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formazione, ricerca e innovazione

Collective Bargaining, Cost of Living and Urban Wage Premia

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The Urban Wage Premium

- Wide literature on the Urban Wage Premium (UWP)
- UWP estimates positive in basically all countries

- Possible explanations:
- **Urbanizations externalities and spillovers**
- **Learning and Human capital accumulation**
- **Sorting.** Best workers and best firms are more likely to be located in urban areas
- **Matching.** Better quality of the match in dense areas, due to thicker labour markets.

Goal of the paper

- Main goal: identifying the role played by centralized wage setting on the urban wage premium (UWP).
 - Centralized wage setting tends to make wages homogenous along the space dimension
 - Cost of living highly heterogeneous in the space dimension, between urban and rural areas
- to address the impact of centralized wage setting on the UWP it is crucial to derive measures of local cost of living

Hence, two additional pillars in the paper: centralized wage setting and local cost of living

1° Pillar: Collective Bargaining

- **Hot policy debate** in many countries:
 - Macron is reforming the French system.
 - Many recent reforms in Germany, Spain, Portugal, Greece.
- In around two-thirds of OECD countries, collective bargaining takes place mainly at firm level.
- Sector-level agreements play a significant role only in continental European countries. Still very high heterogeneity in Europe.

Collective Bargaining in Europe

- OECD (2017) identifies three main European groups:
- The Scandinavian countries: sectoral agreements define the broad framework but leave considerable scope for bargaining at the firm level.
- Countries like Germany, Austria and more recently Spain: sector-level agreements dominate but still firm-level agreements can apply less favourable terms for employees (opting out, ‘in peius’).
- Third group of countries (including Italy, Slovenia and Portugal) sectoral bargaining strictly dominates: firm level bargaining can only improve the standards set at sector level (**“in melius” or “favourability principle”**).

2° Pillar: Cost of living and the *urban wage premium*

- Most of the papers in the literature analyzes the urban wage premium assuming a **uniform cost of living across locations**
- This is surprising: local prices are very diverse across regions and between urban and non-urban areas.
- Very few papers in the literature: Glaeser and Mare (2001), Yankow (2006), Blien et al (2011): when controlling for cost of living UWP remain positive but decreases (even close to zero).

