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Firm strategies and distributional dynamics: Labour share in Italian medium-large firms

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Motivation of the study

Conceptual background and aims of the paper

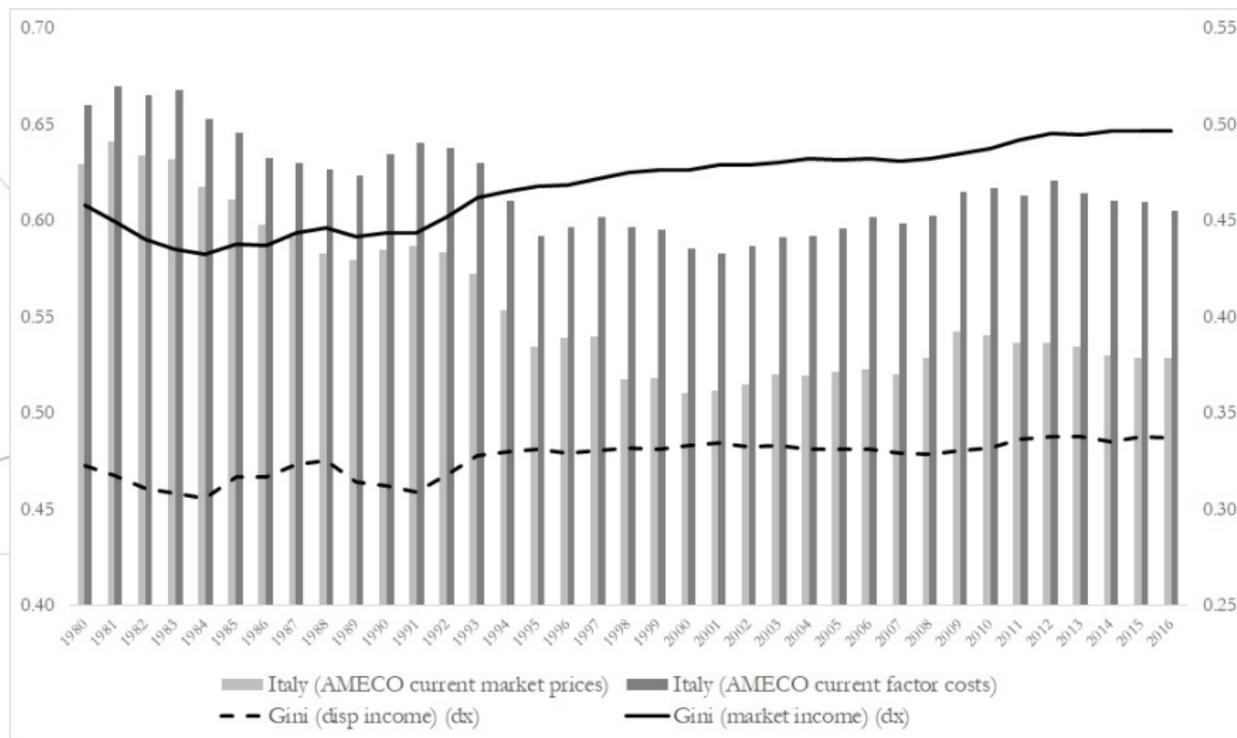
The RIL-Aida database

Empirical strategy

Results

Conclusions

Labour Share and Inequality over time



- ▶ Labour share has declined in all OECD countries reflecting an increasing profit share in total income (Elsby et al., 2013; Karabarbounis and Neiman, 2013; Piketty, 2015);
- ▶ Important consequences in terms of economic inequality (Atkinson, 2009; Glyn, 2009; Checchi and García-Peñalosa, 2010);
- ▶ The decline of labour share implies an increase in economic inequality in the developed world mainly because labour income is much more evenly distributed than non-labor income (Atkinson, 2009; Glyn, 2009; García-Peñalosa, 2010; Checchi and García-Peñalosa, 2010).

