ETLA ELINKEINOELÄMÄN TUTKIMUSLAITOS
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY

JYVÄSKYLÄN YLIOPISTO

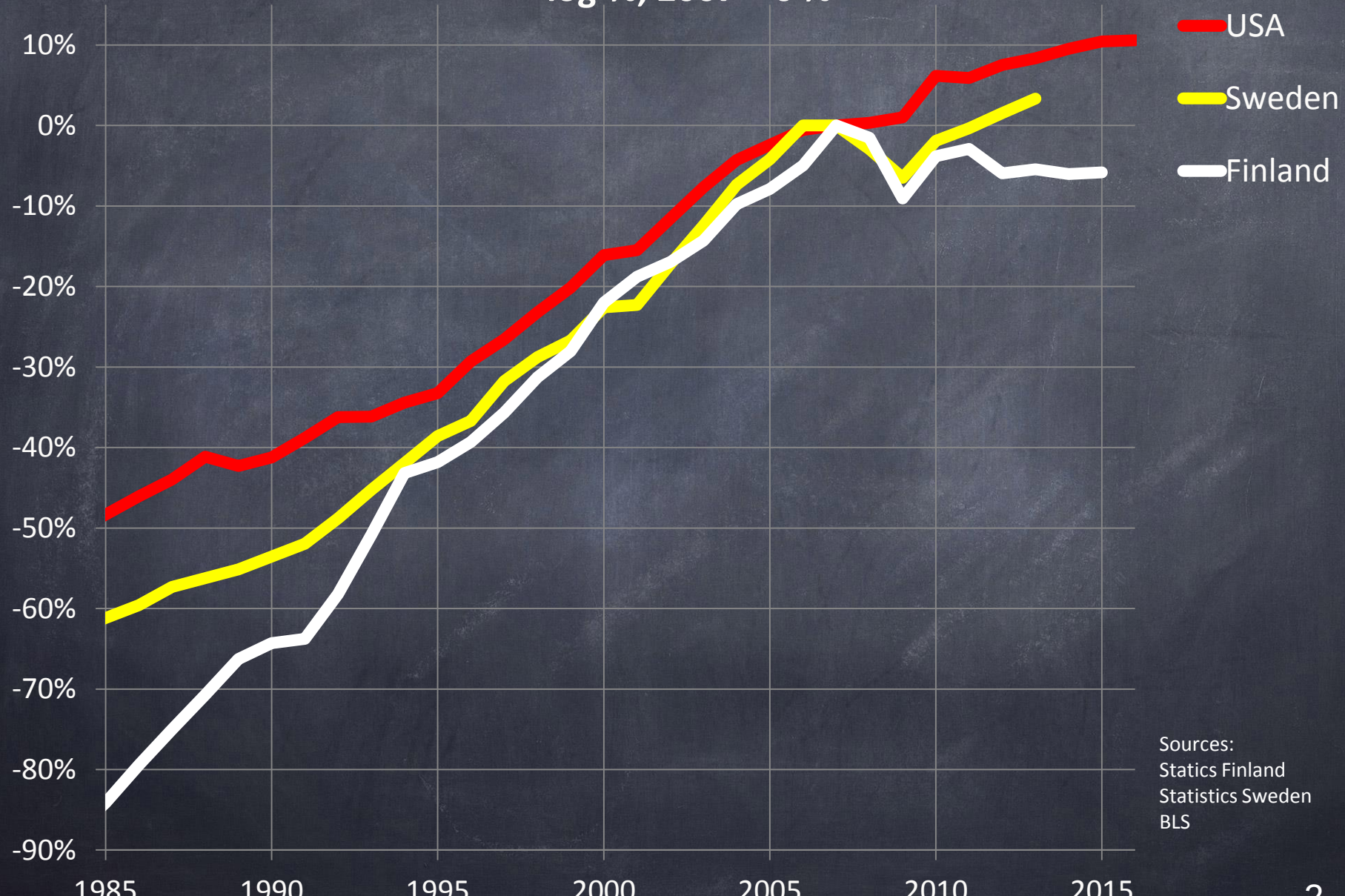
Micro-level Dynamics of Employment and Productivity Growth

