

THE PERFORMANCE OF ITALIAN INDUSTRIAL DISTRICTS IN AND OUT OF THE 2008-2012 CRISIS

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The background evidence

- ▶ A positive performance differential in favour of IDs (the “district effect”) has been documented in the past, roughly up to the end of the 1990s.
- ▶ In the new and more challenging competitive environment brought by the globalization and the IT revolution, the performance of ID firms has deteriorated, even more than in the Italian manufacturing industry as a whole, leading to a fading of the “district effect”.

The background evidence

- ▶ In this new and challenging environment, the entire Italian manufacturing sector went through important structural adjustments.
- ▶ The heightened global competitive pressures sustained a significant reallocation of resources to the best performers.
- ▶ The long recession that followed the global financial crisis triggered further improvements in allocative efficiency, the entry of more selected firms and an increase in R&D intensity (Bugamelli et al., 2018).

The background evidence

- ▶ The structural features of Italian IDs have also undergone deep changes.
- ▶ The participation to global value chains, in place of traditional local supply chains, has markedly increased (Sopranzetti, 2018, De Marchi et al., 2019, Giuliani and Rabellotti, 2019).
- ▶ Economies internal to the firm have become more crucial, compared to external economies stemming from the spatial concentration of economic activity in specific production chains (MAR externalities).
- ▶ Since medium and large size enterprises are better able to profit from internal economies, they have gained a growing role within IDs (Cucculelli and Storai, 2018).

The research questions

- ▶ 1. Have structural modifications in IDs made it possible to interrupt and reverse the decline in the IDs productivity premium observed prior to the Crisis?
- ▶ 2. Are specialization externalities still important in sustaining firm performance in IDs?
- ▶ 3. Have medium and large size firms actually gained relevance in fostering productivity in IDs?

The contribution to the literature

- ▶ The entire ID population, not individual districts, is considered.
- ▶ The analysis is extended to the period following the Great Recession.
- ▶ Performance is measured by firm-level productivity, in line with the theoretical literature on selection and trade with heterogeneous firms.
- ▶ The set of reference areas is carefully selected (instead of “IDs vs. everything else”).

The empirical setting of the study

▶ Identifying IDs

- ▶ We start from the usual **Sforzi-Istat classification**, based on the 2011 map of local labour market areas: 141 IDs identified, out of 641 LLMAAs.
- ▶ We add **large-firm districual LLMAAs**, that, apart from a higher share of manufacturing employment in large firms, possess features similar to IDs in the main local industry.

▶ Selecting the reference areas

- ▶ We exclude from the reference groups **large urban areas** (pop. > 500.000). The latter possess structural features that clearly set them apart (e.g.: much higher labour force education and local supply of KIBS)
- ▶ The reference group thus includes:
 - ▶ 1) large-firm manufacturing LLMAAs
 - ▶ 2) SME-based manufacturing LLMAAs that do not qualify as IDs (lack of specialization)
 - ▶ 3) non manufacturing LLMAAs with less than 500.000 residents

The dataset

- ▶ The firm-level dataset on which we base our empirical analyses pools balance sheet data from the Cerved company accounts database, with data on the number and on the classification of the firm employees from the INPS database.
- ▶ After trimming observations to eliminate outliers, the resulting panel dataset is finally composed of about 55.000 corporations, of which about 34.000 are located in IDs, with yearly observations for the entire 2003-2017 period.

The dataset

Sample statistics

Time period	Industrial districts			Other LLMAs (1)		
		Of which: core ID industry	Of which: Non-core ID industries		Of which: Other manufacturi ng LLMAs	Of which: Non manufacturi ng LLMAs
	Number of firms in the sample (units) (2)					
2003-2017	34,274	12,522	21,752	20,291	4,974	15,317
	Firm size (units)					
2003-2017	30,1	31,1	29,5	27,5	38,6	23,9
	Small firms employment share (percentage points)					
2003-2017	39,5	38,7	40,2	39,8	30,8	44,5

