



# Elite Incomes Around the World: Command over Tradables, Nontradables and Labour

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## Abstract

This paper shows that cross-country comparisons of elite incomes vary widely and systematically depending on the conception of real income used. It is well known that between-country income inequality is higher using market exchange rates than PPP exchange rates, due to a combination of traded sector bias and the Balassa-Samuelson effect, and we empirically confirm that this is the case for comparing top 1 percent incomes across countries. In contrast, we argue that measuring real incomes of elites using entitlements over labour (ELs), which take local wage costs as the numeraire, leads to the opposite effect: since the non-traded sector is relatively labour-intensive, incomes in the sense of ELs demonstrate non-traded sector bias relative to PPP incomes. They therefore provide a complement, or opposite bound, to the traded-sector bias of market exchange rates. Consistent with this argument, we find that between-country inequality among the world's national elites is indeed lower using ELs than either PPP or market exchange rates. But elite incomes in ELs do not merely converge: elites in poorer countries leapfrog or overshoot their rich country counterparts, enjoying higher real incomes in terms of their command over domestic labour.

**Keywords** Elites · Inequality · Balassa-Samuelson effect · PPP exchange rates · Entitlements over labour

## 1 Introduction

The widely-documented rise in inequality within countries over the last 40 years has implied rising shares of national income accruing to countries' elites (Anand & Segal 2017; Alvaredo et al. 2018). At the same time, inequality between countries has declined, and global interpersonal

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inequality began to decline around the early 2000s (Milanovic 2024). This paper explores what existing and new approaches to the measurement of real income tell us about elite living standards. We demonstrate the radically different interpretations implied by focusing on command over tradables versus command over non-tradables, and in particular over local labour, and what this tells us about the social and economic positions of elites within their societies.

Comparisons of real incomes across countries are usually based on purchasing power parity (PPP) exchange rates, which estimate command over a mixed basket of consumption goods and services. These are estimated by the World Bank's International Comparisons Project (ICP), whose most recent benchmark for PPP exchange rates at the time of writing is 2017. An alternative to PPP exchange rates is to use market (FX) exchange rates. However, FX exchange rates tend to have a *traded-sector bias*, meaning that international comparisons of incomes that use them tend to reflect relative command over traded goods and services, rather than the mixed basket of traded and non-traded goods and services of PPP comparisons. In combination with the Balassa-Samuelson effect, which tells us that the relative price of traded goods to non-traded goods is lower in richer countries, this implies an upward bias in estimates of inequality in living standards across countries relative to PPP comparisons (Anand & Segal 2008: 70).

Turning to comparisons of elite incomes in particular, Cravino and Levchenko (2017) find that high-income households spend disproportionately on *non-tradables*, including personal services. While some internationally-priced expenditures like travel and hotel accommodation are luxuries (Anand and Segal 2015), elites spend less on tradables overall as a share of their incomes. This implies that if we want to compare elite incomes across countries, moving from PPP to FX takes us in the wrong direction. International price data recorded in the ICP do not distinguish tradable goods from non-tradable goods, so we cannot extract prices of non-tradables goods per se. But, as we show later, the reasoning underlying Balassa-Samuelson implies that the cost of non-tradables can be approximated by the cost of local labour. This suggests that we can derive an approximation to real incomes in terms of non-tradables by using local labour costs as numeraire.

Segal (2022), building on Milanovic (2010) and others, proposes a measure of real income denoted *entitlements over labour* (EL) that takes local median wages as the numeraire. Thus the EL of a top income group, such as the top 1 percent or the top 5 percent, is defined as that group's disposable income divided by the cost of employing a worker on median wage in their country. Where standard measures of real income measure a person's command over a basket of goods and services, ELs measure their command over local labour.

These observations provide building blocks for a more comprehensive international comparison of elite incomes, because they imply that ELs are a natural complement to FX-based comparisons: where FX-based international comparisons imply higher between-country inequality than PPPs due to their traded sector bias, we hypothesize that EL-based international comparisons will imply lower between-country inequality than PPPs due to their non-traded sector bias. This means that FX- and EL-based comparisons will provide upper and lower bounds on PPP-based international comparisons of real income.

In addition to their interpretation in terms of command over non-tradables, there are also normative reasons to be interested in elite ELs. Atkinson (2007b, a: 21–22) suggested that studying the rich was important because income provides “command over people”, so that “income is important as a source of power”. Modern political theorists in the republican tradition describe this ability to command others as “domination”, where the dominating agent gets to choose how the dominated individual acts “at the [dominating] agent's pleasure” (Pettit 1999, p. 55). To be subject to command by another is to be *unfree* in republican terms. In this way, EL measures the extent to which elites can dominate their

compatriots, reducing the latter's (republican) freedom and autonomy. This implies that EL can also be taken as a measure of inequality in social hierarchies: domination implies "social subordination to others" (Pettit 1999, p. 274), and "a profound asymmetry in whose interests count" (Anderson 2017, p. 5). Anderson (2010, p. 1) describes this as "relational inequality", implying that there are "superior and inferior persons" (Anderson 1999: 312). Thus EL is not a measure of economic inequality in the standard sense of comparing a given income concept across people in order to measure the differences in their command over goods and services – it compares disposable incomes of one group (the rich) with the wages of another group (median-wage workers). It is therefore a measure of social inequality based on economic relations.

Estimating real incomes of top income groups using all three measures—PPPs, FX, and ELs—therefore allows us to do two things. First, we can test the hypothesis that inequality across countries between national elites will be highest using FX, intermediate using PPP, and lowest using EL. Second, we obtain a more complete picture of the rising real incomes of elites, and of their social and economic positions within their countries.

We construct a new dataset in order to test this hypothesis, and our hypothesis is confirmed. However, while inequality between countries' elites is lower using ELs than inequality measured using FX or PPP exchange rates, as expected, we find that this is not because elite incomes in ELs simply *converge*: instead, elites in poorer countries *leapfrog* or *overshoot* their rich country counterparts, enjoying higher real incomes in terms of their command over domestic labour.

## 2 Measuring living standards across countries: 'real incomes' relative to tradables and non-tradables

International comparisons of real incomes are usually based on PPP exchange rates, on the basis that these reflect relative purchasing power over a mixed basket of consumption goods and services. However, just like estimates of inflation over time, the single number used as deflator typically masks widely-divergent price movements in different categories of goods and services. To give an extreme illustration, the relative price of lighting has collapsed over time, in the UK falling by a factor of more than seven between 1950 and 2000 relative to average prices as measured by the CPI (Fouquet and Pearson 2012).

In the case of cross-country comparisons, the Balassa-Samuelson effect refers to the fact that the prices of tradable goods relative to non-tradable goods tends to be lower in richer countries than in poorer countries (Samuelson 1994): you can buy many more taxi rides in India for the price of an iPhone than you can in the USA. This is because tradable goods tend to be more capital- and technology-intensive than non-tradable goods, leading to higher rates of productivity growth in tradables. It follows that the higher overall productivity of richer countries is driven primarily by their higher productivity in tradable goods. With productivity reflected in prices, this implies that the relative price of tradable goods to non-tradable goods is higher in poorer countries.

At the same time, FX exchange rates tend to reflect the prices of tradable goods and services across countries, because it is these goods and services that are subject to arbitrage, leading to something approximating price equalization at market exchange rates (taking into account transport and other costs). With tradable goods being relatively more expensive than non-tradable goods in poorer countries compared with richer countries, it follows that FX exchange rates—reflecting the prices of those tradable goods—will understate real

incomes in poorer countries relative to richer countries. Put another way, when we compare incomes across countries using FX exchange rates, the comparison does not account for the fact that non-tradables are cheaper in poorer countries.

The Balassa-Samuelson effect is based on the fact that tradables tend to be more capital- and technology-intensive than non-tradables. The other side of this observation is that wages are a more important determinant of the prices of non-tradables than of tradables. So just as international comparisons based on FX exchange rates tend to reflect prices of tradable goods more than non-tradables, we would expect the reverse for ELs, where the numeraire is the price of local labour: ELs will reflect the price of non-tradable goods more than tradables.