► Three main macro-drivers of labour share:

1. The role of **technological change**:

- 1.1 Capital-labour elasticity greater than one → the cost of capital relative to labour has fallen driven by declines in prices due to the introduction of ICT (Karabarbounis and Neiman, 2013);
- 1.2 Profits are driven by the ‘Schumpeterian’ effects of new products (Pianta and Tancioni, 2008);
- 1.3 “Winner-take-all markets” structures affect the distribution of income facilitating higher market concentration and higher market rents leading to labour share reduction (Guellec and Paunov, 2017; Barkai, 2016; Autor et al., 2017)

2. The role of **globalization** as a channel going from internationalization to changes in the labor share: offshoring (Epstein and Burke, 2001; Bogliacino et al., 2017); international trade (Guerriero and Sen, 2012; Autor et al., 2017) → need to be qualified in terms of skills

3. The role of **institutional factors** - union density, minimum wage legislation, unemployment benefits and coverage - deserve attention (Damiani et al., 2018; Bogliacino and Maestri, 2014; Hogrefe and Kappler, 2012) → bargaining between labour and capital

- ▶ Most empirical studies focusing on the determinants of the labour share are based either on **country data** (European Commission, 2007; Checchi and García-Peñalosa, 2010; Hogrefe and Kappler, 2012; Damiani et al., 2018) or **industry level data** (Azmat et al., 2012; Hutchinson and Persyn, 2012; Elsby et al., 2013; Alvarez-Cuadrado et al., 2014; Pianta and Tancioni, 2008; Bogliacino et al., 2017);
- ▶ Only few studies have focused on **firm-level data** (Growiec, 2012; Autor et al. 2017; Adrjan, 2018; Guschanski and Onaran, 2018)
- ▶ The lack of firm-level studies is due to the availability of adequate data including information on labour costs, value added, as well as, financial variables and other potential drivers for wage determinants;
- ▶ More recently, the analysis on the relationship between firm labor share and technology has been articulated at **local labour market level** (Ciarli et al., 2017; Adrjan, 2018).

- ▶ At the country level, several measurement issues need to be addressed (imputation of labour and capital income earned by entrepreneurs, unincorporated business and self-employment);
- ▶ A firm-level analysis enables to control for composition biases due to changes in the sectoral composition of the economy rather than by within-firm changes in labor share (Arpaia et al., 2009; Serres et al., 2001; Young, 2010; Elsbj et al., 2013);

⇒ To provide an analysis of the determinants of firm-level labor share (internal subdivision of rents) ;

⇒ To evaluate the impact of main drivers along the entire labor share distribution → We hypothesize different mechanisms at work among firms differentiated according to their labour share;

► We merge two sources of data:

1. *Rilevazione su Imprese e Lavoro* (RIL) dataset conducted by INAPP in 2010 and 2015 on a representative sample of Italian firms. Two repeated cross-sections
 - ⇒ Each wave interviews over 30.000 firms operating in non-agricultural private sector;
 - ⇒ The RIL data collects a rich set of information about the composition of the workforce, including the amount of training investments, hiring and separations, the use of flexible contractual arrangements, the asset of the industrial relations and other workplace characteristics;
2. AIDA archive provided by Bureau Van Dijk containing detailed information on investments, capital, value added and labour costs of almost all the Italian corporations operating in the private sector, except for the agricultural and financial industries;
 - ⇒ All financial variables have been deflated according to specific deflators (the index of industrial production) provided by the national statistics institute (ISTAT);