Why is Italy a perfect case study

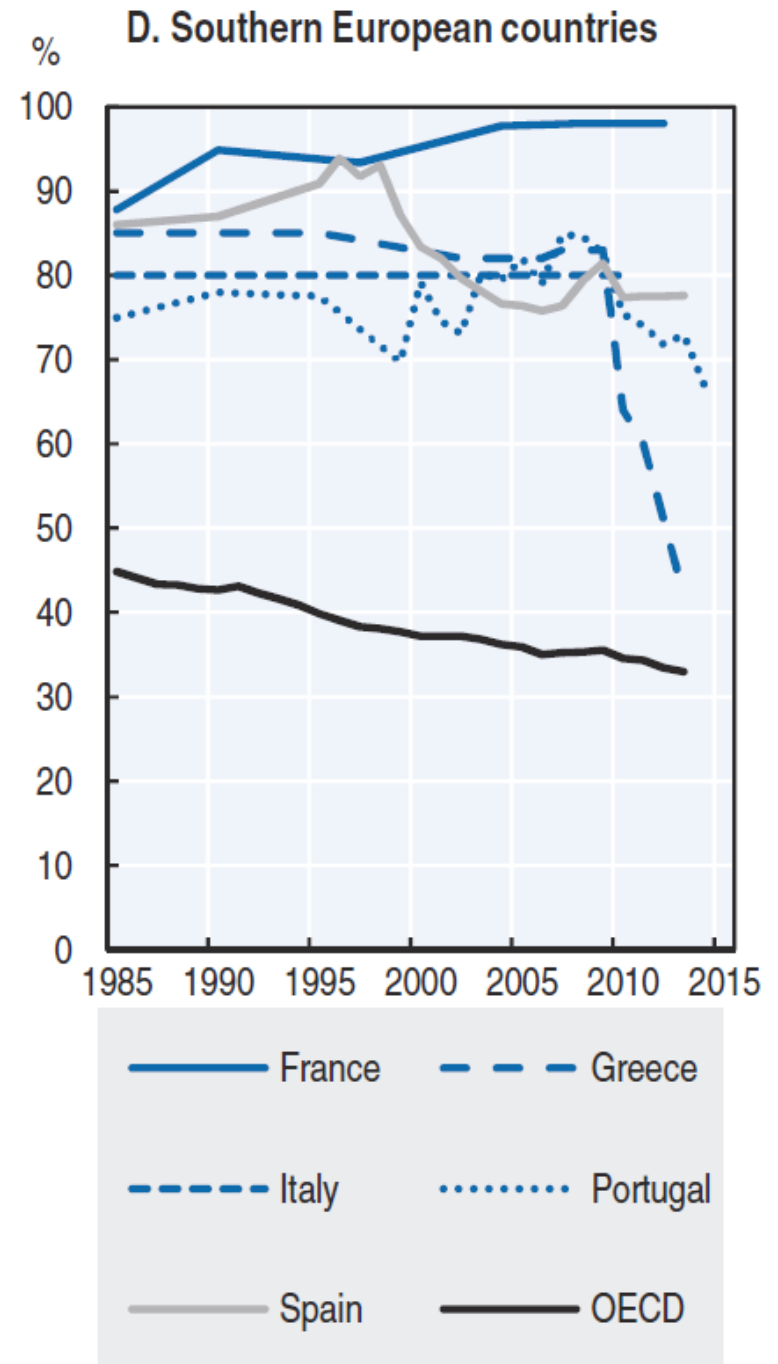
- **Collective bargaining plays a pervasive role.**
- **The most important component of wages is set by centralized collective bargaining at the industry level (and by occupation):** this component is uniform across space.
- There is a second level of decentralized bargaining (related to local productivity), that in Italy plays only a minor role, and that is subject to the **“in melius” or “favourability principle”**.

Why is Italy a perfect case study

OCED (2017): Italy has a rather high coverage rate, around 80%.

More importantly, the coverage rate is constant over time, since no reforms have been applied.

By contrast, local prices are very heterogeneous in the spatial dimension.



Theoretical framework

- Boeri, Ichino, Moretti (2017): North-South labour market differences in Italy and West-East differences in Germany, focusing on collective bargaining and cost of living.
- Boeri, Ichino, Moretti (2017) develop a model to explain labour market differences across macro regions:
 - Collective Bargaining: wages are equal across locations.
 - the higher productivity, employment and cost of living in cities generates a lower real wage, with respect to the non-agglomerated location.
 - To have equality of utilities across locations, the unemployment rate has to be greater in the low productivity location.
 - The model predicts lower real wages in cities, that should be compensated by lower unemployment.

Theoretical framework: the role of amenities

- Lower real wage in agglomerated areas could also be related to the role of amenities (Roback, 1982, Moretti, 2011; Albouy, 2012).
 - For instance, Italian cities are often characterized by monuments, beautiful city centers, entertainment services (restaurants, theaters, cinemas, pubs, and so on).
 - Also, the quality of some important public goods, such as education and health, could be higher in cities (sorting of doctors and teachers, for instance).
- workers could be willing to accept lower real wages in cities in order to enjoy amenities and high quality public goods.

ESTIMATION OF A LOCAL PRICE INDEX, LOCAL CPI

Estimation of a local price index

- **Housing is one of the main driver of the variation in local cost of living:** housing costs incorporate economic and non economic factors that make individuals willing to pay more (less) for a given location.
- **Data from the Osservatorio Mercato Immobiliare (OMI)** provide detailed information on housing prices at the municipality level.
- Main intuition from Moretti (2013): computing **direct** and **indirect** impact of housing on local CPI.
- **Direct:** direct costs of housing
- **Indirect:** the effects of housing on other goods, think about a restaurant or having an haircut

