HAS THE LABOUR SHARE DECLINED? IT DEPENDS.

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Background

Inequality on the rise

- Much debate about rising *inter-household inequality* of (disposable) income in many OECD countries

- In parallel, attention also on functional distribution, i.e., *labour and capital shares in income*
  - Karabarbounis and Neiman (2014)
  - Elsby, Hobijn and Sahin (2013)
  - Stiglitz (2015)
  - Atkinson (2015)

Interest in functional income distribution

- '**Upstream**' to inter-houshold distribution

- General **political-economical interest**:

  '*the empirical determination of factor shares was the proximate cause for the founding of the National Bureau of Economic Research*' (Krueger 1999 p. 1)

- Income shares as a **way to observe production elasticities**

  (Not included in this presentation; refer to our original paper)

This paper

- Revisits some of the *measurement issues*

- Distinguishes between *production-based* and *income-based* labour/capital shares

- Finds *declining* labour shares *only with production-based measures*

- *Dissects the capital share*

  (Not included in this presentation; refer to our original paper)

  - real rate of return on capital vs. capital-income ratio
  - role of land (and non-produced assets)

Production and Income-based shares

Production perspective

- Use of labour share in production analysis
- For cost-minimising producers, LS = production elasticity of labour
- Appropriate weight for MFP measurement
- Production theory provides link between change in LS and elasticity of substitution
- Measurement: choose activities, valuations etc that entail *producer perspective*

Income perspective

- Labour share as a predictor for inter-HH income distribution

- « To address concerns of social justice with the fairnesss of different sources of income » (Atkinson 2009)

- Measurement: choose activities, valuations etc that entail *household perspective* (as close as possible to income that is actually distributed)

* But there are still missing steps in moving from income perspective to actual HH disposable income. See next slide.

Functional income vs. HH disposable income

Production Accounts	
Uses	Resources
Intermediate consumption	Gross output
GVA at basic prices	

Generation of Income Accounts	
Compensation of employees	
Taxes less subsidies on production and imports	GVA at basic prices
Depreciation	
Operating surplus/Mixed income	

Functional Income Distribution

Allocation of Primary Income Accounts	
	Operating surplus/Mixed income
	Compensation of employees
Property income paid	Property income earned
Balance of primary income	

Income from Capital Ownership

Secondary Distribution of Income Accounts	
	Balance of primary income
Current taxes/transfers	Current taxes/transfers
Social contributions/benefits	Social contributions/benefits
Disposable income	

Social Redistribution of Income

Household Income Dispersion

How to measure income

Production perspective	Income perspective
Valuation at basic prices	Valuation at market prices
Exclusion of OOH	Inclusion of OOH
Gross of depreciation	Net of depreciation
Proportionate allocation of net taxes on production	Net taxes allocated to capital

How to measure labour income

- Production perspective

$$w_{Pj}L_j = (CE + \alpha_j V_{MIX})(1 + \tau_p)$$

where $w_{pj}L_j$ indicates labour compensation from production perspective,

CE compensation of employees, α_j the share of mixed income V_{MIX} attributed to labour,

τ_P the rate that proportionally allocates net taxes on production to labour and capital.

- Income perspective

$$w_{Dj}L_j = (CE + \alpha_j V_{MIX})$$

where $w_{Dj}L_j$ indicates labour compensation from income perspective,

CE compensation of employees, α_j the share of mixed income V_{MIX} attributed to labour,

all taxes to capital income on the grounds that taxes must be covered out of operating surplus.

Allocating mixed income (5 ways)

Variant	α_j	Comment
j=1	0	Unadjusted labour share
j=2	2/3	Johnson's (1954) version with 2/3rds of mixed income allocated to labour
j=3	1	Gollin's (2002) 1st adjustment with all mixed income allocated to labour
j=4	$(CE/L_w)(L_{NW}/V_{MIX})$	Average compensation of non-salaried workers equals the average compensation of salaried workers (CE/L_w).
j=5	$0.5(CE/L_w)(L_{NW}/V_{MIX})$	The average compensation of non-salaried workers is set to equal half the average compensation of salaried workers. α_5 is also a simple average of α_1 and α_4

Data

- OECD Annual national accounts
- 22 OECD countries
- 1995-2013/14 (all countries)