TTY-YJS yhteisseminaari ”Prolonged slow growth” 8.9.2016

Mika Maliranta, ETLA & University of Jyväskylä

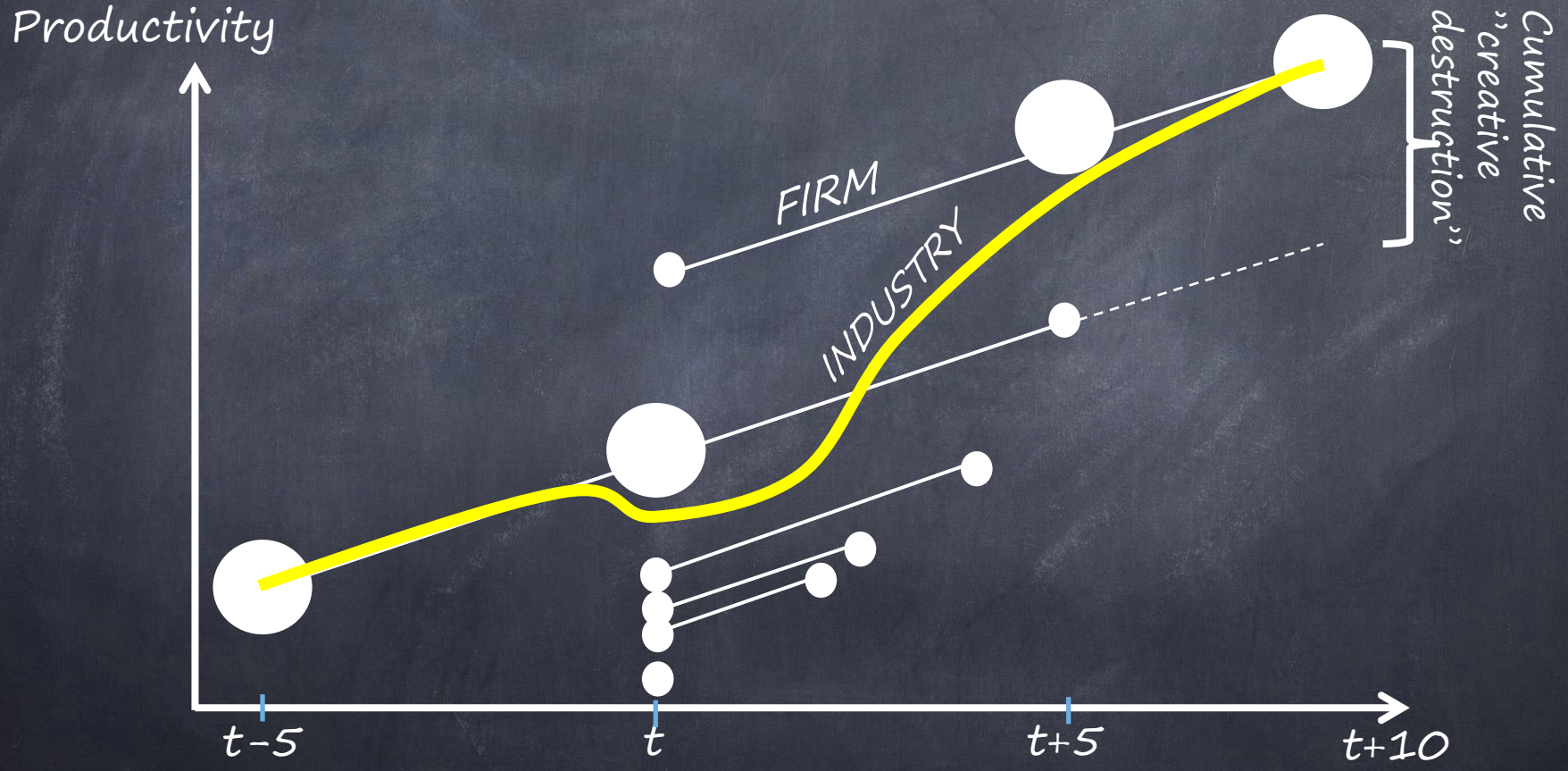
Labour productivity in business sector

log-%, 2007 = 0 %



Sources:
Statics Finland
Statistics Sweden
BLS

Productivity growth in industry, within firms & creative destruction



Measurement of productivity growth within firms and between firms

”Non-log-version” of productivity decomposition (e.g. Böckerman-Maliranta 2012)

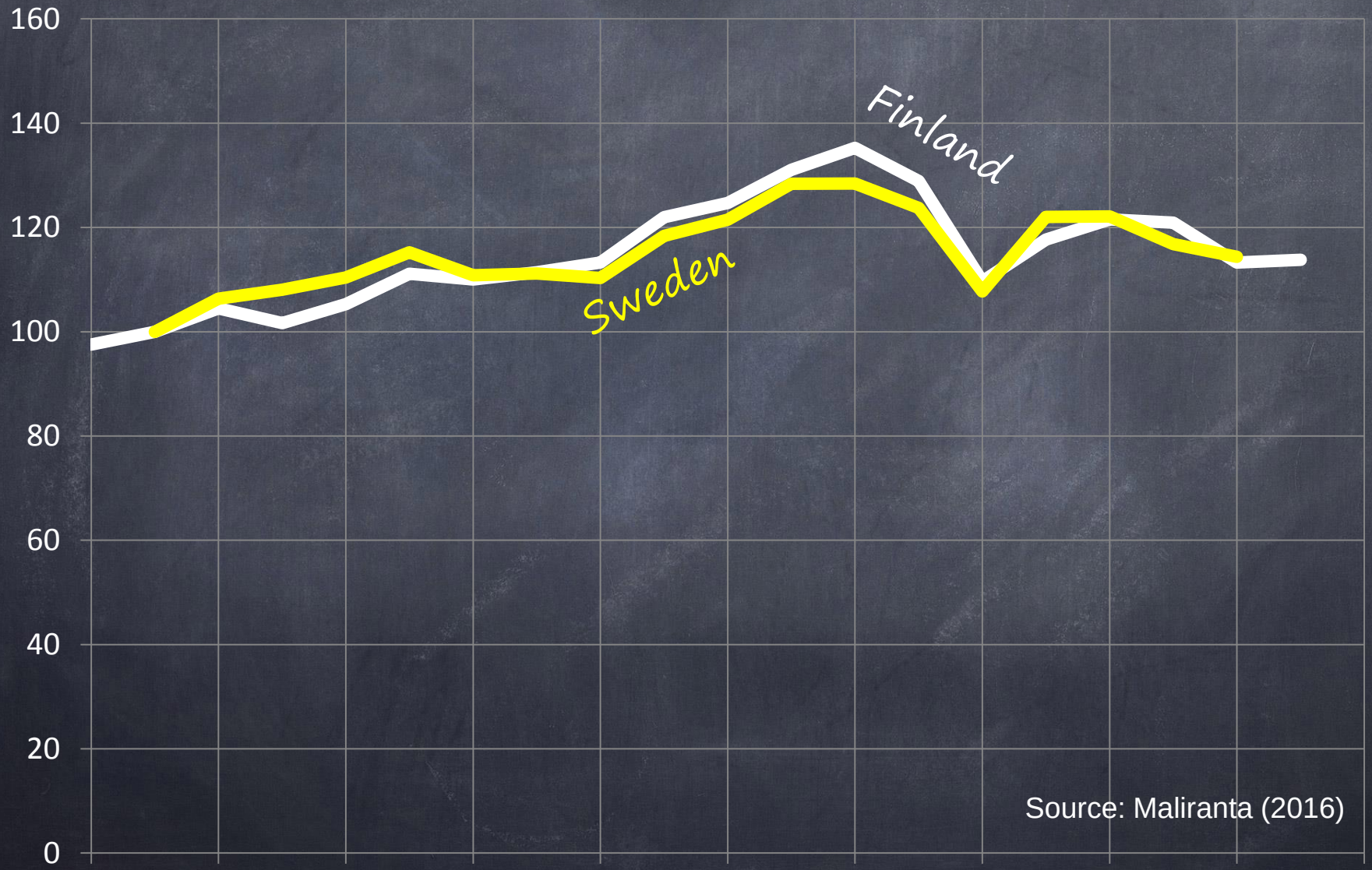
$$\frac{\Phi_1-\Phi_0}{\bar{\Phi}}=\sum_{i\in\Omega_S}\bar{s}_i^{stayer}\frac{\Delta\varphi_i}{\bar{\varphi}_i}+\sum_{i\in\Omega_S}\bar{s}_i^{stayer}\frac{\Delta\varphi_i}{\bar{\varphi}_i}\left(\frac{\bar{\varphi}_i}{\bar{\Phi}}-1\right)+\sum_{i\in\Omega_S}\frac{\bar{\varphi}_i}{\bar{\Phi}}\cdot\Delta s_i^{stayer}+S_1^{entrant}\frac{\left(\Phi_1^{entrant}-\Phi_1^{stayer}\right)}{\bar{\Phi}}+S_0^{exit}\frac{\left(\Phi_0^{stayer}-\Phi_0^{exit}\right)}{\bar{\Phi}}$$

