shock is associated with high aggregate fiscal costs and the need to fund programs to support households at the lower end of the income distribution. There are, though, two general arguments in favor of a permanent EPT: i) the need for a more efficient tax system to eliminate debt bias and distortions to investment decisions (as discussed above); and ii) avoiding the potential deficiency of temporary EPTs mainly in terms of potentially affecting the investment timing and/or the financial structure.

A temporary EPT can also result in gold-plating by incentivizing projects with investments during the EPT and revenues after the EPT period. This incentive arises for companies with existing excess profits because an investor receives a tax saving at a relative high rate (for example, the corporate income tax plus the EPT rate), but pays tax on its profits at a lower rate (for example, the corporate income tax rate). Such a subsidy for current investment results in foregone EPT revenue, and changes in the timing and levels of investment. Moreover, it creates a bias against firms without existing EPT liability under various conditions.[19] See Annex I for a numerical illustration.

Another issue is the financial structure under temporary EPTs. Specifically, in the case of an ACE-based EPT, if the investment horizon is longer than a temporary EPT—and as normal returns are still subject to corporate income tax while the tax on rent is expected to be lower in the future—firms can increase equity to lower the EPT and increase debt immediately after the demise of the EPT. This financing strategy may not reflect a change in real investment but rather be motivated by tax planing.

EPTs can be permanent, but then the question is why not implement a fundamental tax reform by gradually expanding the EPT, while lowering the corporate income tax to become permanently replaced by an EPT system. Whether temporary or permanent EPTs, tax law design and administrative considerations should be taken into account to manage implementation risks.[20]

The Tax Rate on Excess Profits

The overall tax rate on excess profits, while ultimately a policy choice, can be considerably higher than the statutory corporate income tax rate since the EPTs are not distortionary. Historically, the EPT rate reached 95 percent in the United States (Table 1). However, current international tax pressures in the form of profit shifting and tax competition somewhat put a limit on the EPT rate.

Interaction with the Existing Corporate Income Tax

If the EPT is temporary, it would coexist with the corporate income tax. The portion of profits that is subjected to the EPT would not be subjected to the corporate income tax, while the remaining profits would be taxed under the existing corporate income tax. For example, if pre-tax profits are 44,000 and the excess profits are 20,000 (as in the example in Annex II), the EPT applies on excess profits of 20,000 and the corporate income tax applies only on the difference of 24,000. In practice, the already paid corporate income tax on excess profits can be credited against the EPT. Alternatively, it can be designed as a surcharge on the corporate income tax. In this way, the corporate income tax applies to the full 44,000 and the EPT surcharge would apply to the

[19] A firm that does not earn excess profits while the EPT is in place does not receive a deduction for any tax benefit for negative excess profits (unless the tax value of losses is unrefunded). Firms with existing excess profits receive a deduction against EPT for any new investment and, thus, receive the full tax saving benefit.

[20] Waerzeggers and Hillier (2021) discuss key legal principles toward the adoption of a rules-based tax instrument that minimizes legal uncertainty.

20,000, with a choice of the EPT rate. For loss-making companies, no taxes would be paid—neither EPT nor corporate income tax—and losses can be carried forward under the existing corporate income tax rules.

EPT Avoidance

A set of rules would be needed to protect the EPT base. A non-exclusive list of EPT avoidance possibilities includes splitting into more than one company; changing the location of the headquarter (inversion); and/or engaging in M&A activities with loss-making companies.[21] Additionally, the EPT coverage should ensure tax neutrality with respect to the legal form of the business to make it robust against tax avoidance by switching to a non-corporate form.

Moreover, inflating the value of assets on the books raises the allowance, thereby narrowing the EPT base. The valuation of assets is very critical especially at the current age of increased importance of mobile and hard-to-price intangible-assets (including patents and trademarks) in generating rent—distinguishable features from the war times' tangible-capital-intensive companies that were subjected to EPTs. Finally, reducing reported earnings through strategies of shifting profits to low tax jurisdictions—one major loophole of the existing outdated corporate income tax arrangements—can significantly erode the EPT base (more on this below).

Unilateral EPTs: Taxing Domestic versus Worldwide Excess Profits

The tax revenue in country (i) from an EPT imposed on the unconsolidated account of the multinational enterprise is given by:

$$TaxRev_i = \tau_i \pi_i^{normal} + t_i \pi_i^{excess}, \quad (8)$$

where π_i^{excess} is defined as in equation (6) or (7), and the normal return (π_i^{normal}) equal to total profit in country (i) minus π_i^{excess}. The tax rate on excess profit, t, does not need to be equal to the corporate income tax rate τ.

With increased concerns about profit shifting to low tax jurisdictions[22], reported excess profits in high tax countries may further shrink to avoid the EPT. One option would be to compute the excess profits based on assets in the global consolidated accounts (that is, considering global, rather than only domestic, activities). This would be robust to profit shifting practices because even if transfer pricing and lending between related parties erode domestically reported profits, the EPT base is the global profit. Tax revenue would be given as:

$$TaxRev_i = \tau_i \pi_i^{normal} + t_i \omega_i \sum_i \pi_i^{excess}, \quad (9)$$

where ω_i is the weight of country (i) in global excess profit of the company $\sum_i \pi_i^{excess}$. The weight can be for example the share in global sales. Complications may arise, however, in connection to whether (or not) excess profits were already taxed in other countries and under existing tax treaties. There would be a strong need for harmonization of the calculation of the apportionable profits across jurisdictions. International coordination becomes important in order to reduce the risk of increased cross-border tax disputes that could jeopardize the collection of revenues. Any deviations from current norms and practices (for example, taxing in the absence of a permanent establishment/physical presence) would also need to be implemented through domestic law, with

[21] See, for example, Avi-Yonah (2020).

