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Should the Rich be Taxed More? The Fiscal Inequality Coefficient*

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Abstract

This paper holistically addresses the effective (relative) income tax contribution of a given income (or, wealth) group. The widely acclaimed standard in public policy is the absolute benefaction of a given income group in filling up the fiscal coffers. Instead, we focus on the ratio of the average income tax rate of an income group divided by the percentage of national income (or wealth) appropriated by the same income group. In turn, we develop the Fiscal Inequality Coefficient which compares the effective percentage income tax payments of pairs of income (or wealth) groups. Using data for the US, we concentrate on pairs such as the Bottom 90% versus Top 10%, Bottom 99% versus Top 1%, and Bottom 99.9% versus Top 0.1%. We conclude that policy makers with a strong social conscience should re-evaluate the progressivity of the income tax system and make the richest echelons of the income and wealth distributions pay a fairer and higher tax.

JEL Classifications: H23, H30, E64

Keywords: Fiscal policy; progressive income taxation; inequality; effective income tax rate; fiscal inequality coefficient.

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1 Introduction

Deep-seated and multi-facet challenges on the public finances of advanced economies make a convincing case to remould the debate for means-tested direct income tax hikes.[1] Supply-side economics that has dominated policy since the beginning of the 1980s advocates deregulation, the weakening of welfare programmes and tax cuts. At the same time, the rich are hailed for their contribution in filling up the fiscal coffers. This is in line with textbook public economics which braces the argument that in a progressive income tax system, it is the top earners that support (through their income tax payments) the wider society significantly more than any other income group. True may be, but only in an absolute, dry, sense.

In this paper, we propose a holistic new index which re-evaluates the progressivity of the income tax system.[2] Instead of focusing on merely the absolute income tax contribution, which is the standard practice, we rather concentrate on the ratio of the average income tax rate per given income group divided by the percentage of national income owned by the same income group. Our measure of the effective (relative) income tax contribution is very flexible since in the denominator one can also use the percentage of the total household wealth appropriated by a reference income group.

Our numerical calculations are carried out for the US using the recent comprehensive distributional national accounts developed in Piketty, Saez and Zucman (2016). This unique and laborious dataset is a much needed tool to better monitor economic growth and its distribution. It is particularly pertinent for our work since our main objective is to profile our index further as the Fiscal Inequality Coefficient (FIC).

Once the ratio of the effective (relative) income tax contribution is calculated for each income group alone, the FIC (being free of units of measurement), allows easy comparisons of the actual benefaction into filling up the fiscal coffers of pairs of income (or wealth) groups. We mainly focus on the Bottom 90% versus the Top 10%, the Bottom 99% versus the Top 1% and the Bottom 99.9% versus the Top 0.1%.[3] There is a voluminous literature in labour economics regarding the differential pay of skilled versus unskilled labour, the impact of new technologies, automation etc. To that end, we further report

[1] In the aftermath of the 2008-09 Great Recession, fiscal consolidation programmes are implemented in the rich economies, despite record low interest rate costs for servicing government debt issuance. Recent data from Thomson Reuters Datastream and the IMF show that the post-crisis fiscal tightening, defined as the change in structural government balance as percentage points (pp) of GDP between 2010 and 2016, was for the G7 economies: US, 5.8pp; UK, 4.4pp; France, 3.6pp; Japan, 3.5pp; Germany, 3pp; Italy, 2.5pp; Canada, 2pp. At the same, the escallating costs of (i) health and social care; (ii) unemployment benefits and other fiscal transfers to the working poor due to the new landscape of automation; (iii) decreasing labour force participation; (iv) loss of manufacturing jobs; and (v) low-paid, precarious forms of employment, put a huge strain on a governments' balance sheet.

[2] The main theoretical ideas of this work have been previously introduced in Hatgioannides and Karanassou (2017a).

[3] Obviously, the FIC can be reported for any chosen pair of income (or wealth) groups.