Regression model for a LS constancy test

- (9a) Fixed effects model

$$LS_{Pi,t} = \mu_i + \alpha * x_{i,t} + \beta * t + \varepsilon_{i,t} \ ; \ \varepsilon_{i,t} \sim N(0, \Sigma_\varepsilon)$$

- (9b) Random effects model

$$LS_{Pi,t} = \mu_i + \alpha * x_{i,t} + \beta * t + \varepsilon_{i,t} \ ; \ \varepsilon_{i,t} = \phi \, \varepsilon_{i,t-1} + v_{i,t} ; \ v_{i,t} \sim N(0, \Sigma_v)$$

where $LS_{Pi,t}$ is the production-based labour share in country i=1,…22, year t=1,…20;

μ$_i$ are the corresponding country dummies;

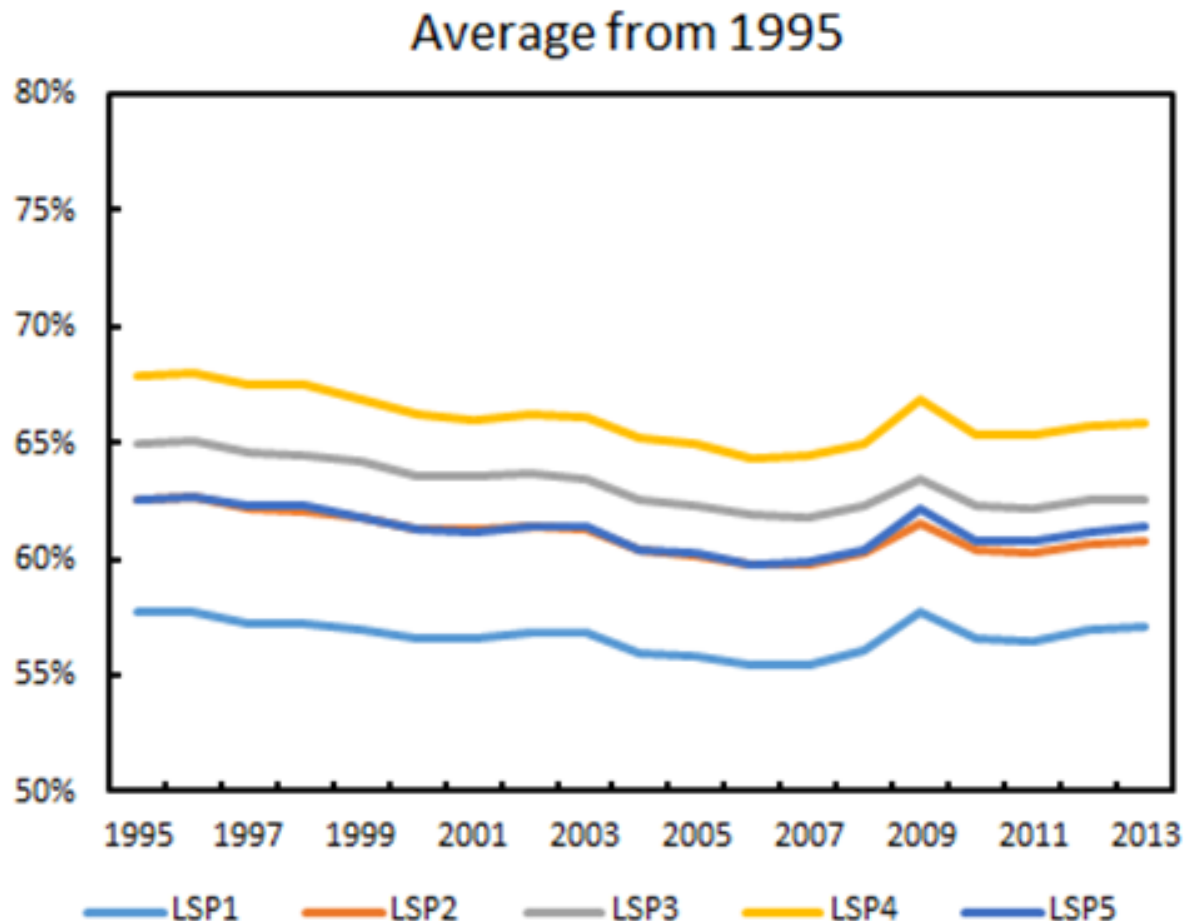α captures a business cyclical factor (countries' output gap $x_{i,t}$)

β captures a positive or negative common trend in countries' LS;

$\varepsilon_{i,t}$ a normally-distributed error term;

in (9b) we test for a common trend in a set of a random effects model

with an auto-correlated error term $\varepsilon_{i,t}$.