[22] See for example, Bratta et al. (2021), Clausing (2016), Hebous and Johannesen (2021), and Tørsløv et al. (forthcoming).

those deviations supported by tax treaties. A unilateral EPT on global consolidated accounts can also become a form of a minimum tax (which exists in a form or another in some countries).[23]

Alternatively, as discussed below, an international agreement can be reached to allocate the EPT revenue across countries, which implies cross-border coordination of the weights ω_i and the definition of excess profit in equation (9). This reform becomes a formulary apportionment reform (Avi-Yonah and Clausing, 2020; IMF, 2019b), but with an allowance for normal return. The weights can be based on sales by destination. As argued in Auerbach et al. (2017) and Devereux et al. (2020), the destination-based principle of taxing profits is more robust to profit shifting by multinationals and tax competition between countries than the existing international tax arrangements that are based on the source-residence principle.[24]

Coordinated EPTs

All historical examples set out in Section II were unilateral EPTs and were not coordinated. Yet, the business model of the 21st-century global firm is based on a complex global supply chain, increased digitalization, and increased importance of hard-to-price intangible assets in generating rent. All in all, economic rent of one multinational company is generated and located in multiple countries. Therefore, a coordinated or a globally agreed EPT design helps addressing spillovers and improve robustness of an EPT (as mentioned above). However, there is a risk of delay in reaching a global agreement. In that case, and even more so if no global agreement were to be reached, the chances of a timely adaptation of an EPT diminishes, failing to establish solidarity and raise revenue when they are much needed. For some countries, EPTs may become important for the sustenance of their revenues. And, a unilateral EPT is a feasible option particularly if it is designed as a first step toward a global reform. In this context, according to theoretical and empirical literature, a properly designed global minimum corporate tax generates room for countries to raise their corporate taxes (Hebous and Keen, 2021; Devereux et al. 2008). If such a global minimum tax is implemented, EPTs provide a more efficient alternative to raising the corporate income tax rates.

Allowances for normal profits—albeit efficient—are still vulnerable to profit shifting and tax competition, unless a destination-based element of taxation is integrated into their designs. A destination-based principle, broadly, implies that the tax is paid (at least partially) in the final market countries. Global adoption of destination-based taxation, depending on the exact design, can largely or even fully eliminate tax competition and profit shifting (Auerbach et al, 2017; IMF, 2019b; Hebous and Klemm, 2020). While such a bold fundamental reform is currently not on the agenda, less bold versions do exist. Pillar 1 of the Inclusive Framework agreement entails a shift to a destination-based principle, by creating new taxing rights for market countries. In 2016, the European Union proposed a common consolidated corporate tax base to be allocated based on a formula that contains sales by destination (in addition to assets and employment).

In many respects, the practical implementation of a coordinated ACC-based EPTs (like in equation 9) is similar to the "residual profit allocation" (RPA) approach—yet another widely discussed reform option. The RPA is an

[23] For example, since the 2018 Tax Cuts and Jobs Act (TCJA), the United States imposes: i) a minimum tax, with no deferral, at half of the statutory federal corporate income tax rate of 10.5 percent, on 'global intangible low tax income' (GILTI); and ii) a base erosion and anti-abuse tax (BEAT) that denies deductible payments to related parties under some conditions resulting in a de facto minimum tax. Also, the recently adopted Corporate Alternative Minimum Tax in the US is a form of a minimum tax based on global profits with certain adjustments—for instance, to exclude depreciation deduction and US tax credits.

[24] Devereux et al. (2020) explain the border-adjustment idea and why it is even more robust than the destination-based principle. IMF (2019b) provides detailed analysis of fundamental tax reforms.

idea—originally stemming from tax practitioners—that also decomposes profit of multinationals into two parts: routine and residual, thereby the latter would be allocated across countries, for example, based on sales by destination and somewhat similarly to the general idea of Pillar 1. Conceptually, this decomposition can be equivalent to normal return and rent, but generally may not be. Routine profit is broadly defined as profits that can be deduced from third-party profits that perform the same functions as the multinational company (that is, determined based on existing transfer pricing methods). However, in principle it can be defined, for example, as some notional rate of return to tangible assets (for instance 7.5 or 10 percent) or as a mark-up over costs. RPA technical details can be very elaborate, and are beyond the scope of this paper[25], but the key message is that an EPT can be broadly in line with the RPA and other similar reform ideas.

Thus, an EPT shares important features, and is broadly consistent, with current ideas and proposals to reform profit taxation. Eventually, the various reform approaches shift the tax burden to economic rent, and if allocated to destination countries, it becomes more robust to spillovers from profit shifting and tax competition. In this sense, unilateral EPTs can be a step toward a coordinated global reform that transforms the corporate income tax into a rent tax, possibly based (in part) on the destination principle.

Revenue Potential of Excess Profits Taxes

EPTs raised significant revenues in the past, as mentioned in Section II. In this section, we estimate the revenue impacts of various designs of hypothetical EPTs on multinational enterprises (ACC-based and ACE-based EPTs—coordinated and unilateral). In particular, to maximize the use of available data, we employ four different databases as summarized in Table 2. Two datasets, the U.S. Bureau of Economic Analysis (BEA) database and the country-by-country database available at the OECD statistics, are most suitable for estimating the impact of unilateral EPTs. The other two datasets, the Refinitiv Database and the S&P Capital IQ data on firms' consolidated accounts, are particularly useful for looking at globally coordinated EPTs. The choice of the design of EPT (whether ACC- or ACE-based) in these exercises is driven by what is best permitted by available information in each database. If the data permit, we also look at the revenue impact if excess profit is defined as profit exceeding the average profit over the last years. As a common assumption, in alle exercises the allowance rate is 10 percent. All data sources include only multinationals, and thus domestic firms are not included in the analysis. The EPT rate is taken to be the current corporate income tax rate, although in practice there is no need for both rates to be the same. In addition, in one exercise, we simulate an EPT of 10 percent on top of the corporate income tax.

Table 2: Databases and Designs of EPTs in the Analysis

Database	*Implementation*	*Design*
U.S. Bureau of Economic Analysis (BEA)	Unilateral	• ACE-based • Profits exceeding the average profit over the last years
Country-by-country reports, OECD Statistics	Unilateral	• ACE-based
Refinitiv	Coordinated	• ACE-based • Profits exceeding the average profit over the last years
S&P Capital IQ	Coordinated	• ACC-based

[25] See Beer et al. (forthcoming).

Revenue Impact of Unilateral EPT

ACE-Based EPT on U.S. Multinationals Abroad

Data

The U.S. Bureau of Economic Analysis (BEA) publishes annual data on the aggregate finances and operations of U.S. based multinationals. These multinationals are responsible for approximately one third of global 'excess' profits (Beer et al., forthcoming). For affiliates in 51 countries, there is detailed information on the foreign income tax paid by all affiliates, the profit they report, the level of equity and the size of equity investments in other foreign affiliates. Using these aggregate data at the country level, we can interpret the estimates as the revenue impacts of a hypothetical unilateral EPT based on unconsolidated accounts. Although data availability narrows the number of countries included in our analysis to 51 countries, these countries make up around 93 percent of total worldwide profits of majority-owned U.S. affiliates. Only 16 countries in the sample are middle income countries (12 upper middle-income countries and 4 lower-middle income countries), and the rest are high income countries. We use the latest available data for 2016, 2017, 2018, and preliminary data from 2019.

