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Progressing regressively: conditional convergence and Europeanisation of tax mixes

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ABSTRACT

Tax mixes are important components of welfare systems, affecting income inequality, labour market outcomes and economic performance. Still, they are relatively under-examined in the literature studying the convergence of EU welfare states. Most existing analyses of tax mix convergence are limited to western Europe, mainly use twentieth-century data and do not control for domestic determinants of tax policy. I therefore study the determinants of tax mix composition and convergence in a panel of 30 EU and OECD countries between 1980 and 2019 using linear regressions. I find that tax mixes converge and shift from personal income taxes towards more regressive revenue sources. Contrary to theoretical predictions, both observations are almost unrelated to proxies of tax competition. Instead, the main driving factor is EU membership. Tax mixes of Central and Eastern European member states, however, do not Europeanise: they constitute a distinct group with low and persistently regressive taxation.

KEYWORDS

Tax mix; convergence; tax competition; Europeanisation

Introduction

The founding fathers of the EU set themselves the objectives of economic and social progress, envisioning that European economic integration would foster both the development and the cross-country homogeneity of domestic social welfare systems. A large body of literature has studied this hypothesis of upward social policy convergence by looking at various indicators of welfare spending (e.g. Caminada, Goudswaard, and van Vliet 2010; Censolo and Colombo 2016). However, the convergence and determinants of the composition of government revenues have been relatively under-examined. This is remarkable, because tax mixes are important components of welfare states. One reason is that the progressivity of a tax-welfare system partially hinges upon the relative revenue shares of different taxes: personal income taxes tend to moderate the burden on low incomes, whereas social security contributions and indirect consumption taxes have less redistributive capacity. On the other hand, the latter two 'regressive' taxes have proven to be powerful revenue generators that can finance generous social expenditure systems

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(Ganghof 2006a). Tax mixes, furthermore, have been shown to affect labour market outcomes, such as employment and unemployment (Kemmerling 2005), and they may influence long-term economic output (Akgun, Cournède, and Fournier 2017). Thus, tax mix composition is a relevant variable in analyses of European economic and welfare state convergence.

Existing convergence analyses have identified a shift in European tax mixes towards regressive revenue sources that fall mainly on labour, such as social premiums and VAT (e.g. Delgado and Presno 2017). However, most of these analyses focus on the late twentieth century and are based on western European nations only, while currently more than a third of EU Member States are Central and Eastern European (CEE) countries. Furthermore, most studies employ crude measures of panel-wide convergence, which yield inconsistent results when countries actually converge into dispersed 'clubs' (Plümper and Schneider 2009). Delgado and Presno (2017) indeed detect such club convergence in 15 EU countries' tax mixes, but it falls outside the scope of their analysis to determine the conditional factors behind it. For instance, a plausible conditional factor is economic openness, as the tax mixes of open economies might converge into a particular direction under competitive pressure.

Those determinants of tax mix composition are also relevant objects of study themselves. The literature has separately identified many domestic determinants, such as partisan and interest group politics, and electoral and labour market institutions (Kemmerling and Truchlewski 2021), which may co-exist beside international factors such as competitive pressure (e.g. Ganghof 2006a) and European harmonisation (e.g. Genschel, Kemmerling, and Seils 2011; Kemmerling 2010). Given the economic and redistributive effects of the tax mix, a relevant question in the light of common European social progress is whether domestic politics and institutions are still able to shape tax mix composition, or whether they are overshadowed by tax competition.

Therefore, this article studies both the convergence and the determinants of developed countries' tax mixes using linear regressions. Applying an error correction model, I measure the effects of several domestic and international factors that may condition both the current composition of countries' tax mixes and their speed of adjustment. I focus on four categories of taxes: personal income taxation (PIT), corporate income taxation (CIT), social security contributions (SSCs) and general consumption taxation. The studied country panel covers 30 EU and OECD countries.[1] Among them are 23 EU member states, 8 of which are Central and Eastern European (CEE) countries. The additional inclusion of 7 non-EU OECD countries controls for the difference between global and European integration. Data for the full panel are available from 1996 to 2019, and an analysis excluding the CEE countries covers available data from 1980 to 2019.

This study's contribution to the literature is threefold. First, this study extends the research on European tax mix convergence by including a larger number of countries and data years, testing whether convergence has continued during the twenty-first century and whether the tax systems of the newer CEE member states partake in any convergence process. These are relevant questions in the light of common European social progress. Second, this study's regression approach improves the consistency of existing convergence analyses by controlling for political, institutional and economic factors that may shape both tax mix composition and the convergence process. Third, its focus on the determinants of tax mixes connects this article with the broader literature on the political

economy of taxation. Quantifying the relative importance of these determinants helps to answer the question whether countries are still able to shape their own tax systems in an increasingly globalised economy.

I proceed as follows. First, I present some descriptive statistics denoting tax mix composition and cross-country variation in my country panel. I subsequently review the theoretical causes of those observations. Then, I develop empirical models that estimate the degree of convergence and measure the effects of the theoretical determinants of tax mixes. I summarise my findings and their implications in the final section.

Developments and determinants of tax mixes

Tables 1 and 2 document the developments in tax mix composition in the studied countries (OECD 2023). While data from 1980 onwards are available for most 'old' EU Member States and non-EU countries, I additionally report their values in 1996 for comparison with CEE Member States.

The most substantial changes are visible between 1980 and 1996, with especially the EU-15 increasing their total tax revenues – from 33.8 to 38.0% of GDP. A shift from PIT to consumption tax revenues is visible in both EU and non-EU countries, and non-EU countries additionally increased their SSCs. Changes after 1996 are relatively moderate, with the most substantial change being a further increase in consumption tax revenues in EU countries.

Changes in CEE tax mixes are also moderate, but their directions are noteworthy. In a slightly decreasing tax intake, the CEE-8 reduced their reliance on the PIT, which was already a small revenue generator, by 1.4% points or 8%. They further increased their large shares of regressive SSCs and consumption taxes.

Additionally, the tables show the respective coefficients of variation. Their decline in almost all variables and groups is a preliminary indicator of convergence, and for non-CEE countries it largely corresponds with earlier findings of Kemmerling (2010) and Delgado and Presno (2017). In most tax mix categories, coefficients of variation for the CEE-8 are smaller than those for the combined group of CEE-8 and EU-15 Member States. Moreover, the CEE-8 show stronger declines in variation in total taxation, SSC reliance and consumption tax reliance. This tentatively indicates the existence of a convergence club.

However, coefficients of variation are crude measures of convergence which disregard any conditionality (Plümper and Schneider 2009). To enable a more consistent estimation of convergence, the remainder of this section aims to disentangle the driving factors behind the observed trends.

Tax competition

One of the most discussed determinants of tax policy is international tax competition. Its only direct effect in the tax mix should be on CIT revenues: any cross-border mobility of consumers in response to VAT rate differentials does not appear to affect governments' consumption tax rate setting (Genschel and Schwarz 2011); and competition for highly qualified workers mainly occurs through special income tax regimes for expatriates, rather than through general PIT policy, such that overall effects on PIT revenues should be limited (see Kleven et al. 2020). Capital's cross-border mobility and its sensitivity to tax

Table 1. Total taxation and revenue shares of PIT and CIT.