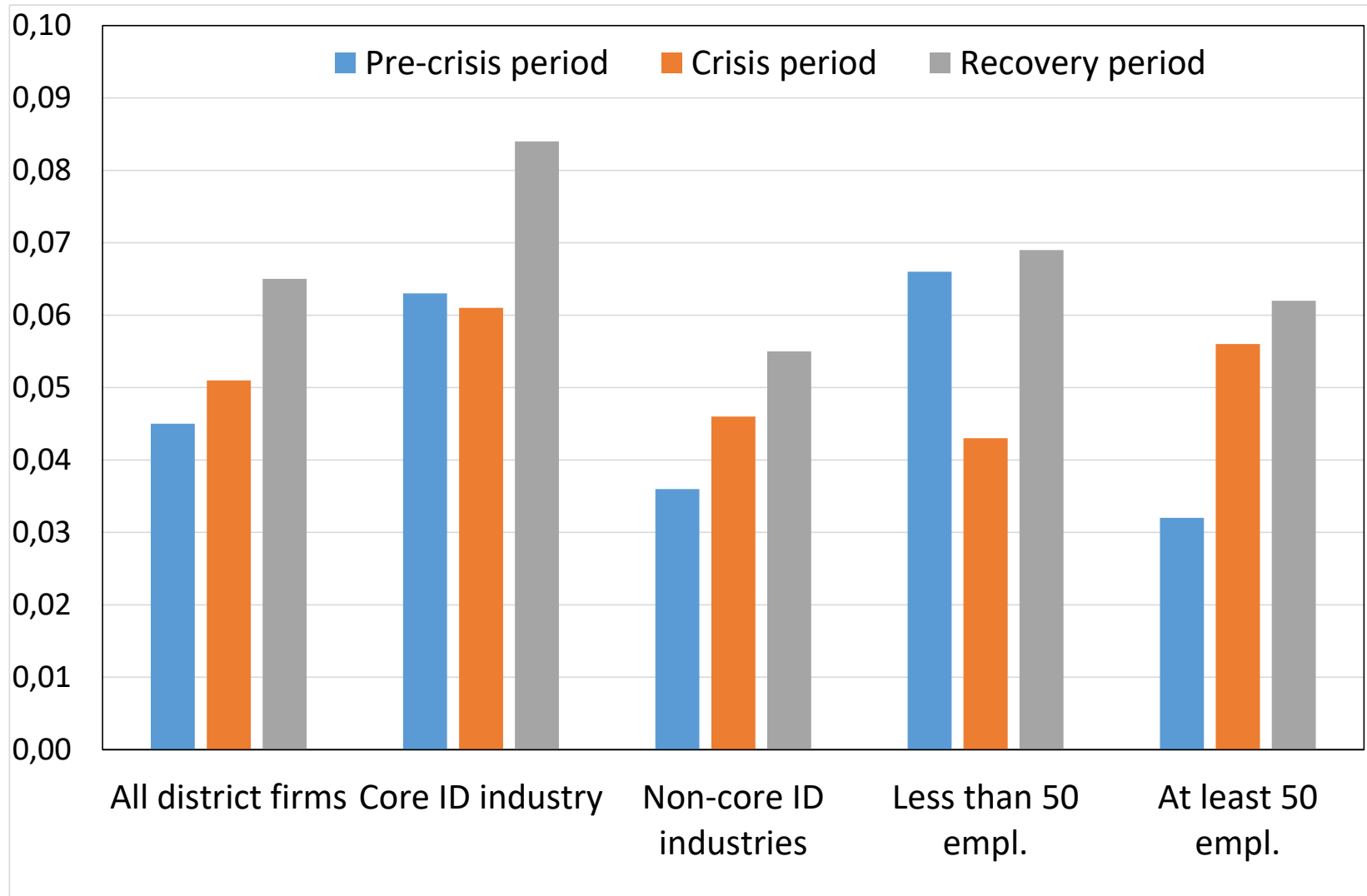
The baseline econometric results

- ▶ The following baseline estimating equation was considered

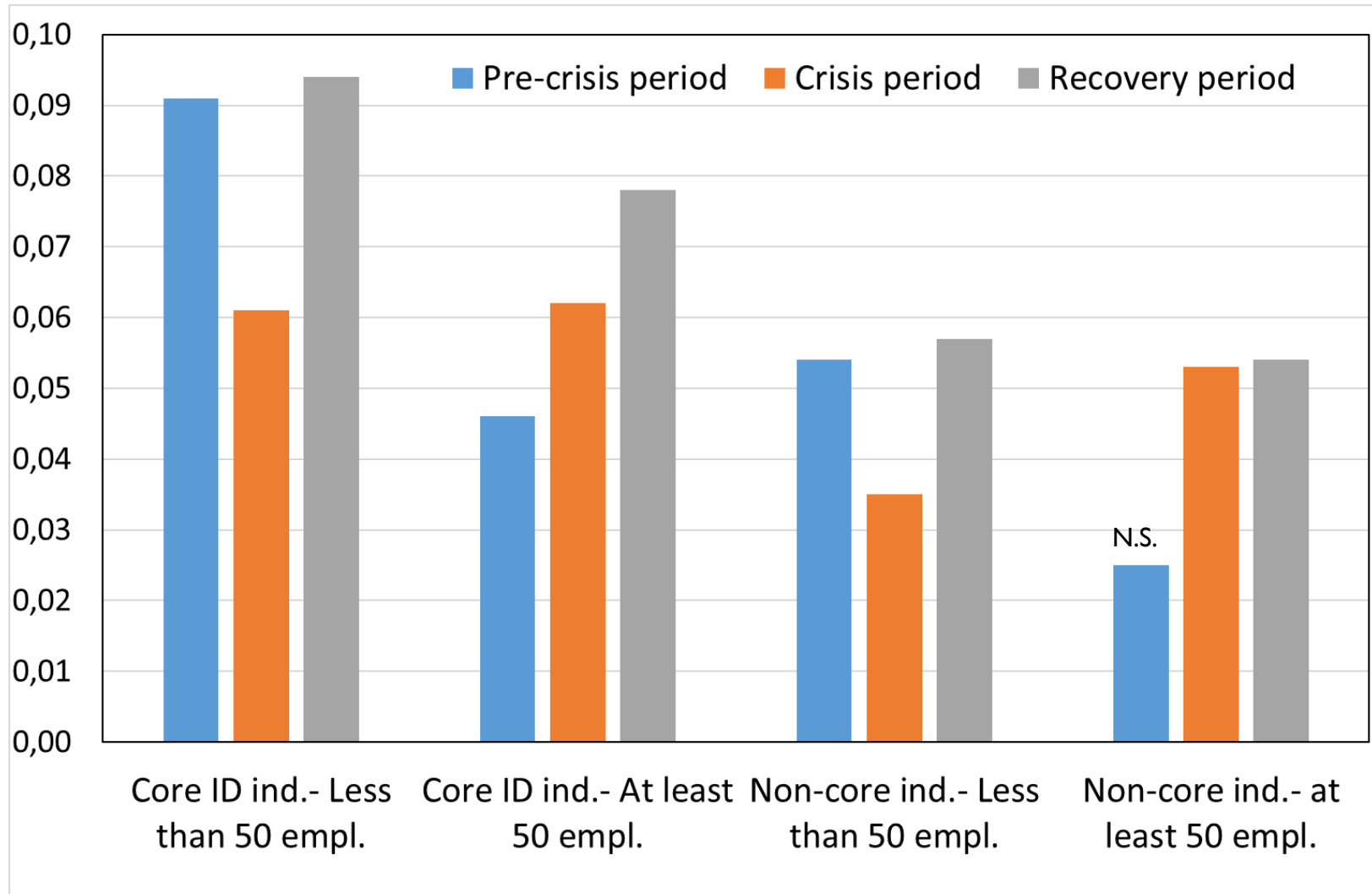
$$Y_{it} = Constant + \alpha District + X'\beta + u_{it}$$

- ▶ where Y_{it} denotes the log of labour productivity (real value added per employee), $District$ is a binary dummy identifying firms belonging to IDs and X is a set of controls, including (in the baseline model) year, area, sector and firm size dummies and the interaction of the latter with time dummies, in order to allow for area, sector and size specific time trends.
- ▶ observations are weighted by firm employment, in order to allow larger firms to contribute to the estimation of the average productivity differential in accordance with their actual contribution to the aggregate output of the LLMA.