Measurement and Empirical Method

The measure of profit in this exercise reflects operating income, excluding capital gains and losses and income from equity investments (which avoids double counting of income and are usually tax exempt, to avoid double taxation). It represents the balance of all reported profits and losses by U.S. based multinationals operating in the country. Generally, this measure tends to be smaller than the 'true' corporate income tax base because in practice there are restrictions to loss offset within company groups. And because losses of different firms are aggregated in the data.

Excess profit is calculated using the ACE approach (as in equation 7) with an ACE allowance rate of 10 percent. The equity measure used is in net terms, whereby equity investment in other affiliates is subtracted from total owner's equity to avoid double counting. The main drawback of this computation is that it tends to underestimate excess profits in a country because: i) it aggregates loss-making and profit-making firms in a country; ii) even among profit-making companies, the aggregation includes firms with returns above and below the assumed normal return; and (iii) it only captures U.S. MNEs; that is, no other multinationals and no domestic firms. Hence, results present a lower bound. The BEA data are not suitable for looking at the ACC variant of EPT because of the lack of information on debt service payments by companies, which needs to be added back to reported profits before deducting the capital allowance.

This static empirical analysis is based on computing excess profits in each country, as in equation 7, and multiplying the outcome with the current corporate income tax rate. This estimation assumes (as we do throughout the paper) that the rates of EPTs are equal to the statutory corporate income tax rates. The static approach gives indication for the short-term direct revenue impacts but is generally less informative about long-term impacts as it abstracts from dynamic behavioral effects that include possible changes in firm investment and location decisions.

Results

Results suggest that around 20 countries in the sample would have positive excess profits (Table 1). Between 2016 and 2018, around half of excess profits are in Asia Pacific. The average return on net equity in Asia Pacific is between 12-13 percent, well above the allowance rate of 10 percent, in part reflecting strong economic growth in the region during this period (IMF, 2019c). The largest excess profits are located in

investment hubs that are well-known as locations of corporate profits and channeling FDI. Hence, the results illustrate the importance of profit shifting, and thus the need for either coordination or adopting a world-wide approach to the EPT. For those countries, imposing an EPT at the current corporate income tax rate would increase revenue from U.S. multinationals by over 100 percent (around 0.6 – 1.5 percent of GDP). However, this static estimation completely ignores that raising taxes unilaterally would incentivize reported profits to decline in the implementing jurisdiction and relocate to other jurisdictions. In this sense, these are upper bound estimates. The additional revenue raised in other countries is rather more moderate.

For robustness, we look at the results prior (2016 and 2017) and during the implementation of GILTI (2018 and 19). Results are rather similar. While there are several caveats to these computations, this finding does underscore the general challenge of profit shifting that would face a unilateral EPT, as the revenue impact reflects the current location of profits.

To gain further insights, in an additional exercise we define excess profits as profits in excess of the average profits over the last four years. The revenue impact of EPTs continues to be the largest in investment hubs. However, results suggest that the aggregate tax base defined in terms of profitability relative to previous years is smaller than ACE-based EPT by about 20 percent, and hence revenue is also estimated to be smaller (by approximately 25 percent).

Table 3: Revenue Impacts of ACE-Based Unilateral EPT (Using BEA Data on U.S. Multinationals)

