

Occupational Exposure to Capital Embodied Technical Change

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Macroeconomic Consequences of Technological Change Workshop

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Overview

- **Capital-Embodied Technical Change (CETC):** progress comes through investment in new, better vintages of capital (Solow 1959).
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- This type of progress can drive growth.
- But how does it affect the labour market?
- This paper investigates CETC across *occupations*, and shows how it impacts labour reallocation.

Measuring CETC

- Need occupation-level capital stock!

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Brief Summary

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Empirical Results

- Changes in tool shares: new contribution!
- CETC: relative price of occupation-capital falls across the board.
- Elasticity of substitution estimates can help explain.

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Model

- Occupation-specific $K \rightarrow$ occupation-specific goods \rightarrow final good.
- CETC: different transformation rates across occupation-specific K .

1. “Occupations that use a larger variety of tools within a capital category will be allocated more capital.”
2. Tool shares vs Capital bundle shares.
3. Computer tools vs Communication tools.

Comments - Results

1. Linear interpolation of measures of occupational tools.
2. Changes in tool shares: would be interesting to see trends, rather than just 1977 vs. 2016 comparison.
3. Change in employment share vs CETC & Capital per worker: not much difference?

Changes in Occupational Employment Share

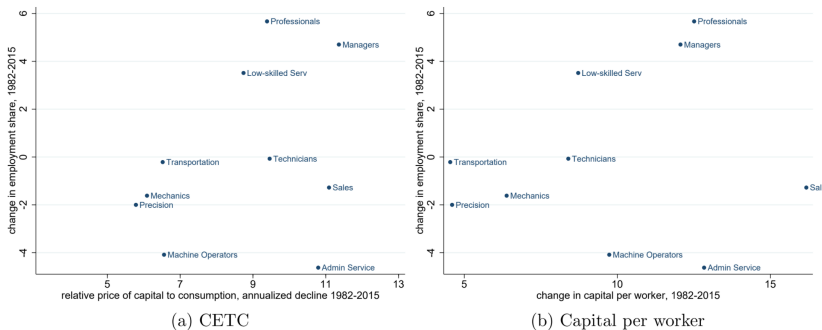


Figure 3: Employment shares by occupation.

Computers vs High CETC?

Table E.I: CETC and changes in the labor market 1982-2015.

	Wage growth per year	Wages	Employment share	
	(median, p.p.)		all	skilled work- ers
	(1)	(2)	% change 1982-2015 (3)	(4)
Panel A: All occupations				
	0.8	28.2	0.0	5.6
Panel B: Occupations ordered by change in capital-per-worker				
Bottom third	0.6	20.9	-4.5	3.5
Middle third	0.8	27.0	2.8	7.9
Upper third	1.0	38.3	1.6	7.6
Panel C: Occupations ordered by the type of capital with highest share				
Computer-intensive	0.9	35.1	-4.3	5.6
HCETC intensive	0.8	27.7	6.3	6.3
LCETC intensive	0.6	22.9	-2.1	3.5

Notes: Column (1) reports average wage changes for workers in a given category. Column (2) reports the change in the share of workers. Column (3) reports the change in the share of high-skill workers in a given category. Column (4) reports the change in the

1. Labour share decline: technology bias & labour-capital relationship.
2. CETC reallocation fits with other evidence.
3. In-sample test of CETC in model: (1) how well does model forecast when CETC is 'switched off'? (2) is there a risk of missing the middle-skill recession-induced job loss by starting in 2005?