Entitlements over labour measure the price of local labour as the cost of employing a worker on median wages. The idea of using wages as numeraire goes back to Adam Smith (1776, p. 47); following Smith, Milanovic (2010) used per capita GDP as numeraire to compare the wealth of extremely rich individuals throughout history, interpreting it as the average cost of employing a contemporary worker. Atkinson (2007b, a, pp. 21–22) estimates a measure of ‘command over people’ as the share of the population with gross income in excess of 10 times average earnings. Segal (2022) argues that median wages are more appropriate than either per capita GDP or average wages, on the basis that they represent a better measure of command over people per se (as opposed to human capital) than do average wages. This follows the Stiglitz Commission’s argument that the median is more appropriate than the mean as a proxy for the ‘typical’ individual (Stiglitz et al. 2009, pp. 13–14), because the mean can be heavily influenced by a small share of individuals at the top of the distribution.

Thus where PPP exchange rates are designed to balance both tradables and non-tradables across a representative basket of consumption goods and services, FX exchange rates more closely reflect command over tradables and ELs reflect command over nontradables. This leads to our primary hypothesis: inequality between elites across countries will be highest when measured using FX exchange rates, intermediate using PPP exchange rates, and lowest using ELs.

### 3 Data

In order to study the economic position of elites globally we need estimates of their incomes. It is well documented that the household surveys used to measure incomes and expenditure around the world are unreliable for measuring incomes at the top of the distribution in each country, and that better estimates of these top incomes can be produced from administrative and tax records (Atkinson et al. 2011). For this reason, some recent estimates of global inequality have attempted to combine data from surveys and tax records to produce a global distribution (Alvaredo et al. 2018; Anand & Segal, 2015, 2017). Here we update the approach used in Anand & Segal (2015, 2017). We combine three sets of data: income shares based on household surveys from UNU-WIDER’s World Income Inequality Database (WIID); the World Bank’s Poverty and Inequality Platform (PIP), which provides estimates of mean incomes based on surveys<sup>1</sup>, and the World Inequality Database

<sup>1</sup> In most cases these are based on the same surveys as those used by WIID. However, for years in which there are no household surveys available WIID assumes that mean incomes are equal to per capita GDP, whereas the World Bank estimates them based on the available means from years with household survey, which is more suited to our purposes. See Anand and Segal (2008) for reasons to prefer using survey-based means rather than national accounts means.

[<https://wid.world/>] which has estimates of top 1% income shares (of fiscal income) based on administrative or tax data for 43 countries. Our assumption is that household surveys are accurate for most of the distribution, but that the WID data are more accurate for the very top.

Our first task is to provide improved estimates of top 1 percent income shares for those countries and years for which WID does not have administrative or tax data. Following Anand and Segal (2015, 2017), for countries without this data we do this by estimating a regression-based relationship between WID's top 1 percent fiscal income shares and WIID's estimates of top 10% shares, along with a set of control variables. For missing years among the 43 countries that have top 1 percent shares in WID, we (a) interpolate following the growth trend of the top 10% shares<sup>2</sup> and (b) extrapolate using top 10 percent shares from WIID and the latest available Pareto coefficient calculated from top 1 percent and top 10 percent shares.<sup>3</sup>

Having estimated top 1 percent income shares we still need to convert them into absolute values using a control income. For this we multiply the income share by mean per capita household income in 2017 PPP\$ from PIP.<sup>4</sup> But since we are assuming that surveys are underestimating top incomes, it follows that mean survey income is also underestimated. So where the survey top 1 percent share is below our estimated share, we then scale up mean income by the difference.

Note that we do not use the absolute values given for fiscal income in WID because these represent pre-tax income, whereas we need to estimate disposable income. If we were to simply use this pre-tax income, it would be equivalent to assuming both that (a) total pre-tax income is equal to total post-tax income, and (b) the top 1% share of post-tax income is the same as the top 1% share of pre-tax income. Given that fiscal income is higher than post-tax income, (a) would imply an upward bias in estimating post-tax income. Regarding (b), it is equivalent to assuming that the top 1% pay the average rate of income tax, and while this adds noise, it is not obvious whether it is an under-estimate or over-estimate. Therefore we apply the top 1% fiscal income shares to the survey-based estimates of mean per capita household income from PIP in PPPs and FX. This means dropping assumption (a) which implies an unambiguous bias, and retaining assumption (b) which adds error but no obvious bias.

We next measure the entitlements over labour of these top income groups, for which we require additional data on gross median wages.<sup>5</sup> For this we use data based on labour market surveys from the Luxembourg Income Study and Segal (2022). We estimate median wages for missing country-years in a parallel manner to how we estimate top 1 percent shares, regressing

<sup>2</sup> When the growth rate of top 10 percent and top 1 percent shares over a gap in the top 1 percent data are of opposite signs, we revert to linear interpolation.

<sup>3</sup> For each country we calculate the Pareto coefficient of the latest year for which both top 1 and top 10 percent shares are available, using the formula in Atkinson (2007, p. 24). Since top 10 percent shares are typically available for more recent years than top 1 percent shares, we then use that coefficient and formula to extrapolate the top 1 percent shares.

<sup>4</sup> Note that this implies a different distribution from those used in Segal (2021, 2022), which are based on per-adult incomes rather than per-capita incomes. For this reason the top 1 percent incomes and ELs here are not directly comparable with those estimates.

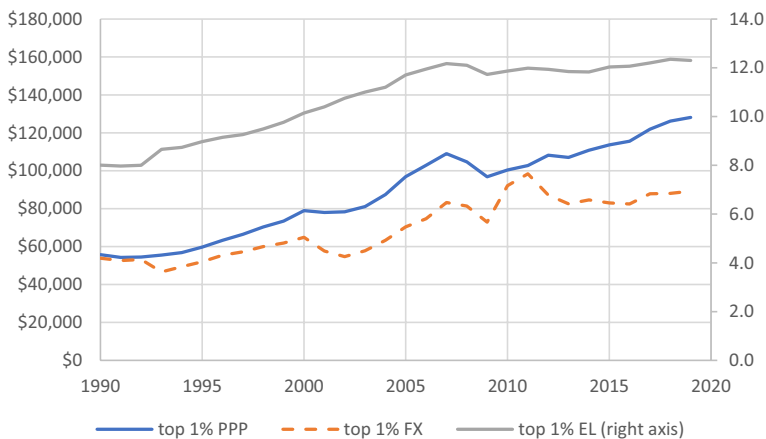
<sup>5</sup> As Segal (2022) discusses, median rather than mean wages are used to measure entitlements over labour because the median is more representative of the 'typical' worker, and captures the idea of command over labour as opposed to over human capital. Average wages often differ substantially from median wages because of the very high salaries of a small share of highly-skilled workers (also see Bleynat et al. 2021, section III).

median wages on estimates of median incomes from surveys (see appendix for details). This allows us to produce the first estimates of ELs of the top 1 percent for 140 countries.

## 4 Real incomes of global elites

We start by considering the levels and the growth rates of real income for elites globally, using the three measures (PPP\$, FX\$ and ELs). They are given in Fig. 1 and Table 1, where we can see that elite real incomes have unambiguously risen since 1990.

First consider elite incomes in PPP\$ and FX\$. These depend on both aggregate economic performance and inequality within countries. Table 1 shows that global per capita GDP in constant PPP\$ grew at an average yearly rate of 1.9 percent over 1990–2019, and that global elite incomes in PPP\$ grew faster at 2.9 percent. The fact that elite incomes grew faster corresponds to the well-documented rise in within-country inequality over the period. We also observe this when we look at elite ELs. From 1990 to 2019 top 1



**Fig. 1** National top 1 percenters around the world, real incomes over time

Source: Authors' calculations. Note: Values based on estimated mean per capita disposable household incomes for individuals in the top 1 percent of each country, population-weighted average across countries. PPP and FX values are in constant 2017 prices. EL is entitlements over labour and uses different units from PPP and FX measures, taking the national median wage as numeraire

**Table 1** Average annual growth rates of real global elite incomes, median wages, and per capita GDP

	Global elite incomes, PPP\$, %	Global elite incomes, FX\$, %	Global elite ELs, %	Median wages, %	Global per capita GDP, PPP\$, %
1990–2000	3.5	1.9	2.4	0.4	1.2
2000–2010	2.4	3.6	1.6	1.8	2.3
2010–2019	2.7	-0.4	0.4	1.8	2.2
1990–2019	2.9	1.8	1.5	1.3	1.9

Source: Authors' calculations and World Bank

Note: Elite incomes are incomes of the top 1% in all countries for which EL data are available. Incomes are population-weighted averages.