	2016				2017				2018				2019			
	Excess Profit	Profit/Net Equity	Revenue		Excess Profit	Profit/Net Equity	Revenue		Excess Profit	Profit/Net Equity	Revenue		Excess Profit	Profit/Net Equity	Revenue	
	USD millions	%	% of GDP	% of CIT revenue	USD millions	%	% of GDP	% of CIT revenue	USD millions	%	% of GDP	% of CIT revenue	USD millions	%	% of GDP	% of CIT revenue
Canada	(10,987)	6.8	-	-	(5,275)	8.6	-	-	(3,740)	9.0	-	-	(6,777)	8.4	-	-
Austria	238	12.4	0.0	24.2	516	14.0	0.0	39.7	(92)	9.2	-	-	9	10.1	0.0	0.8
Belgium	1,382	12.3	0.1	25.1	2,922	15.2	0.2	39.1	1,749	12.9	0.1	23.6	1,492	12.6	0.1	20.6
Czech Republic	(196)	7.7	-	-	41	10.4	0.0	4.5	(16)	9.8	-	-	(232)	7.7	-	-
Denmark	(1,871)	2.4	-	-	(2,044)	2.3	-	-	(2,441)	2.0	-	-	(1,983)	2.8	-	-
Finland	(1,561)	(19.4)	-	-	(191)	8.1	-	-	(99)	8.9	-	-	(221)	7.7	-	-
France	(4,872)	5.9	-	-	(5,276)	5.5	-	-	(6,914)	4.3	-	-	(5,136)	6.2	-	-
Germany	(3,277)	7.4	-	-	(1,816)	8.6	-	-	(5,983)	6.3	-	-	(9,216)	4.6	-	-
Greece	(60)	6.5	-										(128)	5.9	-	-
Ireland	33,215	17.6	1.4	98.6	36,890	18.3	1.4	111.5	52,407	21.1	1.8	88.9	44,707	20.4	1.5	108.4
Italy	(2,096)	6.4	-	-	(1,198)	8.1	-	-	(2,352)	6.5	-	-	1,029	11.7	0.0	15.3
Luxembourg	(15,576)	0.1	-	-	(5,966)	6.0	-	-	(16,295)	(2.0)	-	-	(24,235)	0.1	-	-
Netherlands	13,959	14.8	0.4	65.9	22,332	18.1	0.7	104.9	22,805	30.1	0.6	117.0	28,005	64.9	0.8	115.5
Norway	(1,615)	6.3	-	-	589	11.4	0.0	5.0	2,160	16.2	0.1	15.8	2,403	16.9	0.1	23.2
Poland	467	12.2	0.0	25.6	(106)	9.5	-	-	70	10.3	0.0	2.6	216	10.8	0.0	8.2
Portugal	(180)	7.1	-	-	32	10.8	0.0	10.8	109	12.4	0.0	22.8	(264)	7.1	-	-
Russia	(733)	6.9	-	-	381	11.6	0.0	6.4	1,021	14.6	0.0	23.9	(63)	9.8	-	-
Spain	(652)	8.6	-	-	(697)	8.7	-	-	(269)	9.5	-	-	(915)	8.4	-	-
Sweden	(1,662)	6.4	-	-	(1,868)	6.2	-	-	(2,843)	4.0	-	-	(2,872)	4.7	-	-
Switzerland	11,762	13.8	0.4	68.0	(4,958)	8.8	-	-	8,525	12.7	0.3	39.2	6,937	11.8	0.2	58.8
Turkey	292	13.3	0.0	21.4	410	14.9	0.0	29.3	65	10.8	0.0	5.9	594	16.7	0.0	35.5
United Kingdom	(43,132)	3.9	-	-	(39,166)	5.2	-	-	(50,238)	4.0	-	-	(84,094)	1.5	-	-
Argentina	852	13.4	0.0	13.1	1,676	16.3	0.1	60.3	504	12.3	0.0	17.3	60	10.3	0.0	2.0
Brazil	(7,786)	2.1	-	-	(5,404)	5.0	-	-	(5,130)	5.0	-	-	(4,869)	5.5	-	-
Chile	(769)	7.8	-	-	(181)	9.5	-	-	1,573	15.0	0.1	41.4	1,067	13.2	0.1	31.6
Colombia	(229)	8.0	-	-	(35)	9.7	-	-	336	12.9	0.0	19.3	109	10.9	0.0	5.3
Peru	(1,089)	1.1	-	-	1,868	26.6	0.3	34.7	2,113	26.8	0.3	78.8	1,601	22.2	0.2	50.5
Venezuela	539	24.5	0.1	50.6			-	-			-	-			-	-
Mexico	3,593	12.8	0.1	24.0	6,775	15.0	0.2	36.8	8,247	16.4	0.2	51.1	6,414	14.2	0.2	38.1
Panama	(180)	4.7	-	-	(40)	8.9	-	-	26	10.8	0.0	7.7	(30)	9.1	-	-
Barbados	(2,098)	3.6	-	-	(3,039)	6.1	-		(2,844)	6.5	-		(2,148)	7.8	-	
Bermuda	(27,828)	(2.5)		-	(33,923)	1.1		-	(25,871)	2.5		-	(26,462)	2.6		-
UK Caribbean	(13,435)	4.6		-	(15,405)	4.6		-	(13,078)	4.6		-	(15,539)	5.1		-
Egypt	(378)	7.3	-	-	213	11.7	0.0		1,048	17.8	0.1	22.7	681	14.7	0.1	19.1
South Africa	(509)	6.1	-	-	(790)	4.7	-	-	(384)	7.5	-	-	(937)	5.4	-	-
Israel	(1,832)	5.5	-	-	(1,319)	6.8	-	-	(1,449)	6.9	-	-	(2,707)	5.9	-	-
Saudi Arabia	(1,078)	(3.6)	-	-	(1,171)	(5.1)	-	-	(1,149)	(4.3)	-	-			-	-
UAE	2,696	34.8	0.4	73.0												
Australia	(7,780)	3.1	-	-	(4,552)	6.2	-	-	(7,138)	3.7	-	-	(6,837)	4.3	-	-
China	8,142	15.2	0.0	43.9	11,136	16.8	0.0	48.7	13,316	17.7	0.0	56.6	11,815	16.3	0.0	47.9
Hong Kong	(2,357)	7.1	-	-	(1,546)	8.3	-	-	90	10.1	0.0	0.9	(2,427)	7.7	-	-
India	1,194	12.0	0.0	18.0	2,232	13.3	0.0	27.0	866	11.1	0.0	8.1	(1,664)	8.3	-	-
Indonesia	1,852	17.4	0.0	26.8	3,625	26.8	0.1	47.2	4,442	25.9	0.1	58.4	1,189	14.1	0.0	17.7
Japan	4,773	12.9	0.0	20.7	6,072	13.6	0.0	36.0	8,240	14.9	0.0	32.8	3,853	11.9	0.0	14.2
Korea	434	10.8	0.0	10.8	319	10.6	0.0	6.4	1,659	17.4	0.0	71.7	1,817	16.8	0.0	77.7
Malaysia	657	12.8	0.1	47.8	1,564	16.8	0.1	62.5	(256)	7.8	-	-	(340)	7.3	-	-
New Zealand	(148)	8.8	-	-	(175)	8.7	-	-	362	13.4	0.0	32.6			-	-
Philippines	731	15.9	0.1	56.5	781	15.9	0.1	52.5	22,213	17.3	2.0	174.3	18,801	17.0	1.6	171.6
Singapore	6,834	13.4	0.4	49.3	9,345	13.7	0.5	52.3	(508)	9.0	-	-	(1,100)	8.4	-	-
Taiwan	814	13.9	0.0	33.6	748	12.8	0.0	25.9	(981)	7.6	-	-	(749)	8.2	-	-
Thailand	2,436	19.8	0.1	67.8					4,607	30.9	0.2	92.1	3,358	25.1	0.1	62.6

Note: This Table reports results from using equation (7) to compute the revenue impacts of unilateral ACE-based EPT with an ACE allowance of 10 percent and EPT rates equal to the statutory corporate income tax rates. The source of the data is the BEA. Numbers between brackets are negative.

ACE-Based EPT on Non- U.S. Multinationals (Country-by-Country Reports)

Data

Country by country (CbC) reports provide information on the aggregate finance and operations of multinationals in the headquarter country and each host country. CbC data are currently available at the OECD statistical database for 2016 and 2017. The underlying idea and structure of the data are similar to the BEA, but CbC reports are available for multinationals with headquarters in 26 countries and operations in nearly 170 host jurisdictions. However, unlike the BEA data that cover the universe of US-headquartered multinationals, the CbC reports cover only those multinationals with global revenue exceeding EUR750 million (the threshold that is needed to be in-scope of the global minimum corporate income tax). The data do not include domestic firms. CbC statistics have limitations that are important to keep in mind when interpreting the results (OECD, 2021b). Firstly, the inclusion of intracompany dividends in profits can result in double counting and substantially lower effective tax rates--an issue that has also recently been emphasized by Blouin and Robinson (2020). Secondly, as CbC reports represent an aggregation of separate accounts of each affiliate, revenue may be overstated due to related-party transactions. For the analysis, we restrict the sample to those sub-groups that are reporting profits, since those with losses would not be subject to the EPT.