Movements in LS, production perspective

Average from 1995

- Downward trend

- Mixed income matters for levels

- LS_{P2} and LS_{P5} yield nearly identical results

Production-based LS: panel regression

| Time variable(β_t)	LS_{P1}	LS_{P2}	LS_{P3}	LS_{P4}	LS_{P5}
Fixed effects model (9a)	0.0006	-0.086***	-0.129***	-0.116***	-0.057***
SE	(0.015)	(0.013)	(0.013)	(0.019)	(0.016)
Random effects model with AR1 (9b)	0.004	-0.078***	-0.118***	-0.113*	-0.055
SE	(0.051)	(0.033)	(0.037)	(0.060)	(0.042)

- statistically significant *downward trend* in most cases
- average decline between -0.057*(2014-1995)=-1.08 percentage points for LS_{P5} to -0.129*(2014-1995)=-2.45 percentage points for LS_{P3}

Movements in LS, income perspective

Average from 1995
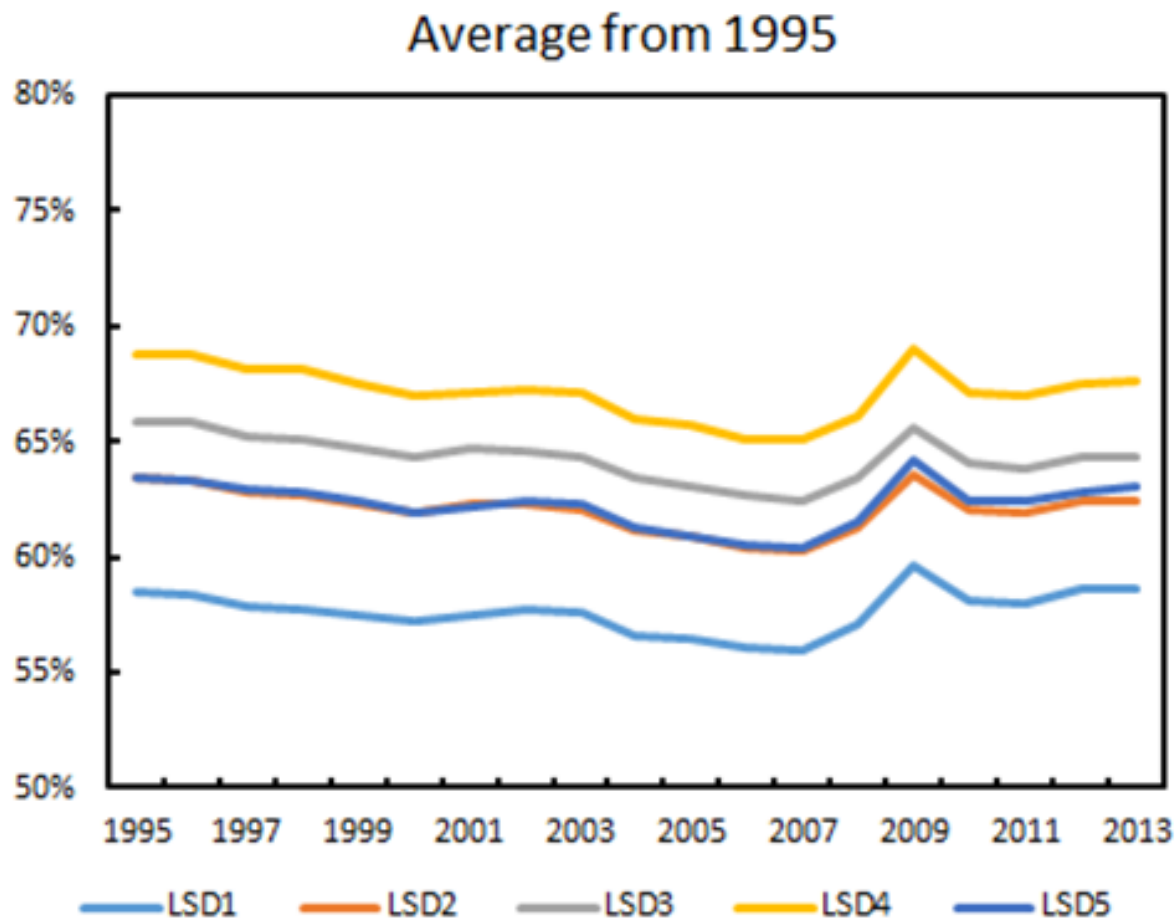
- Downward trend hard to detect