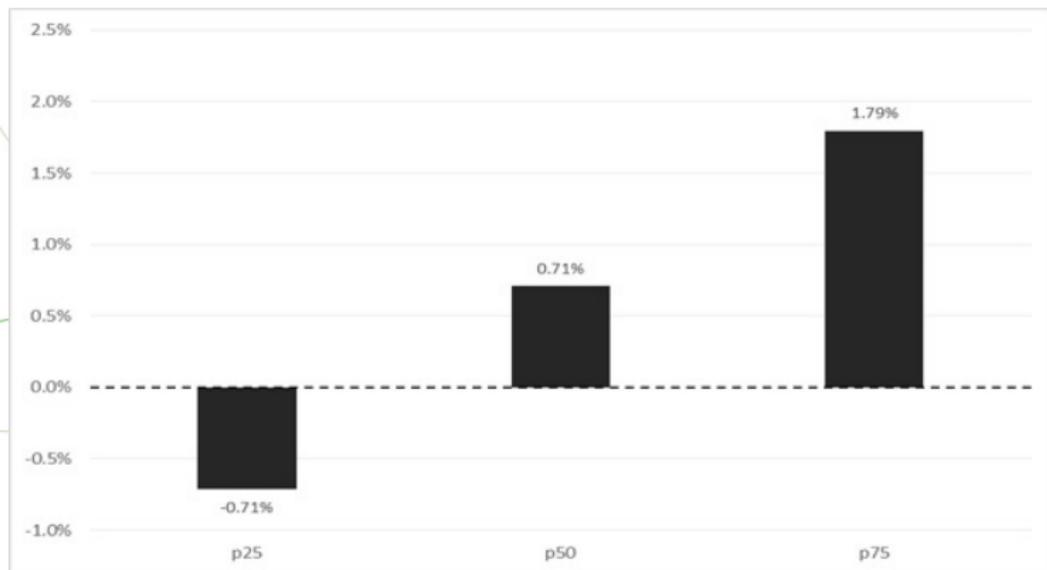
- ▶ The value of labour share is the core variable of our analysis and it is computed as:

$$\mathbf{LabourShare}_i = \frac{\mathbf{TotalLabourCosts}_i}{\mathbf{ValueAdded}_i}$$

⇒ We apply trimming at the top and bottom 0.5 percent of the labor share distribution to obtain a final sample of 6,810 firms (2,410 in 2010 and 4,400 in 2015) (Perugini et al., 2007);

- ▶ We consider only those firms with a positive value added over the period, and with at least 50 employees;

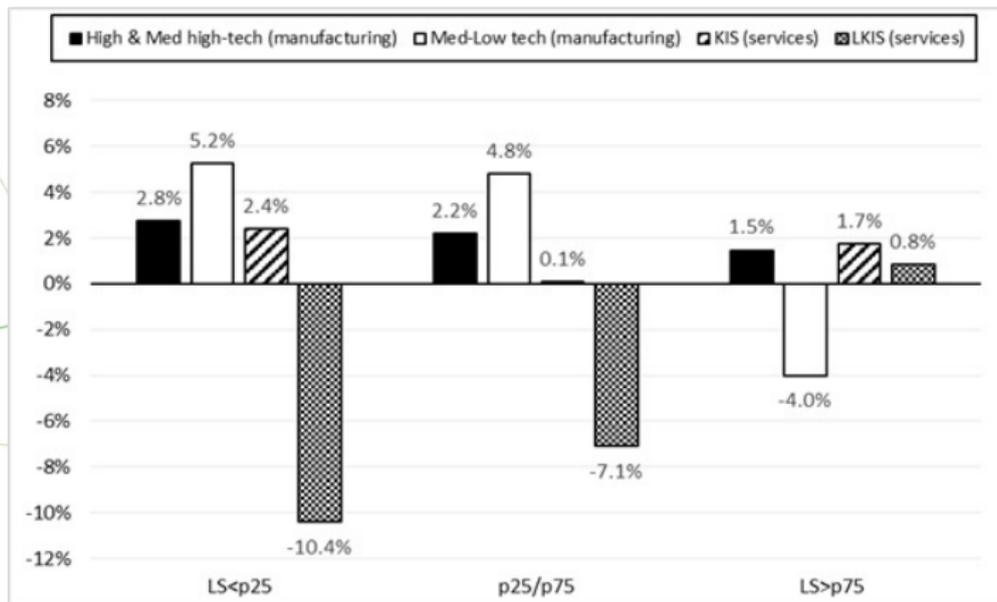
Figure: Percentage variation of labor share by main quantiles of labor share (2010 – 2015)



	2010				2015			
	Mean	p25	p50	p75	Mean	p25	p50	p75
Labor share	0.74	0.61	0.74	0.84	0.74	0.61	0.75	0.86
Total labor cost (per employee)	405.27	451.32	392.66	384.39	437.06	467.44	425.09	430.65
Value added (per employee)	640.13	1089.8	539.66	390.93	665.58	1056.93	579.62	446.1
K-L ratio	17,434.77	43,451.47	9,459.53	7,341.90	11,649.23	24,438.24	7,770.16	6,617.83