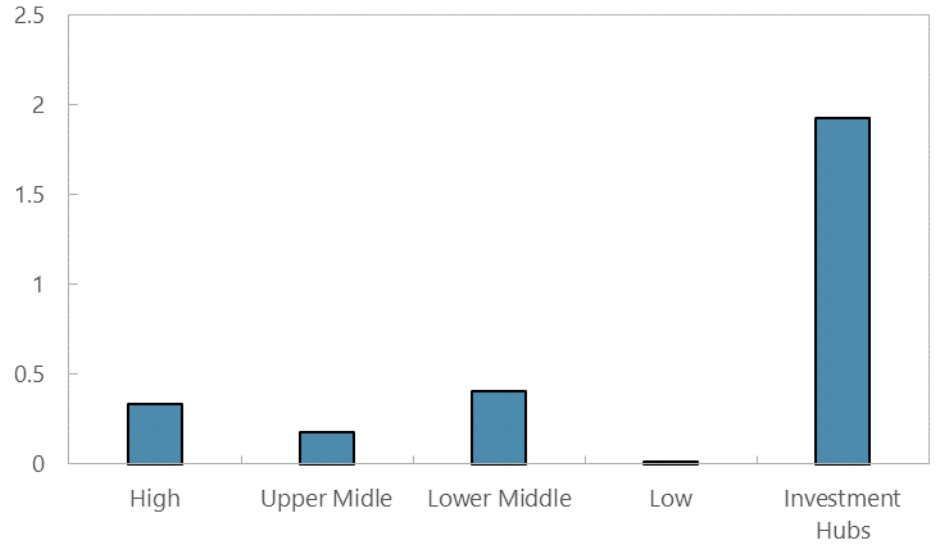
Measurement and Empirical Method

This exercise estimates excess profits for ACE-based EPT (as in equation 7) using data on reported profits and equity, with equity defined to be the sum of stated capital and accumulated earnings. As in the above estimation, we set the ACE allowance rate at 10 percent. In this database, we are not able to subtract equity investment in affiliates from the measure of equity, nor are we able to exclude intracompany dividends from the measure of profit. OECD (2020) compares CbC profits with that reported in tax returns and find that 17 percent of profits are made up of dividends for the Netherlands. Based on this, to account for the presence of intracompany dividends, reported profits are discounted by 17 percent. Thus, while informative, the revenue estimates should be interpreted as a broad guide, with a tendency to underestimate the true level due to the inflated level of equity.

Results

Results suggest that in 2017, countries reflecting a mix of large economies and investment hubs had the largest excess profits ranging between 0.15 percent of GDP and over 1000 percent of GDP. As shown in Figure 3, investment hubs have the most to gain from EPTs as excess profit in the median hub is around 1.9 percent of GDP. In contrast, the median low-income country has a very low level of excess profits (0.01 percent of GDP). If the statutory income tax rate is applied to these excess profits, then the median investment hub would gain 0.3 percent of GDP in revenue. As shown in Figure (3), the median high-income country would raise 0.04 percent of GDP, the median upper middle-income country would raise 0.03 percent of GDP, and the median lower middle-income country would raise 0.1 percent of GDP. Consistent with the results from the BEA data (reported above), this analysis also underscores the importance of the current location pattern of excess profits (and more generally profit shifting) for raising revenues from unilateral EPTs, and hence the challenge in implementing a unilateral EPT based on firm unconsolidated accounts.

Figure 3: Excess Profits as Percent of GDP (Median of Country Group)



Note: This chart reports results for the median country in a country group from using equation (7) to compute the excess profits of a unilateral ACE-based EPT with an ACE allowance of 10 percent. The source of the data is the database for country-by-country reports of multinationals available at the OECD. Data do not include the recent episode of surging energy prices.

Globally Coordinated EPTs (Based on Firm Consolidated Accounts)

Simulation Using Refinitiv Database

Data

The *Refinitiv* database includes several years of financial and market information for publicly traded companies covering 99 percent of global market capitalization. Notably, data on consolidated profits in 2020 – sourced from the company's annual financial statements – is available. These data are particularly useful to provide an indication of profitability during the COVID-19 pandemic. The analysis presented focuses on the largest of these companies with a market capitalization greater than USD 2 billion. After filtering for data availability for the level of equity, the sample comprises 3,000 companies.

Measurement and Estimation Method

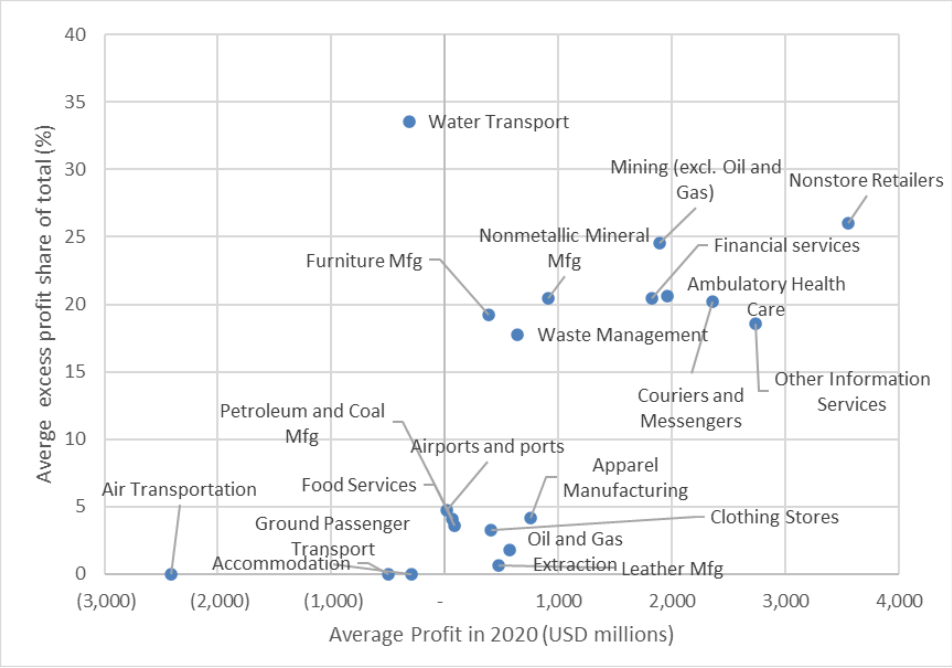
The analysis using this dataset considers two designs. First, it computes the EPT that defines a normal return as the average profits between 2015 and 2019. Under this definition, the EPT base is profits that are above the average level of profits over the four years prior to the pandemic. Second, it estimates the potential tax base from an ACE-type EPT using data on profits and shareholder equity. As throughout the paper, the allowance rate is 10 percent. The equity variable does not deduct equity investment in other companies. However, since the data is based on globally consolidated accounts of the multinational enterprises, it includes only equity investments in non-related parties outside of the multinational group. In the ranking analysis, note that we include only industries with more than 5 observations.

