Introducing a New Comparative Dataset on Effective Tax Rates on Capital and Labour in Europe

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Introduction

Taxation provides the basis for any modern political economic system (Levi 1988). Through taxation, the state not only generates revenue and redistributes resources, but also creates powerful incentives that influence private economic behaviors such as work, savings, and investments. Consider the United Kingdom's response to reduced investment during Covid-19. In April 2021 the UK introduced a "Super Deduction" which allowed businesses to benefit from a 130% first-year capital allowance on qualifying new plant and machinery assets, thereby incentivizing firms to make new productive investments. Despite comparative capitalism's theoretical interest in the political and institutional drivers of production regimes (Baccaro and Pontussen 2016) and firm strategies (Hall and Soskice, 2001), we know surprisingly little about how and why states levies aim to (re)allocate resources within the private sector in this way to support some types of productive activities over others.

State levies do not only provide the necessary revenues for government to function, but taxes also have important redistributive, stabilising and allocative functions for economic governance (Musgrave 1959). Existing literature in comparative political economy gives us many insights into the these first two functions, but tells us little about the latter. Welfare state scholarship has extensively studied the level and progressivity of taxation (Beramendi & Rueda, 2007; Limberg, 2020; Martin, 1991; Meltzer & Richard, 1981) and the different approaches states have taken to financing spending (Beramendi & Rueda, 2007). Though somewhat less scrutinized, the stabilising function of the fiscal system has also been well-understood since Keynes (1936) and gained renewed importance in academic debates during the financial crises (Bernardi 2011). Although the important allocative role of taxation in organizing economic incentives is implicitly accepted, literature has offered few empirical tools to grapple with it, let alone theories to explain it.

One reason for this conspicuous omission might lie in the complexity of most tax systems which mean that statutory rates alone cannot capture the true effects of all interacting incentives (King and Fullerton 1984; Mendoza et al. 1994; Devereux and Griffith 2003; Gorter and de Mooij 2001; Kostarakos and Varthalitis 2020; Acemoglu et al. 2020). Measures of effective taxation address this problem by evaluating the actual burdens borne by individuals and businesses, thereby providing a more accurate estimate of how changes in taxation policy impact the allocative effect of fiscal policies on the productive sector of the economy. Consequently, comprehensive and comparable data on effective taxation is essential for advancing both theoretical and empirical research not only in the comparative study of public finance but also in comparative political economy more generally.

In this research note, we introduce such a new dataset dedicated to cross-national comparisons

in effective tax rates on labour and capital in 30 the European countries between 1990 and 2021. We specifically propose a backward-looking marginal tax approach based, largely, on observed tax revenues from across the EU following the approach outlined by Acemolgu et al. (2020). This new data enables political economists to both assess the incentives business face in their decisions to allocate resources to various factors of production as well as study why societies make these important decisions. In doing so, we respond to Heffert's (2021) call for greater integration of taxation in the political economy of growth regimes. In particular, this new data can provide critical insights into how growth regimes calibrate taxation systems in the context of labour-changing technological change.

This paper proceeds as following. We first introduce the literature on effective taxation, weighing up the different methodological approaches that can be taken in measuring them. We then outline our approach, which builds on Acemoglu et al. (2020). Finally, we offer a brief presentation of the top-line insights from our new dataset.

State of Literature

Effective tax rates (ETR) represent the actual tax burden borne by holders of a given factor of production (labour or capital), introduced as a wedge between the total income generated by that factor and the income received after-tax. Unlike statutory tax rates, effective tax rates measure the real-world impact of taxes after accounting for deductions, exemptions, tax credits and other aspects of fiscal policy. Since the 1990's, estimates of effective tax rates have played an increasingly important in the evaluation of the effects of tax policy on economic decisions such as investment, human resource training and capital relocation (Devereux & Griffith, 1998; Mendoza et al., 1994). Our work builds on this extensive and

evolving literature.

Approaches to the estimation of effective tax rates diverge on several dimensions based on their methodology and focus. Existing work differs along four important dimensions (Gorter and de Mooij 2001). First of all, effective taxation measures differ in their theoretical focus. Empirical work on effective taxation can adopt varying theoretical perspectives, focusing either on broad tax categories—such as labor, capital, or consumption—or on more narrowly defined tax bases and instruments. While most work has been done on the balance between the tax burden on capital and labour income (Mendoza et al., 1994; Kostarakosyz and Varthalitis, 2020; Acemoglu et al., 2020), another key focus of the literature has been the fiscal pressure on wealth in advanced economies (Bachas et al., 2022). Within those broader approaches, we can equally distinguish between marginal and average approaches. Marginal ETR's (METR's) measure the wedge between pre-and post tax returns on projects and in doing so capture the incentives of taxes on the marginal investment decisions (Gorter and de Mooij 2001). This approach is particularly useful for scholars who are interested in the allocative effects of fiscal policy since METR's give us a direct insight into how might taxes shape behaviour of profit-maximising agents in the market. Average effective taxation rates (AETR's) on the other hand simply measure the overall tax burden on a typical investment.

Secondly, effective taxation measures can have diverging temporal orientations. Forward looking rates focus on taxes applicable to future investments while backward-looking rates estimates focus on past investment. Finally, these approaches generally imply different sources of data. Forward-looking rates, for example, mostly rely on statutory tax rates in their overall computation of effective taxation regimes and their key advantage is that they can measure the impact of new project. Backward-looking approaches, on the other hand, use the actual

paid rates as the basis of their computation. This approach recognises that there are many cases where actors do not actually face statutory rates. Especially in a more globalised context where capital is much more agile and able to circumvent the statutory rates, these backward-looking rates generally offer a more realistic picture. Aside from the dichotomy between statutory and actually paid rates, existing approaches can also be distinguished from their use of micro-level (often firm-level) or macro-level data to compute rates.

Dimension	Approach 1	Approach 2
Orientation	Forward-Looking	Backward-Looking
Theoretical basis	Marginal tax rate	Average tax rate
Computational source	Statutory tax rate	Observed tax revenue
Level of analysis	Micro-Level (firm-level)	Macro-Level (national-level)

Table 1: Dimensions of effective tax rate (ETR) estimation approaches.

Current estimates on ETRC/ETRL for Europe can be divided broadly into two approaches: The first approach comprises project-based, forward-looking methods, such as the (Devereux & Griffith, 2003) approach underlying the Mannheim Tax Index. Such approaches simulate a hypothetical future investment project, applying statutory tax parameters to calculate marginal and/or average effective tax rates on investment returns. While these approaches provide useful simulation results for investment decisions, they rely heavily on statutory tax rates and thus can diverge significantly from the actual tax incentives faced by firms.

The second approach comprises country-level, backward-looking methods that estimate effective historical tax rates by allocating observed tax revenues to macro-level tax bases (Bachas et al., 2022; Kostarakosyz & Varthalitis, 2020; Mendoza et al., 1994). While these methods more accurately capture the actual amounts of taxes paid and provide invaluable insights into economy-level incentives, their usefulness in the analysis of investment incentives is often

limited by over-broad definitions. For example, Bachas et al. (2022)'s definition of capital includes taxes on wealth, which diverge significantly from the tax incentives faced by investing firms.