How to compute a local price index

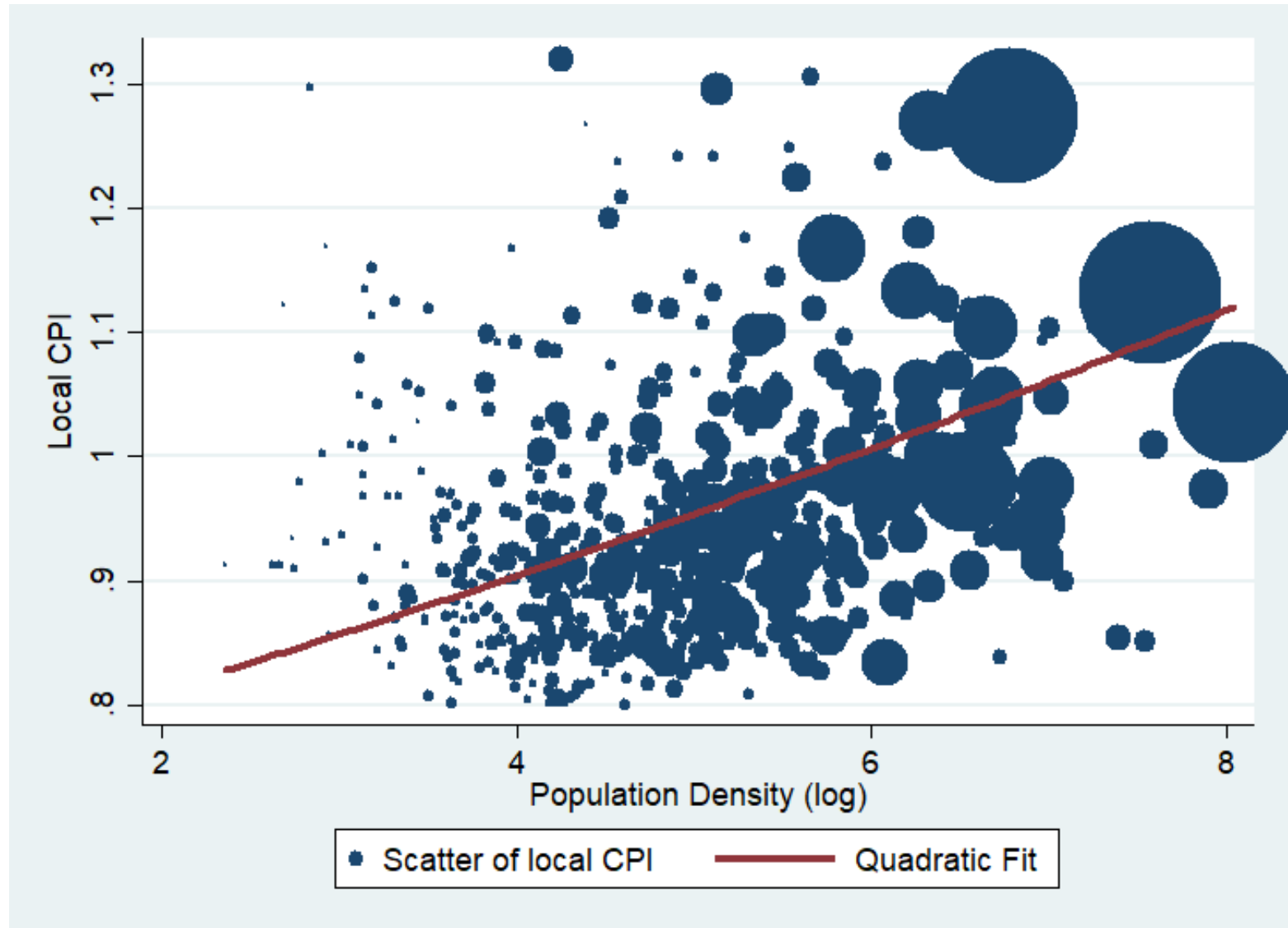
- Using the data from the Osservatorio Mercato Immobiliare (OMI) we compute Local Price indexes in Local Labour Market (LLM) c at time t as a weighted average of two price indexes: housing H (direct and indirect impact) and non housing NH :

$$CPI_{c,t} = \beta H_{c,t} + (1 - \beta)NH_t$$

- β is the weight of the *housing* (H), that we estimate
- β is estimated to be =0.34, much greater than the direct impact estimated by ISTAT (0.09)