Results

Utilizing average historical profits narrows the type of rent that is captured, focusing it closely to windfall gains from the pandemic compared to ACE- or ACC-based EPTs. Figure 4 shows that high shares of excess profits of approximately 34 percent of total profits are observed in the water transportation industry (within this industry, profits in shipping companies are partially offset by losses from cruise ship companies); non-store retailers, ambulatory health care, couriers and messengers and other information services (including the U.S. 'big tech' firms such as Facebook and Google). On the other end of the spectrum, there are industries that reported no excess profits in 2020 and are negatively affected by the pandemic, including air transportation, ground passenger transportation, and accommodation.

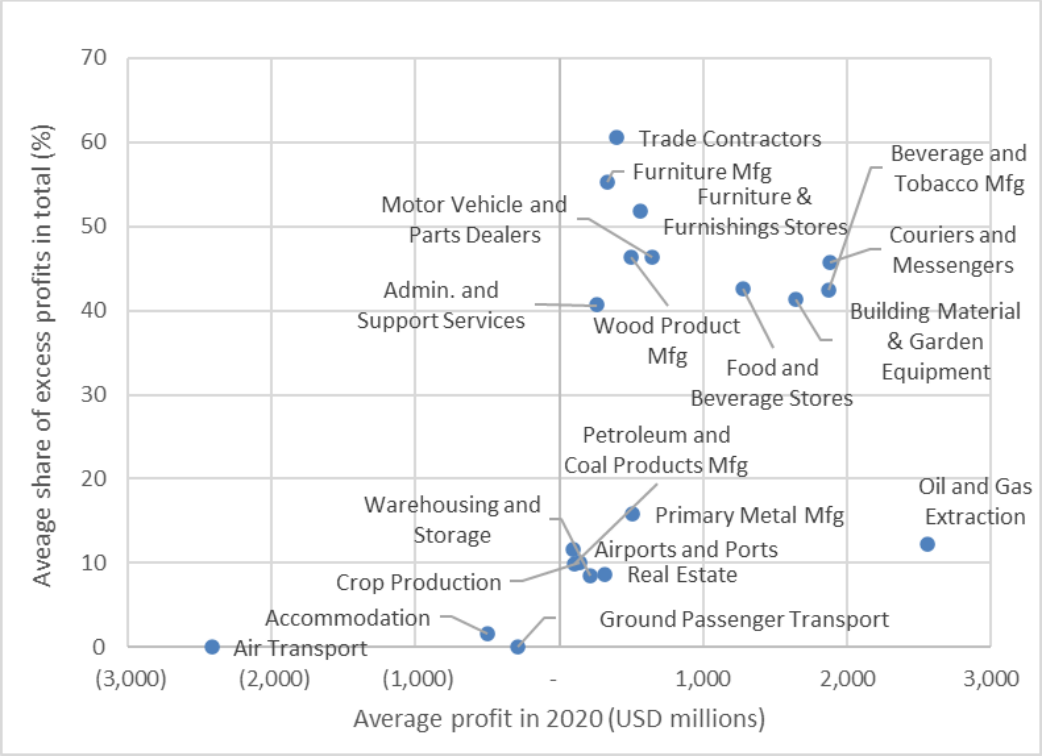
Using the ACE-based definition broadens the industries that exhibit excess profits and more than doubles the size of excess profits since it does only focus on windfall gains. High shares of excess profits are observed in the trade contractor industry, home improvement sector (furniture, building and garden materials) and food and beverage sectors. Couriers and messengers display high shares of excess profits, regardless of the definition used. Similarly, the air transportation, ground passenger transportation and accommodation industries reported losses in 2020 and come at the bottom of the ranking irrespective of the excess profit definition. In absolute dollar terms, the extractive sector remains the largest contributor to the EPT base—unsurprisingly given the importance of natural resources as a source of location-specific rents. The second largest contributor are non-store retailers, followed by telecommunications.

Figure 4: Post COVID-19 Excess Profits (Based on Historical Benchmarks): Industry-Specific Results Using Refinitiv Data



Note: This chart reports results from using 4-year pre-pandemic average profit as the benchmark. The source of the data is Refinitiv. Data do not include the recent episode of surging energy prices.

Figure 5: Post COVID-19 Excess Profits (ACE-Based Method): Industry-Specific Results Using Refinitiv Data



Note: This chart reports results from using equation (7) to compute excess profits of a unilateral ACE-based EPT with an ACE allowance of 10 percent. The source of the data is Refinitiv. Data do not include the recent episode of surging energy prices.

S&P Capital IQ

Data

This analysis uses the consolidated accounts of the largest 40,000 (public and private) global companies from S&P Capital IQ.[26] In this dataset, information on country-by-country activities of the multinational group is unavailable. At the global level, in 2020, multinational profit reached USD 7.9 trillion (9.2 percent of world GDP). The energy sector and the financials together constitute 25 percent of global multinational profit. In terms of distribution, multinational profit is concentrated in relatively few, very large firms—42 percent of profit is earned by the 400 firms with the highest earnings (1 percent of the sample) and 80 percent of total profit is earned by 4,000 firms (10 percent of the sample). In what follows, we drop the extractives from the analysis given the specificity of this sector.

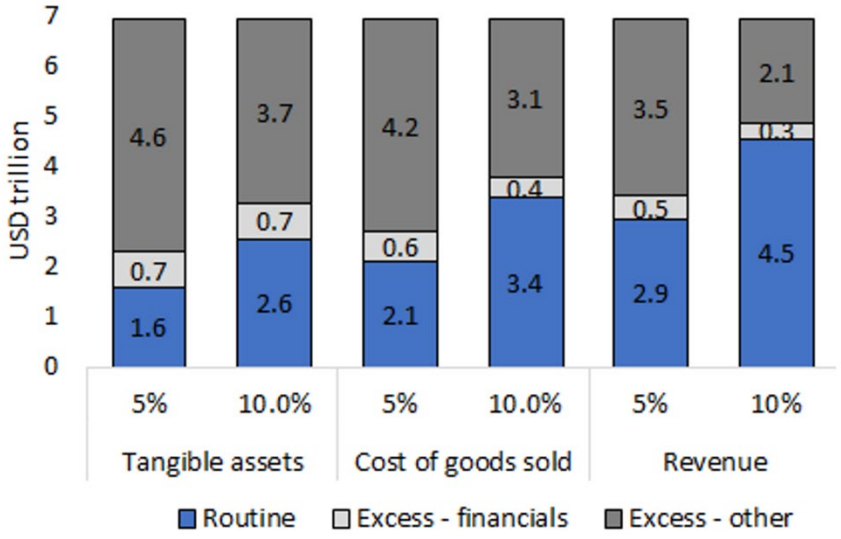
Measurement and Estimation Method

This exercise looks at an ACC-based EPT, as in equation 6, with an allowance rate of 10 percent of total worldwide consolidated assets of the company. The first step of this exercise is computing the global EPT,

[26] Companies with negative profit and missing values for assets and/or payroll are excluded from the sample, reducing the dataset from 50,000 to 40,000 multinationals. But the removed multinationals are relatively small.

which will in the second step be allocated to countries based on some formula including sales by destination. Revenue is calculated by multiplying the allocated tax base with the current corporate income tax rate.

