Decreasing labour-labor exchange rate as a cause of inequality growth

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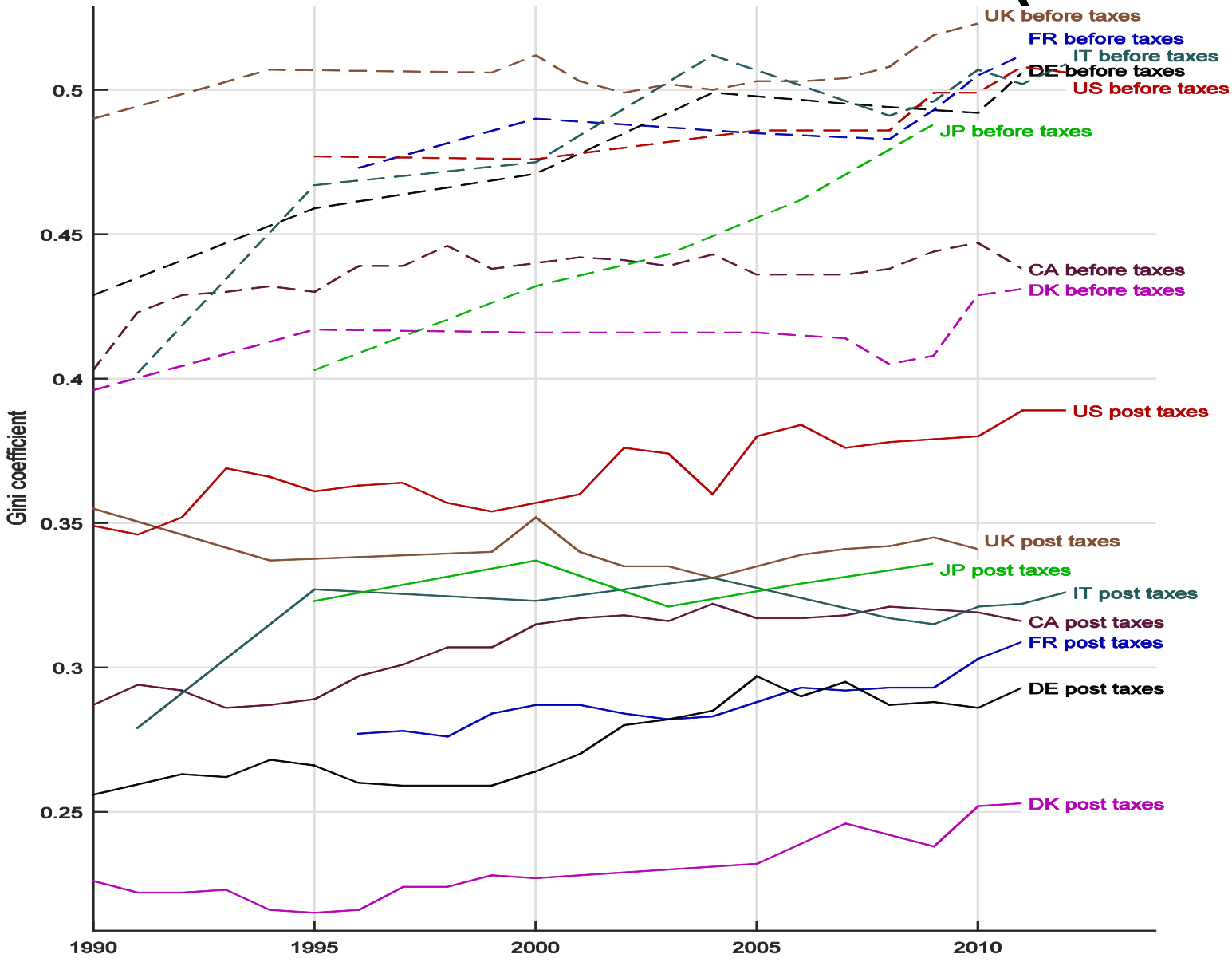
Gini before taxes and after (dashes)



Source: OECD.Stats (2015)

Explanation of inequality growth

Th Piketty (2013) *Capital in the 21st century*: Inequality is caused by accumulation of capital; the role of capital increases with the income share of capital owners and capital managers

Labor is renumerated to guarantee its (decent) reproduction

What about industries where the capital role remains the same?

