

Flexible contracts, temporary jobs and worker performance: evidence from Italian firms

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Increasing Labor Market Flexibility - Boon or Bane? Nuremberg

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1 Motivation and Objectives

- 1 Motivation and Objectives
- 2 Theoretical and Institutional Background

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- 3 Empirical Strategy and Data

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- 2 Theoretical and Institutional Background
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- 4 **Results**

- 1 Motivation and Objectives
- 2 Theoretical and Institutional Background
- 3 Empirical Strategy and Data
- 4 Results
- 5 Robustness checks and alternative strategies

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- 2 Theoretical and Institutional Background
- 3 Empirical Strategy and Data
- 4 Results
- 5 Robustness checks and alternative strategies
- 6 **Conclusions and Open Issues**

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- In this presentation we will refer to two concepts of flexibility:
 - ① Compensation flexibility: decentralized wage bargaining
 - ② Contract (occupational) flexibility: use of temporary or “atypical” contracts
- We aim to empirically assess the effects of decentralized wage scheme on the one hand and temporary form of employment on the other on workers’ effort and firm performance.

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- Italian flexibility changes over last 20 years compared to OECD countries:
- Numerical flexibility in 1990 as assessed by EPL strictness: Italy was 4th out of 26 countries, while in 2008 was 25th out of 40 countries.
- Wage flexibility ranking didn't change a lot: Heylen (1993) rank Italy 12th out of 18 countries and the same is obtained in the meta-analysis of Clar et al. (2007)

Theoretical and institutional background

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- In the face of asymmetric information firms should tie the remuneration of employees to any verifiable (individual or collective) signal of performance.

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- Based on such a theoretical prediction, a number of studies in recent years have shown that, when implemented “wisely”, financial incentives have the potential to exert strong effects on indicators of firm performance, such as productivity (Lazear, 2000; Gielen et al., 2009) and worker absenteeism (Wilson and Peel, 1991; Brown et al., 1999).

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- In Italy, the possibility of using wage scheme in order to prevent workers from shirking hinges on the institutional framework and contractual arrangement.
- The 1993 Agreement (signed by national trade unions, Government and industrial associations) introduced a two stage bargaining system consisting of national-level bargaining (by economic sector) and local-level agreements.

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 - ③ Other bonus (generally related to individual performance)

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- The predictions on the effects of temporary forms of employment on effort and productivity is ambiguous.

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 - 3 External collaboration and agency workers

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- As econometric specification the framework is a simultaneous equation system estimated through a 3SLS.
- We use an observable proxy of effort (absenteeism) and estimate a model in which workers' effort and firm productivity are both observable and endogenous.

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- Objective measures of effort (absenteeism, disciplinary dismissals, etc.)
- Self reported measures of effort/motivation from employees survey

- Information on wages, workers absenteeism and characteristics of labour force at firm level collected by the Confindustria (Italian Manufacturing and Service Industries Association) surveys 2008 and 2009 for about 1900 observations (unbalanced panel with almost 2/3 of observations in 2009);

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- Information on the conditions of local labour markets;
- Information on union density by sector and localization.

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- employment flows (hires by type of contract, temporary lay-offs and conversion rates from temporary to permanent)
- **working time (including overtime hours and absenteeism).**

We start from a standard Cobb Douglas production function



$$Y_i = A_i K_i^\beta E_i^\alpha u_i$$

$$E_i = e_i \hat{L}_i$$

$$e_i = f(Z_i)$$

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- We distinguish between temporary and permanent workers, skilled and unskilled workers and white and blue collar.