- Mixed income matters for levels

- LS_{D2} and LS_{D5} yield nearly identical results

Large variations among countries, LS$_{P5}$
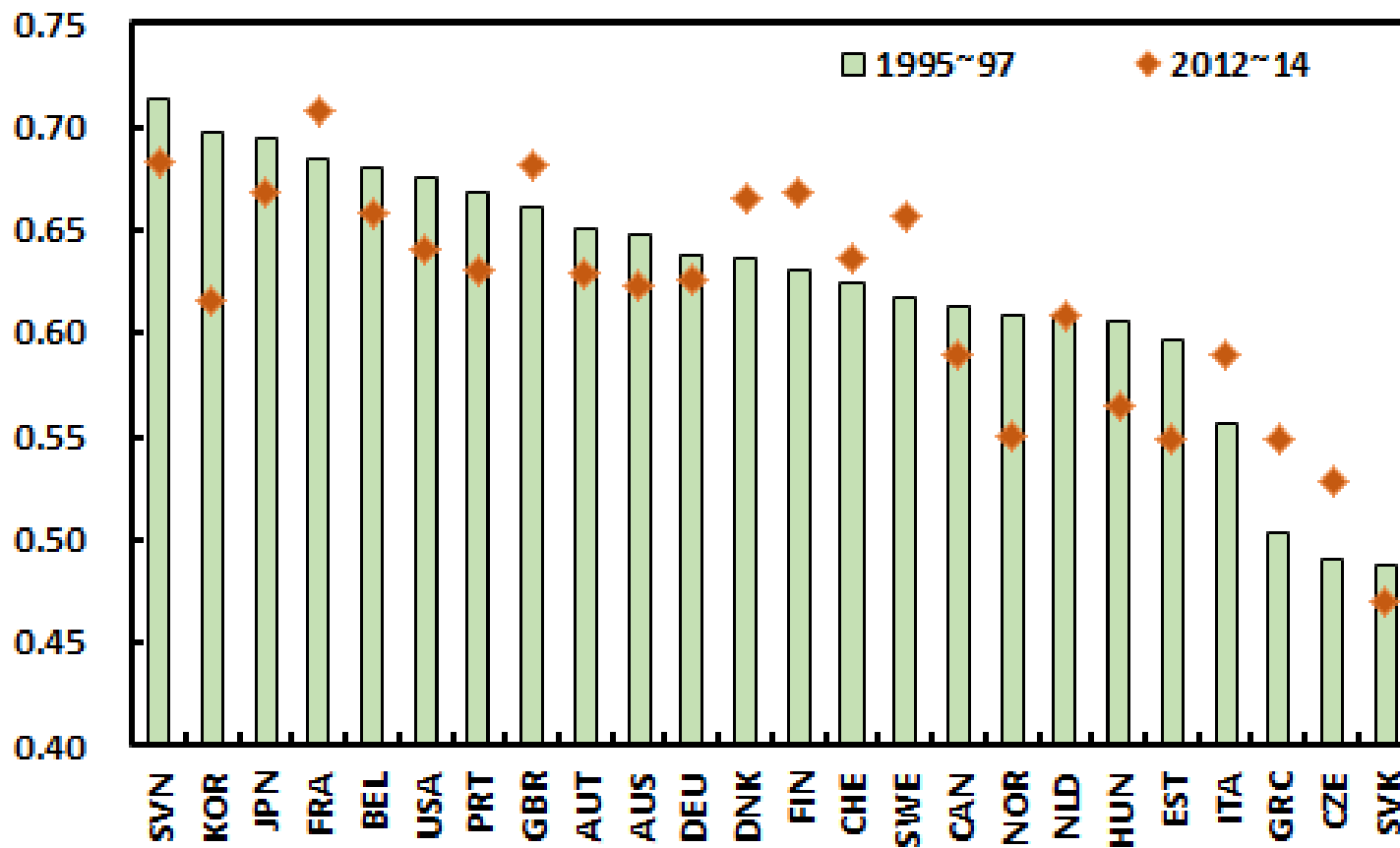
Income-based LS: panel regression