LOCAL CPI
DESCRIPTIVE STATISTICS

Clear positive relation between Local CPI and Pop density, by LLM (2005): bubbles are LMM size, in big cities CPI is higher

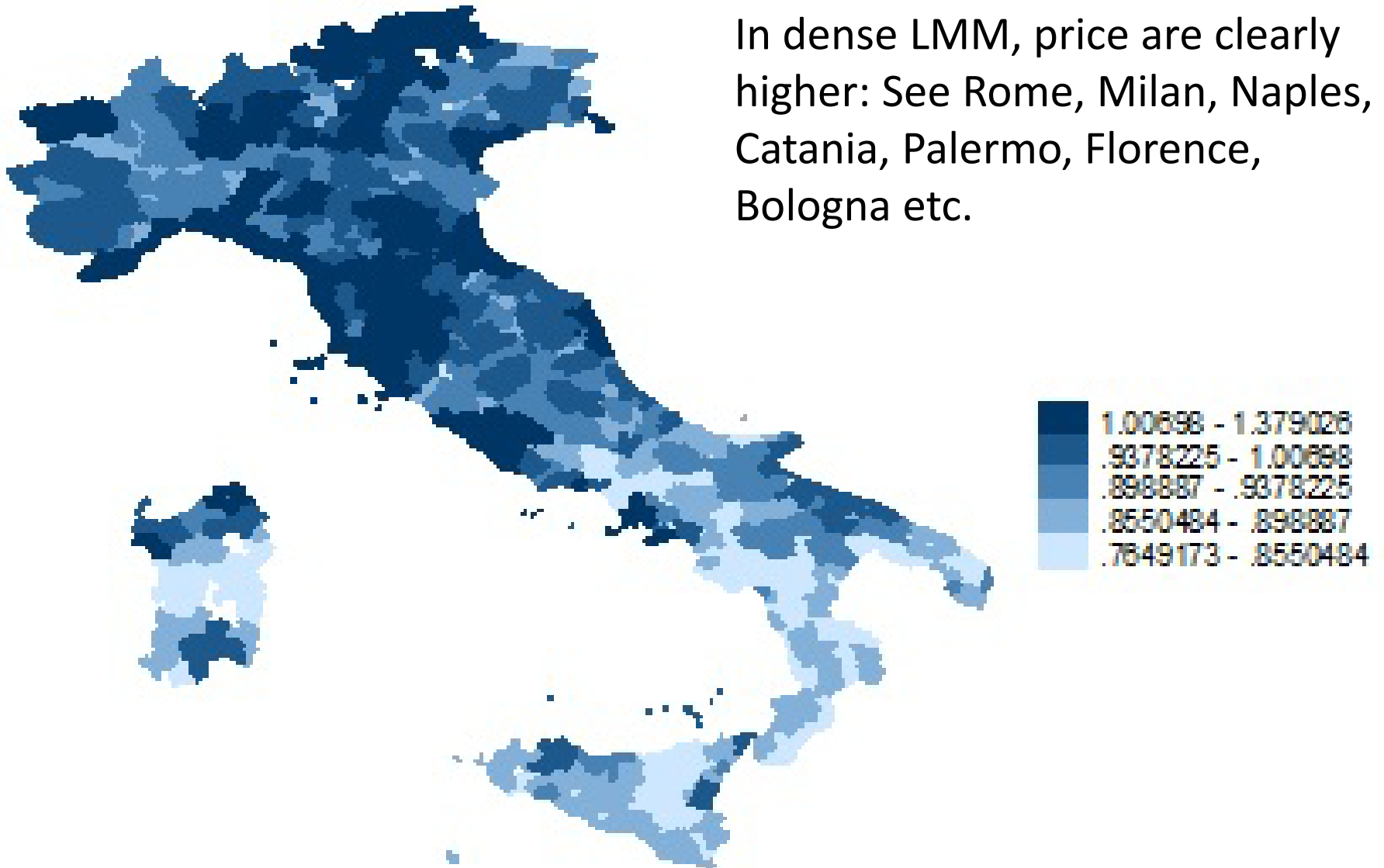