$$\varphi_{i1}=\frac{Y_{i1}}{L_{i1}} \qquad s_{i1}=\frac{L_{i1}}{\sum L_{i1}} \qquad \Phi_1=\sum s_i\frac{Y_{i1}}{L_{i1}}=\frac{\sum_i Y}{\sum_i L}$$

- Note that $\ln\frac{\Phi_1}{\Phi_0}\cong\frac{\Phi_1-\Phi_0}{\bar{\Phi}}$
- See Balk, B. M. (2016). The Dynamics of Productivity Change: A Review of the Bottom-Up Approach. In W. H. Greene, L. Khalaf, C. , R. Sickles, M. Veall, & M.-C. Voia (Eds.), Productivity and Efficiency Analysis (pp. 15-49): Springer.

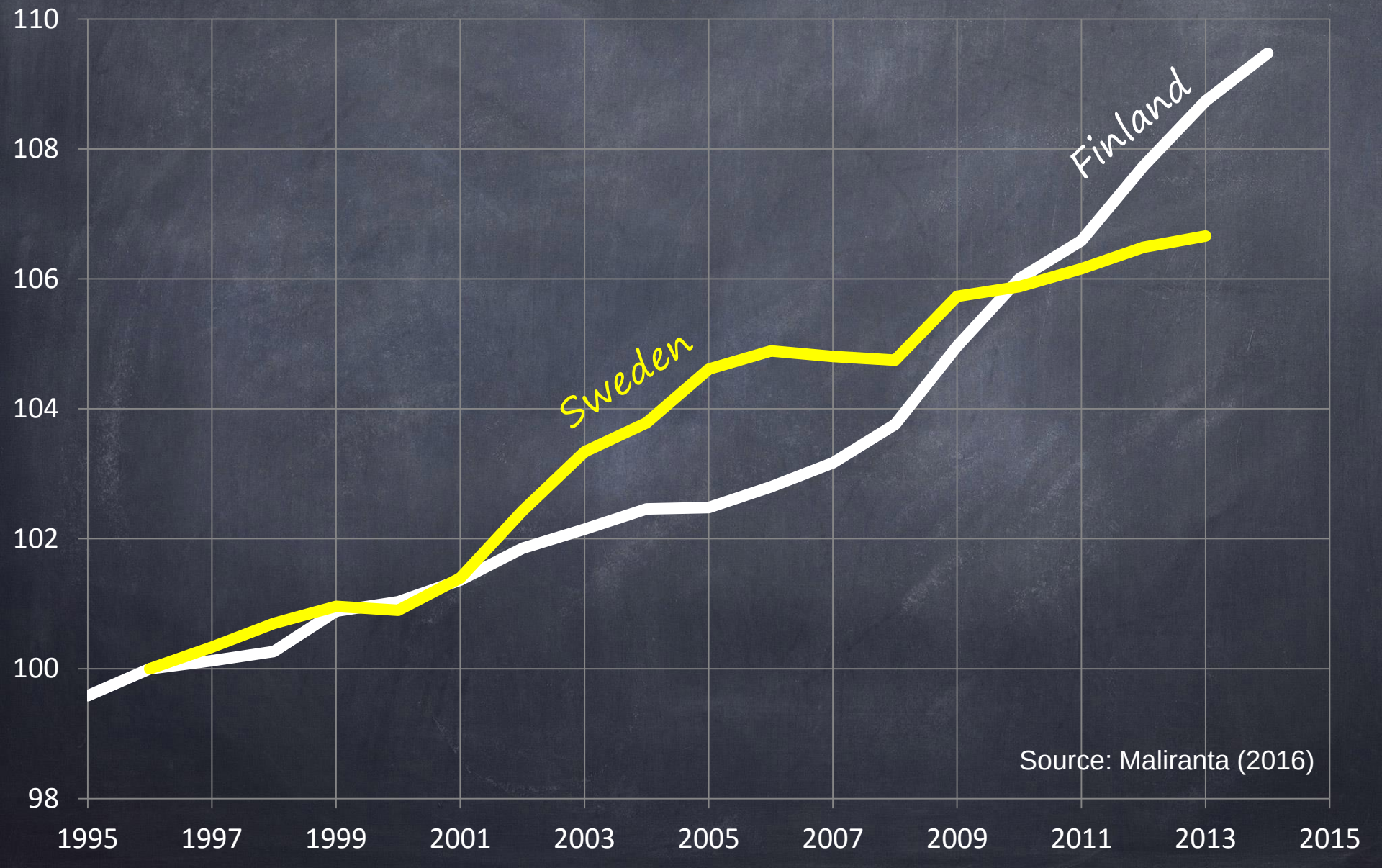
Productivity within firms, 1995=100

Within manufacturing industries (normalized industry structures)