Given these issues with existing approaches, we build a backward-looking margins dataset of effective tax rates for Europe to understand the incentives faced by firms in making investment decisions, especially investment decisions that involve labour- or capital-substituting choices. In their work on automation in the U.S., Acemoglu et al. (2020) provides a new methodology for the estimation of effective tax rates as applied to the U.S. Compared to existing estimates of effective tax rates on capital and labour, the Acemoglu et al. (2020) methodology is especially useful for the study of labour- and capital-substitution decisions for a few reasons:

First, the (Acemoglu et al., 2020) approach is more representative of the tax-related incentives faced by firms. Corporate decision-making are characterized by bounded rationality, often operating on imperfect information and short-to-medium-term planning horizons. Investment and financing decisions are made based on a combination of historical data and forward-looking forecasts. Second, and relatedly, statutory tax rates often used in forward-looking approaches provide a very imperfect estimate of the tax incentives faced by firms. Firms often take advantage of deductions, credits and other tax-reducing provisions to reduce their effective corporate tax rates. In the consideration of future investments, these deductions undoubtedly play a role. Acemoglu et al. (2020)'s backwards-looking estimation of corporate tax rate paid is a more faithful representation of firm-level expectations on future tax rates. Finally, depreciation allowances constitute a critical part of firm incentives on investment, effectuated through tax policy. Accelerated depreciation schedules can substantially lower a firm's immediate tax liability, thereby offsetting new capital outlays with tax savings in the

foreseeable future. However, most other measures of effective tax rates on capital do not account for this effect. By integrating the net present value of depreciation allowances on new investments, the (Acemoglu et al., 2020) approach captures this important dimension in firm investment decisions.

Adapting AMR to EU Data

The Acemoglu et al. (2020) approach holds great promise for different important questions comparative political economy, but its use for comparative research is significantly limited by its sole focus on U.S. data. We therefore propose an adapted version of their method to expand the scope of the analysis to the EU between 1995 and 2020.[1]

Despite the theoretical strengths of the Acemoglu et al. (2020) approach, expanding the approach to European economies presents several challenges. The most significant of these problems is that of data availability. For example, Acemoglu et al. (2020) uses capital allowance claimed by corporations to estimate the "true" tax base in their computation of the corporate tax rate. However, most European countries do not report the total monetary value of capital allowance claimed, either on Eurostat (our primary source) nor in their national tax data reporting. Similarly, while U.S. data provides a highly detailed classification of capital consumption and investment growth, inconsistencies in categorization across European countries limit cross-country comparisons to more aggregated classifications. Furthermore, certain data—such as software depreciation rates—remain unavailable for all countries. Consequently, addressing these challenges requires a combination of supplementary assumptions,

[1] Countries in sample are: Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, Norway, and Switzerland.

additional data collection, and further analytical harmonization.

Another problem is the representativeness of average estimates in European countries. A number of variables in Acemoglu et al. (2020) are estimated as national averages across time, including (for the computation of ETRC) % shares owned by households and % profits realized in the short-term, average change in investment prices, average return on equity and return on debt, and (for the computation of ETRL) average value placed by workers on benefits. Across other advanced industrial economies, these variables often exhibit a wide spread of values. On the other hand, estimating these variables at the national level could introduce additional heterogeneity not desired in the analysis. An effective solution must balance cross-country variation and analytical consistency.

A final challenge arises from structural differences between the economies of Europe and the United States. For instance, Acemoglu et al. (2020) adopts the assumption that shareholders of U.S. corporations are taxed at the domestic U.S. tax rate. While this assumption is reasonable in the context of the U.S.—given its large economy and deep capital markets—it is less applicable to smaller advanced industrial economies. In these economies, residents often hold shares in foreign corporations, and domestic firms frequently secure financing in international capital markets. Such cross-border ownership and financing structures introduce additional complexities in estimating effective tax rates.

Tax on Capital: Data at National Level

Strategies for estimating major components:

Tax rate on household-level income from ownership of public equity ($\tau^{e,c}$)

Acemoglu et al. (2020) estimates $\tau_t^{e,c}$ as:

$$\begin{aligned}\tau_t^{e,c} = \text{share directly owned}_t \cdot (&\text{share short-term ordinary}_t \cdot \tau_t^o \\ &+ \text{share long-term qualified}_t \cdot \tau_t^q \\ &+ \text{share held until death}_t \cdot 0\%).\end{aligned}$$

The US tax system separates long-term capital gain tax rate from the "ordinary" short-term capital gains and subjects it to a lower tax rate. This does not seem to be the case in most European countries, so the European formula can be simplified to:

$$\tau_t^{e,c} = \text{share directly owned}_t \cdot \text{share short-term ordinary}_t \cdot \tau_t^o.$$

assuming that shares held in the long-term (and until death) are subject to a 0% tax rate. The first term is equivalent to:

$$\frac{\text{equity held by households and non-profit organizations serving households}}{\text{total corporate equity}}.$$

This allows us to estimate household-level taxation as:

$$\tau_t^{e,c} = \frac{\text{equity held by households}}{\text{total corporate equity}} \cdot \% \text{ realized short-term} \cdot \tau_t^o.$$

This is theoretically equivalent to (Acemoglu et al., 2020)'s computation, even as (Acemoglu et al., 2020) used a composite term for the product of the first two terms. We source household-held equity and total corporate equity from the ECB's 2021 data (the earliest available year) for the Euro area,[2] yielding an estimated share of approximately 22.9%. While this is likely an overestimate, it remains the best available estimate and is comparable to U.S. levels. For the percentage of profits realized in the short term, we provisionally adopt the Acemoglu et al. (2020) estimate of 60%. Lastly, we assume that profits are taxed at the average household tax rate applicable to each country.

Corporate income tax rate (τ^c)

Acemoglu et al. (2020) estimates the average marginal corporate income tax rate, τ_t^c simply as:

$$\tau_t^c = \frac{\text{corporate tax revenue}}{\text{net operating surplus of corporations}}.$$

In the Acemoglu et al. (2020) estimation, to arrive at the "true" tax base, the reported economic depreciation is added back and the fiscal depreciation (tax allowance) is then subtracted. There is no European country-level data of total depreciation allowance claimed.[3]

[2] Fixed area EU27 data are not available.

[3] This has also been confirmed by the Mannheim Taxation Project researchers.

Thus we assume capital consumption and capital allowances are approximately equivalent. As a result, the net operating surplus of corporations (Eurostat B2A3N, non-financial corporations only) is used as the tax base for corporate taxation. Country-level corporate tax revenue (variable ID) is used as the numerator.

Pretax return to equity holders (r^e) and bond holders (r^b)

Pretax return is necessary to calculate discount rates for equity and bond holders. Acemoglu et al. (2020) uses the S&P 500 index to proxy r^e. A few choices for an European equivalent include:

- MSCI Europe Index (large- and mid-cap companies; top 85%),
- S&P Europe 350 Index,
- STOXX Europe 50 (bluechip companies only),
- STOXX Europe 600 (both large and smaller companies),
- FTSE Europe Index, or FTSE Eurobloc Index (large- and mid-cap companies),
- FESE stock exchange price index/total return index (possibly the most troublesome to compile, but has individual stock exchange data).

We choose the MSCI Europe Index to model return on equity (ROE) in Europe as it provides a broad and diversified representation of the European equity market, and is widely used by institutional investors and researchers. The long time span and consistent methodology of the MSCI Europe Index also ensures comparability over time.

One potential issue with this estimation is that the average return on equity derived from MSCI data (almost 5%) is significantly higher than the S&P 500's 4.3% used by Acemoglu et al. (2020) for the United States, which appears counterintuitive given the historically stronger performance of the U.S. stock market. This is likely due to the differing time frames in the two datasets: while the Acemoglu et al. (2020) data incorporate S&P 500 returns from 1980

onward, the European dataset only extends back to 1997 due to issues of data availability, thereby capturing a period of relatively higher market performance. The MSCI index is also not unique in this fashion: Other European indices experience similar problems. We include robustness checks using the S&P500 in the appendix. do robustness checks

Depreciation (economic)

Acemoglu et al. (2020) estimates economic depreciation as the difference in two variables: capital consumption and investment price changes. Capital consumption is calculated as the average value of:

$$\delta_t^j = \frac{\text{Fixed capital consumption}_t^j}{\text{Total fixed capital}_t^j}$$

Eurostat provides fixed capital consumption (P51C) by sector but not by asset class. As to the total capital stock, Eurostat has no variable approximating the name. However, given the often interchangeable use of "capital stock" with "fixed assets" in Eurostat documentation, the Eurostat fixed asset statistics can be used as a measure for capital stock.