CPI

Italy, 2005

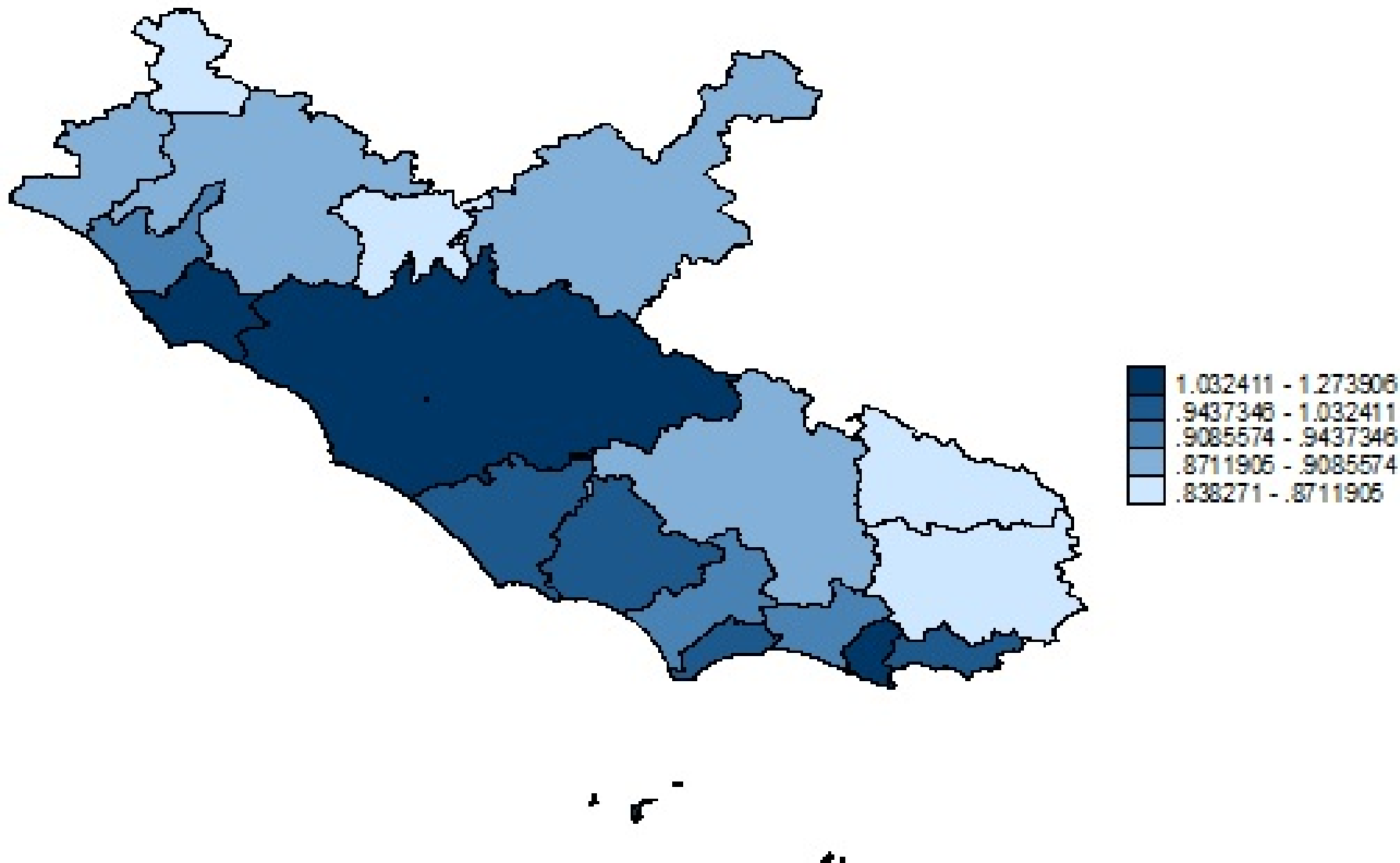
Data by LLM

In dense LMM, price are clearly higher: See Rome, Milan, Naples, Catania, Palermo, Florence, Bologna etc.