	Total taxation (% GDP)				PIT (% revenues)				CIT (% revenues)			
OECD7	1980	1996	2019	*change '96-'19*	1980	1996	2019	*change '96-'19*	1980	1996	2019	*change '96-'19*
Australia	26,2	28,9	27,7	*-1,2*	44,0	41,3	42,0	*0,7*	12,2	15,0	17,1	*2,1*
Canada	30,3	34,9	33,1	*-1,8*	34,1	37,4	36,1	*-1,3*	11,6	8,8	11,3	*2,5*
Japan	24,0	25,3	31,5	*6,2*	24,3	21,0	18,8	*-2,2*	21,8	17,1	12,0	*-5,1*
New Zealand	31,7	33,8	31,3	*-2,5*	61,6	44,4	39,7	*-4,7*	7,8	9,6	12,5	*2,9*
Norway	41,9	39,3	40,1	*0,8*	28,5	26,2	25,9	*-0,3*	13,3	10,7	15,0	*4,3*
Switzerland	22,6	25,4	27,3	*1,9*	38,9	33,3	30,7	*-2,6*	6,4	6,6	11,2	*4,6*
US	25,6	27,0	25,2	*-1,8*	39,1	37,8	40,7	*2,9*	10,8	9,3	5,4	*-3,9*
Mean OECD7	28,9	30,7	30,9	*0,2*	38,6	34,5	33,4	*-1,1*	12,0	11,0	12,1	*1,1*
CV OECD7	0,23	0,18	0,16	*-0,02*	0,31	0,24	0,26	*0,02*	0,42	0,34	0,30	*-0,03*
EU15												
Austria	38,6	42,6	42,6	*0,0*	23,2	21,2	22,6	*1,4*	3,5	4,3	6,4	*2,1*
Belgium	40,7	43,4	42,4	*-1,0*	36,4	31,6	26,6	*-5*	4,7	6,0	8,7	*2,7*
Denmark	41,5	46,7	46,9	*0,2*	52,3	54,0	52,2	*-1,8*	3,3	5,3	6,7	*1,4*
Finland	35,3	45,7	42,3	*-3,4*	35,7	32,7	29,0	*-3,7*	3,4	6,0	6,0	*0*
France	39,5	43,6	44,9	*1,3*	11,6	11,6	20,7	*9,1*	5,1	5,2	4,9	*-0,3*
Germany	36,4	35,7	38,6	*2,9*	29,6	24,8	27,4	*2,6*	5,5	3,8	5,2	*1,4*
Greece	20,8	28,5	39,5	*11,0*	14,9	11,1	15,2	*4,1*	3,8	7,4	5,6	*-1,8*
Ireland	30,1	32,3	21,9	*-10,4*	32,0	31,9	31,6	*-0,3*	4,5	9,3	14,0	*4,7*
Italy	28,6	40,2	42,3	*2,1*	23,1	25,0	25,8	*0,8*	7,8	9,2	4,6	*-4,6*
Luxembourg	35,4	36,5	39,6	*3,1*	27,0	22,0	24,0	*2*	16,2	18,3	15,2	*-3,1*
Netherlands	39,7	37,3	39,3	*2,0*	26,3	17,9	21,6	*3,7*	6,6	10,1	9,4	*-0,7*
Portugal	21,9	29,9	34,5	*4,6*		18,5	18,4	*-0,1*		8,9	9,0	*0,1*
Spain	21,9	31,1	34,7	*3,6*	20,4	23,4	22,7	*-0,7*	5,1	5,8	5,9	*0,1*
Sweden	43,1	46,8	42,8	*-4,0*	41,0	33,8	28,7	*-5,1*	2,5	5,3	7,0	*1,7*
UK	33,4	29,1	32,2	*3,1*	29,4	27,3	27,6	*0,3*	8,4	9,3	7,1	*-2,2*
Mean EU15	33,8	38,0	39,0	*1,0*	28,8	25,8	26,3	*0,5*	5,7	7,6	7,7	*0,1*
CV EU15	0,22	0,18	0,16	*-0,02*	0,37	0,41	0,32	*-0,09*	0,60	0,47	0,41	*-0,06*
Mean OECD7 & EU15	32,2	35,6	36,4	*0,8*	32,1	28,6	28,5	*0,0*	7,8	8,7	9,1	*0,4*
CV OECD7 & EU15	0,23	0,20	0,19	*-0,01*	0,37	0,37	0,31	*-0,06*	0,63	0,45	0,42	*-0,03*
CEE/EU8		**1996**	**2019**	***change***		**1996**	**2019**	***change***		**1996**	**2019**	***change***
Czechia		33,1	34,8	*1,7*		13,2	12,7	*-0,5*		9,3	10,1	*0,8*
Estonia		33,8	33,5	*-0,3*		22,4	16,5	*-5,9*		4,6	5,5	*0,9*
Hungary		39,4	36,4	*-3,0*		17,5	14,2	*-3,3*		4,5	3,4	*-1,1*
Latvia		29,2	30,9	*1,7*		16,7	20,9	*4,2*		6,0	0,5	*-5,5*
Lithuania		27,3	30,3	*3,0*		22,7	23,9	*1,2*		6,4	5,1	*-1,3*
Poland		36,6	35,1	*-1,5*		21,3	15,1	*-6,2*		7,2	6,3	*-0,9*
Slovakia		38,6	34,6	*-4,0*		10,1	10,9	*0,8*		10,9	8,9	*-2,0*
Slovenia		38,1	37,0	*-1,1*		15,3	14,2	*-1,1*		2,3	5,3	*3,0*
Mean CEE/EU8		34,5	34,1	*-0,4*		17,4	16,1	*-1,4*		6,4	5,6	*-0,8*
CV CEE/EU8		0,13	0,07	*-0,06*		0,26	0,27	*0,01*		0,43	0,53	*0,10*
Mean CEE/EU8 & EU15		36,7	37,3	*0,5*		22,9	22,7	*-0,2*		7,2	7,0	*-0,2*
CV CEE/EU8 & EU15		0,17	0,15	*-0,02*		0,42	0,38	*-0,04*		0,46	0,46	*-0,01*

Note: OECD (2023) and own calculations. PIT and CIT revenues are unavailable for Portugal before 1989.

treatment, however, does induce strategic CIT policy-setting by national governments in attempts to attract investments and paper profits (Genschel and Schwarz 2011). This strategic competition has most visibly manifested itself in the lowering of statutory rates (Zohlnhöfer, Engler, and Dümig 2017). The average CIT rate in the OECD currently stands at approximately 23% (OECD 2023; own calculations), which means that its downward trend will not be halted by the recent Pillar 2 harmonisation efforts that establish a 15% minimum rate.

Still, CIT revenues have been rather stable over the years, possibly because tax bases have been broadened. Even if revenues would in fact be jeopardised by tax competition, the direct impact on the tax mix would be minor, because the CIT raises less than 10% of

Table 2. Revenue shares of SSCs and general consumption taxes (GCT).