Building on the approach of Acemoglu et al. (2020), the estimation of economic depreciation also incorporates investment price changes, which are derived from Eurostat inflation statistics, specifically the price level indices for gross fixed capital formation (PLI_EU27_2007, using EU27 2007 level as baseline).

ue to the limited number of categories of assets in Eurostat data and the significant heterogeneity in economic depreciation across asset classes, these data serve primarily as a placeholder. To derive depreciation rates at a more disaggregated level, Orbis data will be utilized to refine

the estimation.

Depreciation allowance (fiscal)

The net present value of depreciation allowances are calculated at the book rates following the formulation (Acemoglu et al. (2020, A.64)):

$$\text{NPV of allowance}_t^j = d_0^j + \sum_{s=0}^{\infty} d_{s+1}^j \cdot \prod_{k=0}^{s} \frac{1 - d_k^j}{1 + r_{t+k+1}},$$

where d_s^j represents the discount schedule, or "the fraction of the investment that a firm is allowed to subtract from its tax liabilities s years after the purchase" (p.250). This schedule is supplied by the Mannheim data, which in its raw form gives a depreciation schedule and the method of depreciation (straight-line, double-declining, switch or a specific schedule).

Overall comparison

For an overall comparison between data sources used, see Table 2.

Variable	Component	US Computation	EU Computation
$\tau^{e,c}$	% shares owned by households	FRED corporate equities owned by data	ECB corporate equities owned by households (2021 data only)
	% shares realized short-term	OTA data	Assume 60% (same as Acemoglu et al. (2020))
	Average household tax rate (short-term)	OTA data (taxes paid on short-term dividends/capital gains)	Mannheim statutory rates
	% shares realized long-term	assumed half of remaining (20%)	N/A
	Average household tax rate (long-term)	OTA data (taxes paid on long-term capital gains)	N/A
τ^c	Total corporate tax collected	BEA NIPA Tables	Eurostat taxag series
	Corporate net operating surplus	BEA NIPA Tables	Eurostat nf_tr series
	Consumption of fixed capital	BEA NIPA Tables	Assume consumption = allowance
	Capital consumption allowance	BEA NIPA Tables	Assume consumption = consumption allowance
r^b	Return on debt	Moody's	
r^b/r^e	Realized inflation	FRED data	Eurostat prc_hicp_aind series
r^e	Return on equity	S&P 500	MSCI Europe Index (also S&P 500)
δ^j	Asset depreciation	BEA fixed asset tables	Eurostat nf_tr & nf_bsa series
	Change in investment prices	BEA fixed asset tables	Eurostat nama_10_gdp series (CLV)
α^j	Depreciation allowances	IRS Publication 946 etc.	Mannheim statutory rates

Table 2: Adaptation of EU sources to the Acemoglu et al. (2020) method of ETRC estimation.

Tax on Labour

Acemoglu et al. (2020) estimates the effective tax rate on labour in a way analogous to that on capital, defined as:

$$\tau^l = \frac{\text{salary} \cdot (\tau^h + \tau^p) + \text{benefits} \cdot (1 - \phi)}{\text{compensation}}.$$

τ_h represents personal income tax, and is estimated as the "average income tax paid by earners below the 95th percentile" (p.258). The estimation of this figure uses a backward-looking approach based on personal income taxes actually collected by the IRS.

τ^p represents payroll taxes. Here Acemoglu et al. (2020) uses the statutory rate applicable to all earners with an income below $132,900, roughly equivalent to the 95th percentile (15.3%).

ϕ represents the discount rate of how benefits are imperfectly valued by workers. For Acemoglu et al. (2020)'s estimation, a rate of $\phi = 0.65$ is used based on estimates from previous literature.

Major differences between US and EU:

1) The level of payroll taxes in EU countries (τ^p) are generally very low. However, following Acemoglu et al. (2020), τ_p can be computed for the few countries that levy payroll taxes directly using Eurostat payroll tax data.

2) Cultural differences in ϕ: The original parameter is based on US estimates by Gruber and Krueger (1991), but similar results are reported for Europe by Melguizo and González-Párama (2016). Therefore, the same estimate is used.

For a comparison between U.S. and EU data sources, see Table 3.

Variable	US Computation	EU Computation
Compensation	BEA NIPA Table	Eurostat nf_tr series
Benefits	BEA NIPA Table	Eurostat taxag series
Income tax	IRS SOI Tax Stats (bottom 95%)	Eurostat taxag series (all)
Income tax base	IRS SOI Tax Stats (bottom 95%)	Eurostat nf_tr series (all)
Payroll tax rate (τ^p)	Social Security Administration website (statutory)	Eurostat taxag series (actual)
Valuation of benefits (ϕ)	65% (Gruber & Krueger, 1991)	Similar (Melguizo & González-Páramo, 2016)

Table 3: Adaptation of EU sources to the Acemoglu et al. (2020) method of ETRL estimation.

Comparisons with Existing Measures

Figure 1 reports our estimates of effective tax rates on labour and capital for 12 European countries. Following the Acemoglu et al. (2020) methodology, our estimates of effective tax rates on capital are considerably lower than existing estimates. We attribute the significant divergence to two main reasons, reflecting some of the theoretical motivations that prompted us to choose the Acemoglu et al. (2020) methodology over previous methodologies:

First, our approach isolates corporate income taxes from other taxes on capital such as taxes on wealth. Studies such as Bachas et al. (2022) amalgamate various types of taxation of capital to calculate effective tax rates. While these approaches provide a useful measure for *overall* taxation on capital, they produce estimates that do not fully represent taxation on capital investments. We choose to focus on corporate tax liabilities alone to more closely mirror the tax incentive structure relevant for corporate investment decisions. This results in estimates that align more closely with the actual tax obligations that firms consider when evaluating new capital investments.