CPI
Lazio, 2005

Data by LLM



Agglomeration variable

- Agglomeration measure: **population density (ED)**, population by LLM (or municipality) out of surface in km² (Combes 2000, Combes et al, 2008, 2011, Mion and Naticchioni, 2009, Matano and Naticchioni, 2012).
- As a check we also use *employment density*: similar results

Population density
Italy, 2005



Data by LLM



Worker data: VisitINPS

- Universe of the dependent workers in Italy (male).
- Period: 2005-2015.
- Information of the Municipality where the job is carried out.
- One observation per worker per year (highest earnings).
- Dropping the outliers in the tails (0.5% by year), and workers attached to the labour market for less than two months per year.
- Final sample: around **75 millions of observations**.

Nominal and Real Wages definition

Two weekly wage variables:

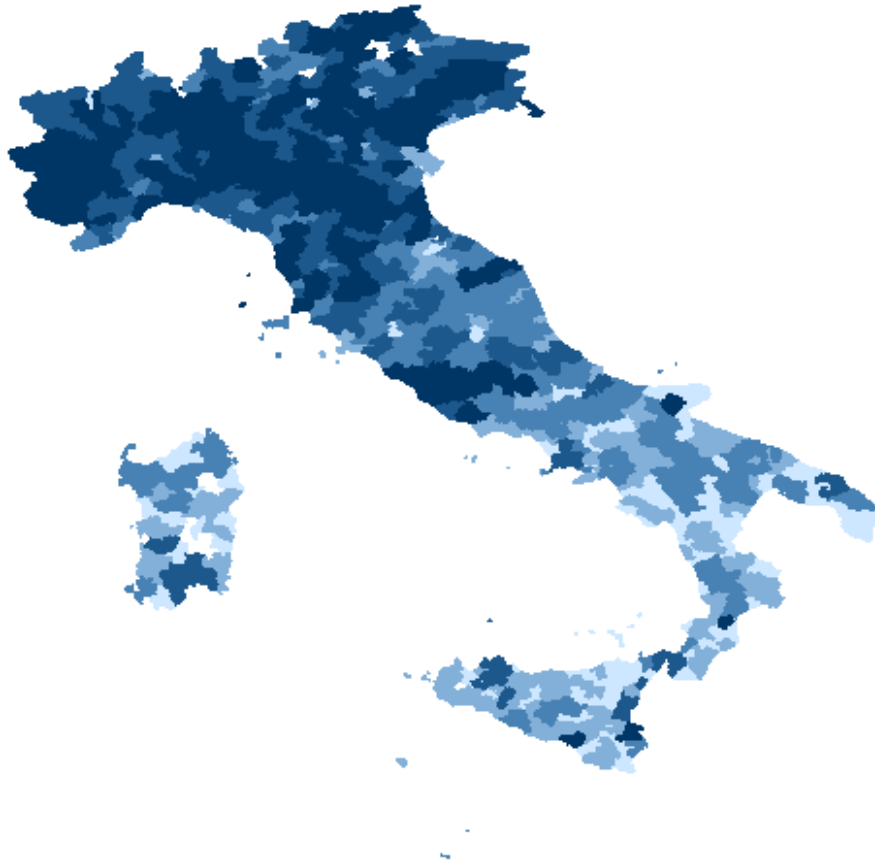
- **Weekly Nominal Wage;**
- **Weekly Spatial Real Wage:** deflated by using the local CPI.

Nominal and Real weekly wages for employee. Year 2005.