Figure 6: Proxies of Normal and Excess Profit of Multinationals (Global Aggregate)



Note: Data do not include the recent episode of surging energy prices.

Results

For illustration, Figure 6 shows a range of excess profit and normal return, defining the latter as: (i) 5-10 percent of tangible assets, (ii) 5-10 percent of the cost of goods sold, and (iii) 5-10 percent of turnover (revenue). At the global level, excess profit of multinationals (excluding the extractives) is on average USD 4 trillion, ranging from USD trillion 2.9 to 6.1. All proxies provide relatively similar results for normal return except for the 10 percent of revenue. Banks and financials exhibit varying excess profits, depending on the method: out of 0.8 trillion of global profit, 9 percent can be excess if a ratio of tangible assets is used and 40 to 60 percent under the revenue mark-up definition.

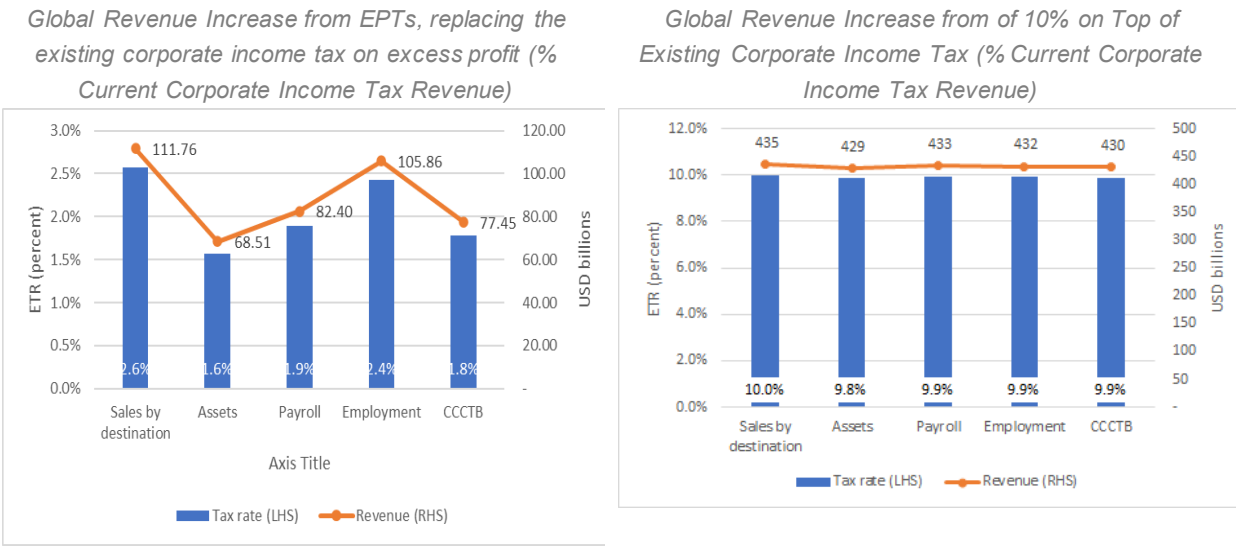
An EPT that is assessed on a consolidated account basis can be allocated to individual countries using a formula. Several allocation formulas have been proposed in the literature, including tangible assets, employees, payroll, and sales, or an index of multiple factors such as the European Commission proposal of a Common Consolidated Corporate Tax Base.[27] Below, we estimate the impact of an ACC-based EPT using different allocation methods and compute the corresponding tax using existing corporate income tax rates. The allocation key impacts the distribution of tax revenue across countries, thereby the global revenue impact of the same excess profit tax base. Figure 7 displays the results for five different allocation formulas: based on sales by destination, three formulas based on production (assets, or employment, or payroll), and one formula that has equal weights for assets, sales, and labor (with labor being split equally into employment and payroll). In the left panel of Figure 7, the findings suggest that if excess profit of multinationals is globally consolidated and allocated to countries based on a formula to replace the existing corporate income tax on the excess profit,

[27] The allocation formulas are computed from aggregate statistics and obtained from Beer et al. (forthcoming) and De Mooij (2021). Information on firm-specific formulas is unavailable, and thus the analysis applies the same allocation formula for all firms.

then global tax revenue goes up by over USD 100 billion (that is, an increase of 4 percent of current global corporate income tax revenue). The resulting increase in the global effective tax rate is between 1.6 and 2.6 percent, depending on the formula. Emphasizing again, the tax rate on excess profits does not need to be the current corporate income tax rate. For illustration, in the right panel of Figure 7, alternatively, the EPT is imposed at 10 percent globally and allocated to countries *on top of existing corporate income taxes* on excess profit. The result is an increase in global revenue by USD 400 billion (that is, an increase of 16 percent of current global corporate income tax revenue).[28]

As to the distribution of the revenue gains across countries, no country loses tax base in the calculation in the right panel of Figure 7. In estimates in the left panel of Figure 7, since the EPT is replacing the corporate income tax, revenue in some countries, particularly major hubs for corporate profit and FDI, declines. Advanced countries would raise their revenues from EPTs between 4 and 15 percent. Low-income countries favor an allocation key based on employment or assets as EPTs would raise revenue by a magnitude ranging from 12 to 18 percent of current corporate income taxes. Investment hubs unambiguously collect less revenues from excess profits of multinationals. This is because the starting point is the consolidated account, rather than reported profits in a country. The revenue estimates are static as they do not consider firm behavioral responses to the tax.

Figure 7: Revenue from Allocating EPTs on Globally Consolidated Accounts



Source: Authors' calculation. Note: Data are obtained from S&P IQ Capital. Excess Profits = EBIT – (0.1×(Total Assets)). Data do not include the recent episode of surging energy prices.

[28] In somewhat related exercise for Canada, the Canadian Parliamentary Budget Office (PBO, 2021) used IQ Capital data to estimate the revenue impact if an additional 15 percent tax rate were applied to excess profits earned by big Canadian firms in 2020. The results suggest that such an EPT tax would generate $7.9 billion in tax revenues for 2020.