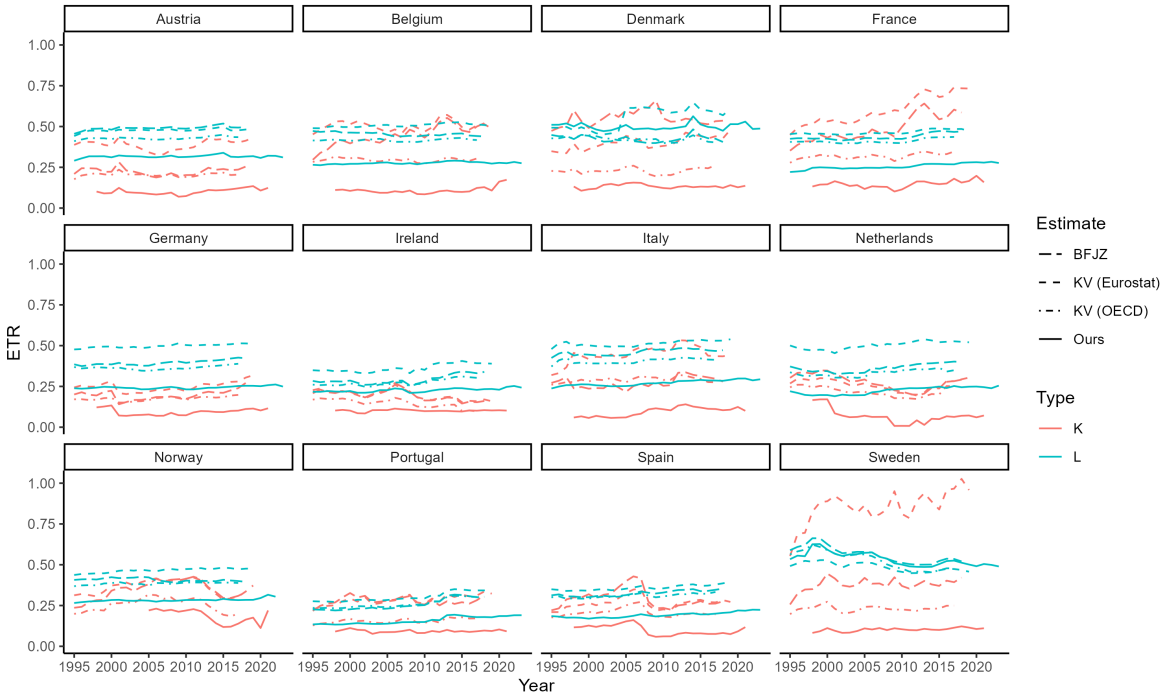

Figure 1: Our estimates of ETRC and ETRL compared with the estimates of Bachas et al. (2022) and Kostarakosyz and Varthalitis (2020) for 12 European countries.

Second, our estimates incorporate depreciation allowances in a manner that represents their actual effects on firms' tax liabilities more realistically. Depreciation allowances allow firms to deduct a substantial portion of capital investment expenditures over time, effectively lowering the net present value of expected tax liabilities. Neglecting to account for depreciation allowances, as is often the case in existing estimates, results in systematic over-estimation of taxation on capital. By integrating depreciation allowances, we present estimates that are truer to the tax incentives facing firm decisions on new capital investments.

The considerably lower estimates that we have produced thus underscore the substantial distortions driven by these two methodological divergences. Taxation rates on wealth frequently exceed taxation rates on corporate income, and depreciation allowances significantly reduce the present value of tax payments on new capital investments. Thus, existing estimations of

effective tax rates on capital may substantially overstate the level of taxation faced by firms for capital investment decisions.

Similarly, our estimates of effective tax rates on labour are systematically lower than existing studies. This is also due to a difference in methodology. In our estimates of ETRL, we incorporate the implicit value that workers assign to benefits and pensions financed out of wages. Prior estimates of ETRL often treat benefits and pension payments as a flat tax on wages . By incorporating the value placed upon these benefits, we also mirror microfoundational decisions on hiring and labour market participation more closely. For countries where benefits are not financed out of wages (e.g. Denmark and Sweden), our estimates are similar to prior estimates.

Descriptive Findings

So, what does this new data on effective capital and labour taxes tell us? Figures 6 until 9 paint the broad descriptive strokes. First of all, whereas Acemoglu et al., 2020 observed a steep decline in effective taxation on capital, our data demonstrates a (small) increase of both ETRC and ETRL at the European level. Where the mean ETRC in 1998 stood around 10.2% in 2022, this number is 10.7%. ETRL evolved from 23.2% to 24.1% in that same period. Put together, this means that the wedge between the total income generated by factor investments and their respective post-tax income has grew by around 4% across Europe. This evolution has been anything but linear. Both European-wide ETRL and ETRC initially came down sharply around 2010 (bottoming out at 8.3% and 22.3% respectively), only to shoot back up in the last decade. We speculate that this stark reversal could be the result of the fiscal pressure experienced by many member states following the financial crisis as well as the development of stronger EU-level monitoring and coordination of fiscal policy by the commission in that time.

Second, the difference between the effective tax burden on capital and labour has increased across Europe. Taxation on labour is almost universally higher than the fiscal pressure on capital (Mendoza et al., 1994; Kostarakosyz and Varthalitis, 2020; Acemoglu et al., 2020). There are several good explanations for this observation. Scholars have pointed out that the technical nature of taxation makes it particularly susceptible to powerful interest groups bending capital taxation in their favour (Olson, 1965; Steimo, 1993; Hettich & Winer, 1999). Labour is also much less mobile than capital, making it a safer source of revenues for states seeking to finance their structural welfare state commitments (Genschel, 2002). Our data

indicates that despite the overall trend towards higher ETRC and ETRL, the growth in the effective labour taxation has generally outpaced that of capital. In 1998 the delta across Europe stood at 13 percentage points, which grew to 13.4 percentage points in 2021. Although this jump of 0.4 percentage points across the whole observed period is relatively minor, it is worth pointing out that this difference only decreased in the later years of the sample. For much of the 2010s, the delta between ETRC and ETRL was greater than 14 percentage points (maximum 14.5 between 2014 and 2015), implying that the imbalance had grown by no less than 7%. This structural difference very likely means that European employers will find it increasingly opportune to invest in capital over labour when all things are equal.

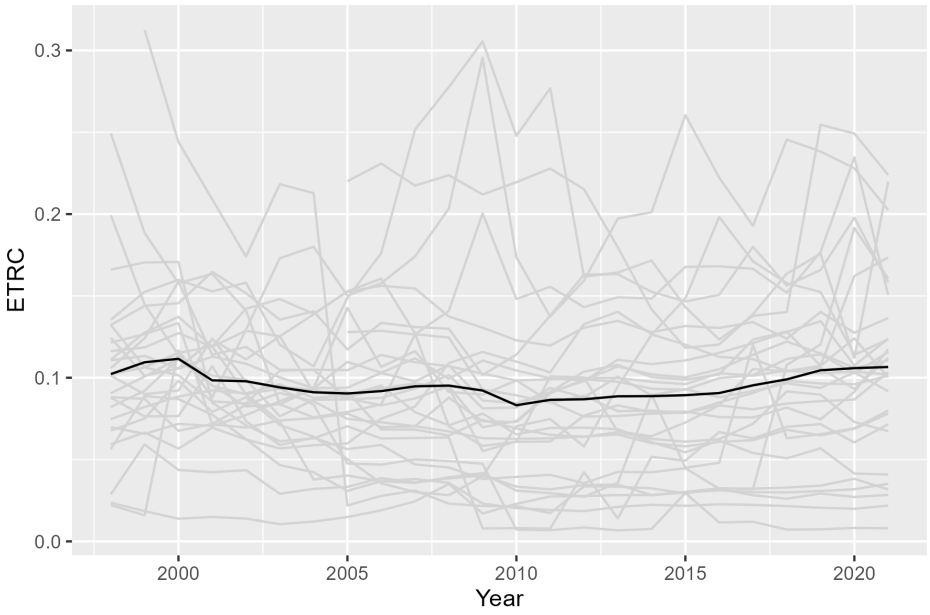

Figure 2: Averages for 29 European countries (outliers removed) using our estimations of effective tax rate on capital (ETRC) using the Acemoglu et al. (2020) methodology, with 29-country average in black.