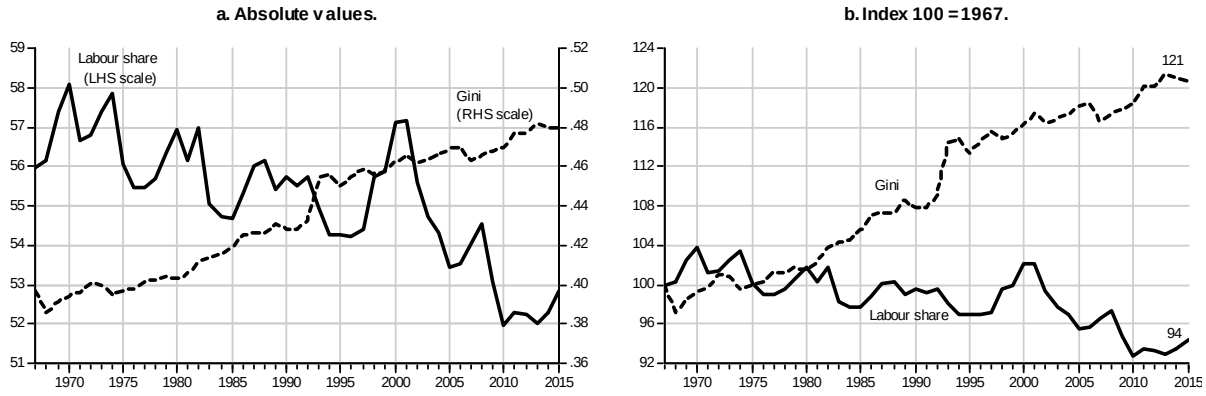
the FIC for the Top 10% against the Top 1%, the Top 10% against the Top 0.1% and the Top 1% against the Top 0.1%; arguably, all highly-skilled income (or wealth) groups have benefited from the modern labour landscape.

Theoretically, the FIC ranges from the value of one (denoting perfect equality), to large values approaching, in the limit, infinity (perfect inequality). As such, it could potentially act as supplementary to the recognised benchmark for inequality, that is, the Gini coefficient which ranges from 0 (perfect equality), to 100 (perfect inequality).

The standard economic paradigm addresses the "holy trinity" of GDP growth, inflation and unemployment management. Still on the fringes of main macroeconomic theorizing and policy making, but recently receiving a great deal of attention and shaping the public debate, is the heavily skewed income/wealth distribution and the appropriation of the proceeds of growth by the top percentiles. We feel that inequality is the missing vital fourth statistic of economic well functioning.

For the last four decades, both the personal and functional income distributions have followed divergent paths in the US, see Figure 1 below as reported in Karanassou and Sala (2017). While increasing inequality in personal income distribution has been pushing the Gini coefficient relentlessly upwards, making the US look like more of a developing than an advanced country, the evolution in the functional distribution has been characterised by a downward trend in the labour income share. Since the labour income share can also be envisaged as the wage-productivity gap, its downward trend is a mere reflection of wages lagging further behind labour productivity, thus boosting the income of the capital holders.

Figure 1. Labour income share and income inequality in the US.



Note: all-worker nonfarm business sector labour share and income Gini ratio for households.
Source: Karanassou and Sala (2017) based on data from the Bureau of Labor Statistics (BLS) for the labour share, and the US Census Bureau for the Gini index.

It is self evident that income taxes configure the fiscal revenue space together with other direct/indirect taxes, insurance contributions and government borrowing. The FIC points to a much neglected, redistributive function that a trully progressive income (and wealth) tax should serve in a rich, albeit highly unequal, polarised and divided advanced economy such as the US.

The remainder of this paper is organised as follows. Section 2 offers a bird's eye view of why inequality is the missing fourth statistic of economic and social well being. Section 3 provides the workings for the calculation of the FIC and provides empirical evidence for the US. Finally, Section 4 concludes.

2 Inequality: The Missing Fourth Statistic

The renowned British historian Charles H. McIIwain (1932) noted that "...The idea of equality of men is the profoundest contribution of the Stoics to political thought...its greatest influence is in the changed conception of law that in part resulted from it" (pp. 114-115). In the same vein, the esteemed historian A.J. Carlyle (1903) wrote earlier "...There is no change in political theory so startling in its completeness as the change from the theory of Aristotle to the later philosophical view represented by Cicero and Seneca... We think that this cannot be better exemplified than with regard to the theory of the equality of human nature" (pp. 8-9).

Positivism in modern economics, nurturing an image of a value-free science in a value-ladened discipline, is strenuously aiming to separate inequality from its philosophical, sociological and, most importantly, classical economics heritage. The topic of inequality was made largely irrelevant for influential parts of the mainstream, destined beyond the realm of micro founded, scientific economics. Lucas (2004) asserted that "Of the tendencies that are harmful to sound economics, the most seductive, and in my opinion the most poisonous, is to focus on questions of distribution".