Conclusion

A case can be made for taxing excess or windfall profits to meet extraordinary financing needs, while also supporting social cohesion, during the global pandemic and now during the episode of energy price surge following Russia's war in Ukraine. Some general EPTs were indeed embarked upon successfully in the past. The theme that emerges in this paper is as follows. An EPT can be implemented as an allowance for corporate capital or equity, in practice defining excess profit as returns above a predetermined percent of assets. If excess profit is location-specific, then the EPT should be at source. If excess profit is firm-specific, then the EPT can be at source or following the destination-based principle.

If an efficient design of the tax on profits were existent at the outset, it would have rendered new EPTs redundant. In practice, if the objective is mere revenue, then the EPT can be a temporary add-on to existing corporate income taxes covering the entire economy. More ambitiously, if the objective is also striving for an efficient system, the EPT can be introduced as a gateway for a permanent efficient tax replacing the corporate income tax altogether in the long-term. Depending on the design, taxing excess profits can yield sizable revenue. Temporary or permanent EPTs would face the same international pressures due to profit shifting and tax competition as the current corporate income tax does. These cross-border spillovers were less prominent during the World Wars' EPTs, but going forward can be addressed by combining the allowance for corporate capital or equity with the destination-based principle. Conceptually, the EPT ends up being a formulary apportionment approach consolidating the excess profit of the multinational at the global level and allocating it to countries based on sales by destination. This is similar to the core idea of Pillar 1 of the 2021 Inclusive Framework agreement to reform the taxation of multinationals.

Annex I. Gold-Plating and the Impact of a Temporary Excess Profit Tax on Investment

A temporary EPT can increase investment during the EPT period through incentivizing investments that would otherwise not be profitable and increasing the profitability of already viable future investments. An illustrative, two-period model is used to demonstrate these impacts below.

In Table 4, the business earns excess profit of 100 on existing activities in period 1 and 2, and must decide whether to undertake investment. There are three tax scenarios: (1) no EPT, (2) permanent EPT of 20 percent, and (3) temporary EPT of 20 percent in period 1 and 0 percent in period 2; and three investment scenarios: (A) no new investment, (B) an investment that just breaks even after the corporate income tax (net present value of 0), and (C) an investment unprofitable after the corporate income tax (net present value of -10). All values are shown after corporate income tax and in discounted terms.

The breakeven investment goes ahead under all tax scenarios, illustrated by a higher or equivalent net present value (column B, rows 12, 20, 28) as compared to not undertaking new investment (column A). The breakeven investment generates excess profit in the case of the temporary EPT (column B, row 26), showing that there is a significant benefit for the firm to invest while the EPT is in place. The unprofitable project after corporate income tax (CIT, column C) only becomes viable under the temporary EPT (row 26), as the investor receives tax savings of 20 in period 1 (the investment value multiplied by the EPT rate) and then does not pay EPT in period 2 since the EPT has been terminated.

Table 4: Gold-Plating under a Temporary EPT

Row	Column	A **Scenario A** *No new investment*	B **Scenario B** *Breakeven after CIT*	C **Scenario C** *Unprofitable after CIT*
	Before tax - new investment			
1	Baseline profit after CIT - period 1	100	100	100
2	Baseline profit after CIT - period 2	100	100	100
3	*NPV of baseline profit before EPT*	*200*	*200*	*200*
4	Investment - period 1	-	(100)	(100)
5	Revenue after CIT - period 2	-	100	90
6	NPV of new investment before EPT	-	-	(10)
7	*NPV of baseline and new investment before EPT*	*200*	*200*	*190*
	No EPT (tax scenario 1)			
8	EPT rate - period 1	-	-	-
9	EPT rate - period 2	-	-	-
10	NPV of new investment, investor - No EPT	-	-	(10)
11	NPV of new investment, govt. - No EPT	-	-	-
12	NPV of baseline and new investment, investor - No EPT	200	200	190
13	NPV of baseline and new investment, government - No EPT	-	-	-
14	AETR on new investment - No EPT	-	-	-
15	AETR on baseline and new investment - No EPT	-	-	-
	Permanent EPT (tax scenario 2)			
16	EPT rate - period 1	20.00 %	20.00 %	20.00 %
17	EPT rate - period 2	20.00 %	20.00 %	20.00 %
18	NPV of new investment, investor - Permanent EPT	-	-	(8)
19	NPV of new investment, govt. - Permanent EPT	-	-	(2)
20	*NPV of baseline and new investment, investor - Permanent EPT*	*160*	*160*	*152*
21	NPV of baseline and new investment, government - Permanent EPT	40	40	38
22	*AETR on new investment - Permanent EPT*	-	-	*20 %*
23	AETR on baseline and new investment - Permanent EPT	20 %	20 %	20 %
	Temporary EPT (tax scenario 3)			
24	EPT rate - period 1	20.00 %	20.00 %	20.00 %
25	EPT rate - period 2	-	-	-
26	*NPV of new investment, investor - Temporary EPT*	-	*20*	*10*
27	NPV of new investment, govt. - Temporary EPT	-	(20)	(20)
28	*NPV of baseline and new investment, investor - Temporary EPT*	*180*	*200*	*190*
29	NPV of baseline and new investment, government - Temporary EPT	20	-	-
30	*AETR on new investment - Temporary EPT*	-	-	*200 %*
31	AETR on baseline and new investment - Temporary EPT	10 %	-	-

Annex II. A Numerical Example of an Excess Profits Tax

Suppose that total assets are $1 million ($600,000 debt plus $400,000 equity). Earnings Before Interest and Taxes (EBIT) are assumed to be $120,000. Interest expense is $60,000, which is equivalent to 0.1 × $600,000. Pre-tax profits are therefore $60,000. We assume that the EPT rate is 20 percent:

- ACC-based EPT: Let the rate of allowance be 10 percent of assets. Then, the ACC allowance would be $100,000. The excess profits subjected to the EPT would be $120,000 – $100,000 = $20,000. Revenue from the EPT would be 20 percent of $20,000 = $4,000.
- An ACE-based EPT would apply the 10 percent on equity resulting in an allowance of $40,000 (0.1 × $400,000). This allowance will be deducted from pre-tax profits after deducting interest expense, so the ACE-based EPT would be $60,000 – $40,000 = $20,000. EPT revenue would again be 20% of $20,000 = $4,000. The ACC-based and ACE-based EPT would not be identical if, for example, the interest rate on debt differs from the allowance rate for equity.

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