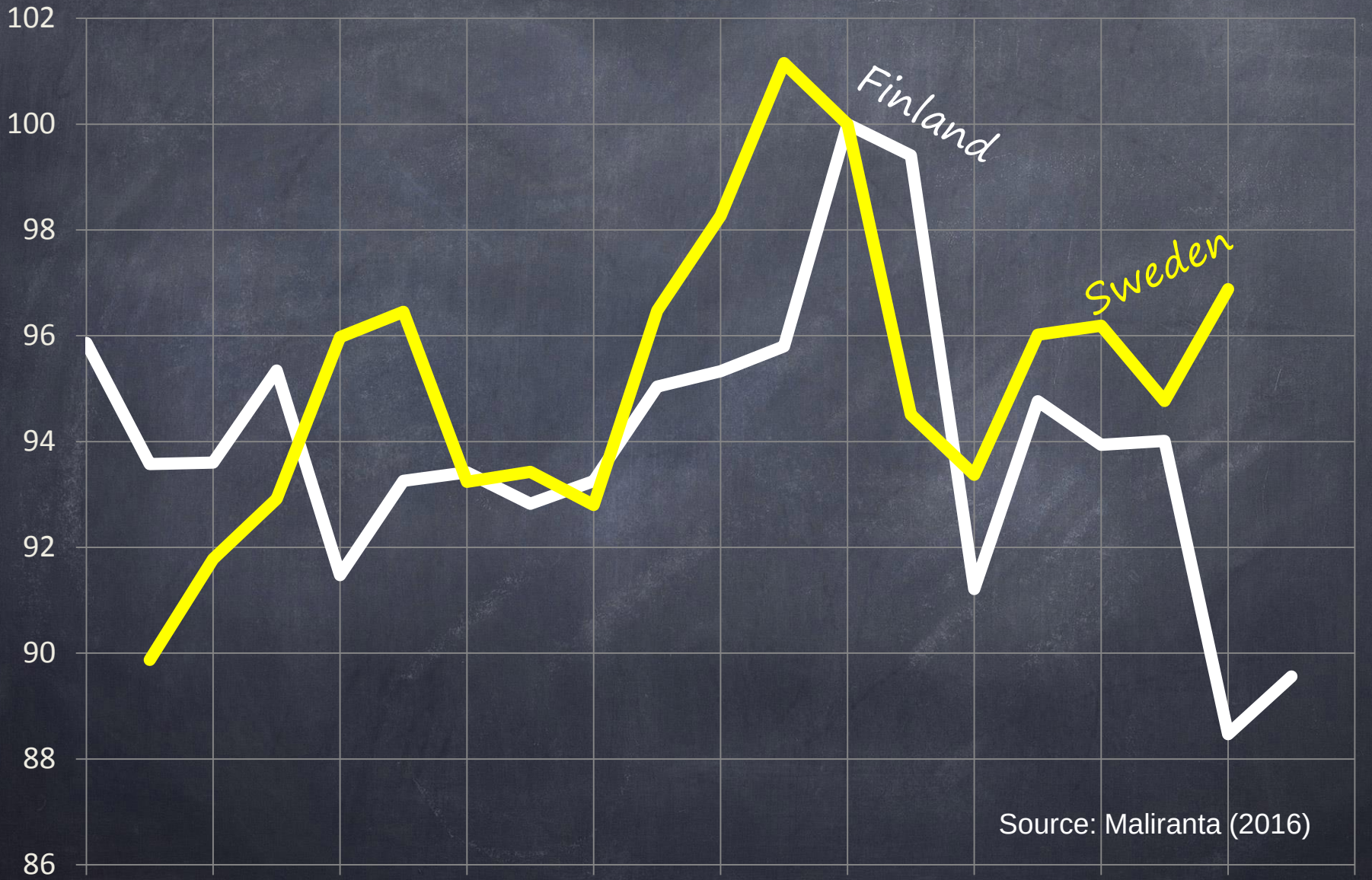
”Creative destruction” between firms, 1995=100

Within manufacturing industries (normalized industry structures)