Wisman and Smith (2011) thoroughly and critically review the (i) contributory, (ii) incentives, (iii) trickle-down, (iv) libertarian, and (v) fluid vertical mobility endeavors for legitimating inequality in economic and political theorising. They correctly, in our opinion, argue that "...such approaches to distributive justice have continually provided a powerful theoretical and political under-girding for those who oppose efforts to reduce inequality through policy. These approaches even favor policies that serve to increase inequality, such as tax cuts for the rich and cuts in public goods and social welfare for the poor" (pp. 995-996).[4]

[4]Wisman and Smith (2011) argue that (i) the marginal contributory argument insists that those who have more in our economy are typically those who contribute more, with the claim that is both natural and just; (ii) the incentives argument, strongly complements the contributory one, and suggests that inequality, or even more of it, is necessary for bringing forth behavior that contributes to economic

Since the 1980s, the mainstay argument justifying inequality is the marginal contributory/incentives approach (see footnote 4). It is deeply entwined with the common intellectual roots of libertarian philosophy and neoclassical economics that set the autonomous individual at the center of the socioeconomic world.

Nozick (1974), perhaps the most influential proponent of libertarian justice, argued that a distribution of goods is just if brought about by free exchange from a just starting point, even if large inequalities subsequently emerge from the process. He carried on, controversially arguing that a consistent upholding of the non-aggression principle would allow and regard as valid consensual or non-coercive enslavement contracts between adults in a typical "free system".

In a surprising reversal of his earlier philosophising, Nozick (1989) expressed, through his methodological ecumenism, serious misgivings about capitalist libertarianism, going so far as to reject much of the foundations of liberal theory on the grounds that personal freedom can sometimes only be fully actualised via "...a collectivist politics.... and that wealth is at times justly redistributed via taxation to protect the freedom of the many from the potential tyranny of an overly selfish and powerful few" (pp 71).

We are turning our attention next to justifying the redistributive function of taxation.

3 The Fiscal Inequality Coefficient

We proceed with the detailed calculations of the Effective Income Tax contribution and the FIC.

Assuming a uniform income distribution within a given income group, we define the Effective (relative) income tax contribution of a representative taxpayer in the income group as:

$$\frac{\text{Average Income Tax Rate per Income group (\%)}}{\text{Share of Total Pre-Tax Income of the Representative Taxpayer in the income group (\%)}} \quad (1)$$

If one further assumes that the x percent of wealth-holders are the same people as the

dynamism; (iii) its trickle-down corollary claims that redistributing income to the rich who will save and invest it is best for everyone; (iv) the libertarian view asserts that policy measures to reduce inequality are more unjust than the inequality itself because the former involves the violation of individual rights and the latter does not; and (v) the fluid vertical mobility argument suggests that inequality is not an issue since everyone can by dint of dilligence make it to the top.

Wisman and Smith, ibid, articulate a forceful critique of all five aforementioned approaches to legitimating inequality by explaining in detail why they are grounded in theoretical constructs that distort social reality.

x percent of income holders,[5] then a variant of expression (1) reads as:

$$\frac{\text{Average Income Tax Rate per Income/Wealth group (\%)}}{\text{Share of Total Household Wealth of the Representative Taxpayer in the Income/Wealth group (\%)}} \quad (2)$$

The FIC is then readily available if one divides expression (1) for pairs of income groups and/or expression (2) for pairs of wealth groups.

In reporting the FIC, we are typically using in the numerator the more populous income or wealth group. We are also employing the convention that the "Bottom y percent group" of the income (wealth) distribution is the numerator of the FIC calculations whereas the "Top $(1-y)$ percent group" lies in the denominator (in the case that the income (wealth) brackets of a given pair add up to 100%, or 1.00 of the income (wealth) distribution).[6] It then follows that parity in the fiscal benefaction among income (wealth) groups is attained when the FIC is equal to one. Values of the FIC bigger than one produce unequal relative income tax contributions.