What happens to housing prices?

Norman-French real estate agent:

Now the villas of the rich are purchased almost exclusively by superrich foreigners; the rich purchase the houses of the middle class, the middle class purchases workers' houses, and workers cannot afford own housing and stay in rented apartments

To put it in another way, the houses purchased 40 years ago by middle-class families with one earner, now are only affordable for middle-class families with two earners

Well-being growth disillusioned

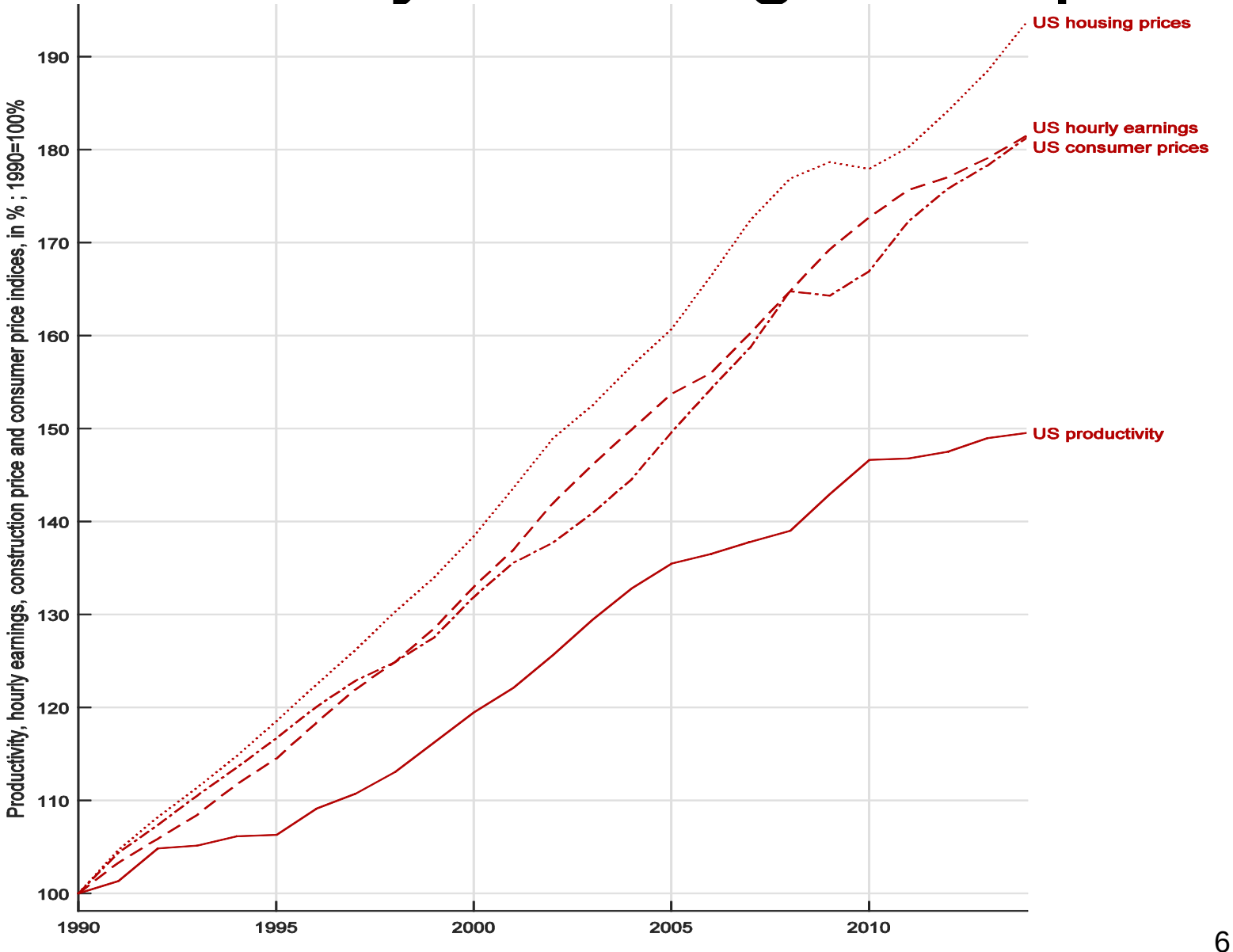
In the 1980s, a medium salary was hardly sufficient to purchase a personal computer