The estimated ID productivity differential



The estimated ID productivity differential



The ID productivity differential by industry class

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
	Fashion and luxury goods					
District	0.110***		0.146***		0.118**	
	[0.026]		[0.037]		[0.046]	
of which:						
Core ID ind.- Less than 50 empl.	0.196***		0.157***		0.176***	
	[0.020]		[0.021]		[0.023]	
Core ID ind.- At least 50 empl.	0.096**		0.203***		0.142*	
	[0.043]		[0.067]		[0.081]	
Non-core ind.- Less than 50 empl.	0.092***		0.056***		0.075***	
	[0.021]		[0.021]		[0.023]	
Non-core ind.- at least 50 empl.	0.070		0.131*		0.066	
	[0.048]		[0.067]		[0.074]	
Observations	56899	56899	35745	35745	38063	38063
R-squared	0.203	0.206	0.197	0.201	0.216	0.220

The ID productivity differential by industry class

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
Food and beverages						
District	0.128**		0.134**		0.088*	
	[0.056]		[0.057]		[0.051]	
of which:						
Core ID ind.- Less than 50 empl.		0.210***		0.184***		0.243***
		[0.040]		[0.042]		[0.042]
Core ID ind.- At least 50 empl.		0.265**		0.241**		0.143
		[0.117]		[0.118]		[0.118]
Non-core ind.- Less than 50 empl.		0.054**		0.064**		0.117***
		[0.026]		[0.026]		[0.025]
Non-core ind.- at least 50 empl.		0.075		0.116		0.012
		[0.060]		[0.071]		[0.067]
Observations	27034	27034	22165	22165	27056	27056
R-squared	0.190	0.200	0.232	0.237	0.247	0.253



The ID productivity differential by industry class

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
Machinery, equipment and metals						
District	0.043***		0.023		0.057***	
	[0.016]		[0.020]		[0.016]	
of which:						
Core ID ind.- Less than 50 empl.		0.063***		0.015		0.055***
		[0.011]		[0.012]		[0.011]
Core ID ind.- At least 50 empl.		0.044		-0.008		0.036
		[0.028]		[0.041]		[0.029]
Non-core ind.- Less than 50 empl.		0.049***		0.027***		0.047***
		[0.009]		[0.009]		[0.008]
Non-core ind.- at least 50 empl.		0.033		0.039		0.076***
		[0.026]		[0.032]		[0.026]
Observations	133157	133157	105066	105066	116588	116588
R-squared	0.204	0.204	0.146	0.146	0.181	0.182

The ID productivity differential by industry class

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
	Furniture and home goods					
District	-0.034		-0.001		0.047	
	[0.021]		[0.026]		[0.031]	
of which:						
Core ID ind.- Less than 50 empl.		-0.076***		-0.077***		-0.038*
		[0.016]		[0.019]		[0.022]
Core ID ind.- At least 50 empl.		-0.084**		0.012		0.112*
		[0.039]		[0.051]		[0.059]
Non-core ind.- Less than 50 empl.		0.015		-0.002		0.011
		[0.013]		[0.015]		[0.019]
Non-core ind.- at least 50 empl		-0.017		0.032		0.071
		[0.039]		[0.051]		[0.058]
Observations	49578	49578	36255	36255	35491	35491
R-squared	0.290	0.294	0.198	0.199	0.246	0.249