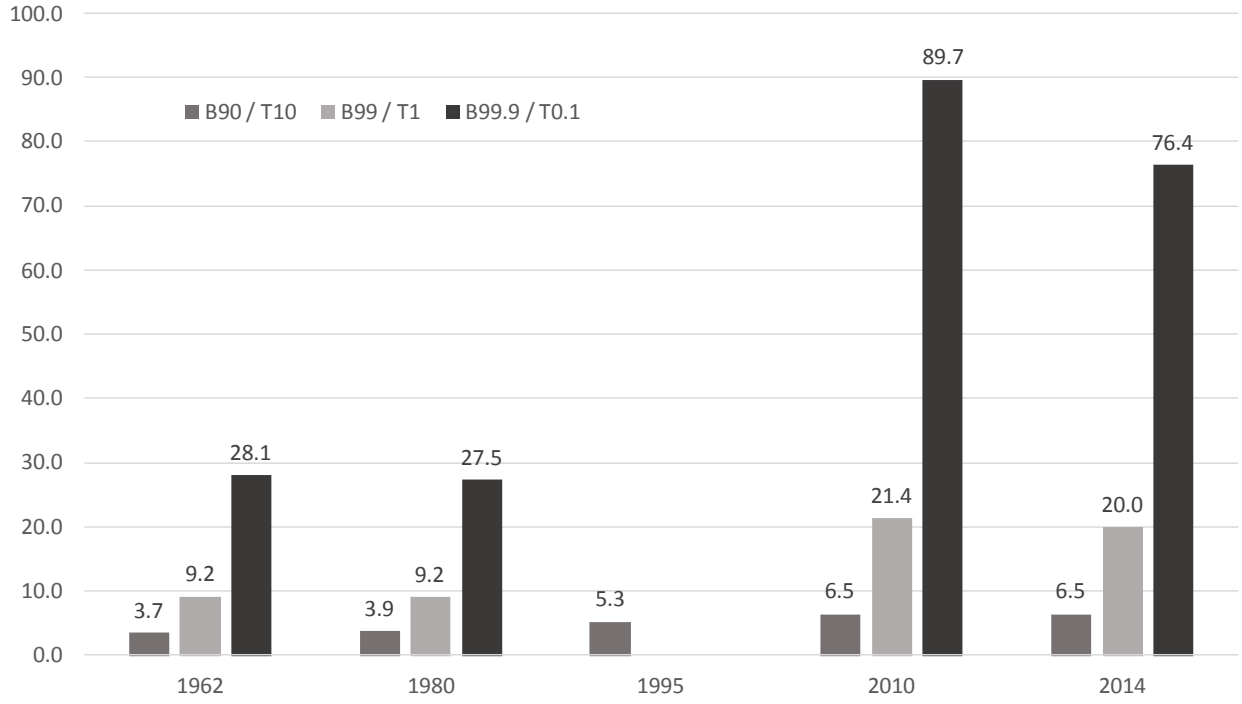
As an empirical illustration, we use the unique dataset for the US developed in Piketty *et al.* (2016). We adhere to the definition of the relevant variables provided therein. Figures 2 and 3 below plot the FIC based on income and household wealth shares, respectively, of the Bottom 90% versus the Top 10%, the Bottom 99% versus the Top 1%, and the Bottom 99.9% versus the Top 0.1% for 1962, 1980, 1995, 2010, and 2014.[7] Detailed calculations are provided in Table A1 in the Appendix.

[5] We acknoweledge that this is a very strong assumption with very debatable empirical validity. We are also aware that total personal wealth is made by both stock and flow variables. However, it is the income (flow) component of personal wealth that is routinely taxed more than the stock elements, hence our proxy calculations.

[6] It should be noted that in the calcualtion of the FIC, the pairs of the income or wealth brackets may not add up to 100% or the entire area of the distribution curve. (For example, Top 10%/Top 1%)