In 2016, four much better PCs are affordable for a medium salary, creating an illusion of growing value of own labor

In fact, due to innovations (productivity growth), the amount of labor embodied in four modern PCs is smaller than that in one PC 30 years ago

Thus, the labor return from the labor rewarded with a medium salary decreased, contrary to a growing purchase power of a medium salary

US productivity, earnings and prices



Source: OECD.Stats (2015)

Labor-labor exchange rate (LLER)

In 1990 one worker makes 4 kettles/hour and his colleague, requiring the same amount of labor, 4 coffee pots of the same price. Due to capital share, social security contributions etc., the 1st worker's hourly earnings suffice for 2 coffee pots and that of the 2nd worker – for 2 kettles, i.e., the labor embodied in 4 units is exchanged for the labor needed for 2 units. Thus, the labor–labor exchange rate (LLER) is 2:1 (the *status quo)*.

By 2014 the productivity doubles, i.e., each worker makes 8 units/hour. If LLER remains 2:1, then the hourly earnings' purchasing power doubles as well, i.e., each worker's hourly earnings suffice for 4 units. Maintaining the *status quo* is considered fair.

If in 2014 the hourly earnings suffice for 3 units, LLER is 8:3 = 2.67:1 deteriorating the *status quo* and considered as unfair.

LLER operationalization

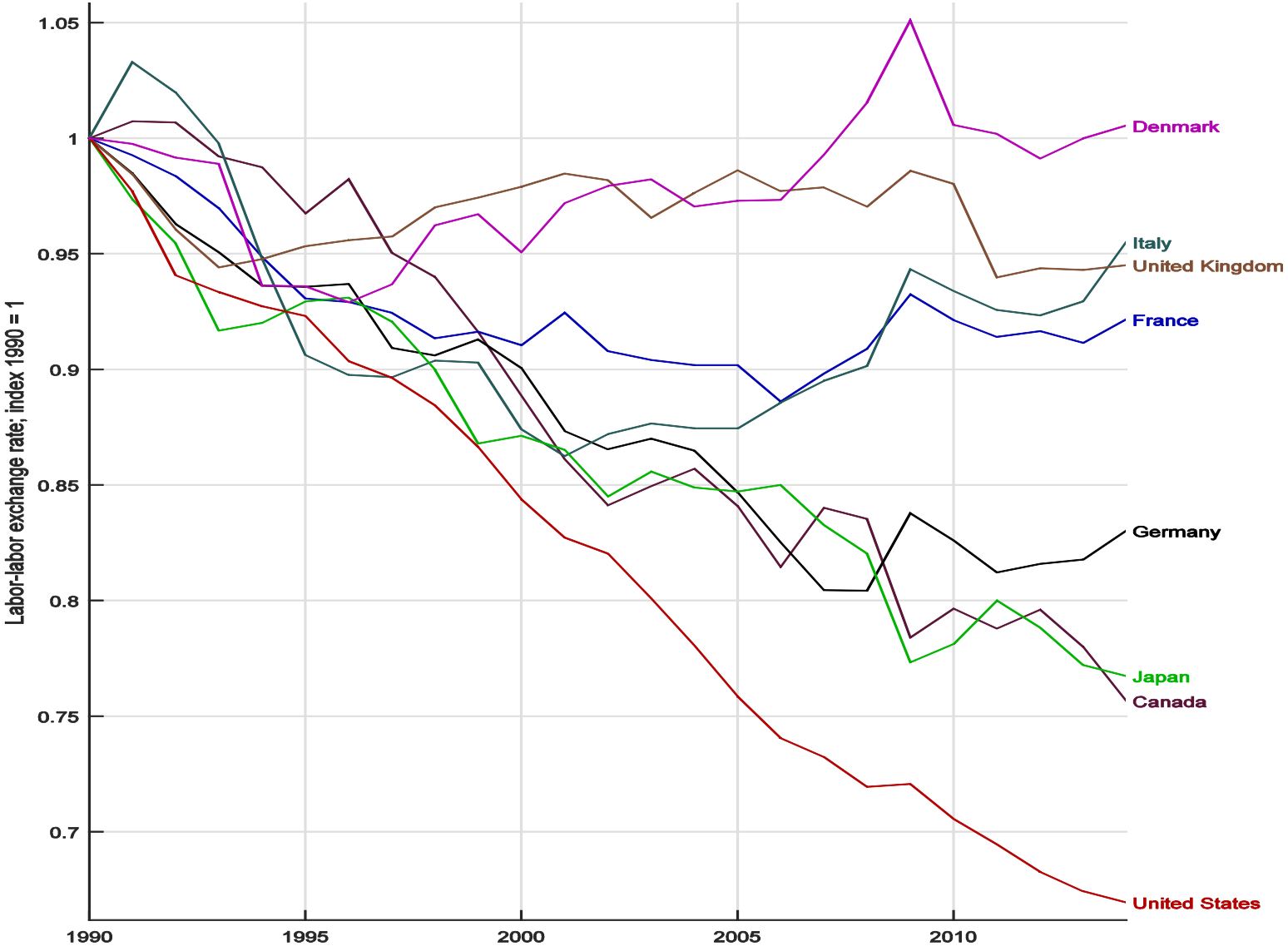
The US productivity growth by factor 1.5 suggests a commensurable increase in the hourly earnings' purchasing power. The fact that the purchasing power with reference to consumer products does not change over 25 years, means that the LLER with reference to consumer products decreased by factor 1.5. Generalizing this train of thought, we obtain the following LLER index as a function of time *t* :