	SSCs & payroll (% rev.)				GCT (% revenues)			
EU15 & OECD7	1980	1996	2019	*change '96-'19*	1980	1996	2019	*change '96-'19*
Australia	5,0	6,8	4,7	*-2,1*	5,3	8,3	12,0	*3,7*
Canada	10,5	16,2	16,5	*0,3*	11,5	13,9	14,2	*0,3*
Japan	29,1	33,8	41,1	*7,3*	0,0	5,5	13,2	*7,7*
New Zealand	0,0	0,0	0,0	*0*	10,2	24,3	30,4	*6,1*
Norway	21,1	23,4	26,5	*3,1*	18,2	21,3	21,6	*0,3*
Switzerland	23,4	26,5	23,7	*-2,8*	10,3	11,3	11,5	*0,2*
US	21,9	24,4	24,3	*-0,1*	7,0	8,0	8,2	*0,2*
Mean OECD7	15,9	18,7	19,5	*0,8*	8,9	13,2	15,9	*2,6*
CV OECD7	0,68	0,63	0,71	*0,08*	0,64	0,54	0,48	*-0,06*
EU15								
Austria	38,0	41,1	41,3	*0,2*	20,1	18,9	18,0	*-0,9*
Belgium	28,8	32,5	31,1	*-1,4*	16,9	15,5	15,8	*0,3*
Denmark	0,4	0,6	0,7	*0,1*	22,7	19,7	20,0	*0,3*
Finland	23,5	28,9	27,9	*-1*	17,3	17,1	21,7	*4,6*
France	44,9	44,1	37,0	*-7,1*	21,1	18,0	17,7	*-0,3*
Germany	34,5	40,3	37,9	*-2,4*	16,6	17,7	18,2	*0,5*
Greece	34,7	31,8	30,8	*-1*	13,2	21,3	21,4	*0,1*
Ireland	14,5	13,6	17,8	*4,2*	14,8	21,1	19,6	*-1,5*
Italy	38,7	34,2	31,2	*-3*	15,6	13,0	14,7	*1,7*
Luxembourg	29,4	26,7	27,8	*1,1*	11,6	12,4	14,7	*2,3*
Netherlands	38,1	37,9	34,2	*-3,7*	15,8	16,6	18,2	*1,6*
Portugal	32,1	25,3	27,9	*2,6*	16,2	23,7	25,4	*1,7*
Spain	48,6	35,6	35,3	*-0,3*	10,2	16,4	18,8	*2,4*
Sweden	31,4	31,0	33,8	*2,8*	13,4	17,3	21,3	*4*
UK	21,0	17,6	20,1	*2,5*	14,7	19,5	21,3	*1,8*
Mean EU15	30,6	29,4	29,0	*-0,4*	16,0	17,9	19,1	*1,2*
CV EU15	0,40	0,39	0,35	*-0,05*	0,21	0,17	0,15	*-0,02*
Mean EU15 & OECD7	25,9	26,0	26,0	*0,0*	13,8	16,4	18,1	*1,7*
CV EU15 & OECD7	0,52	0,48	0,46	*-0,02*	0,39	0,31	0,27	*-0,03*
CEE8		**1996**	**2019**	***change***		**1996**	**2019**	***change***
Czechia		43,0	44,1	*1,1*		17,8	21,6	*3,8*
Estonia		34,0	35,0	*1,0*		27,4	26,7	*-0,7*
Hungary		34,6	34,9	*0,3*		20,7	31,9	*11,2*
Latvia		35,3	30,7	*-4,6*		26,9	29,3	*2,4*
Lithuania		28,2	31,9	*3,7*		27,4	26,2	*-1,2*
Poland		31,7	38,3	*6,6*		18,6	22,6	*4,0*
Slovakia		40,3	43,3	*3,0*		19,3	21,0	*1,7*
Slovenia		42,5	42,3	*-0,2*		29,9	21,6	*-8,3*
Mean CEE8		36,2	37,6	*1,4*		23,5	25,1	*1,6*
CV CEE8		0,15	0,14	*-0,01*		0,21	0,16	*-0,04*
Mean CEE/EU8 & EU15		31,8	32,0	*0,2*		19,8	21,2	*1,4*
CV CEE/EU8 & EU15		0,32	0,30	*-0,02*		0,23	0,21	*-0,02*

Source: OECD (2023) and own calculations.

revenues in most OECD countries (see Table 1). Its limited role as a revenue generator is also illustrated by Slemrod (2004), who finds that its statutory rates are unrelated to government revenue needs.

However, a race to the bottom in CIT rates may also affect the tax mix indirectly. A large discrepancy between top PIT and CIT rates encourages entrepreneurs to incorporate their businesses and for workers to receive their income in dividends (Ganghof 2006a; Gordon and MacKie-Mason 1995; Slemrod 2004). This allows them to postpone individual income taxation by retaining income inside corporations and financing personal consumption through loans. Once the owners distribute their income through dividends or capital gains, the applicable shareholder taxes are usually more lenient than labour taxes

(Harding and Marten 2018). De Mooij and Nicodème (2008) estimate that such avoidance strategies account for 12 to 21% of CIT revenues in a panel of 17 EU countries. This magnitude implies a substantial loss of PIT revenues. Additionally, case-study and quantitative evidence shows that governments resultingly cut their PIT rates to preserve the integrity of their tax systems (Ganghof 2006a; Van Ganzen 2023). Indeed, there is a correlation between CIT and PIT rates (Loretz 2008; Slemrod 2004). Base broadening can only partially compensate the resulting revenue losses, because at some point no further exemptions and deductions can be abolished. Furthermore, a falling top PIT rate always constrains the revenue-raising capacity of the tax by determining the maximum rate of lower tax brackets. Eventually, the spill-over of CIT competition to PIT rates could induce a shift towards SSCs and payroll taxes in the tax mix. These are less prone to arbitrage, because they are closely linked to one's place of employment. Alternatively, countries may increase consumption taxes, evidence of which is found by Loretz (2008).

Revenue requirements

Such shifts in the tax mix are more likely to occur when the government's revenue requirement is high. Logically, when the revenues of one tax decline, be it the result of domestic factors or of external competitive pressure, a high and rigid level of government spending necessitates a simultaneous increase in another tax, leaving aside the possibility of running a deficit. Lierse and Seelkopf (2016) provide a concrete example of this, linking the simultaneous decline in CIT rates and increase in VAT rates after the global financial crisis to fiscal pressure.

There is also a more general positive correlation between government size and regressivity of the tax mix, which Ganghof (2006a) relates to the abovementioned competitive pressure on direct taxes that wholly or partially fall on capital – CITs and PITs. He also notes that any high tax has high efficiency costs, such that high-tax countries are better off with diversified tax mixes, necessarily including regressive taxes. Although the framing of VAT as an economically efficient tax varies from country to country, the general view is that indirect taxes are able to raise substantial amounts of revenues without excessively hurting economic growth or employment (Kemmerling 2017).

If government size is indeed a determinant of tax mix composition, it may also be a driver of tax mix convergence, as average government spending in EU and OECD countries has both increased and converged since the 1980s (Bertarelli, Censolo, and Colombo 2014).

EU membership

Discussing VAT reliance brings us to the importance of the EU in shaping countries' tax mixes. The VAT Directive is the embodiment of the most substantial harmonisation of taxes in the Union, establishing an obligatory common tax base and minimum rate. Hence, EU membership should be a strong driver of upward convergence in general consumption tax revenues. Kemmerling (2010) even argues that the trends in VAT rates and revenues 'overshoot harmonisation efforts'. Noting that the nine EEC countries adopting VAT around 1972 increased their consumption tax rates by much more than the Directive required them to, both at its introduction and long thereafter, he infers that

the EU may have been a good legitimatory device for governments to increase VAT reliance.