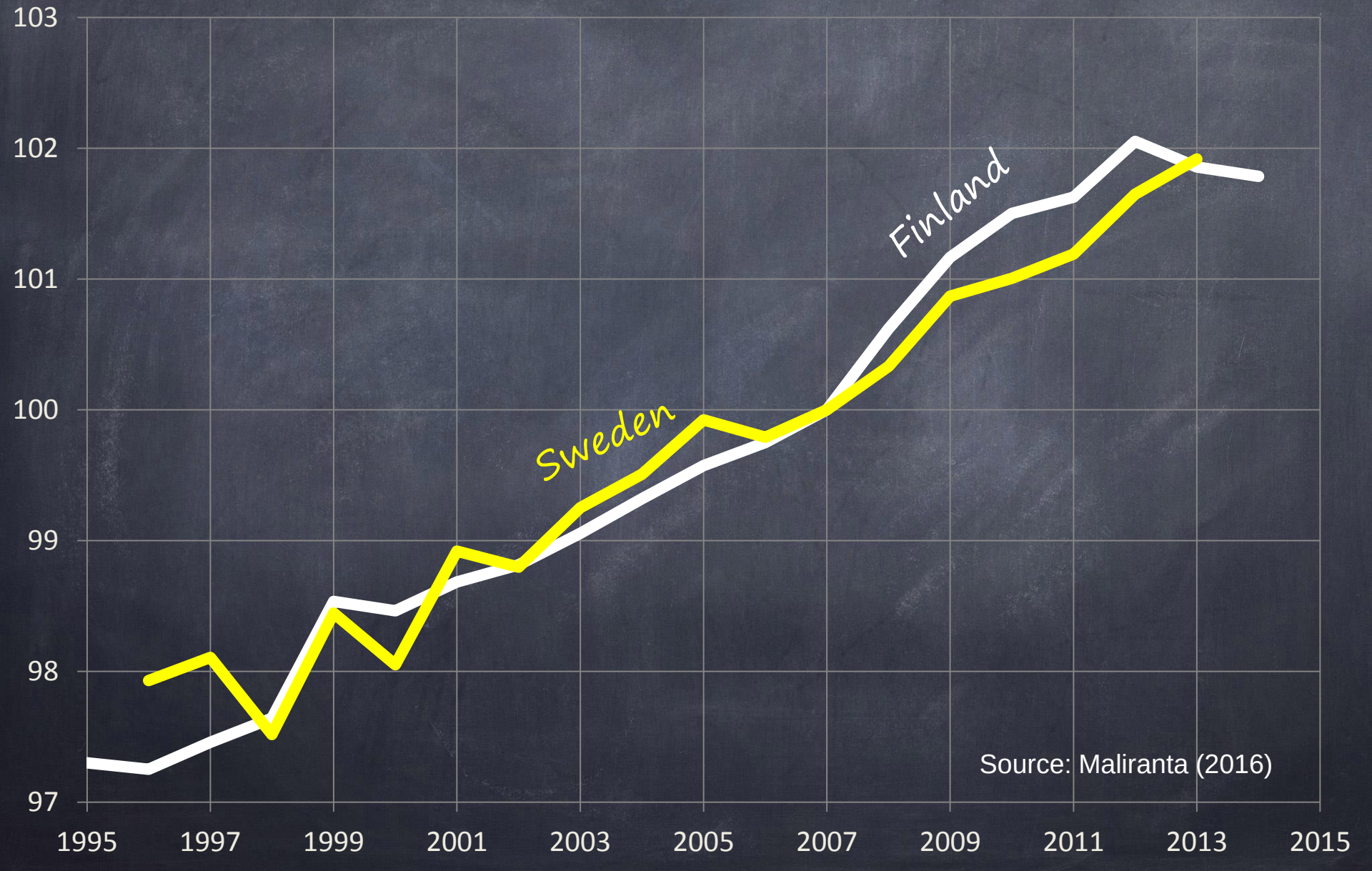
Productivity within firms, 2007=100

Within private service industries (normalized industry structures)