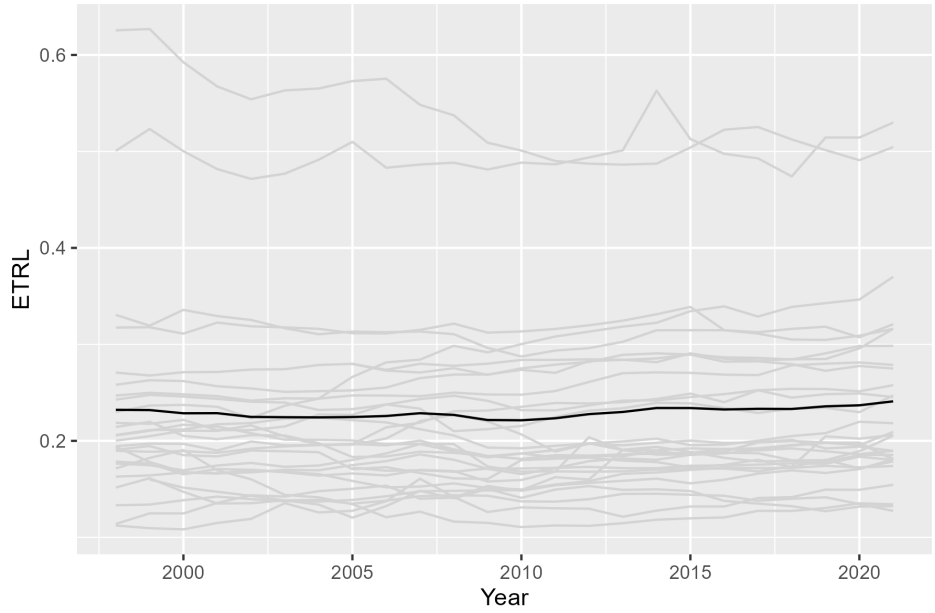

Figure 3: Averages for 29 European countries (outliers removed) using our estimations of effective tax rate on labour (ETRL) using the Acemoglu et al. (2020) methodology, with 29-country average in black.

Third, underlying these top-line figures, our data indicates significant variation across Europe. In some ways we cannot talk about *European* ETRC and ETRL, since we observe vast difference in both the overall levels of effective taxation and the balance those respective regimes strike between capital and labour. On the low end of the spectrum we find most Eastern and Central Europe (ECC), many of which have a cumulative effective tax burden on capital and labour around or below 30%. This stands in stark contrast to Scandinavian economies which, despite their touted economic liberalisation (find good reference XX), all tax capital and labour cumulatively at more than 40%. Aside from the difference in total taxation faced by firms, we observe another layer of complexity in how states balance ETRL and ETRC. Let us start by saying that there are very few European countries which tax labour and capital in the same manner. Estonia (in 2021) stands out as the example of a state that does strike this balance, very likely due to its flat tax regime (xxx). General, however, capital gets taxes at

much lower rates than labour. Scandinavian countries such as Sweden and Denmark, by virtue of their particularly high labour taxation, stand out as the best examples of countries where the delta between ETRL and ETRC has on average been the greatest in Europe since 1998. Cyprus, on the other hand, is the sole country that has historically taxed capital more than it has labour. Clearly, there is great variation in how countries strike this balance between incentivizing businesses to employe capital or labour. However, it is not entirely obvious to us that these different regimes every neatly fit onto existing ideal types identified by prominent CPE models (cite Hall and Soskice 2001; Baccaro et al. 2022).

Fourth, ETRC is more volatile than ETRL. Common across almost all countries is the observation that ETRC oscilates significantly while ETRL remains very stable. Figures 7 and 4 demonstrate this point by plotting withing-country variance. In our sample, Sweden stands out at the country that undergoes the biggest evolution in ETRL going from over 60% in 1998 to around 50% in 2021. In that same period, no less than 13 countries[4] made similar or greater jumps in ETRC. This seeming unwillingness to let ETRL fluctuate in the same way as ETRC also reinforces the argument that European countries strongly rely on stable revenues from labour taxation to finance their expensive welfare states (Genschel, 2002). It could also be the case that governments simply believe they might be able to attract foreign investments by lowering the ETRC, while international labour is not so sensitive to such fiscal signals, making changes to ETRL less impactful in this regard. Additionally, governments may prioritize stimulating domestic investment—by reducing ETRC—as a more effective strategy for driving long-term economic growth, viewing it as more valuable than boosting employment through reductions in ETRL in the immediate term. This reflects a policy preference for

[4]Croatia, Estonia. Cyprus, Latvia, Poland, Slovakia, Greece, the Netherlands, Hungary, Norway, Switzerland, Finland and Spain

capital deepening and productivity gains over short-run labour market interventions.

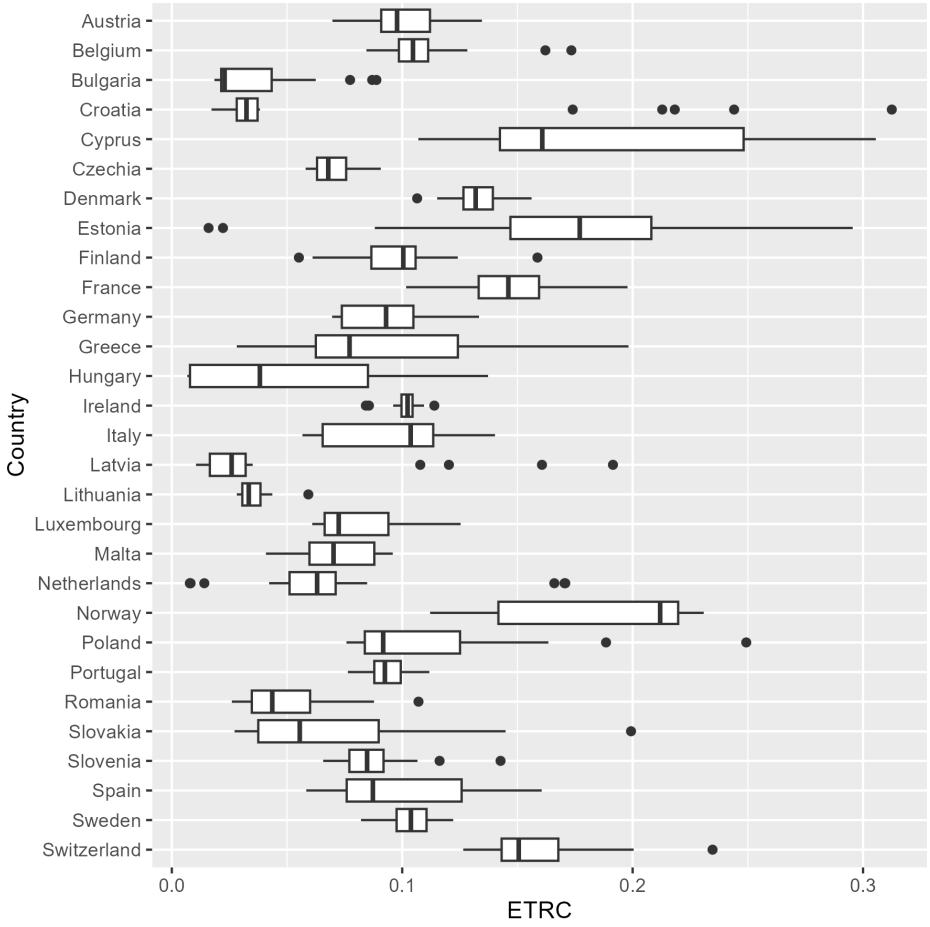

Figure 4: Boxplot indicating the range of ETRC values by country.

Finally, we want to highlight some shortcomings of the data when it comes to the ECC. Eurostat data pertaining to ECC is quite volatile and therefore somewhat less reliable in the early years of our dataset. In Croatia, for example, ETRC exceeded 100% in one year and became negative in another. These irregularities are likely attributable to the ongoing post-Communist restructuring processes in these economies. However, without deeper case-by-case analysis it is difficult to judge to what extent these fluctuations are to be attributed to rapidly evolving policy or to deficits in administrative capacity.