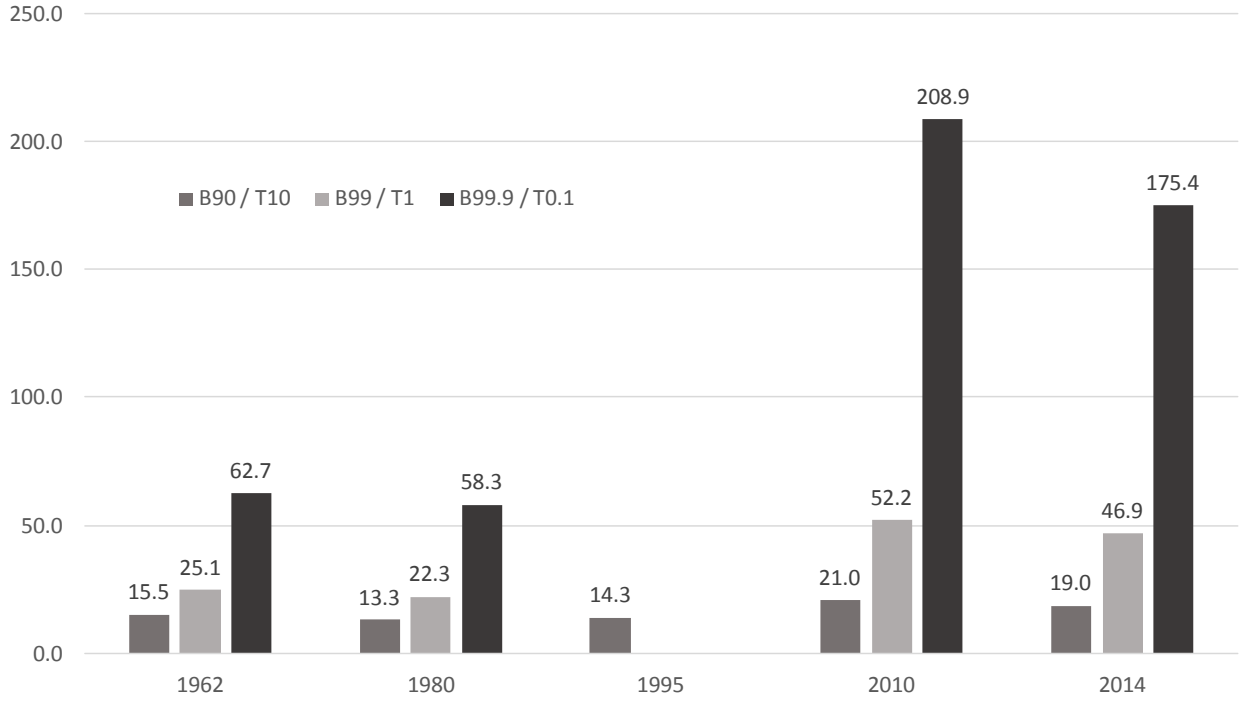
[7] As explained in the note to Table A1 in the Appendix, the selection of years for calculating the FIC is constrained by data availability in Piketty *et al.* (2016). Nevertheless, it may be considered as representative of different epochs that have signposted the trajectory of alternative economic policies: 60s (Year 1962) –the Keynesian demand led/full employment era; 80s (Year 1980) –the onslaught of the supply-side economics; 90s (Year1995) –the "roaring goldilock" economy. Year 2010 reflects the depths of the Great Recession and Year 2014 is representative of the straits of fiscal consolidation.

Figure 2. Relative income tax contributions of the representative taxpayer: B90/T10; B99/T1; B99.9/T0.1 (FIC based on income shares)



Note: see notes under Table A1.

Figure 3. Relative income tax contributions of the representative taxpayer: B90/T10; B99/T1; B99.9/T0.1 (FIC based on household wealth shares)



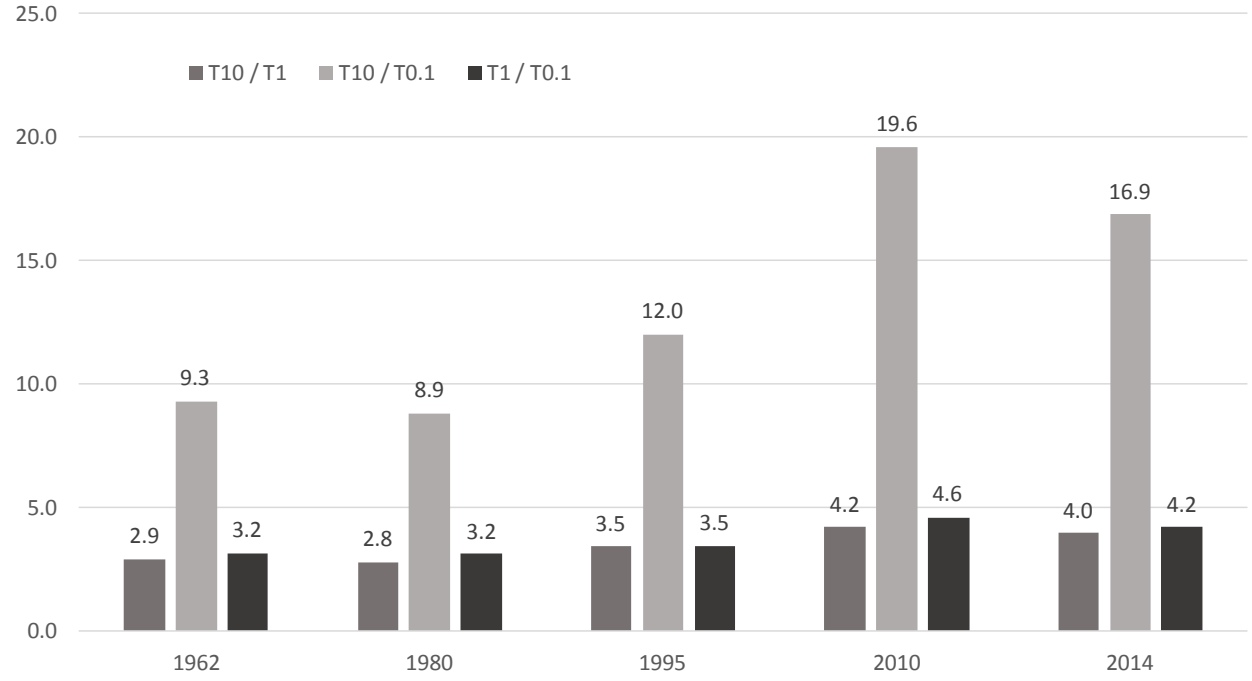
Note: see notes under Table A1.