EU influence in other components of the tax mix occurs more obliquely, for instance through the jurisprudence of the Court of Justice. Kemmerling (2010) and Maier and Schanz (2016) note that the Court effectively abolished the CIT imputation system, under which domestically resident shareholders were granted a PIT relief for the CIT paid at the corporate level. Member states reacted by scrapping the relief and lowering statutory CIT rates, which contributed to the race to the bottom. While statutory rates do not necessarily affect tax mix composition, recall that discrepancies between CIT and PIT rates may induce tax arbitrage, adversely affecting PIT revenues.

A second channel of influence is soft law, including the EU's Code of Conduct for business taxation. The Code of Conduct may have reduced harmful competition through preferential tax regimes, creating a common perception amongst policy-makers about the acceptability of CIT provisions (Radaelli 2003). On the other hand, curbing preferential regimes shifted competitive policy-making to the area of statutory rate-setting, accelerating the race to the bottom; Genschel et al. (2011) find that statutory CIT rate competition is stronger within the single market than elsewhere.

Thirdly, European integration may affect countries' expenditure levels and revenue requirements, as it fosters the funding of domestic social protection systems by stimulating economic growth (Goudswaard and Van Riel 2004). Government spending and revenues in western Europe have indeed converged upwards (Bertarelli, Censolo, and Colombo 2014). Hypothetically, therefore, revenues from SSCs and/or VAT may converge upwards as well, insofar it is true that large governments require balanced and partially regressive tax mixes. In CEE member states, however, economic integration appears to be negatively related to welfare state generosity (Leibrecht, Klien, and Onaran 2011). This is probably the result of these countries' desire to attract mobile production factors to their post-communist economies (Appel and Orenstein 2016). Resultingly, total social expenditure – and hence the necessity of a balanced tax mix – is much lower and does not seem to converge towards Western European levels (Draxler and Van Vliet 2010).

Finally, competitive pressure should be more pronounced in the deeply integrated single market. Mobility of tax bases is not only enabled by the four freedoms, it is also fostered by the absence of exchange rate risks and the harmonisation of CIT provisions in the Parent-Subsidiary and Merger Directives. While tax competition is already strong in western Europe, the CEE countries again constitute a distinct group. Most of these countries have implemented CIT rates below EU average, as a signal of a business-friendly investment climate (Appel and Orenstein 2016). Simultaneously, some have implemented low and flat rate schedules on labour income, which in most cases limited the revenue-raising capacity of their PIT systems (A. J. Evans and Aligica 2008). Thus, although their low tax levels might not necessitate a shift towards SSCs and VAT for efficiency purposes, it is likely that tax mixes in CEE countries have converged towards these revenue streams because of those countries' meagre direct income taxes.

Political and institutional factors

The eventual effect of economic integration and EU membership on tax mix composition is likely to be mediated by domestic political, institutional and economic factors. Many areas of tax policy, in the end, are still in the hands of national governments.

As shown in a recent review of those domestic factors by Kemmerling and Truchlewski (2021), an important determinant of tax policy is partisan politics. Some studies have found a positive influence of left-wing cabinet ideology on government size (Potrafke 2017), although a considerable number have found no significant effect (Zohlnhöfer, Engler, and Dümig 2017). Sakamoto (2008) finds that left-wing governments set higher PIT and general consumption taxes and lower SSCs than right-wing governments. Osterloh and Debus (2012) find a positive effect of left-wing government on statutory and effective CIT rates, which however diminishes with increasing tax competition.

Proportional representation may contribute to these forces because it fosters the inclusion of pro-welfare interests, whereas majoritarian systems are often dominated by right-wing parties that favour a less generous welfare state (Döring and Manow 2017) or big-tent parties that do not specifically target pro-welfare voters (Cusack and Beramendi 2006). Simultaneously, however, the fragmented political landscape in some proportional electoral systems may produce broad coalition governments including right-wing parties, which demand lower capital taxes. This may lead to a higher labour-capital tax ratio in consensus democracies than in majoritarian systems (Hays 2003).

Relatedly, fragmented political landscapes contribute to the number of veto points in policy-making, and so do constitutional courts, strong upper houses and decentralised legislatures (e.g. Ganghof 2006a). Veto players may, on the one hand, block tax reforms. On the other hand, electorates may find it harder to organise resistance against tax reforms in an institutionally fragmented system (Swank 2002).

Several studies have stressed that national tax policy also depends on institutional factors related to countries' labour markets and economic growth models. For instance, dualised labour markets with a high number of structurally unemployed 'outsiders' should foster the demand for SSCs, as contribution-financed welfare schemes allow the median voter – being an employed 'insider' – to ring-fence benefits for himself (O'Reilly 2014). Additionally, high structural unemployment seems to generate consensus between politicians about the employment-friendliness of VAT (Kemmerling 2017). Furthermore, corporatist traditions of centrally coordinated wage bargaining are positively related to VAT reliance, especially under social-democratic government. According to Beramendi and Rueda (2007), this is the result of the corporatist deal between labour and capital, which includes a generous welfare state in return for low capital taxes, necessitating relatively high labour and consumption taxes. But besides resolving conflicts of interest, labour and capital may also defend their common interests: Haffert and Mertens (2021) show that sectoral coalitions of labour and capital may favour or oppose VAT, depending on their sector being based on export or domestic consumption, respectively. Resultingly, VAT rates should be higher in export-based economies.

Finally, it is important to account for a country's economic situation. As mentioned, high structural unemployment puts VAT in an employment-friendly light (Kemmerling 2017). An ageing population puts long-term pressure on the government's budget and may increase the need for high tax and spending levels. It is also plausible that an

increasing share of pensioners limits the revenue-raising capacity of taxes that fall on labour. In the shorter run, severe banking crises seem to foster societal fairness norms, inducing increases in PIT rates (Limberg 2019). In more prosperous times, economic growth may facilitate the funding of a larger government (Goudswaard and Van Riel 2004), although temporal budget surpluses appear to be used predominantly to cut taxes (Haffert and Mehrtens 2015). Furthermore, a country's size may determine its strategy in tax competition: small economies benefit more from lowering their rates, as they have little domestic revenues to lose and much foreign tax base inflows to gain (Kanbur and Keen 1993).

Variables and model

Dependent variables

The dependent variables in this study are the revenue shares in the tax mix of four respective tax categories: PIT, CIT, the sum of SSCs and payroll taxes, and general consumption taxes (VAT/GST). SSCs and payroll taxes are aggregated because both are closely linked to employed labour and both are theoretical substitutes for the PIT. Consumption taxes on specific goods and services are not included, because they comprise a large number of taxes with very diverse political economies, including alcohol taxes, energy taxes, other excises, customs duties, export duties, taxes on fiscal monopolies, gambling taxes and banking taxes. Their aggregate revenue share in this study's data panel in 2019 is approximately 9%, but there is no single political economy behind this figure that can be captured in one model. On an individual level, instead, these taxes are relatively unimportant in the tax mix, which limits their added value to the present study. The same applies to the small and internally diverse category of property taxes. Tax revenue data are retrieved from the OECD's Revenue Statistics (2023), which categorise countries' taxes using standardised criteria and therefore provide internationally comparable figures.