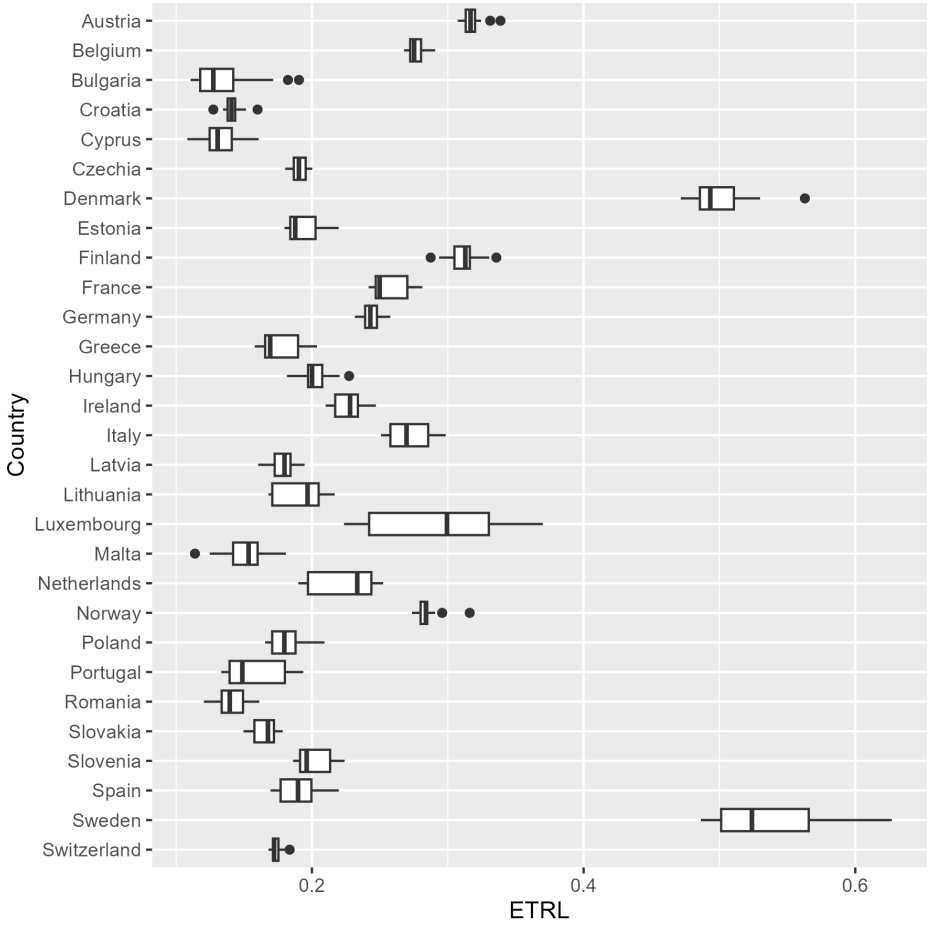

Figure 5: Boxplot indicating the range of ETRL values by country.

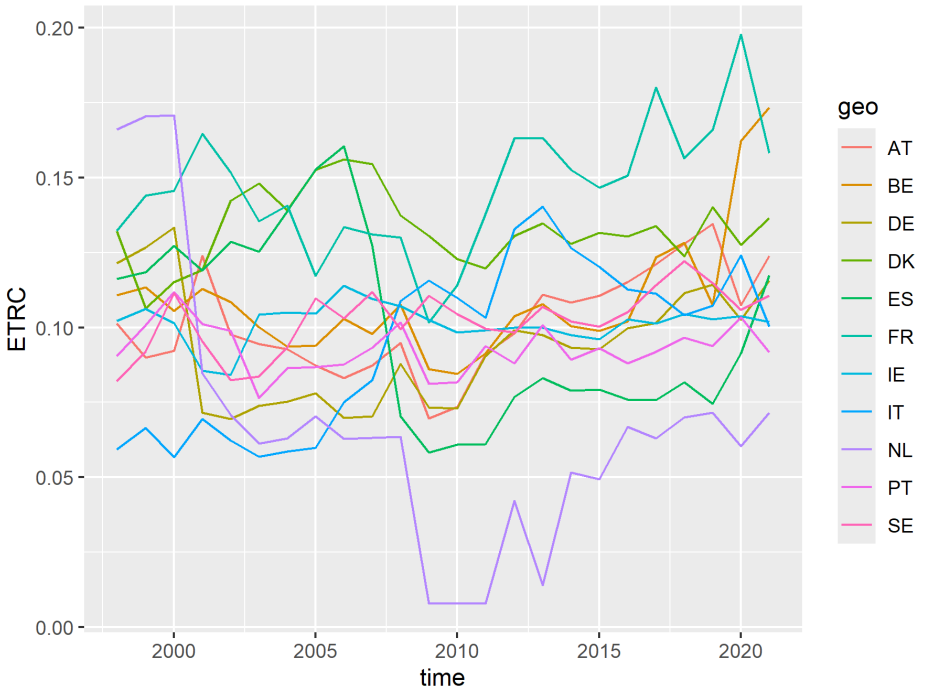

Figure 6: Our estimation of ETRC following Acemoglu et al. (2020).

Extensions and Further Research

Country-level treatment effects

Company-level ETRC/ETRL estimates (might have some issues with consistency)

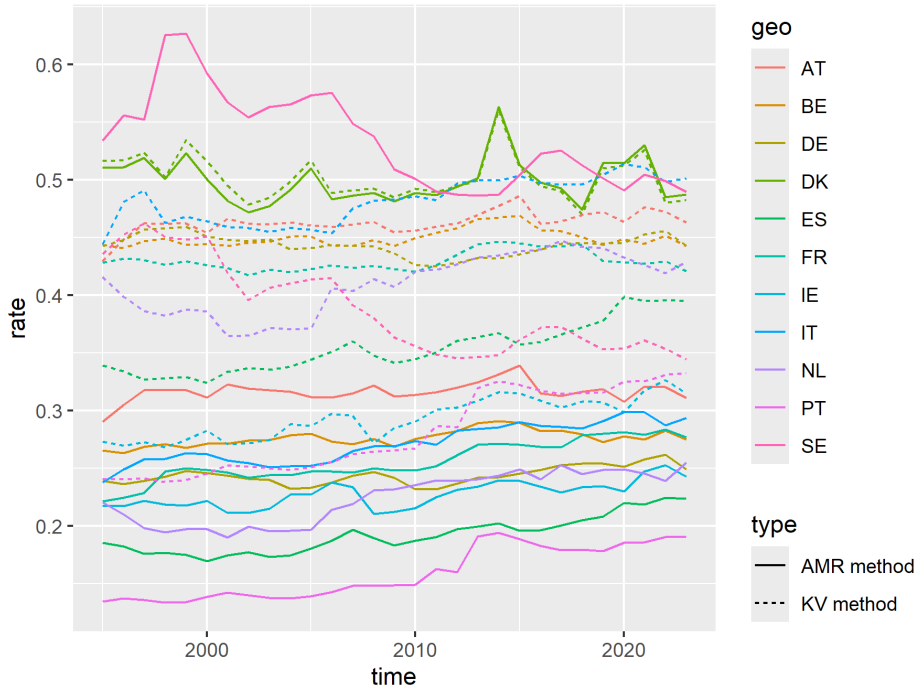

Figure 7: Comparison between Kostarakosyz and Varthalitis (2020) estimation of ETRL and our estimation following Acemoglu et al. (2020). Note our method is typically lower as it accounts for the value placed on benefits by workers, whilst Kostarakosyz and Varthalitis (2020) includes all benefits as a flat tax.