Empirical strategy and Data

The empirical strategy becomes:



$$\ln Y = \ln A + \beta \ln K + \alpha \ln eL + \phi_T \frac{L_T}{L} + \phi_H \frac{L_H}{L} + \phi_w \frac{L_w}{L} + u$$

$$\ln e = \gamma'Z + \varepsilon$$

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- Further, by relaxing the assumption that blue collars and white collars are perfect substitute we obtain

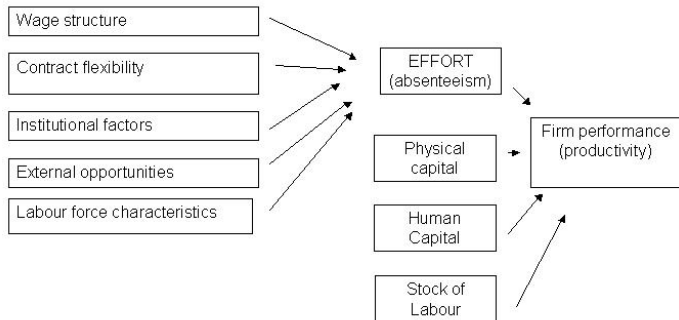


$$\ln Y = \ln A + \beta \ln K + \alpha_B \ln e_B L_B + \alpha_W \ln e_W L_W + \phi_T \frac{L_T}{L} + \phi_H \frac{L_H}{L}$$

$$\ln e_B = \gamma'_B Z_B + \varepsilon_B$$

$$\ln e_W = \gamma'_W Z_W + \varepsilon_W$$

3SLS



Production Function with two labour inputs	
	Coefficient
L_w	0.409***
L_b	0.186***
E_w	0.409***
E_b	0.186***
K	0.192***
sh_temp	-0.354
sh_degree	0.549**
sect_dummies	Yes
geographical dummies	Yes
obs	2103
R^2	0.88

Results

Effort function with two labour inputs	<i>White collars</i>	<i>Blue collars</i>
<i>Wage flexibility</i>		
Share variable wage premium	0.078**	-0.021
Share other wage premium	0.041	0.071
Superminimum differential	0.000	0.000
Seniority differential	-0.001	-0.001
<i>Numerical flexibility</i>		
Risk of dismissions	-0.034**	-0.001
Hiring rate	-0.005	0.003
Share of temporary hiring	-0.001	-0.007**
Share of temporary workers	-0.058***	-0.047***
Share of temporary workers*transitions	0.127**	0.133**
Share of apprenticeship workers	-0.013	-0.005
Share of apprenticeship workers*transitions	0.077	-0.188**
Share of collaborators	0.007	-0.020*
Share of interinal workers	-0.000	0.001***

Results

Effort function with two labour inputs	<i>White collars</i>	<i>Blue collars</i>
<i>Institutional characteristics</i>		
Art. 18	0.004	0.000
Union rate	0.001	0.001
Unemployment rate	0.001	0.001
Dummy Centre	-0.002	-0.002
Dummy North	0.002	-0.001
<i>Labour force and firm characteristics</i>		
Share of part-time workers	-0.006	-0.007
Presence of a supervisor	0.000	-0.006**
Share of women	-0.018***	-0.024***
Share of white collars workers	-0.007	0.039***
Firm size	-0.014***	-0.019***
Firm size squared	0.001**	0.001**
Sectorial dummies	Yes	Yes
R^2	0.15	0.18

Results

Effort function with two labour inputs F.D.	<i>White collars</i>	<i>Blue collars</i>
<i>Wage flexibility</i>		
Share variable wage premium	0.189**	-0.009
Share other wage premium	0.071	0.000
Superminimum differential	0.005**	-0.001
Seniority differential	-0.008	-0.006
<i>Numerical flexibility</i>		
Risk of dismissions	0.037**	0.041*
Hiring rate	0.001	0.005
Share of temporary hiring	0.006	0.002
Share of temporary workers	-0.228**	-0.106
Share of temporary workers*transitions	0.437**	0.332**
Share of apprenticeship workers	-0.096	-0.003
Share of apprenticeship workers*transitions	0.057	-0.205
Share of collaborators	0.005	0.009
Share of interinal workers	-0.000	0.000

Effort function with two labour inputs F.D.	<i>White collars</i>	<i>Blue collars</i>
<i>Institutional characteristics</i>		
Unemployment rate	0.001	0.001
Dummy Centre	-0.002	-0.002
Dummy North	0.002	-0.001
<i>Labour force and firm characteristics</i>		
Share of part-time workers	0.010	-0.015
Share of women	-0.017	-0.045*
Share of white collars workers	-0.019	0.025
Firm size	-0.015	-0.028**
Firm size squared	0.001*	0.002**
Sectorial dummies	Yes	Yes
Observations	356	356
R^2	0.15	0.18