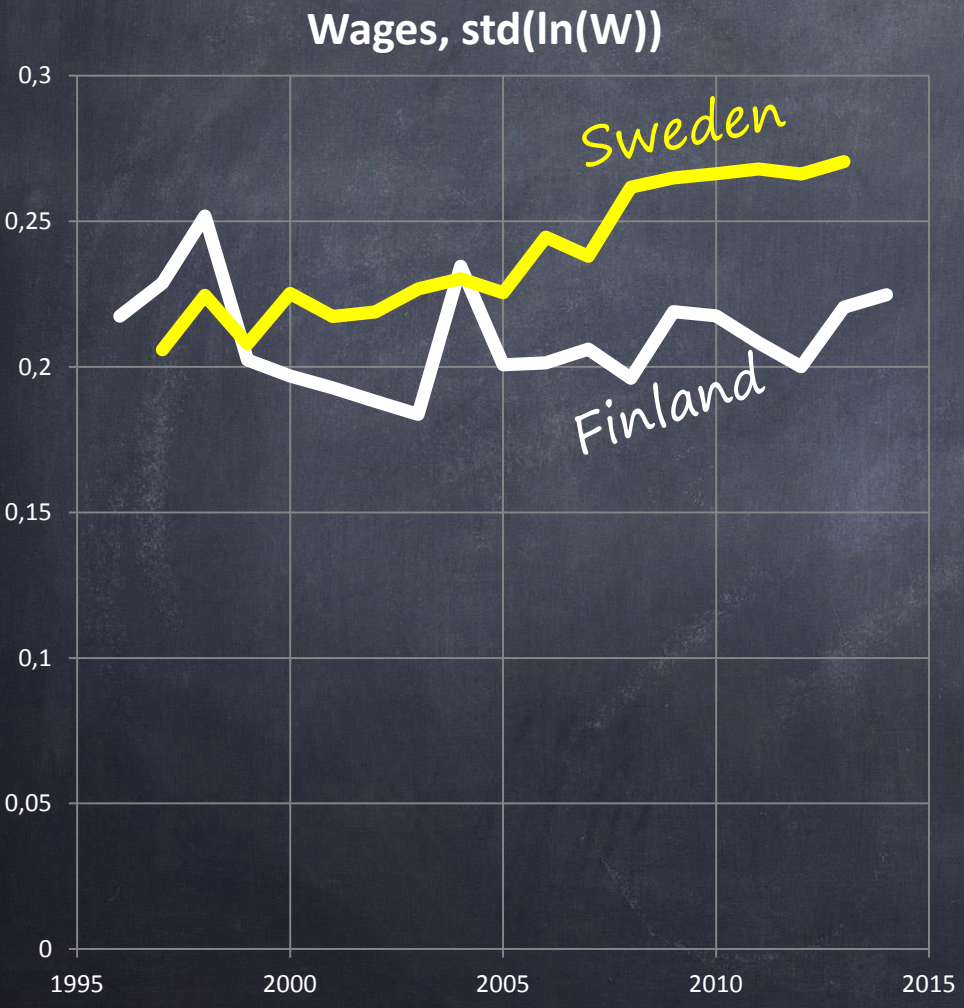


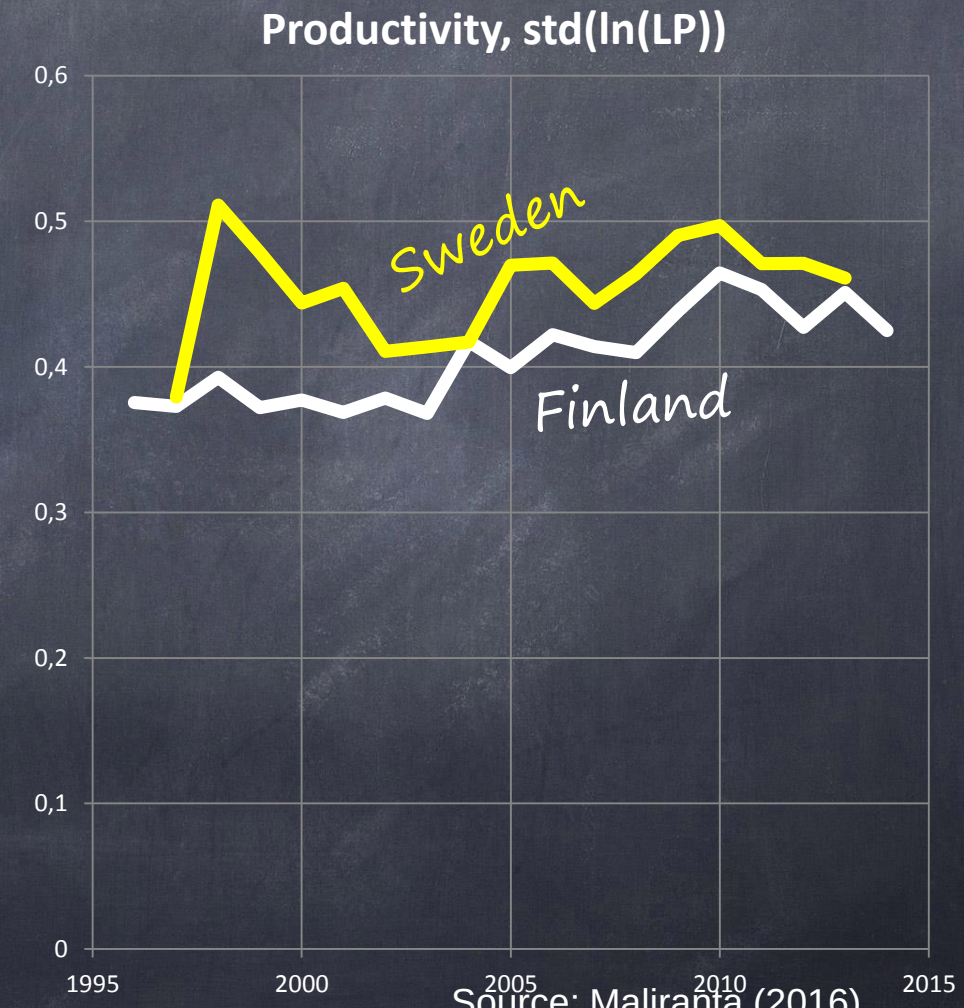
”Creative destruction” between firms, 2007=100

Within private service industries (normalized industry structures)



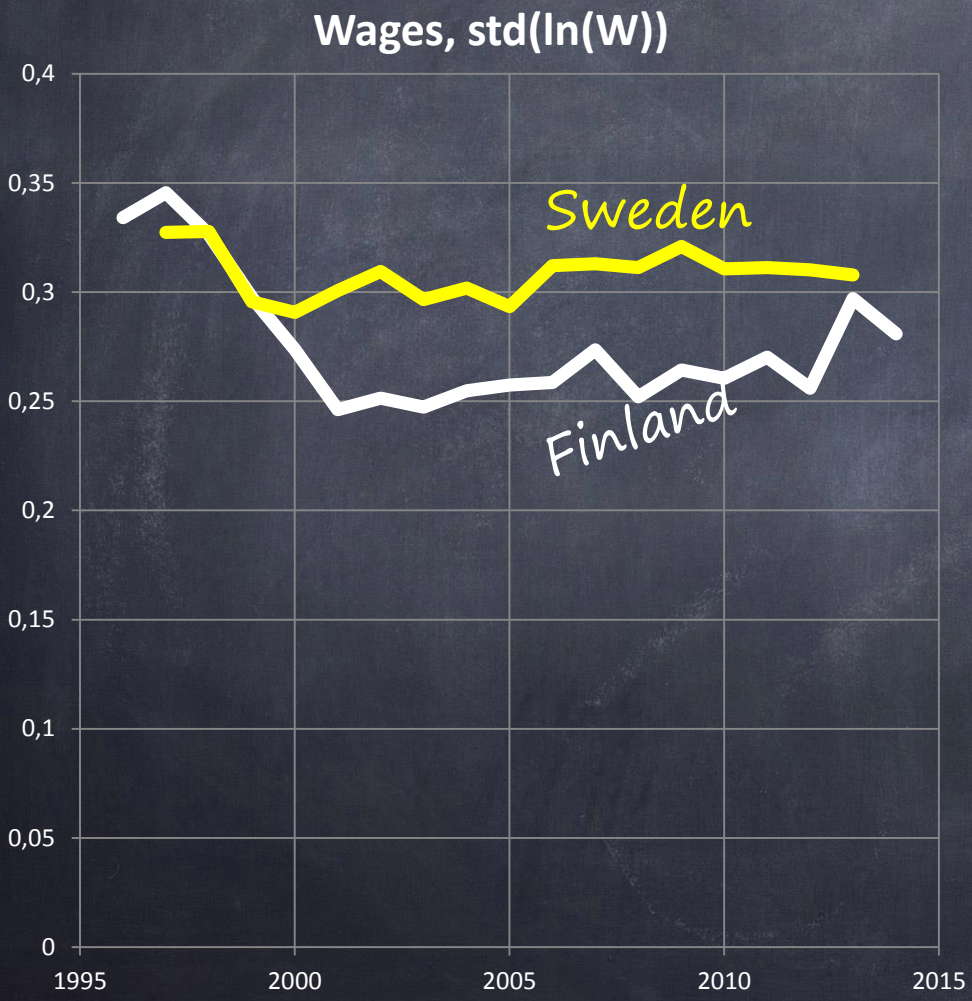
Dispersion between firms,
Within manufacturing industries