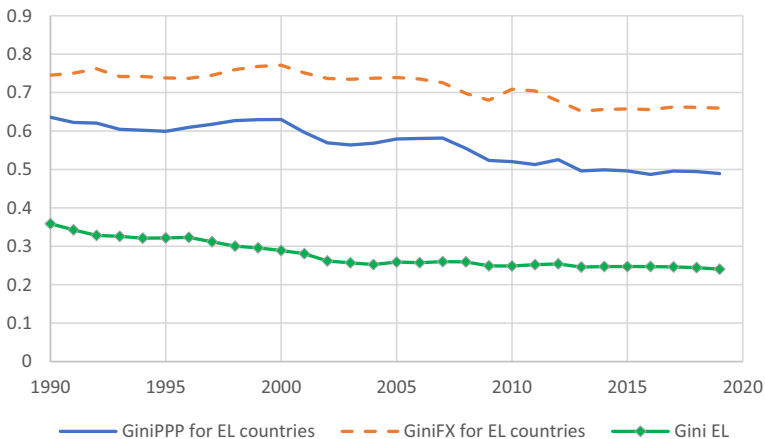
percenters worldwide saw their ELs grow at an average rate of 1.5 percent, due to the fact that median wages grew substantially more slowly than elite incomes at a rate of just 1.3 percent per year. Elites grew richer not just in terms of their command over goods and services, but also in terms of their ability to command the labour of their compatriots.

## 5 Global elite inequality

We have seen that at the global level, the real incomes of national elites have risen faster than average incomes, and faster than median wages. How do these elite incomes compare across countries? We will use the term *global elite inequality* to refer to between-country inequality among the top 1% in all countries. As we discussed above, we would expect different outcomes depending on whether we use PPP, FX, or EL-based measures of real incomes. We have seen that relative incomes using FX exchange rates are biased towards tradable goods, and that that relative incomes using ELs are biased towards non-tradable goods, with PPPs lying in between. Combined with the Balassa-Samuelson effect, this would suggest that when we measure inequality between countries for elite incomes, FX provides an upper bound on inequality because it corresponds to incomes in terms of tradables; EL provides a lower bound on inequality because it corresponds to incomes in terms of labour costs and non-tradables; and PPPs would be in between because they correspond to a weighted average of tradables and non-tradables.

Figure 2 plots the Gini coefficient for inequality between global elites using the three measures, and it is consistent with this hypothesis over the entire period: inequality is highest in FX, lowest in ELs, and in between the two for PPPs.

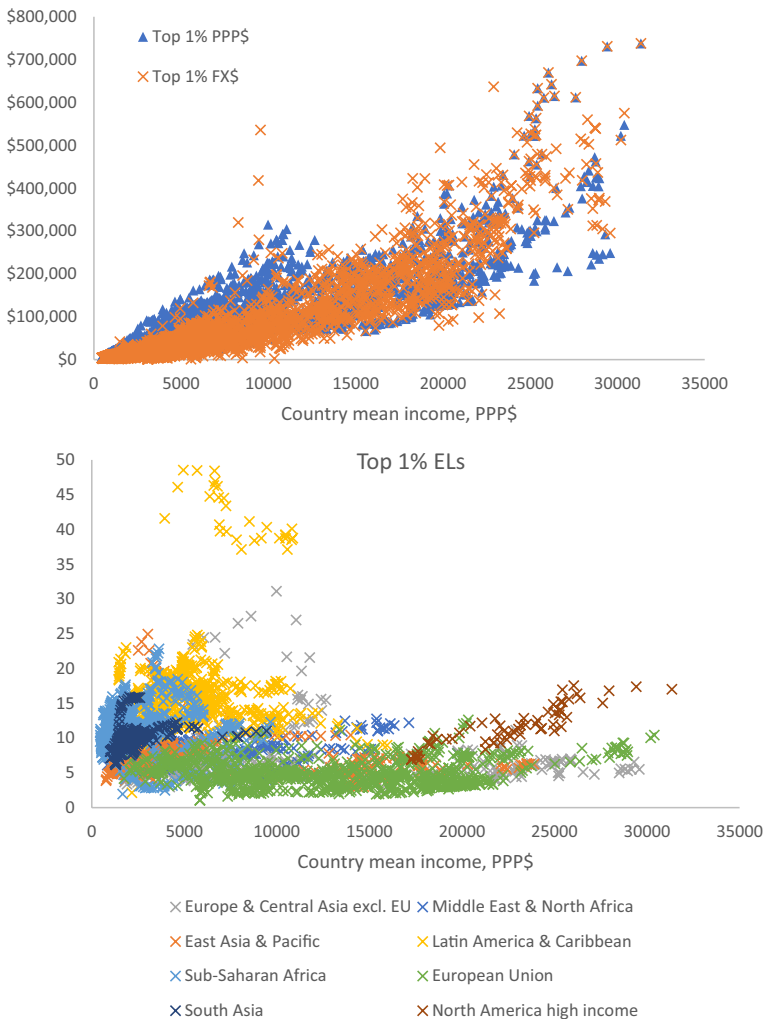
However, the lower level of inequality estimated using ELs does not arise out of elites in poorer countries merely “closing the gap” with elites in rich countries. Instead we find that elites in poorer countries on average *leapfrog*, or *overshoot*, their counterparts in richer



**Fig. 2** Global inequality between national elites in PPPs, FXs and entitlements over labour

Source: Authors' calculations. Note: Inequality is population weighted, and assumes that everyone within the top 1 percent within each country has the same income. In this sense it measures between-country inequality for the top 1 percent of national income distributions. All three series are estimated using only those countries for which we have estimates of median gross wages and entitlements over labour (EL), to ensure comparability. They are 90 countries in 1990, rising to 137 in 2015, and then falling to 133 in 2019. These comprise 89 to 92 percent of the global population

countries. We examine this relationship using Fig. 3, which shows how elite incomes compare with national mean incomes. The horizontal axis is country mean income in PPP\$ from surveys. We plot elite incomes in PPP\$ and in FX\$ in the top panel, and in EL in the bottom panel, where datapoints are colour-coded by region, to be discussed below. While we find the expected strong positive correlation between elite incomes and survey mean incomes in PPP\$ and FX\$—in countries with higher survey mean incomes (in PPP\$), the top 1% are also richer in both PPP and FX terms—in contrast we find a weaker, but overall negative, correlation, between survey mean income and elite ELs. In the entire pooled sample the



**Fig. 3** Incomes of global elites in PPP\$, FX\$ and EL, pooled results 1990–2019

Source: Authors' calculations. Both panels are constrained to countries for which we have estimates of gross median wages and entitlements over labour (EL). Notes: Pooled data over 1990–2019. Regions are represented with different colours and are mutually exclusive. North America high income comprises Canada and the USA



simple correlation between top 1 percent ELs and national mean incomes is  $-0.28$ , indicating the “overshooting” by poorer-country elites in terms of ELs.

This generalises an observation made by Segal (2022). In that study, the top 1% in high-income Sweden had disposable incomes of PPP\$178,000, making them substantially richer in terms of overall consumption goods and services than their counterparts in middle-income Mexico, who had PPP\$107,000. But those in Mexico could afford to command the labour of 21 full time local workers, compared with 3.7 in Sweden: Mexican elites are richer than their Swedish counterparts in terms of their ability to command those around them. We can now report that this reversal applies more broadly to richer and poorer countries.

We can examine this relationship in more detail for the latest available year, 2019. Consider the poorest countries with national survey mean incomes below PPP\$20/day (81 countries), compared with the richest countries with national survey mean incomes above PPP\$40/day (27 countries). In terms of PPP incomes the top 1 percent in these rich countries have an (unweighted) average income of PPP\$266,000 compared with PPP\$62,700 in the poorer countries. In terms of ELs, the poor countries’ top 1 percents have a higher average at 11.9 compared with the average in the richer countries of just 6.9. Thus in ELs, elites in poorer countries are richer than their counterparts in poorer countries—which is, of course, a function of the fact that inequality tends to be higher in poorer countries than in richer countries. But still, inequality across countries between elites in ELs is lower than in PPP\$ because the overshooting is relatively modest: whereas elites in richer countries were 4.2 times richer than poor country elites in terms of PPPs, poorer country elites are just 1.7 times richer in terms of ELs than rich country elites.