The ID productivity differential by industry class

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
	Chemical and paper products					
District	0.039		0.049		0.044*	
	[0.035]		[0.033]		[0.024]	
of which:						
Core ID ind.- Less than 50 empl.		0.150***		0.097***		0.081***
		[0.028]		[0.032]		[0.028]
Core ID ind.- At least 50 empl.		0.090		0.069		0.072
		[0.059]		[0.056]		[0.057]
Non-core ind.- Less than 50 empl.		0.063***		0.059***		0.060***
		[0.016]		[0.017]		[0.015]
Non-core ind.- at least 50 empl.		0.016		0.039		0.031
		[0.055]		[0.052]		[0.033]
Observations	53017	53017	39114	39114	43255	43255
R-squared	0.320	0.322	0.275	0.275	0.327	0.327



Robustness checks

- ▶ The empirical findings on the evolution of the «district effect» have been checked through an extensive set of robustness checks, regarding
 - ▶ the identification of IDs and of the reference areas
 - ▶ controlling for firm-level capital endowments or
 - ▶ the inclusion of smallest firms in the sample
- ▶ In all cases the qualitative findings of the baseline results are confirmed
- ▶ The IDs strongest performance, in particular, is confirmed also when including only manufacturing-base LLMAs in the reference group and when measuring performance via the wage bill.

Robustness checks

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
	(f) including only manufacturing LLMA in the reference group					
District	0.034**		0.030		0.063***	
	[0.017]		[0.020]		[0.019]	
of which:						
Core ID ind.- Less than 50 empl.		0.073***		0.036***		0.068***
		[0.009]		[0.010]		[0.010]
Core ID ind.- At least 50 empl.		0.037		0.045		0.087***
		[0.027]		[0.037]		[0.032]
Non-core ind.- Less than 50 empl.		0.041***		0.014		0.035***
		[0.008]		[0.009]		[0.009]
Non-core ind.- at least 50 empl		0.020		0.031		0.064**
		[0.025]		[0.031]		[0.028]
Observations	231838	231838	169870	169870	187014	187014
R-squared	0.268	0.268	0.234	0.234	0.249	0.250

Robustness checks

VARIABLES	Pre-crisis period		Crisis period		Recovery period	
	(i) dependent variable: labour cost per employee					
District	0.023***		0.027***		0.039***	
	[0.004]		[0.005]		[0.004]	
of which:						
Core ID ind.- Less than 50 empl.		0.064***		0.060***		0.075***
		[0.003]		[0.004]		[0.004]
Core ID ind.- At least 50 empl.		0.015**		0.021*		0.034***
		[0.007]		[0.011]		[0.008]
Non-core ind.- Less than 50 empl.		0.045***		0.041***		0.052***
		[0.003]		[0.003]		[0.003]
Non-core ind.- at least 50 empl		-0.003		0.005		0.019***
		[0.007]		[0.009]		[0.007]
Human capital	0.518***	0.519***	0.462***	0.462***	0.411***	0.412***
	[0.010]	[0.010]	[0.017]	[0.017]	[0.013]	[0.013]
Observations	287068	287068	214156	214156	233636	233636
R-squared	0.610	0.612	0.532	0.534	0.542	0.543

The differential in human capital endowments

- ▶ When measured by the white-collar share of firm employment no significant differentials are estimated for human capital
- ▶ A catching-up of human capital, however, is observed when focusing on the higher-educated share of the labour force employed in IDs

Graduate workers in IDs: estimation results from linear probability models

VARIABLES	2002-2016	2002-2008	2010-2016
District	-0.0178** (0.0064)	-0.0250** (0.0083)	-0.0087 (0.0101)
Observations	11662	7162	4500
R-squared	0.0069	0.0065	0.010

The regressors include a full set of geographical area dummies. Observations are weighted by the sampling design weights. Robust standard errors in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Summary

- ▶ 1. Structural modifications in IDs appear to have made it possible to reverse the decline in the IDs productivity premium.
- ▶ 2. Specialization externalities have maintained an important role in sustaining firm performance, but not for all IDs (only in those specializing in more traditional sectors) and not for all firms (small firms appear to benefit more).
- ▶ 3. The contribution of medium and large size firms to aggregate productivity in IDs has increased. For this class of ID firms internal factors (endowments of tangible and intangible assets, organizational features) appear to have gained relevance.

Thank you for your attention