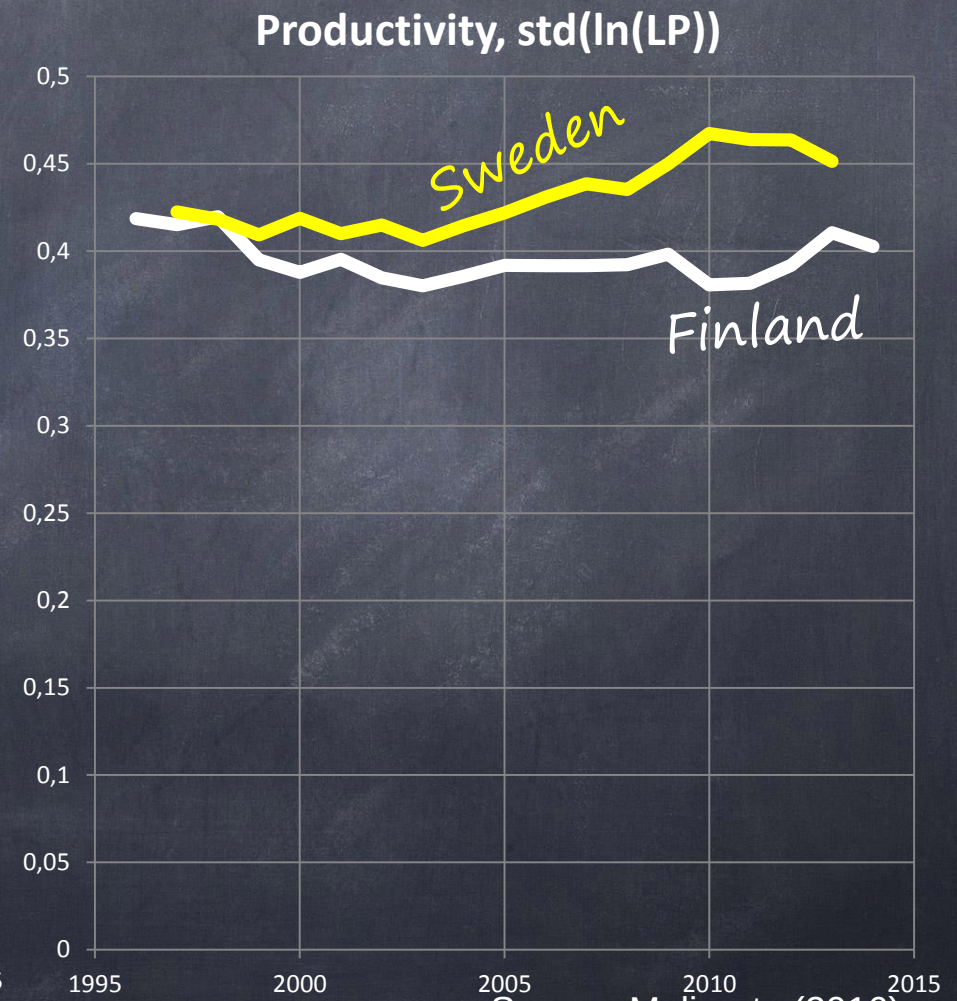




Source: Maliranta (2016)

Dispersion between firms,
Within private service industries



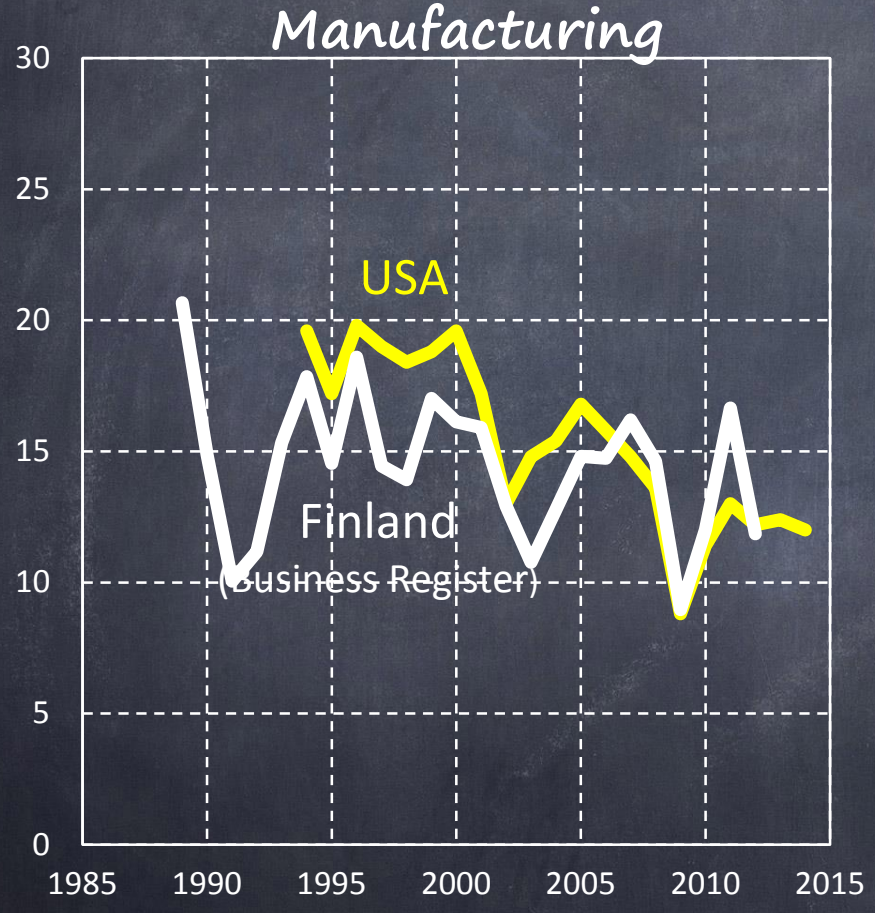


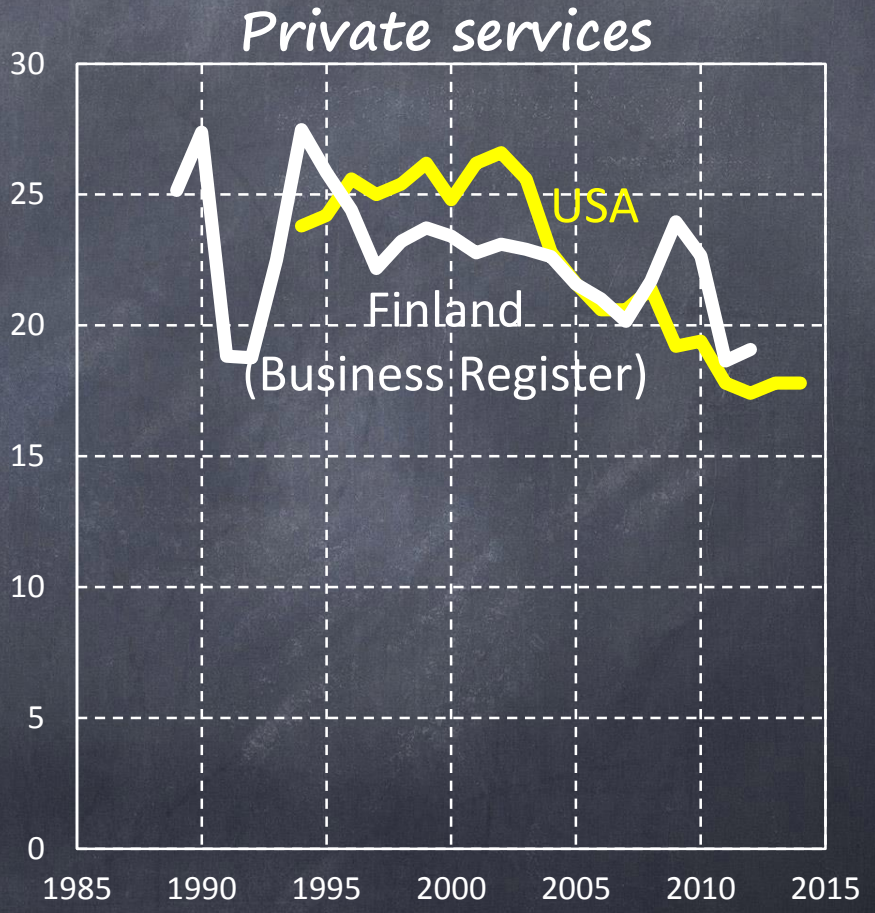
Source: Maliranta (2016)