$$\text{LLER w.r.t.consumer prices}_{1990=1}(t) = \frac{\text{Hourly earnings in consumer units}_{1990=1}(t)}{\text{Productivity}_{1990=100}(t)} = \frac{\dfrac{\text{Hourly earnings}_{1990=1}(t)}{\text{Consumer prices}_{1990=1}(t)}}{\text{Productivity}_{1990=1}(t)} .$$

The subscripts 1990 = 1 mean that the indices are referred to the *status quo* year 1990, where the index values are 1

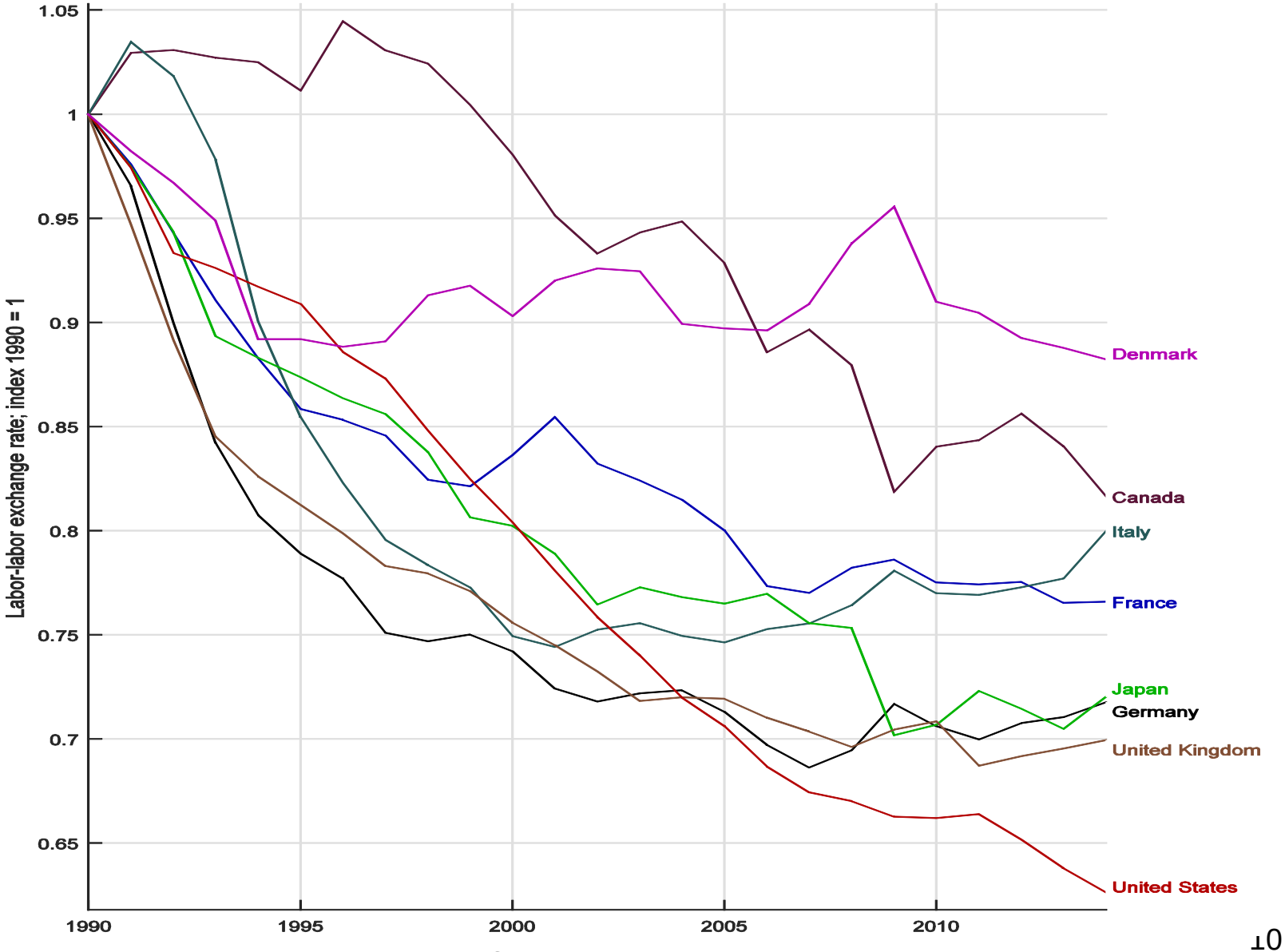
Similar formula with reference to housing prices.

LLER w.r.t. consumer prices



Source: Author's derivation from OECD.Stats (2015)

LLER w.r.t. housing prices



Source: Author's derivation from OECD.Stats (2015)

Non-paid % of working time, assuming fair pay in 1990

Country	Labor–labor exchange reference	1990	1995	2000	2005	2010	2014
Canada	with reference to consumer prices	0	3	11	16	20	24
	with reference to housing prices	0	-1	2	7	16	18
France	with reference to consumer prices	0	7	9	10	8	8
	with reference to housing prices	0	14	16	20	22	23
Germany	with reference to consumer prices	0	6	10	15	17	17
	with reference to housing prices	0	21	26	29	29	28
Italy	with reference to consumer prices	0	9	13	13	7	4
	with reference to housing prices	0	15	25	25	23	20
Japan	with reference to consumer prices	0	7	13	15	22	23
	with reference to housing prices	0	13	20	24	29	28
UK	with reference to consumer prices	0	5	2	1	2	5
	with reference to housing prices	0	19	24	28	29	30
US	with reference to consumer prices	0	8	16	24	29	**33**
	with reference to housing prices	0	9	20	29	34	**37**
Denmark	with reference to consumer prices	0	6	5	3	-1	**-1**
	with reference to housing prices	0	11	10	10	9	**12**