Time variable(β_t)	LS_{D1}	LS_{D2}	LS_{D3}	LS_{D4}	LS_{D5}
Fixed effects model (9a)	0.052***	-0.031**	-0.073***	-0.052***	0.0002
SE	(0.016)	(0.014)	(0.014)	(0.019)	(0.017)
Random effects model with AR1 (9b)	0.027	-0.050	-0.090**	-0.085	-0.026
SE	(0.055)	(0.037)	(0.040)	(0.064)	(0.045)

- Hardly statistical significant, especially for random effects models
- Where present, even smaller in size than production-based measure

Interpretation and caveats

- Although a statistically significant downward trend for production-based LS, little no evidence of a pervasive decline of LS under an income-based measure

- LS shows a downward trend until the onset of the crisis and reversed afterwards. The upward trend in both income-based and production-based LS after the crisis is most evident in countries under a protracted period of crisis (e.g. Italy, Greece, France but also Finland and Denmark) and, as growth resumes in these countries, their LS will go down again.

- The picture may differ if only the business sector is considered, in particular in conjunction with production-based LS. It depends on the scale of GOV sector.

- Constant capital and labour shares may well be associated with growing income inequality. Wage can be more unequally distributed even if the average growth of labour income has equalled capital income growth. The effects on total income inequality can be compounded when capital income grows faster than the wages of low-income workers, and even more so as the distribution of wealth is highly skewed.

Why gap in changes between LSP5 & LSD5

- Depreciation is the most important element in this decomposition is the passage from a gross to a net measure of income

  For example IPPs

- Housing services also plays a role that drives a wedge between production-based and income-based labour shares for many countries. It implies the important role of land

Percentage points, cumulative over the period 1995-2014

Country	Time period	Changes in production-based LS	+ Effect of allocation of net taxes	+ Effect of exclusion of owner-occupied housing	+ Effect of valuation	+ Effect of depreciation	Changes in income-based LS
		$m*\Delta lnLS_{P5}$	$m*\gamma1$	$m*\gamma2$	$m*\gamma3$	$m*\gamma4$	$=\Delta LS_{D5}$
Australia	1995~2014	-1.62	-0.55	-0.82	**0.97**	0.20	-1.82
Austria	1996~2014	-2.27	-0.31	-1.05	-0.77	**1.45**	-2.95
Belgium	1996~2014	-2.28	1.16	0.86	-0.53	**3.27**	2.47
Canada	1995~2014	-4.10	0.97	0.00	1.17	**1.55**	-0.41
Czech Republic	1996~2014	3.94	0.51	**-0.62**	-0.40	0.24	3.67
Denmark	1996~2014	3.20	**-0.60**	0.03	0.01	0.50	3.14
Estonia	1996~2014	-6.03	0.54	-0.29	**-0.74**	0.31	-6.22
Finland	1996~2014	3.97	-0.44	**-1.51**	-1.20	0.82	1.63
France	1995~2014	3.13	0.01	-0.55	-0.34	**1.88**	4.14
Germany	1996~2014	-1.63	-0.72	-0.21	-0.45	**1.22**	-1.78
Hungary	1996~2014	-6.21	-0.15	0.43	-0.27	**-1.37**	-7.58
Italy	1996~2014	3.52	-2.06	-1.70	-0.33	**2.39**	1.83
Japan	1995~2013	-3.40	-0.69	**-1.48**	0.16	1.14	-4.27
Korea	1995~2014	-6.30	-0.02	0.11	0.35	**5.62**	-0.24
Netherlands	1996~2014	-0.18	-0.24	**1.09**	-0.43	0.36	0.60
Norway	1996~2014	-5.65	-0.28	**3.52**	1.69	-0.77	-1.50
Portugal	1996~2014	-3.98	-0.41	**-2.66**	-0.52	1.38	-6.20
Slovak Republic	1996~2014	0.75	-0.39	-0.09	0.45	**-0.83**	-0.10
Slovenia	1997~2014	-5.55	-0.41	1.43	0.20	**1.70**	-2.64
Sweden	1996~2014	5.13	**-2.11**	1.00	0.69	2.05	6.75
Switzerland	1996~2013	2.08	**-0.93**	0.00	-0.05	0.64	1.75
United Kingdom	1998~2014	2.62	0.16	**-1.91**	-0.38	-0.51	-0.03
United States	1998~2014	-2.97	-0.08	-0.47	1.03	**1.15**	-1.33
Average		-1.04	-0.31	-0.21	0.01	**1.06**	-0.48
Average of absolute effects			0.60	**0.95**	0.57	**1.36**	