Table 2 presents the highest and lowest EL countries in 1990 and 2019, along with their top 1 percent PPP\$ incomes and ranks. In almost all cases, these countries’ top 1 percenters are neither the richest nor the poorest in PPP\$. There are only two exceptions. Brazil has the highest EL in both years, and ranks 7 and 10 for PPP incomes in 1990 and 2019, respectively. In 2019, the USA is close to Brazil’s mirror image: it ranks 1 in PPP incomes of the top 1 percent and 8 in ELs. Among the countries with the lowest ELs, none is in either the top or bottom 10 in terms of PPP\$ incomes.

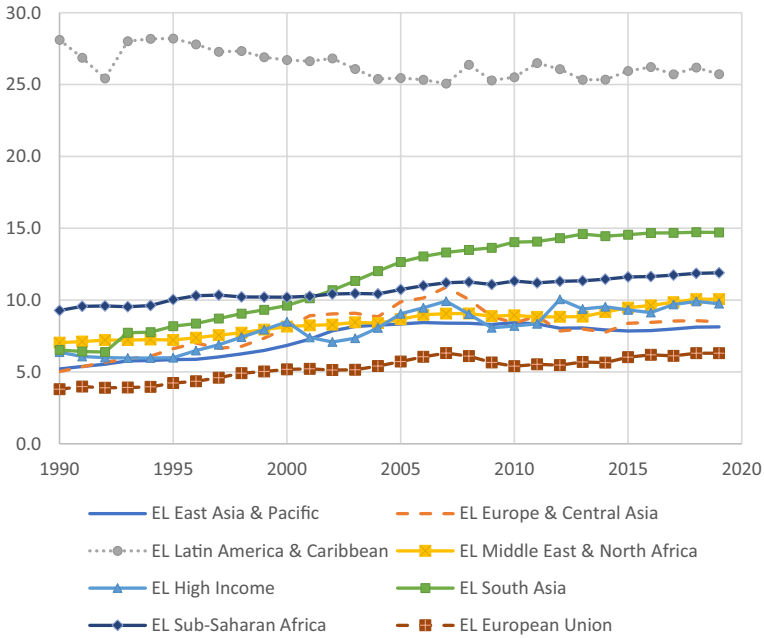
The regional pattern of ELs over time is given in Fig. 4. As also implied in Fig. 3, Latin American elites enjoy the highest ELs by some margin, although it has declined slightly over the period from a high of 28 to 26 since 2005. The high level is driven particularly by Brazil, which has both the largest population in Latin America and has exceptionally high ELs, falling since 1990 but remaining above 38 in all years (represented by the set of vertical outliers in the bottom panel of Fig. 3). All other regions have seen an increase, with South Asia growing most rapidly to become the region with the second-highest elite ELs. High income countries are near the middle of the pack, but that is driven largely the highly-unequal USA, as shown by the much lower average elite EL in the European Union. While it has grown in the EU as well, in 2019 it was still only 6.3, the lowest of all regions. European elites are rich in terms of PPP\$ but the least rich in terms of their ability to command their compatriots.

Finally, we can compare the level of inequality among elites with the level of inequality among all people, as estimated in Anand & Segal (2017) for a set of benchmark years. Our estimates of global elite inequality assume uniform incomes *within* each country’s top 1 percent, so they correspond to the between-country component of global interpersonal inequality restricted to the top 1 percent of each country. Therefore the appropriate comparison is with the between-country component of global interpersonal inequality for all people. We do this using the decomposable MLD measure in Fig. 5. This shows that between-country global elite inequality was about the same as that of global interpersonal inequality in 1993 and slightly higher in 1998. After 2000 (in the benchmark years 2002, 2005 and 2012), global elite inequality has been around 10 percent lower than global

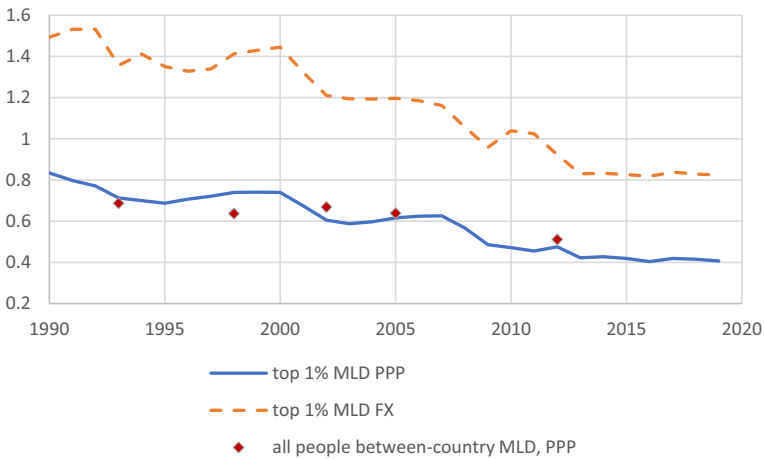
**Table 2** Highest and lowest EL countries, 1990 and 2019

country	1990					2019				
	Top 1% EL	Top 1% PPP\$ income	EL rank	PPP\$ rank	country	Top 1% EL	Top 1% PPP\$ income	EL rank	PPP\$ rank	
<b>Highest EL countries</b>										
Brazil	50.1	141,002	1	7	Brazil	38.7	292,646	1	10	
Thailand	22.6	72,511	2	27	Mexico	23.0	128,987	2	48	
Chile	21.1	109,894	3	13	Colombia	19.6	135,199	3	45	
Namibia	20.9	41,991	4	58	Costa Rica	18.2	226,517	4	18	
Guatemala	20.1	43,363	5	57	Guatemala	17.4	95,705	5	65	
Mexico	17.1	74,932	6	25	Jamaica	17.4	138,339	6	42	
Bolivia	16.4	73,181	7	26	Peru	17.2	128,258	7	49	
Honduras	15.6	31,873	8	72	United States	17.0	737,918	8	1	
Dominican Republic	13.6	47,745	9	51	Zambia	17.0	35,298	9	116	
Sierra Leone	13.6	12,614	10	102	Paraguay	16.9	177,602	10	30	
<b>Lowest EL countries</b>										
Czech Republic	2.7	35,956	108	66	Mauritius	4.3	43,198	127	107	
Denmark	2.6	84,028	109	23	Sweden	4.0	207,111	128	23	
Norway	2.4	66,650	110	34	Croatia	4.0	79,608	129	74	
Finland	2.4	71,923	111	28	Netherlands	3.8	158,797	130	37	
Slovenia	2.4	48,467	112	49	Finland	3.8	155,016	131	38	
Belarus	2.3	39,521	113	60	France	3.5	173,550	132	32	
Greece	2.3	39,325	114	61	Denmark	3.3	137,390	133	43	
Netherlands	2.1	92,625	115	20	Belgium	3.2	174,656	134	31	
Sweden	2.0	70,658	116	30	Slovenia	2.9	102,773	135	62	
Slovak Republic	1.6	25,075	117	80	Greece	2.1	66,382	136	85	

Source: Authors' calculations



**Fig. 4** Regional ELs  
 Source: Authors' calculations. Note: EL is the population-weighted average of entitlements over labour of the top 1% in the region



**Fig. 5** Global elite inequality and global interpersonal inequality in PPP\$: the between-country component of the MLD  
 Source: Global elite inequality: authors' calculations. Between-country MLD for all people: Anand & Segal (2017b), which they estimate for the benchmark years 1993, 1998, 2002, 2005 and 2012. Note: Global elites are defined as the top 1 percent in every country. Estimates cover between 90 and 92 percent of this total population in every year

interpersonal inequality. Using the MLD, inequality among global elites has halved since 1990.

This is consistent with the recent literature on national elites that has found that they are increasingly internationalized, and often have more in common with one another across national boundaries than they do with their domestic compatriots (Anand & Segal 2017; Hecht 2017; Krozer 2018; Sassen 2002; Segal 2022).

## 6 Discussion

We have seen that globally, using PPP and FX exchange rates, the incomes of top percentile groups within countries have risen faster than average economic growth, and faster than median wages. Their real incomes measured using entitlements over labour, or their capacity to command workers in their own economies for their personal ends, have also increased. The fact that inequality among elites is highest using FX exchange rates, lowest using ELs, and intermediate using PPP exchange rates, is consistent with the view that ELs reflect a non-traded sector bias that complements the traded sector bias of FX exchange rates, relative to the balanced consumption basket represented by PPP exchange rates.