Mean characteristics by firm sample	2010				2015			
	Overall	< p25	p25/p75	>p75	Overall	< p25	p25/p75	> p75
Institutional settings								
Share of union members	21%	17%	21%	26%	17%	15%	17%	21%
Share of temporary workers	13%	12%	13%	11%	8%	9%	9%	7%
Technological patterns								
Process innovation	49%	54%	51%	39%	47%	55%	50%	33%
Product innovation	57%	57%	60%	49%	51%	58%	54%	39%
Internationalization strategies								
Outsourcing	4%	4%	3%	5%	9%	9%	11%	6%
FDI	11%	15%	9%	8%	10%	13%	10%	5%
Foreign group	12%	17%	12%	9%	11%	12%	10%	11%
Share of export	18%	21%	19%	15%	21%	27%	23%	12%
Observations	2,175	574	1,022	579	4,271	1,041	2,160	1,070

Figure: Percentage points variation of the sectoral composition of firms by main quantiles of labor share (2010 – 2015)



$$\log LS_i = \beta_0 + \beta_1 EXP_i + \beta_2 FDI_i + \beta_3 OUT_i + \beta_4 FG_i + \beta_5 PDI_i + \beta_6 PCI_i + \beta_7 UNION_i + \beta_8 TEMP_i + \alpha_n y_i + \gamma Z_j + \delta Y_r + \epsilon_i \quad (1)$$

Globalization { *EXP* Firm's export over the total value added
FDI Foreign Direct Investments
OUT Outsourcing part of its production
FG Firm belongs to a foreign group

Technologies { *PDI* Introduction of Product innovation
PCI Introduction of Process innovation

Institutions { *UNION* Share of workers affiliated to unions
TEMP Share of temporary workers

Other controls include: log Capital-Labor ratio, log employees, workforce composition by occupation, age and gender, education of manager.

Empirical strategy

We adopt a two-step empirical strategy:

- ▶ Firstly, we estimate equation (1) for the two different cross-sections at different quantiles of the labour share distribution (i.e. P25-P50-P75) using Unconditional Quantile Regression (UQR)
- ▶ Secondly, we implement a detailed decomposition à la Oaxaca-Blinder to distinguish between composition and unexplained effects for each covariate and quantile θ :

$$\Delta_{\theta} = \hat{\Delta}_{U,\theta} + \hat{\Delta}_{E,\theta} = (\hat{\beta}_{2015,\theta} - \hat{\beta}_{2010,\theta})\bar{X}_{2015} + (\bar{X}_{2015} - \bar{X}_{2010})\hat{\beta}_{2010,\theta}$$

- ▶ If $\text{cov}[x, \epsilon_i]$ does not vary between 2010 and 2015 (i.e. if the ignorability assumption holds) unexplained effects can be interpreted as causal effects (Firpo et al, 2011; Firpo et al. 2018)
- ▶ This assumption is weaker than strictly exogeneity assumption. Does it hold in our case? We are including many controls and decomposing labour share variations over a very small time period
- ▶ But... ignorability can not be tested!