While earlier studies have analysed the convergence of tax-to-GDP ratios (Delgado and Presno 2017; Kemmerling 2010), this study expresses tax revenues as a percentage of total taxation. This measure better captures the relative importance of the studied categories in the tax mix. It also allows for an easier comparison between high-tax and low-tax countries, and it is less affected by economic shocks. To also capture the magnitude of the tax burden, I include the total tax-to-GDP ratio as an additional dependent variable (OECD 2023).

Explanatory variables

The selection of explanatory variables is aimed to reflect the main determinants of tax mix composition as identified in the preceding literature review: tax competition; EU membership; revenue requirements; and domestic politics, institutions and economics.[2]

As a proxy for tax competition, I use trade openness, measured by the sum of imports and exports as a percentage of GDP (Armingeon, Engler, and Leemann 2022). Alternative proxies will be tested as robustness checks. To assess EU influence, I include a time-variant dummy variable for EU membership. A dummy coded 1 for CEE countries controls for the

potentially distinct political economies of post-communist nations. I control for revenue requirements by including the tax-to-GDP ratio.

To control for domestic politics, the estimations include the percentage of cabinet posts held by left-wing parties (Armingeon, Engler, and Leemann 2022). Also included is an index of political constraints, measuring veto power over policy change by independent branches of government (Henisz 2002). The electoral system is captured in a dummy variable coded 1 for proportional representation (Armingeon, Engler, and Leemann 2022; own calculations).

To express the institutional structure of the labour market, I include a five-point scale indicating the degree of coordination in wage bargaining, where 5 denotes economy-wide bargaining and 1 means no coordination (OECD & AIAS 2021). Additionally, the annual unemployment rate is included (Armingeon, Engler, and Leemann 2022).

I control for the government's budget surplus to capture the effect of budgetary room on tax reforms (Armingeon, Engler, and Leemann 2022).[3] To account for the effects of an ageing population, I include the share of elderly people (Armingeon, Engler, and Leemann 2022). GDP growth and the natural log of GDP per capita are added because an increase in economic output may facilitate the funding of a larger government, which may also affect tax mix composition (Feenstra, Inklaar, and Timmer 2015). Finally, I control for the size of the economy by including the natural log of GDP (Feenstra, Inklaar, and Timmer 2015).

Method

In order to capture the development of tax mixes since the onset of globalisation, I first estimate a set of regression models using data between 1980 and 2019.[4] These regressions exclude the CEE countries and Luxembourg, Portugal and Switzerland for reasons of data availability. Next, I run regressions using the full country panel with data years 1996–2019. I use the following empirical model:

$$\Delta y_{it} = \alpha + \beta y_{it-1} + \Sigma \gamma_j \Delta X_{it} + \Sigma \delta_j X_{it-1} + \omega_t + \varepsilon_{it} \quad (1)$$

This model regresses a dependent variable's first difference (Δy_{it}) on its lagged level (y_{it-1}). A negative β coefficient would indicate convergence, as it would show that cases in the low end of the distribution have relatively high growth rates, and vice versa. A vector of the abovementioned control variables is included, both using their first differences (ΔX_{it}) and their lagged levels (X_{it-1}), so that the model captures both their long-term and short-term effects (de Boef and Keele 2008). I enter some variables as lagged levels only, namely those that are relatively time-invariant and those that denote economic circumstances. The latter would otherwise yield multicollinearity, for instance GDP growth and the first difference of GDP.

In this form, the regression constitutes an error correction model, which is widely used in convergence analysis.[5] To control for panel-heteroscedasticity and contemporaneous spatial correlation, panel-corrected standard errors are used. An AR(1) disturbance term accounts for autocorrelation (Beck and Katz 2011). Year dummies are included to control for time trends (ω_t in equation 1).

Although the model includes control variables for the various factors that may determine tax mix composition, the estimation in the form of equation 1 will not show whether these factors affect the speed of convergence. However, determining the conditionality of

convergence speed is necessary for identifying 'convergence clubs'. The discussed literature suggests that four clubs plausibly exist, namely: tax mixes of open economies converging under competitive pressure; convergence towards regressive revenue sources being present primarily among high-tax nations; the Europeanisation of tax mixes; and CEE countries converging into a specific direction because of their distinct political economies. The existence of such clubs may lead to inconsistent estimations of panel-wide convergence (Plümper and Schneider 2009). For example, the β coefficient in equation 1 may turn negative and significant because a club's outlier values move toward the panel mean, even if tax mixes outside the club remain divergent. In that case, the estimation falsely indicates panel-wide convergence. Alternatively, consider two clubs of nations with steeply declining internal variation, which however converge into opposite directions, such that panel-wide variation remains the same or increases. Here, an insignificant or positive β would correctly negate panel-wide convergence, but it would not paint the full picture. Hence, controlling for convergence clubs not only makes the estimations of convergence more consistent, it also contributes to this study's aim of disentangling the effects of tax competition, Europeanisation, and domestic spending choices.

Following Plümper and Schneider (2009), the regressions are therefore re-run with interaction terms between the lagged dependent variable and several control variables. Including the interaction term, the model is formally expressed as follows.

$$\Delta y_{it} = \alpha + \beta y_{it-1} + \Sigma \gamma_j \Delta X_{it} + \Sigma \delta_j X_{it-1} + \theta y_{it-1} x_{it-1} + \omega_t + \varepsilon_{it} \quad (2)$$

In this model, $\theta \neq 0$ would indicate that convergence speed wholly or partially depends on control variable x_i. If $\theta < 0$, convergence is accelerated under the influence of increasing x_i, whereas $\theta > 0$ denotes that higher x_i values lead to slower convergence. Interactions are included with trade openness (as a proxy for tax competition), total taxation (as a proxy for revenue requirements), the EU dummy, and the CEE dummy. These terms are not estimated simultaneously but subsequently, in order to preserve the statistical power of the model.

Empirical findings

Regression results, 1980–2019

Table 3 reports the regression results between 1980 and 2019. Especially CIT and consumption tax revenues show a strong and significant convergence, with rates of adjustment of approximately 7%. Convergence in total taxation, PIT and SSCs is slower, with 2.2, 1.6 and 1.1%, respectively.

Turning to the control variables, most of the significant coefficients are found in the model for total taxation. For instance, economic openness leads to lower taxation in both the short run and long run, but it does not explain tax mix composition. Its long-term effects on total taxation are substantial: an increase in the ratio of imports and exports over GDP by one standard deviation (36% points) is associated with a 6.9% point decrease in the tax-to-GDP ratio.[6] As expected, countries with ageing populations raise more taxes, and budget surpluses are used to cut taxes, but again no effects on tax mix composition

Table 3. Regression results, EU-15 and OECD-7 excluding Luxembourg, Portugal and Switzerland, 1980–2019.