Renewal of job structured has diminshed

”Excess job reallocation rate”, EJR, %

1989/1994 – 2012/2014, %





Sources: Bureau of Labor Statistics (USA) & computations from Business Register data, Statistics Finland

''Creative destruction'' by firm groups in Finland

Within business sector industries

Employment ja productivity micro-level decomposition,
Preliminary results

Table. Contribution of High Growth Firms and other firms to micro-level sources of output growth, within business sector industries, 2011-2014,

	OUTPUT	EMPLOYMENT			LABOUR PRODUCTIVITY							*FIRMS*
	Growth of real value added	Net job growth	Crea-tion	Destruc-tion	Aggregate productivity	Productivity growth within firms	Reallocation between firms	Entry	Exit	Cross-term of within component	Other cross-terms	*Avera ge size*
	(1)= (2)+(5)	**(2)= (3)-(4)**	**(3)**	(4)	**(5)=(6)+(7)+ (8)+(9)+(10)**	(6)	(7)	(8)	(9)	(10)	(11)	*(12)*
All firms	-1,9	-0,6	20,0	20,7	-1,3	-2,7	0,9	-1,4	1,2	0,6	0,0	
Contribution of …												
High growth firms, large	1,3	1,9	1,9		-0,6	-0,6	0,1			-0,1	0,0	*166*
High growth firms, small	2,2	3,1	3,1		-1,0	-0,6	-0,2			-0,1	0,0	*7*
Modest growth firms, large	1,3	2,7	2,7		-1,5	-1,7	0,3			-0,1	0,0	*202*
Modest growth firms, small	1,8	3,2	3,2		-1,4	-1,4	0,0			0,0	0,0	*8*
Modest decline firms, large	-2,5	-4,7		4,7	2,2	1,6	0,1			0,5	0,0	*327*
Modest decline firms, small	-2,7	-2,8		2,8	0,1	-0,3	0,2			0,1	0,0	*6*
Strong decline firms, large	-1,0	-1,6		1,6	0,5	0,2	0,2			0,1	0,0	*132*
Strong decline firms, large	-1,5	-2,1		2,1	0,5	0,1	0,2			0,2	0,0	*6*
Entry & exit, large firms	-0,9	-0,8	2,4	3,2	-0,1			-0,2	0,1	0,0	0,0	*n/a*
Entry & exit, small firms	0,2	0,3	6,6	6,3	-0,1			-1,1	1,1	0,0	0,0	*n/a*

Note: High growth firms have grown at least 20 % per year and strong decline firms declined at least 20 % per year in terms of employment. The number of jobs refers to the average number of employees in 2008 and 2011

Source: Maliranta (2016)

''Creative destruction'' by firm groups in FInland

Within business sector industries

The current contribution of the High Growth Firms of the previos period

Table. Contribution of firm groups of the previous period to the current micro-level sources of output growth, 2011- 2014, %

	OUTPUT	EMPLOYMENT			LABOUR PRODUCTIVITY						
	Growth of real value added	Net job growth	Creation	Destruction	Aggregate productivity	Productivity growth within firms	Reallocation between firms	Entry	Exit	Cross-term of within component	Other cross-terms
	(1)=(2)+(5)	(2)=(3)-(4)	(3)	(4)	(5)=(6)+(7)+(8) +(9)+(10)	(6)	(7)	(8)	(9)	(10)	(11)
All firms	-1,8	-0,2	20,8	21,0	-1,6	-2,8	0,9	-1,5	1,2	0,5	0,0
Contribution of …											
High growth firms, large	-0,5	-0,5	0,9	1,5	0,0	-0,1	0,1		0,0	0,0	0,0
High growth firms, small	0,0	0,0	1,4	1,4	0,0	-0,1	0,0		0,2	0,0	0,0
Modest growth firms, large	-1,0	-1,4	1,8	3,1	0,4	-0,4	0,4		0,1	0,2	0,0
Modest growth firms, small	-1,7	-1,3	2,3	3,6	-0,4	-1,0	0,2		0,2	0,1	0,0
Modest decline firms, large	-3,2	-2,7	1,0	3,7	-0,5	-0,7	0,1		-0,1	0,2	0,0
Modest decline firms, small	-2,3	-1,9	1,3	3,2	-0,4	-0,9	0,1		0,3	0,1	0,0
Strong decline firms, large	-0,1	-0,4	0,1	0,4	0,3	0,2	0,0		0,0	0,0	0,0
Strong decline firms, small	-0,3	-0,3	0,3	0,6	-0,1	-0,1	0,0		0,1	0,0	0,0
Large entrants	-0,3	-1,0	0,3	1,3	0,7	0,6	0,1		0,0	0,0	0,0
Small entrants	-0,2	-0,1	2,1	2,2	0,0	-0,2	-0,2		0,4	-0,1	0,0
New firms of this period	7,9	9,4	9,4		-1,5			-1,5			0,0

Source: Maliranta (2016)