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- We may miss specific-time invariant component and this may weaken the results
- The effort may be poorly observed through the simple absenteeism
- Unfortunately, the nature of the database do not allow us to use panel estimation to get fixed effects

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- We have production function data for a longer period with respect to firm wage strategy and characteristics.
- It means that we start with a production function like:
- $Y_{i,t} = \alpha K_{i,t} + \beta E_{i,t} + \delta Z_i + \theta_i + \epsilon_{i,t}$

- We may get the $\delta Z_i + v_i + \varepsilon_{i,t}$ term and then average over time to eliminate the $\varepsilon_{i,t}$ term.

Robustness checks and alternative strategies

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- This way we are able to estimate the second step without the possible sources of biases arising from capital and labour correlations with time invariant effect v_i .
- In order to run the first step we use the GMM procedure highlighted in Blundell and Bond (2000) that show how other panel estimators than the system give too low values of production factors coefficients.

Twostep GMM results	
First step	Value added 2000-2009
L	0.491***
K	0.359***
year_dummies	Yes
Common factor test (prob.)	0.21
Sargan difference (prob.)	0.29
Second step	Averaged residuals
Share variable wage premium	0.457**
Share other wage premium	-0.066
Superminimum differentials	0.007**
Share of graduate workers	0.299***
Share of temporary workers	0.221**
Share of temporary workers*transitions	0.887***
R^2	0.082

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 - **Institutional characteristics**

The structural equations are quite similar, except than for the fact we have unobserved variables:



$$\begin{aligned} \ln Y &= \ln A + \beta \ln K + \alpha \ln L + \zeta \ln e + \vartheta \ln h + v \\ e &= \theta_1 \eta_1 + \theta_2 \eta_2 + \theta_3 \eta_3 + \theta_4 \eta_4 + v \end{aligned}$$

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- where:

- e is the latent endogenous variable effort; η_s are the exogenous latent variables wage structure, contract flexibility and firm characteristics respectively; y is productivity, l and k are the labour and capital inputs, z is a vector of exogenous variables.

The relationships among latent and observed variables are given by the measurement model.



$$x_j = \varphi_i \eta_j + \omega_j$$

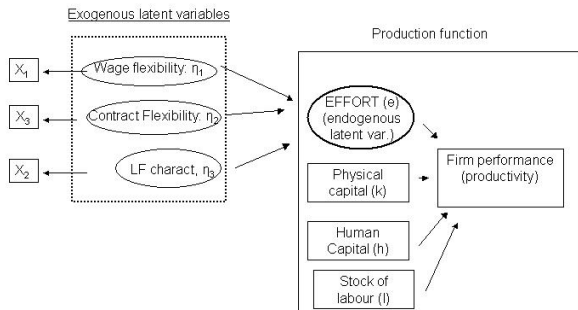
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- η_j are not observed while the vectors x_j of observed variables are available.

SEM



SEM results		
	Survey 2008	Survey 2009
K	0.264***	0.239***
L	0.697***	0.437***
sh_degree	0.070***	0.069***
effort	0.093***	0.324
Goodness of fit	0.75	0.79
χ^2	0.000	0.000

Results

SEM results	Survey 2008	Survey 2009
<i>Effort determinants</i>		
Wage flexibility	0.814**	0.219
Numerical flexibility	-0.467*	-0.049
<i>Wage flexibility</i>		
Seniority differentials	0.218***	0.006
Superminimum differentials	0.171***	0.005
Share of variable wage premium	0.205***	0.197***
<i>Numerical flexibility</i>		
Share of fixed term workers	0.288***	0.124***
Share of part-time workers	0.141**	-0.017
Share of collaborators	0.044	0.205***
Share of atypical workers	-0.076	-0.053
Share fired or dismissed workers	-0.118*	-0.016

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Conclusions and Open Issues

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- White collars are more responsive to monetary incentives than blue collars
- Temporary contracts increases the feeling of precariousness inside the firm and reduce permanent workers' effort.
- The use of alternative specifications do not reduce these evidences.

Comments are welcome

Thank you!