	Tax-to-GDP	PIT (% revenues)	CIT (% revenues)	SSCs & payroll (% revenues)	GCT (% revenues)
LDV	−0.0220***	−0.0157***	−0.0652***	−0.0111**	−0.0687***
	(0.0085)	(0.0058)	(0.0213)	(0.0046)	(0.0141)
EU (*t*-1)	0.0595	0.2249*	−0.2543**	−0.0547	0.2074*
	(0.1146)	(0.1169)	(0.1120)	(0.1482)	(0.1258)
Tax-to-GDP (*t*-1)		−0.0070	−0.0199*	0.0124	−0.0042
		(0.0089)	(0.0106)	(0.0108)	(0.0084)
Δ Trade	−0.0366***	−0.0105	0.0058	−0.0047	0.0058
	(0.0123)	(0.0138)	(0.0127)	(0.0106)	(0.0108)
Trade (*t*-1)	−0.0042**	−0.0028	−0.0010	0.0018	−0.0010
	(0.0018)	(0.0021)	(0.0023)	(0.0022)	(0.0014)
Δ Left government	0.0043**	−0.0001	0.0028	−0.0017	−0.0022
	(0.0017)	(0.0023)	(0.0026)	(0.0018)	(0.0018)
Left government (*t*-1)	0.0014	0.0016	−0.0007	−0.0005	−0.0002
	(0.0010)	(0.0013)	(0.0014)	(0.0011)	(0.0010)
Political constraints (*t*-1)	1.8114***	1.4223**	0.6856	−1.4356*	−1.5716***
	(0.4819)	(0.6746)	(0.5755)	(0.7827)	(0.4534)
PR electoral system (*t*-1)	0.0042	−0.0558	−0.1367	0.1502	0.1650*
	(0.1030)	(0.1442)	(0.1340)	(0.1144)	(0.0979)
Wage coordination (*t*-1)	0.0100	−0.0708+	0.0847*	0.0267	−0.0770*
	(0.0373)	(0.0436)	(0.0488)	(0.0387)	(0.0418)
Δ Unemployment	−0.0399	0.0741	−0.1773***	0.0573	−0.0607
	(0.0453)	(0.0562)	(0.0513)	(0.0512)	(0.0523)
Unemployment (*t*-1)	0.0072	−0.0035	0.0179	−0.0198	−0.0134
	(0.0115)	(0.0163)	(0.0135)	(0.0171)	(0.0171)
Elderly (*t*-1)	0.0501**	−0.0202	0.0016	0.0113	0.0132
	(0.0201)	(0.0268)	(0.0308)	(0.0270)	(0.0192)
Budget surplus (*t*-1)	−0.0382***	−0.0031	−0.0117	0.0207+	0.0195*
	(0.0114)	(0.0137)	(0.0150)	(0.0127)	(0.0114)
Ln GDP per capita (*t*-1)	0.2204	0.4959	0.3654	−0.2893	−0.2720
	(0.2988)	(0.4182)	(0.4916)	(0.3102)	(0.2896)
Ln GDP (*t*-1)	−0.1033**	−0.0227	−0.1357*	0.1257*	−0.1982***
	(0.0498)	(0.0716)	(0.0704)	(0.0737)	(0.0581)
GDP growth (*t*-1)	0.0378+	0.0193	0.0294	0.0230	−0.0024
	(0.0240)	(0.0288)	(0.0288)	(0.0213)	(0.0250)
Constant	−0.8935	−3.8083	−1.1224	1.6442	6.9728**
	(2.6176)	(3.9969)	(4.4344)	(2.8177)	(2.9436)
R^2	0.2326	0.1274	0.2620	0.1633	0.1326
Observations	760	760	760	760	760
Countries	19	19	19	19	19
Interactions					
LDV * EU (*t*-1)	−0.0238+	0.0286**	−0.0624**	−0.0014	−0.0727***
LDV (*t*-1)	−0.0041	−0.0350***	−0.0575**	−0.0101	−0.0521***
LDV * trade (*t*-1)	0.0000	0.0002	−0.0005	−0.0100	−0.0002
LDV (*t*-1)	−0.0255*	−0.0317***	−0.0394+	−0.0000	−0.0594***
LDV * tax-to-GDP (*t*-1)		0.0014+	0.0001	−0.0008+	−0.0026*
LDV (*t*-1)		−0.0707**	−0.0699	−0.0435**	0.0122

Notes: Models include year dummies, panel-corrected standard errors and autoregressive disturbances. ***Significant at the 0.01 level; **Significant at the 0.05 level; *Significant at the 0.10 level; +Significant at the 0.15 level.

are found. The short-term increase in total taxation when a left-wing government comes to power is the only effect of the government ideology variable in all models.

Cross-country differences in tax mixes are unexplained by most of the control variables. An unsurprising exception is the positive effect of the EU dummy variable on consumption tax reliance. Additionally, EU Members raise more PIT and less CIT revenues. High-tax nations also have lower shares of CIT revenues, as predicted, but there is no evidence of higher SSCs and consumption taxes as a result. There is weak evidence that corporatist

nations raise less PIT and consumption taxes and more CIT, which is contrary to theoretical predictions. It appears that stronger political constraints inhibit the reduction of taxes and the shift towards regressive revenue sources, but a drawback of the present regression approach is that a single veto player index does not reveal the underlying political processes.

As explained, the effects of certain control variables on the speed of convergence are given by their respective interaction terms. Their coefficients are presented below the main regression results in Table 3. Every interaction term is estimated separately by adding it to the main model. Because the results for the control variables closely resemble those of the main model, they are left out for the sake of simplicity. The main driver of convergence appears to be EU membership. As expected, its significant interaction term with consumption tax reliance shows a substantial rate of adjustment, namely 7%. This EU convergence club exists beside a panel-wide convergence of 5%. CIT revenues in the EU converge as well, and there is weak evidence (close to the 10% significance level) of convergence in tax-to-GDP ratios. PIT revenues, instead, slightly diverge in the EU. Despite the many theoretical channels through which economic integration may influence tax mixes, it seems that trade openness does not drive the convergence process. Neither does the magnitude of the tax burden. The most substantial and significant interaction term with the tax-to-GDP ratio (namely, consumption tax reliance) turns insignificant when simultaneously including the EU interaction (not reported).

Regression results including CEE countries, 1996–2019

Table 4 displays the panel-wide regression results for the period 1996–2019, including the CEE-countries, and Luxembourg, Portugal and Switzerland. There is convergence in all categories, at roughly similar rates of adjustment.

To determine whether the results can be attributed to the inclusion of 11 additional countries or to the exclusion of 16 data years, the 1996–2019 estimations are re-conducted using only the 1980–2019 country panel. To explicitly control for the influence of the CEE-8, they are also re-estimated excluding only those nations. The results of these auxiliary estimations, provided in the online appendix, largely replicate those presented in Table 4. This means that convergence in the EU-15 and OECD-7 remains existent after 1996 and is not mainly driven by the added countries.

In the 1996–2019 estimations, the determinants of total taxation are largely the same as those found in the 1980–2019 panel, but the control variables are slightly better able to explain variation in tax mixes. For instance, richer nations have less regressive tax mixes (also when the CEE-8 are excluded: see the appendix). The significant short-term effect of the unemployment variable is probably the result of economic shocks; long-term effects are absent.