These findings also illuminate the position of global elites both with respect to each other and with respect to their positions within their own countries. Inequality among these elites across countries has declined, implying international convergence. At the same time, rising levels of entitlements over labour implied increasing divergence between these elites and their own compatriots, as elites increased their ability to command and dominate local labour in their own countries. This supports Anand & Segal's (2017: 112) conjecture that "citizens of developing countries who reach the global elite may simply find themselves further removed from their own compatriots".

What do high entitlements over labour look like within a country? Standard measures of inequality are strictly impersonal, and are based on measuring relative differences in money incomes, or relative differences in command over a representative basket of goods and services. High inequality in this sense implies that one group of people can enjoy higher levels of consumption than others. But these measures do not refer to what political theorists and sociologists describe as "relational inequality", or the degree of inequality in the relationships between people. Following a tradition developed by Jean Jacques Rousseau, relational egalitarians are concerned not with simple comparisons of relative consumption, but instead conceive of equality as "a kind of social relation between persons – an equality of authority, status, or standing" (Anderson 2010, p. 1). Anderson (1999, 2017) further argues that historical egalitarian movements were concerned not with inequality in the distribution of incomes, but instead that they opposed social orders based on "a hierarchy of human beings", where "inequality referred not so much to distributions of goods as to relations between superior and inferior persons." (Anderson 1999, p. 312; Anderson 2017, chapter 1). Segal (2022) argues that, unlike standard measures of inequality, entitlements over labour provide a measure of relational inequality because they measure the extent to which elites can command or dominate others. Domination implies "social subordination to others" (Pettit 1999, p. 274), and "a profound asymmetry in whose interests count" (Anderson 2017, p. 5).

This is clearest in the case of domestic work where elites in a high-EL country like Mexico expect to employ domestic workers to do their personal bidding to a much greater extent than their counterparts in Sweden, for whom domestic work is prohibitively expensive—and also seen by many as morally questionable (Bowman and Cole 2009).

For these reasons, using EL as a measure also illuminates the political salience of inequality, for two reasons. First, it shows that wages are a locus of conflict not just between workers and capitalists, as is usually assumed, but also between workers and the high-income households that enjoy the ability to employ them for their own consumption purposes. Most obviously this includes domestic workers like maids and nannies, which are ubiquitous in upper-income households in high-inequality countries. But it also includes services such as taxi rides, or hair cuts and other beautification services, which are important to the lifestyles of the upper middle classes. This indicates the salience of entitlements over labour for the rich, because a decline in ELs implies a decline in their ability to command others for their personal purposes. By the same token, they are equally salient for those who are commanded. The cheaper their labour is to the rich, the easier it is for them to be dominated, and the more “inferior” is their social status.

The combination of rising economic and social inequality is particularly notable in the case of China, where all incomes have risen dramatically over the last 40 years, but rising inequality has meant that elite incomes have risen faster, and elite entitlements over labour have risen substantially.<sup>6</sup> Considering attitudes to domestic service, China underwent a remarkable change in social relations consistent with the above theoretical discussion. During the Mao era, paid domestic service was seen as an unacceptable symbol of inequality and the old class system, and largely disappeared. But after Deng Xiaoping’s reforms, and China’s transition to rapid economic growth, social norms also changed. The employment of domestic workers came to be seen as not just acceptable but necessary in order to free the professional classes from the burdens of domestic work, and to enable them to focus their energies on China’s modernization (Yan 2008). The All-China Women’s Federation set up an organization to bring rural women to urban areas to provide domestic service, and rising inequality in the sense of entitlements over labour meant that these workers became increasingly affordable for those professionals (Liu 2017). By the early 2000s the social norms opposing this kind of inequality had become so eroded that Yan (2008) found Chinese diplomats expressing the wish that Chinese maids could be as servile as South African maids (also see Sun 2009). We find that from 1990 to 2019 the real incomes of the top 1 percent in China rose from \$5,410 to \$71,200 in PPPs and from \$3,000 to \$43,000 in market exchange rates, while their entitlements over labour rose from 3.9 to 8.2.<sup>7</sup> Despite this rise in absolute ELs, they did not rise in the global ranking: in 1990 they were 94 out of 117 and in 2019 they were 95 out of 136.

In India, in contrast, conceptions of an upper-middle class lifestyle that is dependent on domestic workers have deep roots, including colonial influences from the British Raj (Grover et al. 2018, 8–9). The International Labour Organisation estimates that domestic workers comprise 1.0 percent of all employment based on household survey data, but note that the estimate rises to 2.7 percent when the Employment and Unemployment Survey is used (ILO 2013). We find that from 1990 to 2019 the real incomes of the top 1 percent rose from \$14,000 to \$62,500 in PPPs and from \$4,180 to \$17,800 in market exchange rates, while their entitlements over labour more than doubled from 6.4 to 15.8. This represented a substantial move upwards in their EL ranking from 72 out of 117 in 1990 to 18 out of 136 in 2019.

Latin America stands out as the region with the highest entitlements over labour despite a modest decline since the mid-1990s. The top 1 percent enjoyed entitlements over labour

<sup>6</sup> See Segal (2021) for discussion.

<sup>7</sup> These figures differ from those in Segal (2021) both because of the use of different sources, and because that paper uses adult equal-split incomes whereas here we use per capita household incomes.

of 28.1 in 1990, falling to 25.7 in 2019, and seven out of the global top 10 elite EL countries were Latin American in both years. This is consistent with the fact that domestic workers account for 7.6 per cent of total employment, which is the highest share of all regions (ILO 2013, 20). Segal (2022) argues that Brazil's President Dilma Rousseff lost the support of the upper middle classes in part because their declining entitlements over labour meant that the domestic service they depended on was becoming more expensive.

We conjecture that rising entitlements over labour may also have had political ramifications in high-income countries. The rise of right wing "populist" political parties in Europe and the US in recent years is frequently linked to changing "economic status" for many voters in the middle and lower end of the income distribution (Sandbu 2020). In the US, this has come after more than 40 years of real wage stagnation for large groups of workers. In most European countries real wages have risen, making the argument for an economic basis to this populism more complicated. So the rise in ELs may help explain the shared experience of rising right wing "populism": even if real incomes have risen, the rise in ELs can imply a decline in social status and a rise in feelings of subordination for many wage earners, leading to a rising sense of inferiority. It is these feeling of inferiority, and the resentment they cause, that are exploited by right wing populist politicians. This is effective because, as Ridgeway (2014, p. 2) puts it, "people care about status quite as intensely as they do money and power."

This understanding of well-being as dependent on one's position relative to other members of society is consistent with Fuchs's (1967) classic argument for defining poverty relative to median income. As Sen (1985) has pointed out, one's *relative* position in income space can affect one's *absolute* state in social terms. This follows Adam Smith's (1776, 676) discussion of the importance of being able to appear in public without shame, and its dependence on having "those things which the established rules of decency have rendered necessary to the lowest rank of people." This set of arguments regarding relative poverty show why the social aspects of well-being for those near the bottom of the distribution may be affected by the living standards of those at the middle. Entitlements over labour, in turn, highlight how social dimensions of the well-being of the top of the distribution may depend on the incomes and wages in the middle of the distribution, and vice versa. In this way a positive-sum game in terms of income can become a zero-sum game in terms of social status: if elites get richer while incomes in the rest of the distribution remain the same, then it may reduce both social status and freedom from domination for non-elites, even if it does not reduce their real incomes. Conversely, a rise in median wages can reduce elites' ability to dominate others, and thereby reduce their social distinction, even if it does not affect their real incomes (as measured in PPPs).

## 7 Conclusion

In this paper we have analysed global elites defined as the top 1 percent in each country, investigating how different definitions of their real incomes compare across countries and have evolved over time. In addition to the standard measures of incomes in terms of PPP\$ and FX\$ we considered entitlements over labour, defined as the economic power to command a worker on median wages for personal or consumption purposes. We argued that whereas FX\$ comparisons exhibit traded sector bias, we would expect ELs to exhibit non-traded sector bias, as the cost of labour would be more associated with non-tradable goods than with tradables. Consistent with this, inequality among national elites was highest in FX\$ and lowest in ELs, with inequality in PPP\$ lying in between the two.