The results are starking. The FIC based on income shares remains relatively constant for all pairs for years 1962 and 1980 and increases significantly in year 2010, with the Bottom 99.9% effectively contributing 89.7 times more in the fiscal coffers than the Top 0.1%; the aftermath of the Great Recession reduces the FIC to 76.4 for the same pair in 2014, still almost 3 times more than it was in 1980, the birth of supply-side economics.

The results are more eye-dropping if one calculates the FIC based on household wealth shares. However questionable our assumptions are in using wealth rather than income, it is very daunting to interpret the evidence that in the year 2010 the Bottom 99.9% contributed 208.9 times more than the Top 0.1%, nearly four times over than in 1980!

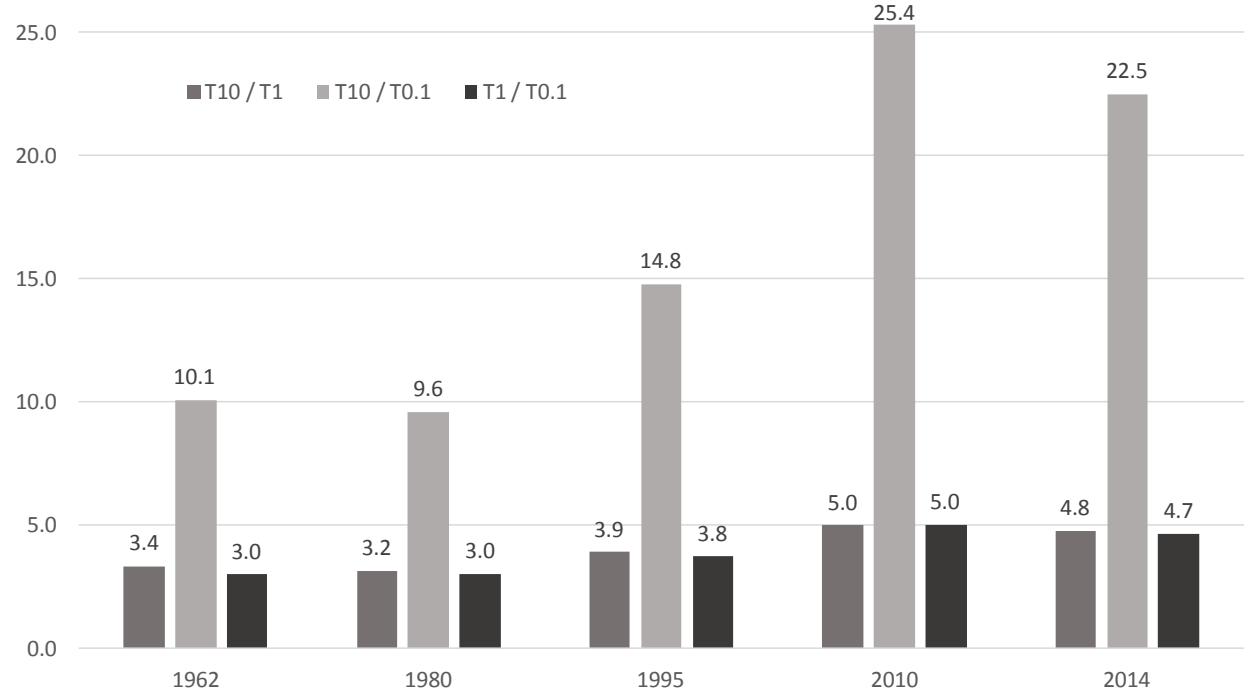
One should accept the premise that the top percentiles of the income and wealth distributions are populated by highly skilled individuals who are proficient to the new technologies. Figures 4 and 5 report the FIC based on income shares and household wealth shares for the Top 10% versus the Top 1%, the Top 10% versus the Top 0.1% and the Top 1% versus the Top 0.1% for the same years as above. Once again, the detailed calculations may be found in Table A1 in the Appendix.