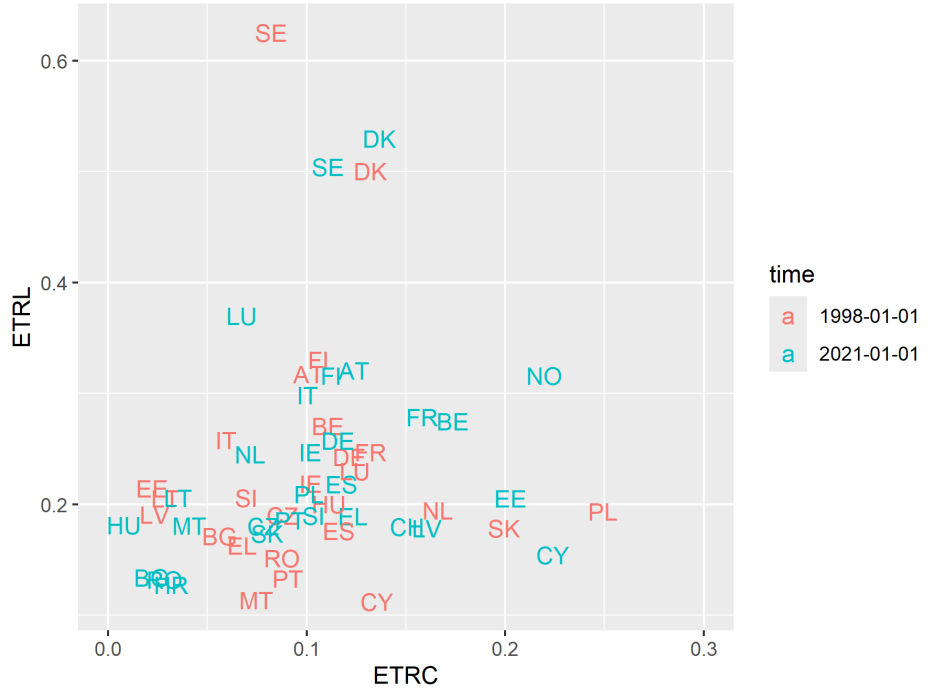

Figure 8: Comparison of trends from 1998 to 2021. A number of European countries including France, Belgium and Italy experienced an increase in ETRC. Sweden experienced a significant dencrease in ETRL.

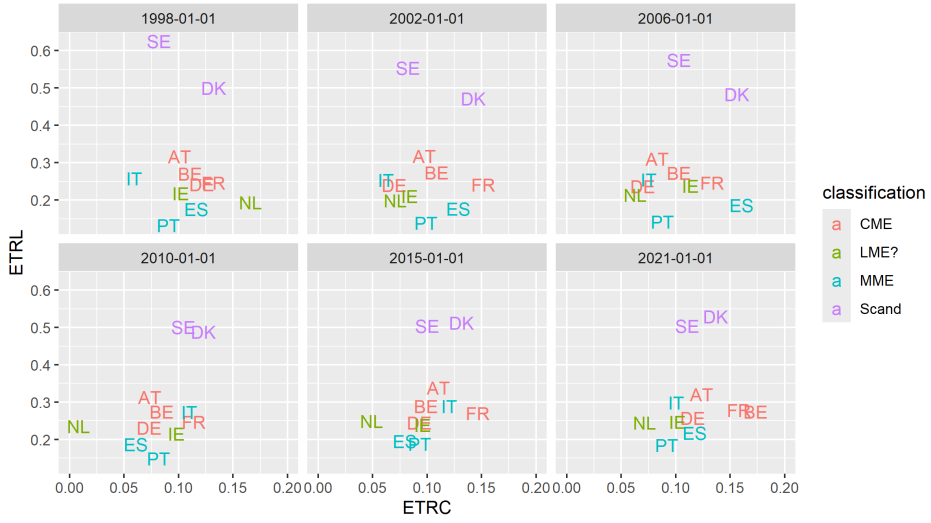

Figure 9: Snapshots of ETRC/ETRL at six different points in time from 1998 and 2021.

Conclusion

This research note introduces a new dataset on effective tax rates on capital and labour across 30 European countries between 1995 and 2021—an empirical contribution that opens novel avenues for inquiry in comparative political economy. By adapting and extending the backward-looking marginal tax methodology of Acemoglu et al. (2020) to the European context, this dataset captures the actual fiscal incentives facing firms and workers. We believe this offers researchers a powerful tool to examine how states calibrate tax policy to structure factor markets and shape firm behaviour—issues that have often remained empirically underdeveloped in the literature on growth regimes, production models, and institutional complementarities.

The comparative variation we document —both in the levels and the balance of effective taxation on labour and capital— highlights the diverse ways in which European political economies reconcile fiscal extraction with economic coordination. Our data opens up new questions of how these patterns map onto existing ideal types. Beyond questions of capitalist divergence, it also also underscores a structural bias in European fiscal systems where labour provides a stable tax base to sustain welfare commitments, while capital taxation emerges as a more discretionary —and potentially strategic— policy instrument.

In bringing taxation more squarely into the analytical core of CPE, this dataset enables scholars to re-evaluate key debates on institutional change, the evolution of growth models, and the political foundations of distributive conflict. Future research may fruitfully explore how tax policy mediates between firm strategies and macroeconomic outcomes, how fiscal structures align with coalitional politics, or how cross-national differences in taxation contribute to di-

vergent paths of technological adaptation and structural adjustment. In this way, we respond to longstanding calls for a more integrated understanding of fiscal institutions as constitutive elements of contemporary capitalism.

Appendix A: Average ETRC and ETRL 1998–2021

Year	ETRC	ETRL	△
1998	0.143	0.229	0.086
1999	0.109	0.231	0.122
2000	0.112	0.229	0.117
2001	0.073	0.227	0.157
2002	0.098	0.226	0.128
2003	0.094	0.226	0.132
2004	0.091	0.226	0.135
2005	0.090	0.226	0.136
2006	0.092	0.227	0.135
2007	0.095	0.230	0.135
2008	0.095	0.228	0.133
2009	0.092	0.223	0.131
2010	0.083	0.223	0.136
2011	0.087	0.226	0.139
2012	0.087	0.230	0.143
2013	0.089	0.232	0.143
2014	0.089	0.236	0.147
2015	0.089	0.234	0.145
2016	0.091	0.233	0.142
2017	0.095	0.233	0.138
2018	0.099	0.233	0.134
2019	0.105	0.236	0.131
2020	0.106	0.237	0.131
2021	0.107	0.241	0.134

Table 4: Average effective tax rates on capital and labour across 30 European countries, 1998–2021.

year	ETRC	ETRL	△
1998	0.102	0.232	0.130
1999	0.109	0.232	0.123
2000	0.112	0.229	0.117
2001	0.098	0.229	0.131
2002	0.098	0.225	0.127
2003	0.094	0.225	0.131
2004	0.091	0.224	0.133
2005	0.090	0.225	0.135
2006	0.092	0.226	0.134
2007	0.095	0.229	0.134
2008	0.095	0.227	0.132
2009	0.092	0.222	0.130
2010	0.083	0.221	0.138
2011	0.087	0.223	0.136
2012	0.087	0.228	0.141
2013	0.089	0.230	0.141
2014	0.089	0.234	0.145
2015	0.089	0.234	0.145
2016	0.091	0.233	0.142
2017	0.095	0.233	0.138
2018	0.099	0.233	0.134
2019	0.105	0.236	0.131
2020	0.106	0.237	0.131
2021	0.107	0.241	0.134

Table 5: Average effective tax rates on capital and labour across 30 European countries, 1998–2021, with outliers (Croatia 1998 & 2001) removed.