Source: Author's computations based on the variables previously defined

Hourly earnings in manufacturing in €

Country	Pay pattern	1990	1995	2000	2005	2010	2014
Canada	**Actual pay**	**12.35**	**14.47**	**15.92**	**17.88**	**19.07**	**20.4**
	Fair pay with reference to consumer prices	12.35	14.96	17.92	21.27	23.93	26.96
	Fair pay with reference to housing prices	12.35	14.31	16.24	19.26	22.69	24.99
France	**Actual pay**	**9.29**	**10.67**	**12.34**	**14.43**	**16.36**	**17.80**
	Fair pay with reference to consumer prices	9.29	11.47	13.55	16.00	17.76	19.32
	Fair pay with reference to housing prices	9.29	12.43	14.75	18.04	21.11	23.25
Germany	**Actual pay**	**12.31**	**15.55**	**17.53**	**19.12**	**20.87**	**23.18**
	Fair pay with reference to consumer prices	12.31	16.62	19.46	22.57	25.26	27.93
	Fair pay with reference to housing prices	12.31	19.70	23.62	26.81	29.55	32.30
Italy	**Actual pay**	**7.89**	**10.17**	**11.65**	**13.22**	**15.41**	**16.90**
	Fair pay with reference to consumer prices	7.89	11.22	13.32	15.12	16.50	17.70
	Fair pay with reference to housing prices	7.89	11.90	15.54	17.71	20.01	21.13
Japan	**Actual pay**	**13.07**	**14.43**	**15.19**	**15.76**	**15.30**	**15.77**
	Fair pay with reference to consumer prices	13.07	15.52	17.44	18.60	19.58	20.56
	Fair pay with reference to housing prices	13.07	16.51	18.94	20.60	21.65	21.90
UK	**Actual pay**	**7.21**	**9.52**	**11.78**	**14.26**	**16.74**	**18.04**
	Fair pay with reference to consumer prices	7.21	9.99	12.04	14.46	17.08	19.09
	Fair pay with reference to housing prices	7.21	11.72	15.59	19.83	23.63	25.80
US	**Actual pay**	**10.42**	**11.93**	**13.86**	**16.02**	**18.00**	**18.91**
	Fair pay with reference to consumer prices	10.42	12.93	16.42	21.12	25.50	28.25
	Fair pay with reference to housing prices	10.42	13.13	17.24	22.68	27.18	30.20
Denmark	**Actual pay**	**14.45**	**17.08**	**20.75**	**25.06**	**29.55**	**31.68**
	Fair pay with reference to consumer prices	14.45	18.25	21.82	25.76	29.38	31.51
	Fair pay with reference to housing prices	14.45	19.15	22.97	27.93	32.48	35.91

Correlation between the variables

	Actual Gini market income before taxes	Actual Gini post taxes and transfers	Growth of general productivity in 1990–2014	Non-paid % of working time in 2014 w.r.t. consumer prices assuming full pay in 1990	Non-paid % of working time in 2014 w.r.t. housing prices assuming full pay in 1990
Actual Gini market income before taxes	1	0.555	0.183	0.021	0.718**
Actual Gini post taxes and transfers	0.555	1	0.347	0.660*	**0.831*** **
Growth of general productivity in 1990–2014	0.183	0.347	1	0.497	0.659*
Non-paid % of working time in 2014 w.r.t. consumer prices assuming full pay in 1990	0.021	0.660*	0.497	1	0.626*
Non-paid % of working time in 2014 w.r.t. housing prices assuming full pay in 1990	0.718**	**0.831*** **	0.659*	0.626*	1

*** PVAL ≤ 0.01
** 0.01 < PVAL ≤ 0.05
* 0.05 < PVAL ≤ 0.10

Conclusions 1/2

Dependence between the inequality degree and LLER decline

The dependence between the *degree* of inequality and the *degree* of labor devaluation is statistically highly significant

Thus, it is not due to chance that the smallest labor devaluation is inherent in Denmark, where the inequality is the lowest among the countries considered, and that the greatest labor devaluation is inherent in the US, where the inequality is the highest

Conclusions 2/2

Controlling LLER with taxes

High taxes moderate the motivation to increase the capital share in gains, protecting the labor share from significant reductions, retaining the LLER

Such a tax policy constrains the inequality growth not only at the expense of top earners

Workers earn more, and the applicable taxes enable generous social transfers reducing the inequality from the side of weak social groups

A general economic effect is enforcing solvent demand and, thereby, stimulating marketing and production

Reform suggestion: Tax firms with the **inner-Gini** higher than the country-Gini

Reference

Tangian A (2016) *Devaluation of one's labor in labor–commodities–money–commodities–labor exchange as a cause of inequality growth.* Karlsruhe Institute of Technology Working Paper Nr 86 (February 2016)

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