Note: Shaded cells indicate the largest absolute component.

What makes the difference?

- Depreciation rises, CS_P rises (LS_P drops)
  - Obsolescence
  - Wear and tear
  - Crisis
- Net rate of return on capital *not* source of rising CS_P
- OOH
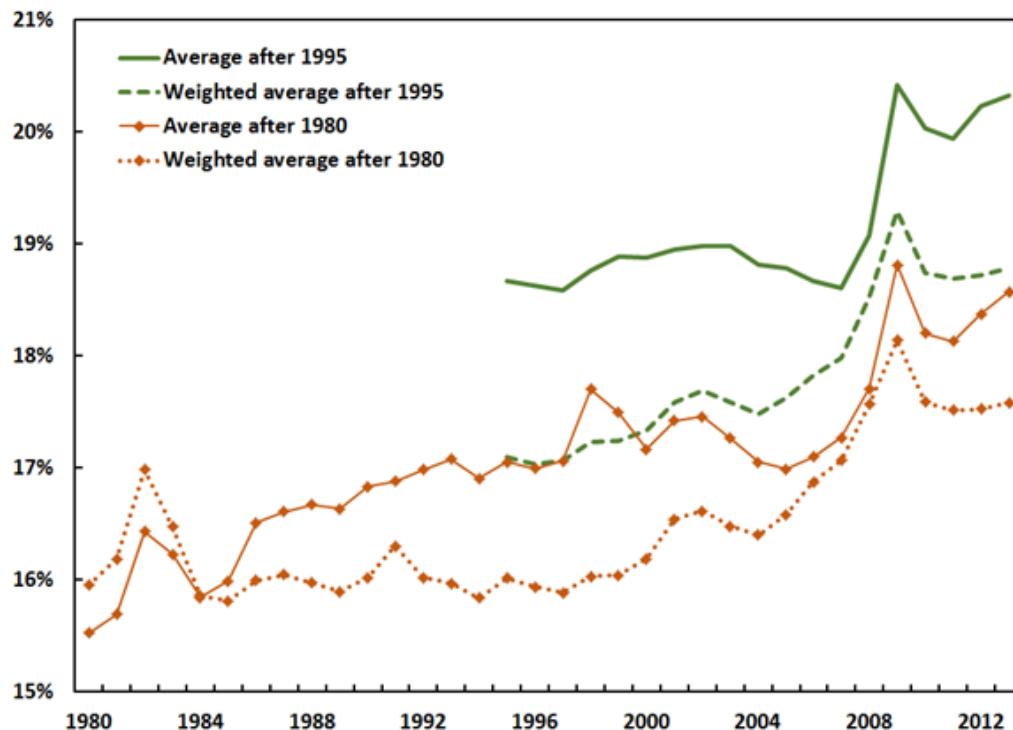
Summing up.

- Yes, LS has *declined* but only under production perspective
- Where significant, *small* on average
- Income-based LS has not declined, therefore, unlikely as a source for rising inter-HH income inequality
- Distribution *within* capital income components important

  Depreciation does matter
- Constant LS compatible with rising inequality among wage earners
- Mis-interpretation possible when *land* is excluded
- *Mixed income* cannot be ignored

Thank you!