Figure 4. Relative income tax contributions of the representative taxpayer: T10/T1; T10/T0.1; T1/T0.1 (FIC based on income shares)



Note: see notes under Table A1.

Figure 5. Relative income tax contributions of the representative taxpayer: T10/T1; T10/T0.1; T1/T0.1 (FIC based on household wealth shares)



Note: see notes for Table A1.

Whereas the findings for the Top 10% versus the Top 1% and of the Top 1% versus the Top 0.1% do not differ much over the years and have comparable magnitudes, the Top 10% was effectively paying in the year 2010 19.6 times more than the Top 0.1% based on the income shares and 25.4 times more based on household wealth shares.

It is beyond the scope of this paper to provide an in-depth explanation of the systemic causes for the escallation of inequality in the advanced economies since the 1980s. We refer the interested reader to Hatgioannides and Karanassou (2017b).

4 Conclusions

In this paper we develop a flexible new measure called the Fiscal Inequality Coefficient (FIC) which compares the effective (relative) income tax contribution of different income and, under specific assumptions, wealth pairs of percentile groups. The FIC may be used in holistically assessing the progressivity of the direct income and can serve as a supplementary inequality index to the Gini coefficient.

Using the novel distributional national accounts for the US developed by Piketty *et al.* (2016), we calculate the FIC for three complementary pairs of income and wealth percentiles (Bottom 90% versus the Top 10%, Bottom 99% versus the Top 1% and Bottom

99.9% versus the Top 0.1%) for a selection of years from the 1960s up to the present. The FIC reaches its maximum value for all pairs in the midst of the Great Recession, the year 2010, having increased manifold since 1980, the year that supply-side economics took hold of economic policy in the US.

Using the iluminating lens of the FIC, we further examine as to whether there are significant differences between the evidently highly-skilled, familiar with the advent of new technologies, income and wealth pairs of the Top 10% against the Top 1%, Top 10% against the Top 0.1% and Top 1% against the Top 0.1%. Again, the highest values of the FIC are reported for the year 2010 with the pair of the Top 10% versus the Top 0.1% standing out in terms of unequal contribution into filling up the fiscal coffers.

The overarching policy question is the following: In the current era of fiscal consolidation should the rich be taxed more? Our evidence suggests unequivocally yes.

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APPENDIX

Table A1. The Fiscal Inequality Coefficient. 1962, 1980, 1995, 2010, 2014 .

		Bottom 90%	Top 10%	Bottom 99%	Top 1%	Bottom 99.9%	Top 0.1%
A	Average tax rates by pre-tax income group, percent						
	1962	23.9	33.2	25.5	39.3	26.5	43.6
	1980	28.7	34.8	29.9	38.5	30.4	40.8
	1995*	29.7	34.7	-	37.8	-	41.9
	2010	26.1	30.7	27.4	31.3	27.8	32.4
	2014	27.6	33.9	29.1	36.4	29.6	39.8
B	Shares of total pre-tax income (equal-split individuals (20+)), percent						
	1962	63.9	36.1	87.4	12.6	95.6	4.4
	1980	65.8	34.2	89.3	10.7	96.4	3.6
	1995*	59.3	40.7	-	15.3	-	5.9
	2010	54.2	45.8	80.2	19.8	90.5	9.5
	2014	53.0	47.0	79.8	20.2	90.7	9.3
C	Shares of total household wealth (equal-split individuals (20+)), percent						
	1962	29.4	70.6	72.0	28.0	90.6	9.4
	1980	35.9	64.1	77.5	22.5	92.7	7.3
	1995*	35.0	65.0	-	27.9	-	11.6
	2010	26.7	73.3	62.4	37.6	80.4	19.6
	2014	27.8	72.2	62.8	37.2	80.9	19.1

... Continuation Table A1.