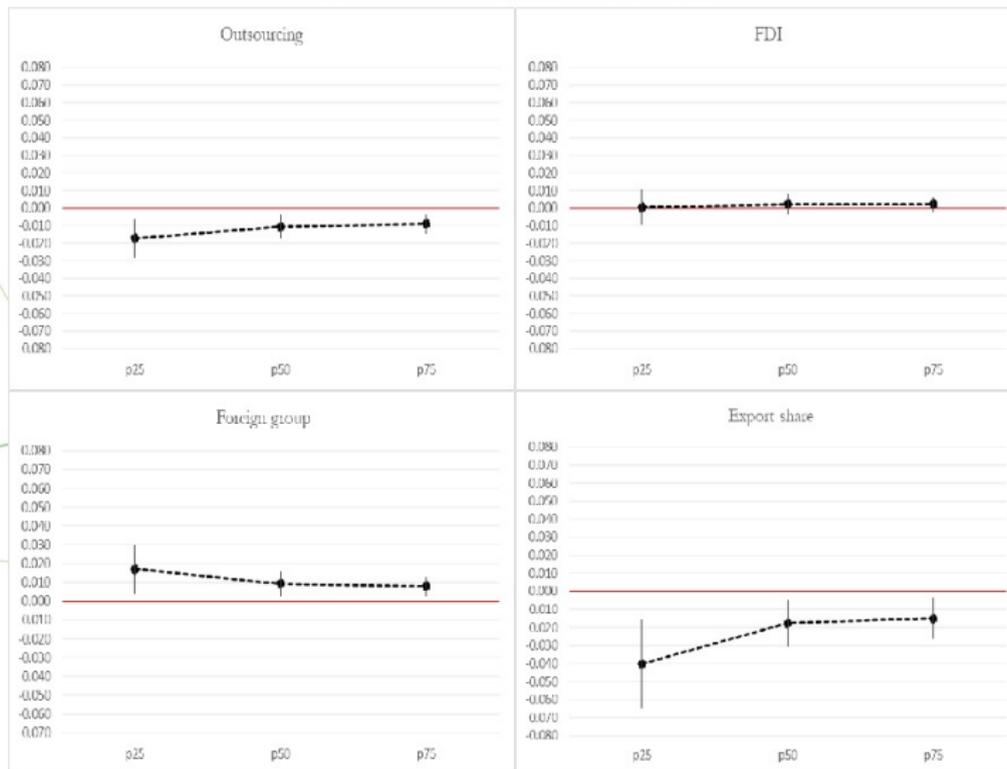
First step: RIF-regressions

	2010			2015		
	p25	p50	p75	p25	p50	p75
Internationalization strategies:						
Outsourcing	0.0651 [0.0790]	0.0475 [0.0445]	0.055 [0.0433]	0.0091 [0.0328]	-0.0161 [0.0194]	-0.0361** [0.0145]
FDI	-0.0871* [0.0524]	-0.0548* [0.0311]	-0.0207 [0.0243]	-0.0474 [0.0395]	-0.0422** [0.0202]	-0.0125 [0.0122]
Foreign group	-0.0408 [0.0611]	-0.0377 [0.0274]	-0.0338 [0.0257]	0.0714* [0.0429]	0.0276 [0.0210]	0.0378** [0.0154]
Share export	-0.0166 [0.0711]	0.0114 [0.0388]	0.0307 [0.0354]	-0.1587*** [0.0467]	-0.0903*** [0.0237]	-0.0436** [0.0185]
Institutional settings:						
Share of union members	0.3042*** [0.0704]	0.1737*** [0.0404]	0.1231** [0.0510]	0.1491*** [0.0530]	0.1551*** [0.0316]	0.1087*** [0.0309]
Share of temporary contracts	0.0513 [0.1099]	-0.1578*** [0.0521]	-0.1314** [0.0541]	-0.1710* [0.0975]	-0.1058** [0.0434]	-0.1540*** [0.0378]
Technological patterns:						
Process innovation	-0.0714* [0.0369]	-0.0524** [0.0205]	-0.0432* [0.0243]	-0.0283 [0.0271]	-0.0181 [0.0173]	-0.0327** [0.0143]
Product innovation	0.0788** [0.0388]	0.0244 [0.0206]	-0.0097 [0.0229]	-0.0158 [0.0231]	-0.0048 [0.0164]	-0.0082 [0.0123]
Obs.	2175	2175	2175	4271	4271	4271
Rsquared	0.1862	0.2176	0.183	0.1553	0.1959	0.2094

Notes: Other controls includes: log Capital-Labor ratio, log employees, workforce composition by occupation, age and gender, education of manager, 2-digit Ateco dummies, regional dummies