Notably, the government ideology variable is significant in all models. In line with earlier findings, left-wing government ideology leads to higher tax-to-GDP ratios, more PIT and CIT, and less SSCs and consumption taxes, though the effect on CIT and SSCs only exists in the short run. Most of these effects remain present when excluding the CEE-8 and/or Luxembourg, Portugal and Switzerland. Given the variable's insignificant coefficients in the 1980 models, it appears that the effect of government ideology on tax mix composition has increased through time. This

Table 4. Regression results, entire panel, 1996–2019.

	Tax-to-GDP	PIT (% revenues)	CIT (% revenues)	SSCs & payroll (% revenues)	GCT (% revenues)
LDV	−0.0247***	−0.0251***	−0.0691***	−0.0115**	−0.0628***
	(0.0074)	(0.0072)	(0.0229)	(0.0054)	(0.0154)
EU (*t*-1)	0.1333	−0.0954	−0.3228***	0.1029	0.2146*
	(0.1059)	(0.1296)	(0.1212)	(0.1165)	(0.1215)
CEE	0.0847	−0.3098	−0.1630	0.1920	−0.1067
	(0.1663)	(0.2313)	(0.2313)	(0.2041)	(0.1860)
Tax-to-GDP (*t*-1)		0.0015	−0.0084	−0.0004	0.0071
		(0.0098)	(0.0089)	(0.0100)	(0.0083)
Δ Trade	−0.0282***	0.0107	−0.0108	−0.0056	0.0028
	(0.0071)	(0.0085)	(0.0087)	(0.0077)	(0.0072)
Trade (*t*-1)	−0.0005	−0.0018	−0.0003	0.0021*	−0.0010
	(0.0011)	(0.0015)	(0.0016)	(0.0011)	(0.0013)
Δ Left government	0.0027+	−0.0001	0.0083***	−0.0036*	−0.0045***
	(0.0017)	(0.0024)	(0.0027)	(0.0022)	(0.0017)
Left government (*t*-1)	0.0029***	0.0040**	0.0012	−0.0014	−0.0026**
	(0.0010)	(0.0016)	(0.0014)	(0.0014)	(0.0011)
Political constraints (*t*-1)	0.7485+	1.2734*	0.3352	−1.3001+	−1.9165***
	(0.5163)	(0.7537)	(0.5248)	(0.8211)	(0.5739)
PR electoral system (*t*-1)	0.0209	−0.2038	0.0762	0.0579	0.1542+
	(0.0985)	(0.1911)	(0.0923)	(0.1890)	(0.1044)
Wage coordination (*t*-1)	−0.0244	−0.0289	−0.0007	0.0773**	−0.0252
	(0.0376)	(0.0350)	(0.0473)	(0.0381)	(0.0388)
Δ Unemployment	0.0195	−0.0853	−0.1928***	0.2137***	−0.1248***
	(0.0398)	(0.0619)	(0.0438)	(0.0571)	(0.0440)
Unemployment (*t*-1)	0.0026	−0.0168	0.0078	−0.0148	−0.0148
	(0.0115)	(0.0168)	(0.0124)	(0.0170)	(0.0140)
Elderly (*t*-1)	0.0672***	−0.0356	0.0042	0.0059	−0.0260+
	(0.0185)	(0.0249)	(0.0167)	(0.0225)	(0.0177)
Budget surplus (*t*-1)	−0.0234*	−0.0115	−0.0194	0.0334**	0.0179
	(0.0132)	(0.0159)	(0.0164)	(0.0141)	(0.0135)
Ln GDP per capita (*t*-1)	0.4261*	0.1738	0.6293**	−0.5582**	−0.5954**
	(0.2257)	(0.3383)	(0.2723)	(0.2434)	(0.2565)
Ln GDP (*t*-1)	−0.0347	−0.0443	−0.0790*	0.1239**	−0.1221**
	(0.0432)	(0.0628)	(0.0420)	(0.0551)	(0.0528)
GDP growth (*t*-1)	0.0122	−0.0053	0.0438*	0.0301	−0.0452**
	(0.0210)	(0.0283)	(0.0228)	(0.0227)	(0.0195)
Constant	−4.5203**	−0.4929	−4.8693*	4.6752*	10.2510***
	(2.2281)	(3.2364)	(2.7878)	(2.6698)	(3.0150)
R^2	0.1911	0.1161	0.2731	0.2139	0.1363
Observations	720	720	720	720	720
Countries	30	30	30	30	30
Interactions					
LDV * EU	−0.0006	0.0189+	−0.0526+	−0.0102+	−0.0118
LDV (*t*-1)	−0.0242*	−0.0393***	−0.0513*	−0.0033	−0.0589***
LDV * trade (*t*-1)	0.0002	0.0001	−0.0003	−0.0002	−0.0001
LDV (*t*-1)	−0.0439**	−0.0306**	−0.0446	0.0018	−0.0540**
LDV * tax-to-GDP (*t*-1)		0.0016+	−0.0001	0.0002	−0.0015
LDV (*t*-1)		−0.0876**	−0.0657	−0.0177	−0.0161
LDV * CEE	−0.0674**	−0.0379	−0.0063	−0.0428+	−0.0745**
LDV (*t*-1)	−0.0125+	−0.0219***	−0.0677**	−0.0080	−0.0401***

Notes: Models include year dummies, panel-corrected standard errors and autoregressive disturbances. ***Significant at the 0.01 level; **Significant at the 0.05 level; *Significant at the 0.10 level; +Significant at the 0.15 level.

contrasts with its diminishing effect on CIT rates as found by Osterloh and Debus (2012). Perhaps, left-wing governments have realised that competitive pressure on CIT rates and its spill-over effect on PIT progressivity are inescapable (see, e.g. Ganghof 2006a), and have since then worked to reduce tax system regressivity through SSCs and consumption taxes. Indeed, left-wing governments are more

opposed to VAT when income inequality is a salient political issue (Kemmerling 2017).

Table 4 also displays the interaction terms. Notably, EU membership is not a significant driver of consumption tax convergence anymore when the CEE countries are included. In the auxiliary regression excluding the CEE-8, provided in the online appendix, the EU interaction term becomes significant again for CIT and consumption tax reliance. Hence, Western European nations still converge. Looking at the interactions with the CEE dummy in Table 4, it seems that the CEE-8 constitute a convergence club in terms of consumption tax reliance, with a cohesion so strong that EU-wide convergence pales into insignificance. Additionally, the CEE-8 converge in tax-to-GDP ratios and SSC reliance at substantial rates of adjustment (6.8 and 4.3%), though the latter effect is slightly above the 10% significance level. Again, virtually no evidence is found for convergence clubs of open economies and high-tax nations.

Robustness

I conduct several sensitivity analyses. I first examine the trade variable, because of its surprising insignificance. As noted by Bretschger and Hettich (2002), it might be biased by country size: smaller countries naturally have higher trade shares, for instance as a result of production specialisation. Following their methodology, I remove this bias by regressing trade openness on relative GDP and using the residuals as trade values. The results, including the interaction terms, are similar.

I follow the same procedure to separate the potentially overlapping effects of globalisation and the European common market on trade openness, which could cause multicollinearity of the trade variable and the EU dummy.[7] I regress the trade variable on the EU dummy to remove EU influence, and subsequently I add the abovementioned control variable for relative GDP. When using the residuals of these regressions instead of the respective original variables, the results do not change substantially.