		Bottom 90%	Top 10%	Bottom 99%	Top 1%	Bottom 99.9%	Top 0.1%
D	Number of adults (20+)						
	1962	102,373,597	11,375,052	112,611,147	1,137,502	113,634,879	113,770
	1980	139,740,040	15,526,767	153,714,085	1,552,722	155,111,490	155,317
	1995*	166,903,716	18,544,857	-	1,854,486	-	185,449
	2010	203,118,638	22,569,569	223,431,202	2,257,005	225,462,508	225,699
	2014	210,996,660	23,444,453	232,096,606	2,344,507	234,206,646	234,467
B / D	Denominator of the Fiscal Inequality Coefficient with the share of total pre-tax income						
	1962	0.0000006	0.0000032	0.0000008	0.0000110	0.0000008	0.0000389
	1980	0.0000005	0.0000022	0.0000006	0.0000069	0.0000006	0.0000229
	1995*	0.0000004	0.0000022	-	0.0000082	-	0.0000319
	2010	0.0000003	0.0000020	0.0000004	0.0000088	0.0000004	0.0000420
	2014	0.0000003	0.0000020	0.0000003	0.0000086	0.0000004	0.0000397
C / D	Denominator of the Fiscal Inequality Coefficient with the share of total household wealth						
	1962	0.0000003	0.0000062	0.0000006	0.0000246	0.0000008	0.0000823
	1980	0.0000003	0.0000041	0.0000005	0.0000145	0.0000006	0.0000468
	1995*	0.0000002	0.0000035	-	0.0000151	-	0.0000628
	2010	0.0000001	0.0000032	0.0000003	0.0000166	0.0000004	0.0000869
	2014	0.0000001	0.0000031	0.0000003	0.0000159	0.0000003	0.0000814
A / (B/D)	Fiscal Inequality Coefficient (over denominator with shares of pre-tax income)						
	1962	38,276,222	10,458,486	32,861,702	3,556,011	31,492,404	1,119,844
	1980	61,014,499	15,769,177	51,379,086	5,613,193	48,919,207	1,780,870
	1995*	83,652,628	15,830,471	-	4,585,657	-	1,315,268
	2010	97,770,813	15,128,519	76,427,228	3,566,718	69,141,278	770,802
	2014	109,779,390	16,931,378	84,597,193	4,228,461	76,499,032	1,001,537

... Continuation Table A1.

		Bottom 90%	Top 10%	Bottom 99%	Top 1%	Bottom 99.9%	Top 0.1%
A / (C/D)	Fiscal Inequality Coefficient (over denominator with shares of household wealth)						
	1962	83,114,954	5,346,495	39,926,001	1,593,416	33,208,774	529,259
	1980	111,919,583	8,413,492	59,234,042	2,657,932	50,873,773	872,790
	1995*	141,844,289	9,902,045	-	2,510,569	-	668,011
	2010	198,276,415	9,449,797	98,181,191	1,879,671	77,854,215	372,600
	2014	209,158,995	11,024,828	107,590,750	2,291,950	85,735,694	488,927
[A/(B/D)]/10^6	Normalised Fiscal Inequality Coefficient (based on shares of pre-tax income)						
	1962	38.3	10.5	32.9	3.6	31.5	1.1
	1980	61.0	15.8	51.4	5.6	48.9	1.8
	1995*	83.7	15.8	-	4.6	-	1.3
	2010	97.8	15.1	76.4	3.6	69.1	0.8
	2014	109.8	16.9	84.6	4.2	76.5	1.0
[A/(C/D)]/10^6	Normalised Fiscal Inequality Coefficient (based on shares of total household wealth)						
	1962	83.1	5.3	39.9	1.6	33.2	0.5
	1980	111.9	8.4	59.2	2.7	50.9	0.9
	1995*	141.8	9.9	-	2.5	-	0.7
	2010	198.3	9.4	98.2	1.9	77.9	0.4
	2014	209.2	11.0	107.6	2.3	85.7	0.5

Note: Own calculations based on data from Piketty, Saez and Zucman (2016) and their reported statistics on the distribution of pre-tax national income and total household wealth among equal-split adults in the US; the unit is the adult individual (20-year-old and over; income of married couples is split into two).

(*) For 1995, data on the number of adults (20+) and the Bottom 99% and 99.9% shares is not given by Piketty *et al.* (2016). We compute the number of adults as follows. We calculate the divergence (in %) between the working-age population (source: World Development Indicators, World Bank) and the number of adults (20+) in 1980 and 2010. We take the average divergence and apply it to 1995 to obtain our extrapolated adult population for 1995. Based on this extrapolated population, we compute the FIC for 1995 for the Bottom 90%, the Top 10%, the Top 1% and the Top 0.1% whose information for blocks A, B and C is available from Piketty *et al.* (2016).