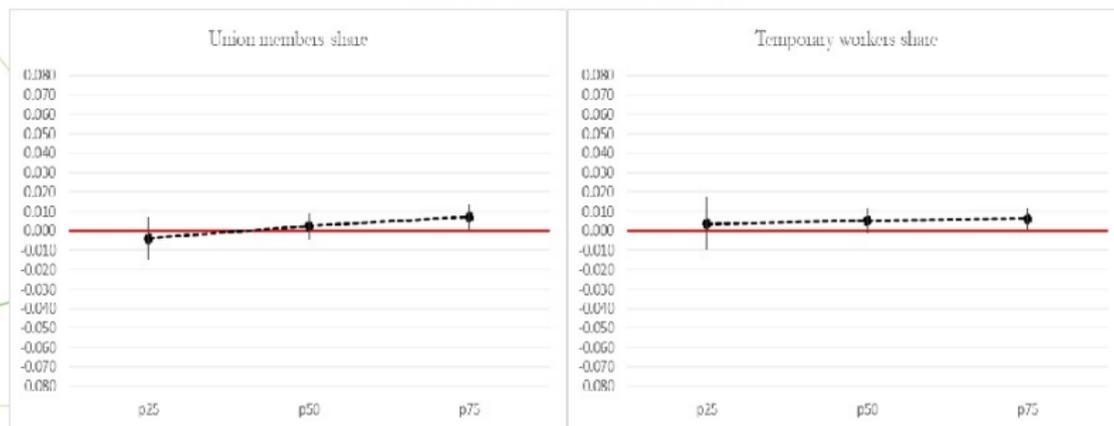
Detailed decomp.-unexplained effects (1)

Panel A: internationalization strategies



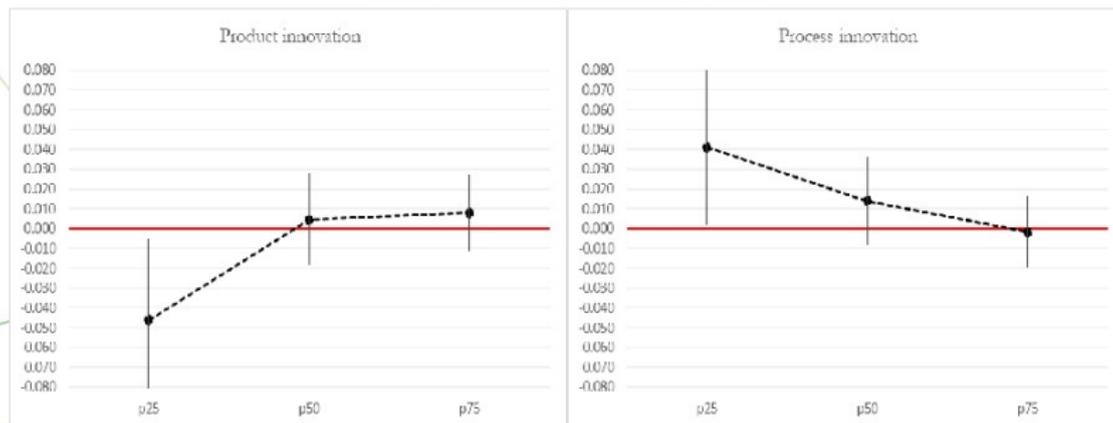
Detailed decomp.-unexplained effects (2)

Panel B: institutional settings



Detailed decomp.-unexplained effects (3)

Panel C: technological patterns



- ▶ The results suggest that over 2010-2015 changes in the labour share were mainly driven by outsourcing and export strategies;
- ▶ Over 2010-2015 being part of a foreign group pushes up the labour share with respect to firms not involved in international consortia;
- ▶ Innovation strategies have a significant effect only among firms at the bottom of the labour share distribution (more productive firms);
- ▶ Product innovation plays a crucial role pushing down the labour share, while process innovation drives up labor share;
- ▶ Unionization and temporary employment explain increases in labour share among less productive firms, while they are not significant at the bottom of the distribution.

- ▶ More productive and more capital-intensive firms (at the bottom of the labour share distribution) have been poorly redistributive over 2010-2015;
- ▶ The decomposition exercise shows that outsourcing production is the main strategy pursued by firms to contract labour share and this result holds along the entire distribution;
 - ⇒ A further improvement of the analysis would be to analyze a longer time span allowing us to shed lights on long-term structural factors impacting on firm labour share and consequently on how rents are subdivided within-firm.

CREDITS

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