As alternative proxies for tax competition, I subsequently use the Chinn-Ito index for de-jure capital account openness (Armingeon, Engler, and Leemann 2022), net inflows of foreign direct investment as a percentage of GDP (World Bank 2023), and the statutory CIT rate at the combined central and sub-central level (OECD 2023). All are insignificant.

The results are also robust for the subsequent inclusion of four potential determinants of tax policy that were initially left out to prevent overspecification. One is the interaction between wage coordination and left government, following Beramendi and Rueda (2007). Second, following Limberg (2019), I add a dummy variable coded 1 when a country experiences a banking crisis (Nguyen, Castro, and Wood 2022) and interact it with the budget variable. Third, given the finding of Haffert and Mertens (2021) that opposition against VAT should be more pronounced in economies based on domestic consumption, I follow the authors by including an index of value added in the most important domestically oriented sectors, being wholesale and retail trade, restaurants, hotels, finance, insurance, real estate and business services, as a share of total value added in the economy (OECD 2022). Finally, I include a dummy coded 1 for members of the Economic and Monetary Union (EMU), as countries in the eurozone have stronger fiscal constraints. The effects of the EU dummy do not change substantially.8

Finally, from the insignificance of several control variables, it follows that tax mixes and their convergence are probably conditioned by unquantifiable factors, such as political culture and redistribution preferences. It is problematic to control for such unobserved heterogeneity using country dummies, since fixed-effects regressions generate inconsistent estimators in models that include a lagged dependent variable. Therefore, country dummies are not used in the main models and only as a sensitivity analysis. The results, provided online, indicate even stronger convergence than displayed in Tables 3 and 4. For instance, all dependent variables in the 1980–2019 regressions converge yearly by approximately 12 to 18%. Unobserved factors apparently play a large conditioning role. Still, the effects of the control variables are largely similar. Moreover, the interaction terms with trade openness and total taxation remain insignificant (the interactions with the partially time-invariant EU dummy and completely time-invariant CEE dummy make less sense in fixed-effects models).[9] This leaves intact the conclusion that tax mix convergence is unrelated to tax competition or high spending.

Conclusion

This study has extended the analysis of tax mix convergence in the OECD with a substantial number of years, and has supplemented it with data from Central and Eastern EU member states. Furthermore, it has aimed to elucidate the conditional factors that determine both the current state of tax mixes and their speed of adjustment, in order to make convergence estimates more consistent and identify convergence clubs.

The results show that tax revenues and tax mixes in developed nations continue to converge. The underlying downward trend in PIT revenues and upward trends in CIT and consumption tax revenues have continued but moderated through the 21st century, though several Western EU countries are slightly increasing their PIT revenue shares.

While economic openness has a long-run negative effect on total taxation, this variable and several other proxies of tax competition are unable to explain cross-country differences in tax mix composition. Instead, tax mixes are largely determined by unexplained cross-country heterogeneity. Government ideology, however, does significantly affect tax mixes in line with earlier empirical findings, and its influence appears to have increased over the years. These results contrast with the often-heard hypothesis that international economic integration, through competitive pressure, reduces domestic governments' leeway in tax policy-making. Whereas income tax progressivity may be under competitive pressure, tax mix progressivity is not.

Neither economic openness nor the tax-to-GDP ratio is able to explain the speed of convergence, which negates the existence of convergence clubs of competitive or high-tax nations that rely on regressive revenue sources like SSCs and VAT. Instead, the main driver of convergence is EU membership. While the Europeanisation of tax mixes is an unsurprising finding, this study emphasises that it trumps the effects of global tax competition. However, only the tax mixes of Western European countries converge. Central and Eastern European countries, instead, constitute a separate convergence club with lower tax burdens and more regressive tax mixes.

Considering the European goal of common social progress, this might be a worrying observation. A regressive tax mix may not only increase income inequality, it may also have adverse effects on labour markets. Low PITs and high regressive taxes make it more

difficult to lower the tax burden of low-wage earners in efforts to increase employment. Furthermore, financing the welfare state with SSCs may dualise the labour market, leading to structural unemployment. Thus, when it comes to tax mix composition, the EU's ambition of 'upward' convergence is not being realised.

Although this study's models provide more reliable convergence tests than conventional measures of cross-country variation, and although they help to quantify the relative importance of tax mix determinants, the method of regression analysis also has several drawbacks, especially in the analysis of 'soft' data. For example, an ideology index will not fully capture a government's considerations underlying tax policies; and it is impossible to capture the pluriform influence of veto players in a single index. Thus, there remains a need for qualitative analyses of the politics of taxation, especially regarding the newer CEE Member States. Also, future quantitative studies could further disentangle the channels through which EU membership continues to affect national tax policies, given that increased competition does not appear to be a significant determinant of tax mixes.

Notes

1. Australia, Austria, Belgium, Canada, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States. Other OECD nations were excluded for reasons of data availability.
2. To prevent overspecification of the models, the selection of political, institutional and economic variables is restricted to relatively common variables in political economic analysis. A small number of potential determinants, such as the occurrence of a banking crisis and the value added in domestically oriented production sectors, are tested as robustness checks only.
3. The 1980–1983 government budget data for New Zealand are retrieved from RBNZ (1983); the 1984 value comes from Evans et al. (1996, 1896).
4. Whereas tax revenue data are available until 2021, data availability for several control variables restricts the period of analysis to 2019. An incidental advantage is that the one-off shock to tax mixes during the COVID pandemic is excluded.
5. Im-Pesaran-Shin unit-root tests, allowing for time series-specific trends and lag structures, indicate stationary in all time series, except for the variable denoting the share of elderly people in the 1996–2019 panel. Kao tests indicate cointegration in all models. Hence, the use of error correction models should be appropriate (Keele, Linn, and Webb 2016). Incidentally, the results also hold when excluding the elderly variable.
6. The long-term effect is given by $\delta_j/-\beta$ (Iversen and Cusack 2000, 330). In this case, $-0.0042/-(-0.0220)*36=-6.9$.
7. I thank an anonymous referee for raising this issue. Multicollinearity between the EU dummy and trade openness does not seem to be a big problem, however: their correlation coefficient in the 1996 panel is 0.34 and their variance inflation factors are 1.92 and 3.51, respectively.
8. The EMU dummy's coefficient is significant in two models in the 1996 regressions, suggesting that Euro members have lower CIT revenues (its long-term effect is −3.3% points of tax revenues) and lower consumption tax revenues (−2.8% points). In the 1980 regressions, only the CIT effect is significant. When simultaneously adding interaction terms of the lagged dependent variable with the EU, EMU and CEE dummies to the 1996 regressions, almost all interaction effects resemble those in Table 4. However, CIT and SSC convergence driven by the EU turn insignificant. Instead, it is EMU membership that appears to drive a 7% CIT convergence and a 2% SSC convergence – though CEE countries' SSC convergence remains

stronger, at 5%. These results should be treated with some caution, due to potential multicollinearity between the EU and EMU dummies.

9. The only exception is the interaction term between SSC reliance and the tax-to-GDP ratio (coefficient −0.0026 and −0.0048 in the respective 1980 and 1996 panels), which however becomes insignificant when adding an interaction term with the EU dummy.

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Data availability statement

Replication materials are available in the Harvard Dataverse at https://doi.org/10.7910/DVN/CZR55W.

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