But while the gap between national elites was smaller in ELs than in PPP\$ or FX\$, we also found an “overshooting”, or a reversal of positions for elites in rich and in poor countries: while rich country elites are consistently richer than poor country elites in PPP\$ and FX\$, they tend to be poorer in ELs, owing to the lower levels of inequality in richer countries. This is also observable at the regional level, where elites in Europe have much lower ELs than their counterparts in poorer regions, despite having much higher incomes in PPP\$ and FX\$.

United Nations Sustainable Development Goal 10 seeks “Reduced Inequalities”, and on some measures inequality has been declining since the new millennium. Unfortunately we find a different story when we consider elites defined as the top 1 percent in each country. National elite incomes have risen faster over time than global average incomes, and have diverged within their own countries from national median wages, meaning that entitlements over labour globally have risen. This implies that these elites have increased not only their share of goods and services in PPP terms, but also their ability to dominate their compatriots, and the social hierarchies that this implies.

## Appendix

Data sources:

- Top one percent shares: source World Inequality Database (WID), fiscal income. We use the data that refer to publications using administrative or tax data and are not using the imputed top one percent share values estimated by WID: instead we estimate our own imputations as described in the main text. Last accessed via the Stata API on 21/02/2022. These cover the countries and years shown in Table 3.
- Top ten percent shares: downloaded from the World Income Inequality Database (WIID) website on 2/2/2022 (version timestamped 31/05/2021). The dataset includes original and imputed values by WIID.
- Mean survey income: PIP/World Bank, the dataset including imputed values for years without surveys (in 2017 PPP\$). We accessed the PIP data using the World Bank API on 25/05/2022.
- Government share of GDP, Household Final Consumption Expenditure: World Bank WDI, last accessed on 20/1/2022 via the World Bank API.
- Median wages: LIS median gross wages (in 2017 PPP\$). Downloaded 22/02/2022 from <https://dart.lisdatacenter.org/dart>), and Segal (2022)
- Social Spending: KPMG employer social security contributions from <https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/social-security-employer-tax-rates-table.html>. Downloaded 26/10/2017 for 2009–2010; downloaded 02/06/2022 for 2011–2021.

## Estimation

Our method for estimating median wages is the following:

1. Start with LIS median wages for 28 countries and Segal (2022) median wage for Mexico and Sweden.
2. Regress these on median income from surveys, top 10% share from WIID, and government expenditure share of GDP, all in logs (see table 3 in 7.).
3. For countries without any LIS/Segal wages, impute using the aforementioned regression.

**Table 3** Countries with fiscal data on income share of the top 1%

Argentina	1997–2004	Korea, Rep	1981–1985, 1995–2016
Australia	1981–2019	Malaysia	1983–1984, 1989, 1997, 2002, 2004, 2007, 2009, 2012, 2014
Belgium	1990–2013	Mauritius	1981–1991, 1993–1998, 2001–2008, 2010–2011
Brazil	2001–2015	Netherlands	1981, 1985, 1989–2014
Canada	1981–2019	New Zealand	1981–2019
Chile	1981, 1990–2015	Norway	1981–2019
China	1981–2015	Poland	1981–1989, 1992–2015
Colombia	1993–2010	Portugal	1981–1982, 1989–2005
Cote d'Ivoire	1988, 1993, 1998, 2002, 2008, 2014, 2019	Russian Federation	1985, 1988–2015
Croatia	1997, 1999–2013	Singapore	1981–1991, 1993–2014
Czech Republic	1985, 1988, 1992–2015	Slovenia	1991–2012
Denmark	1981–2010	South Africa	1981–1988, 1990–1993, 2002–2012
Finland	1981–1989, 1993–2009	Spain	1981–2012
France	1981–2014	Sweden	1981–2013
Germany	1983, 1986, 1989, 1992, 1995, 1998, 2001–2017	Switzerland	1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995–2014
Greece	1981–2018	Taiwan China	1987–2013
Hungary	1982, 1984, 1986, 1988, 1992–2008	Thailand	2001–2016
India	1981–2015	United Kingdom	1981–2018
Indonesia	1982, 1987, 1990, 1993, 1996, 1998–2004	United States	1981–2019
Ireland	1981–2015	Uruguay	2009–2012
Italy	1981–1995, 1998–2009	Zimbabwe	1983–1984
Japan	1981–2010		



4. For countries with any years of LIS/Segal wages, interpolate/extrapolate using median income from surveys per capita growth rates (for interpolations, averaging backwards and forwards extrapolations).

Our method for estimating top 1% shares and incomes is the following:

1. Start with WID fiscal income top 1% shares.
2. Regress these shares on top 10% from WIID, mean income from PIP household surveys, government consumption share and time trend, and impute for all countries with no top 1% data (see table 3 in 7.).
3. For countries with some WID top 1% data, we (a) interpolate missing years of top 1% data following the growth trend of the top 10% shares<sup>8</sup> and (b) extrapolate using top 10 percent shares from WIID and the latest available Pareto coefficient calculated from top 1 percent and top 10 percent shares.<sup>9</sup>
4. We then multiply these income shares by mean household income from World Bank surveys, respectively in PPP\$ and FX\$.

Nicaragua in 1990 has an unusual spike in reported government consumption that produces implausible values for in its top 1 percent share and incomes, so for this year we take the average for 1989 and 1991.

Overlap original sample: The overlap between our two samples, i.e. countries with both original fiscal data on top incomes and original median wage data, comprises twenty countries: Australia, Belgium, Brazil, Canada, Colombia, Czech Republic, Denmark, Finland, Germany, Greece, Ireland, Italy, Netherlands, Norway, Russia, South Africa, Spain, Switzerland, United Kingdom, United States. Considering just these countries, the correlation between mean income and top incomes in FX, PPP, and ELs are respectively 0.66, 0.80, and -0.35. Thus the finding that elite ELs are negatively correlated with country mean income holds in this sample with original unimputed data.

Calculating ELs:

1. For high income countries, EL is top 1% income in PPP\$ divided by gross median wages (i.e. before tax) in PPP\$ plus social security contributions, in order to capture the cost to the employer.
2. For non-high-income countries, it is top 1% income in PPP\$ divided by gross median wages in PPP\$. We do not add social security contributions in low- and middle-income countries because they have more than 50% of workers paid informally or without social security contributions (ILO 2012).
3. Note: the estimates can differ from Segal (2022) because that study used country-specific data which uses different population definitions from the global data used in this study. For instance, Segal (2022) used “adult equal split” income for the top 1 percent, whereas our use of World Bank mean survey income in this study implies that we use per capita, not per adult, incomes.

<sup>8</sup> When the growth rate of top 10 percent and top 1 percent over a gap in the top 1 percent data are of opposite signs we revert to linear interpolation.

<sup>9</sup> For each country we calculate the Pareto coefficient of the latest year for which both top 1 and top 10 percent shares are available, using the formula in Atkinson (2007, p. 24). Since top 10 percent shares are typically available for more recent years than top 1 percent shares, we then use that coefficient and formula to extrapolate the top 1 percent shares.

## Regression tables

**Table 4** Estimating median wages (all in logs)

	Pooled OLS
Log MeanInc	0.94*** (0.02)
Log Top10%	-0.024 (0.077)
Log GovCons	0.127* (0.053)
constant	6.4*** (0.14)
N	340
R <sup>2</sup>	0.90

Significance codes: '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05

**Table 5** Estimating top 1 percent shares

	Pooled OLS
Top10%	0.77*** (0.10)
Top10% <sup>2</sup>	-0.69*** (0.12)
MeanInc	1.82E-04 (2.54E-04)
MeanInc <sup>2</sup>	6.9E-06* (3.26E-06)
GovCons	4.94E-03** (1.74E-03)
GovCons <sup>2</sup>	-1.68E-04*** (4.8E-05)
Trend	1.54E-03 (1.12E-04)
Latin America dummy	0.04*** (0.00)
constant	-3.17*** (0.22)
N	986
R <sup>2</sup>	0.580

Regional dummies other than Latin America were found to be insignificant, as were demographic variables. Significance codes: '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05