Appendix A: Country-level ETRC and ETRL range and difference 1998–2021

Country	ETRC range
Croatia	0.295
Estonia	0.280
Cyprus	0.199
Latvia	0.181
Poland	0.174
Slovakia	0.172
Greece	0.170
Netherlands	0.163
Hungary	0.131
Norway	0.119
Switzerland	0.108
Finland	0.104
Spain	0.102
France	0.096
Belgium	0.089
Italy	0.084
Romania	0.081
Slovenia	0.077
Bulgaria	0.070
Austria	0.065
Luxembourg	0.064
Germany	0.064
Malta	0.055
Denmark	0.050
Sweden	0.040
Portugal	0.035
Czechia	0.033
Lithuania	0.031
Ireland	0.030

Table 6: Range of ETRC levels by country, 1998–2021.

Country	Total ETR	Difference in ETR
Sweden	0.638	0.433
Denmark	0.632	0.365
Norway	0.470	0.101
Austria	0.419	0.216
Finland	0.409	0.215
France	0.404	0.111
Belgium	0.386	0.168
Luxembourg	0.376	0.210
Italy	0.367	0.178
Estonia	0.366	0.019
Germany	0.337	0.150
Switzerland	0.332	0.016
Ireland	0.328	0.125
Cyprus	0.317	-0.053
Netherlands	0.292	0.156
Poland	0.291	0.071
Spain	0.291	0.091
Slovenia	0.290	0.115
Greece	0.269	0.085
Czechia	0.261	0.120
Portugal	0.252	0.066
Hungary	0.250	0.156
Slovakia	0.234	0.096
Lithuania	0.225	0.155
Malta	0.222	0.079
Latvia	0.221	0.136
Croatia	0.216	0.066
Romania	0.191	0.091
Bulgaria	0.171	0.098

Table 7: Total effective taxation and differences between effective taxation on labor and capital (a positive percentage means ETRL is higher than ETRC, while a negative percentage means that ETRC is higher than ETRL, by country averaged across 1998–2021.

Appendix C: Robustness Checks and Choices of Measurements

Household-level tax rate

We employ book rates as reported by the Mannheim Tax Project to estimate household-level taxation on the use of capital. In the Mannheim data, nine options are available: tax rates on dividends, capital gains, and interests, each segmented by zero-rate, non-qualified top rate, and qualified top rate taxpayers. Tax rates for zero-rate taxpayers are unlikely to be informative and interest tax rates are not pertinent for equity-financed investments. Consequently, our focus is restricted to the four remaining measures: the non-qualified top rate and qualified top rate for dividends, and the non-qualified top rate and qualified top rate for capital gains.

An examination of ETRC estimation (see Figure 10) using each of these four measures reveals that:

1. In countries such as Denmark, Italy, and Sweden, the differences among the measures are minimal. Scandinavian countries exhibit a uniform rate.

2. In most other countries, capital gains tax rates tend to be lower than dividend tax rates; however, with the exception of Belgium, these differences converge around 2005–2010.

3. Differences between non-qualified and qualified top rates are generally less significant.

Rates of return

For return on equity, the S&P 500 index is employed to capture firms with a global orientation, and the MSCI Europe Index is more representative of companies focused on the European market. Returns on the S&P 500 are substantially higher than those on the MSCI Europe In-

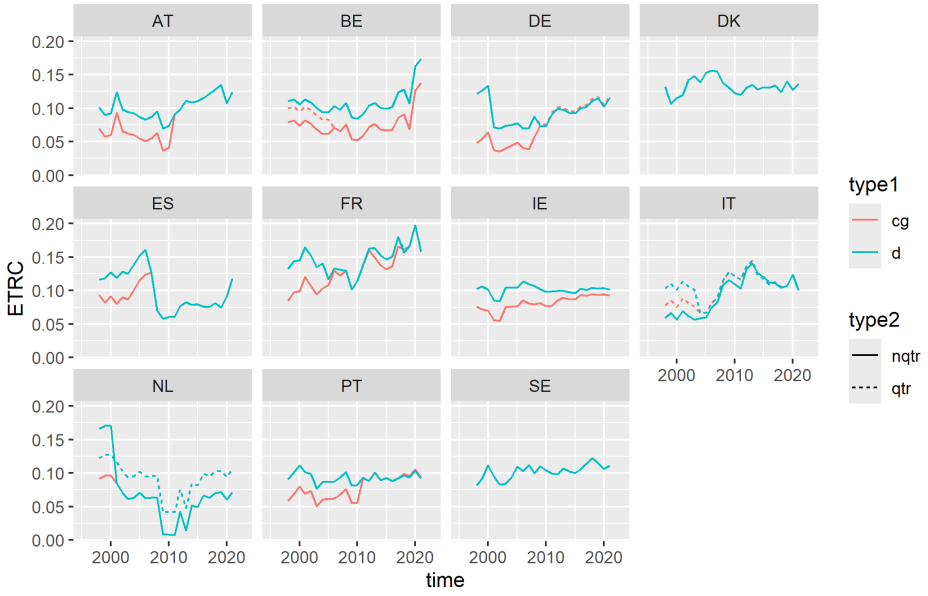

Figure 10: Effects of different measures of household-level tax rate on ETRC estimation. CG = capital gains tax rate; D = dividend tax rate; NQTR = non-qualified top rate; QTR = qualified top rate.

dex during the period 1998–2021, leading to a lower overall estimated depreciation allowance. As a result, using the S&P 500 Index yields an estimate that is consistently higher by several percentage points compared to that estimated with the MSCI Europe Index (see Figure 11), but the estimates are not substantially different in terms of cross-national and inter-temporal variations.

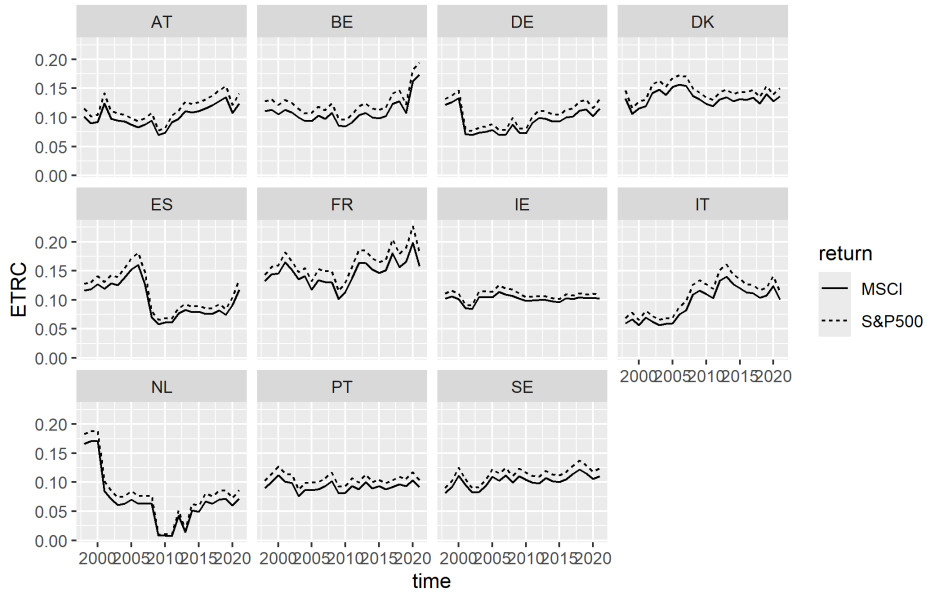

Figure 11: Equity-financed ETRC estimated with the MSCI Europe Index and with the S&P 500 Index average returns respectively.

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