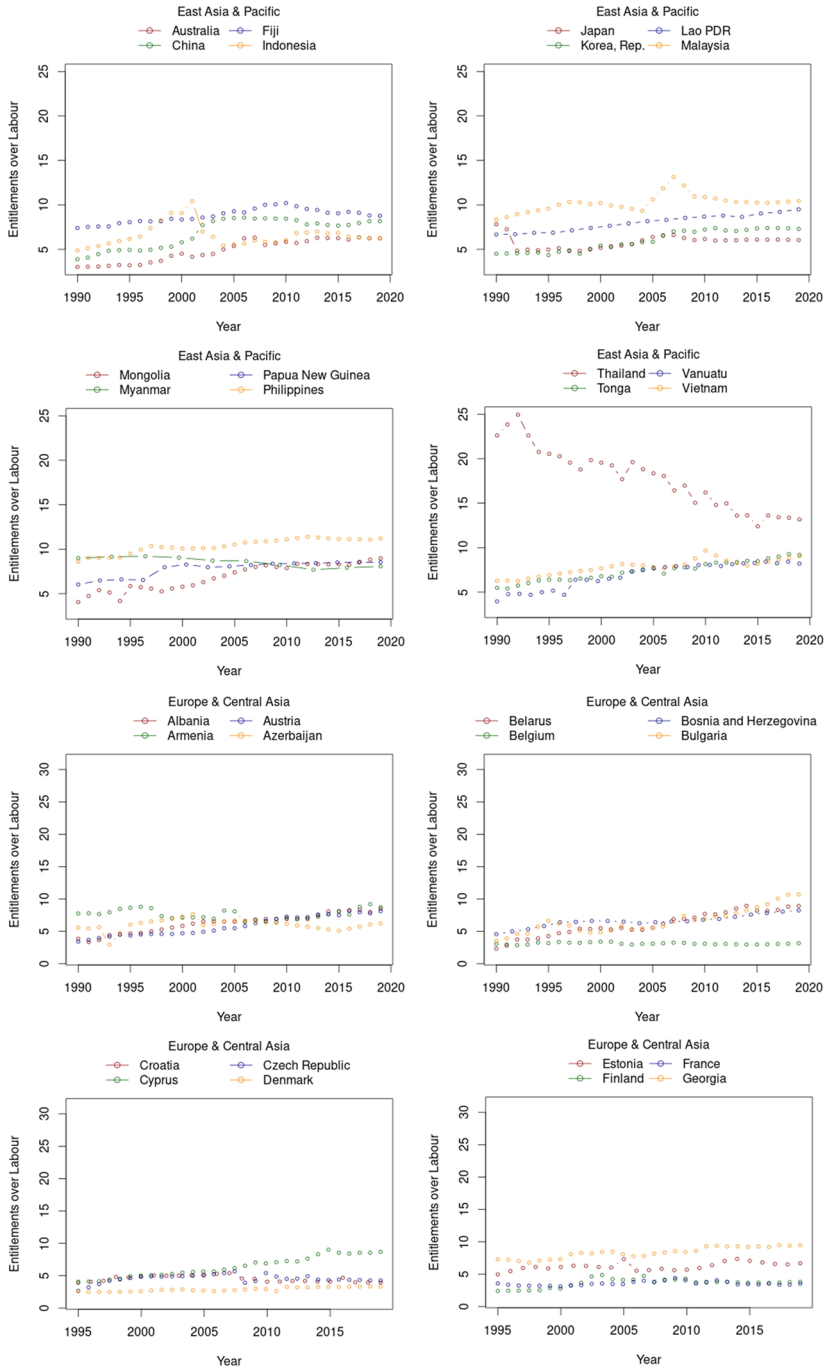


Fig. 6 Estimates of entitlements over labour of the top 1 percent in each country

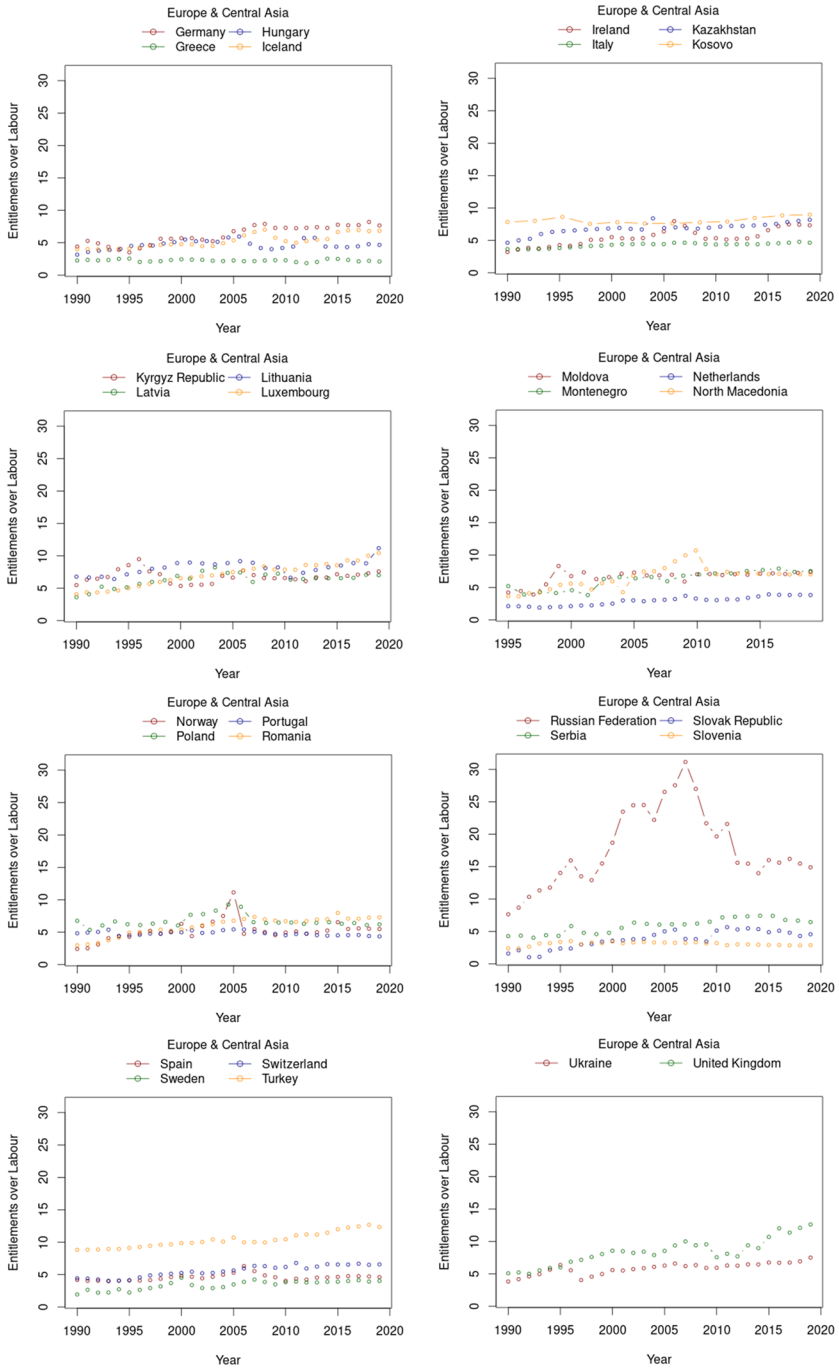


Fig. 6 (continued)

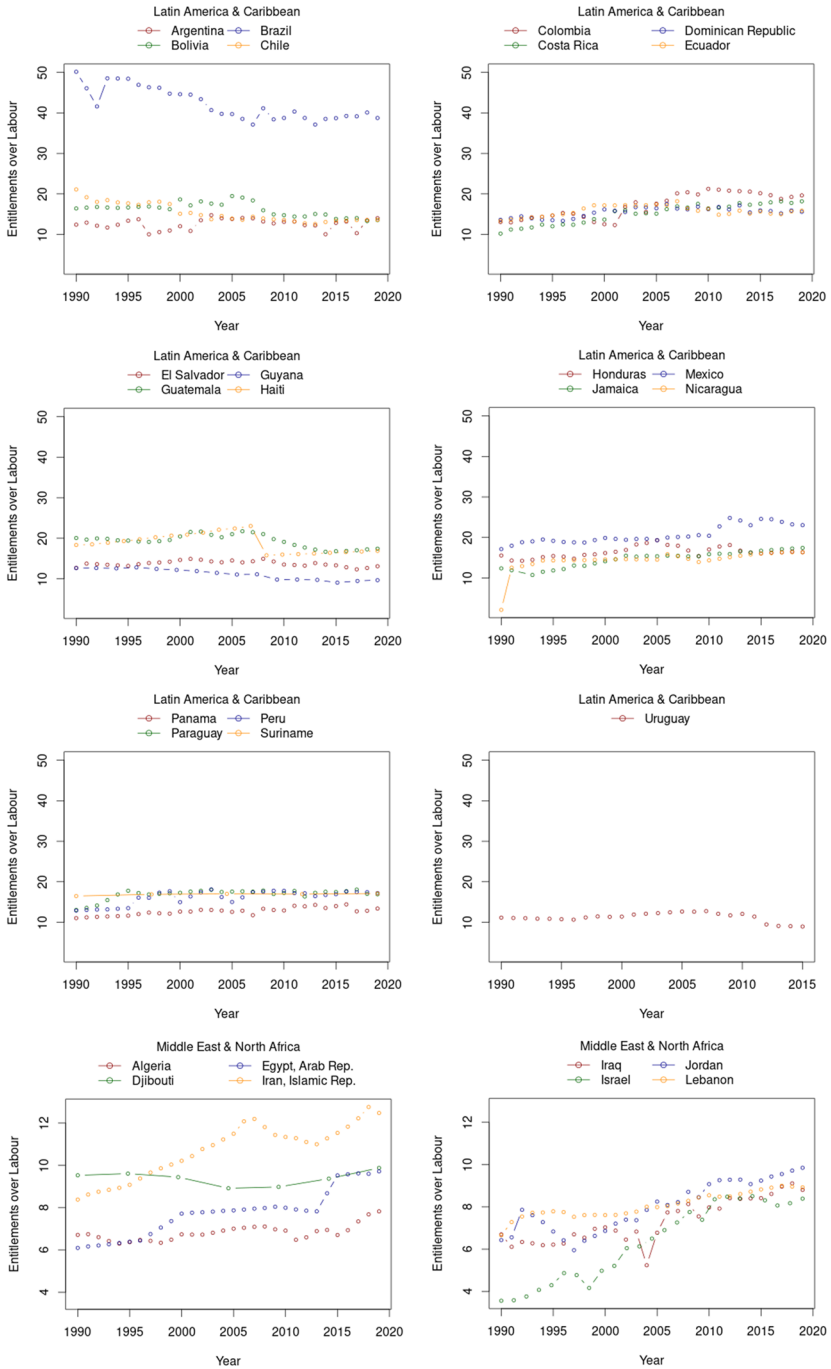


Fig. 6 (continued)

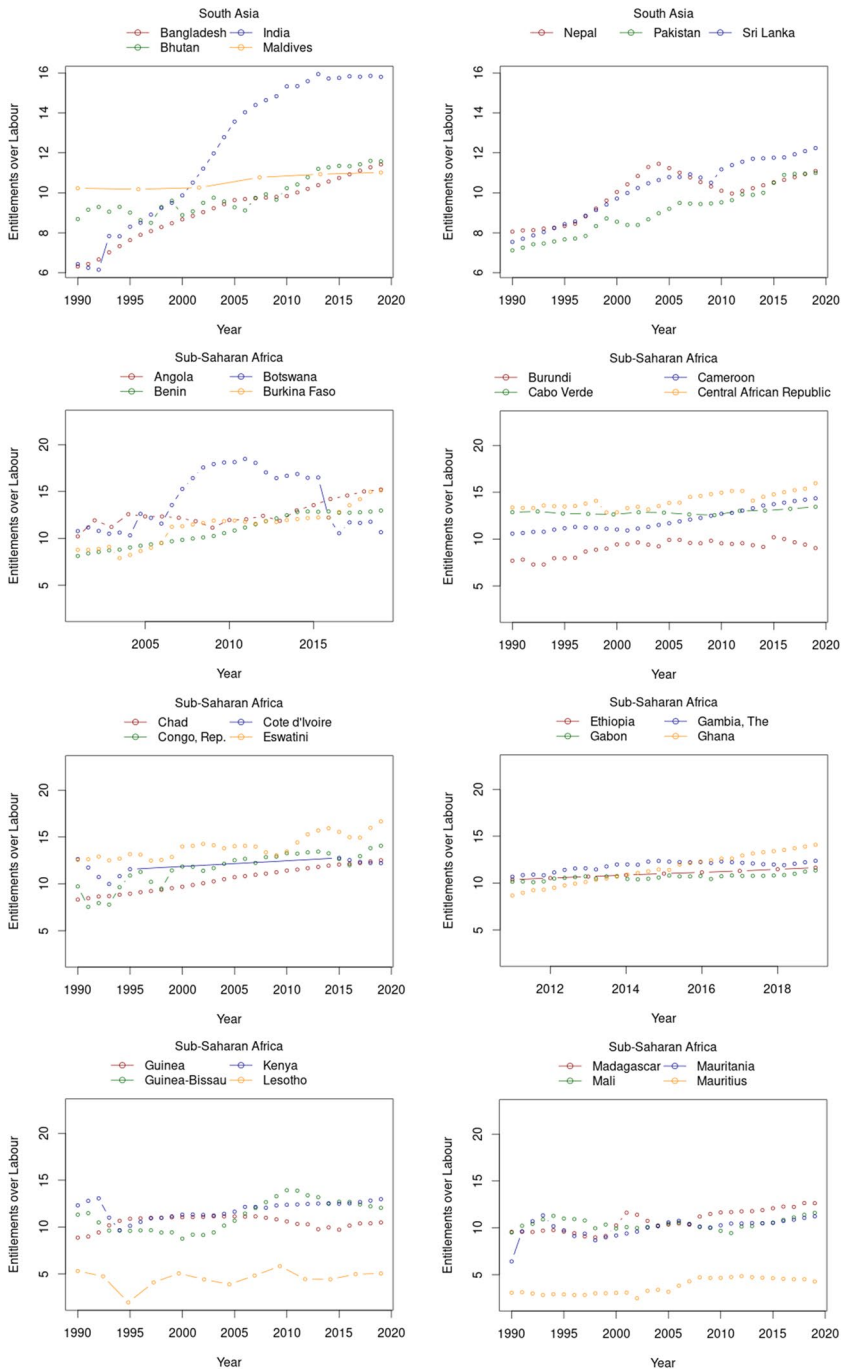


Fig. 6 (continued)

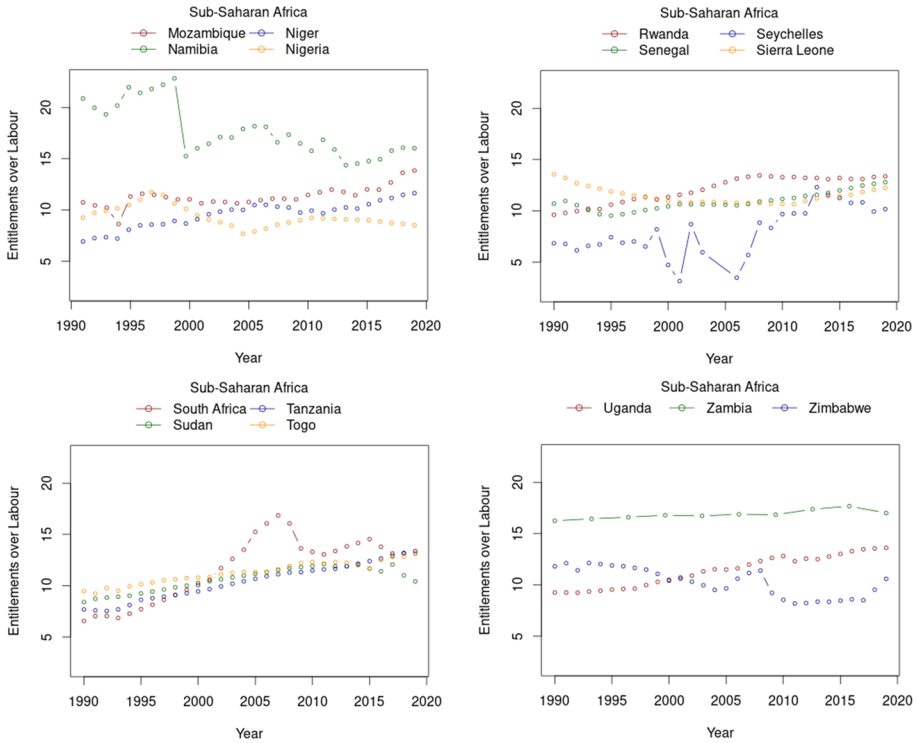


Fig. 6 (continued)

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## Declarations

**Ethical approval** Not applicable.

**Competing interests** The authors declare no competing interests.

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