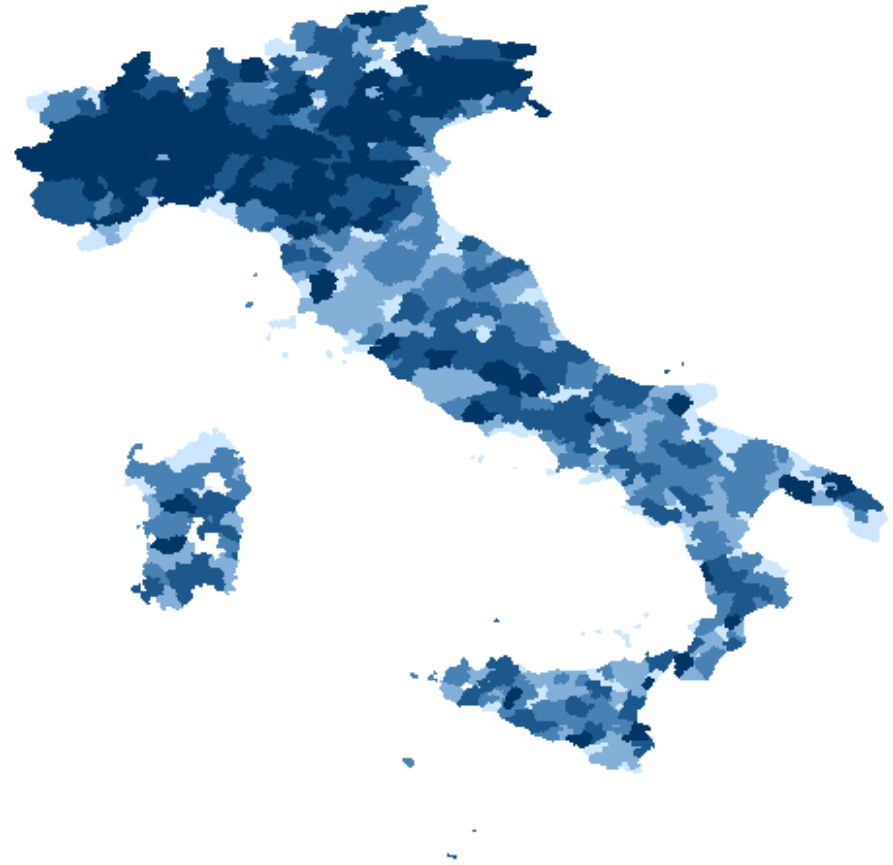
| quantiles | Nominal Wages | Real Wages |
|-----------|---------------|------------|
| 1 | 401 | 446 |
| 2 | 428 | 459 |
| 3 | 444 | 458 |
| 4 | 472 | 465 |
| 5 | 511 | 443 |

- Clear evidence. Real wages are more compressed

nominal wages
Italy, 2005



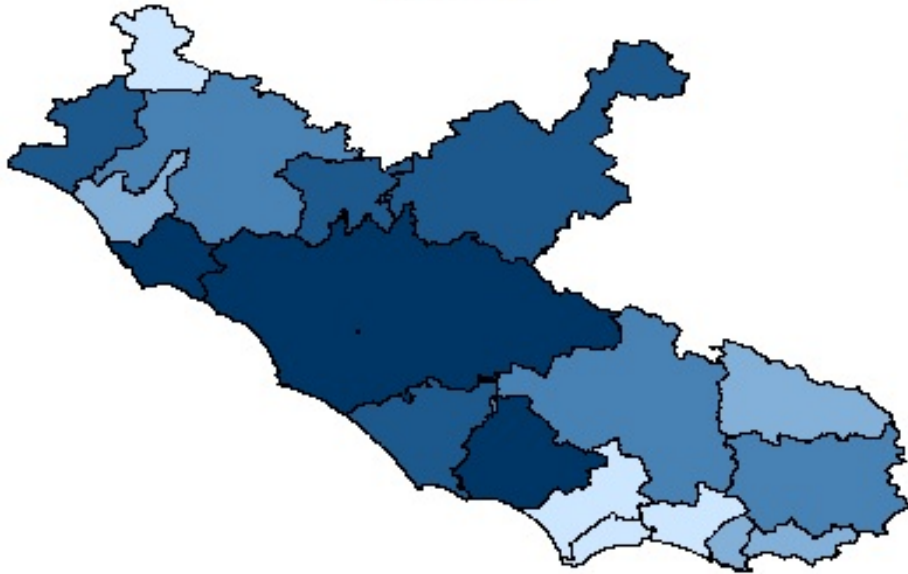
real wages
Italy, 2005



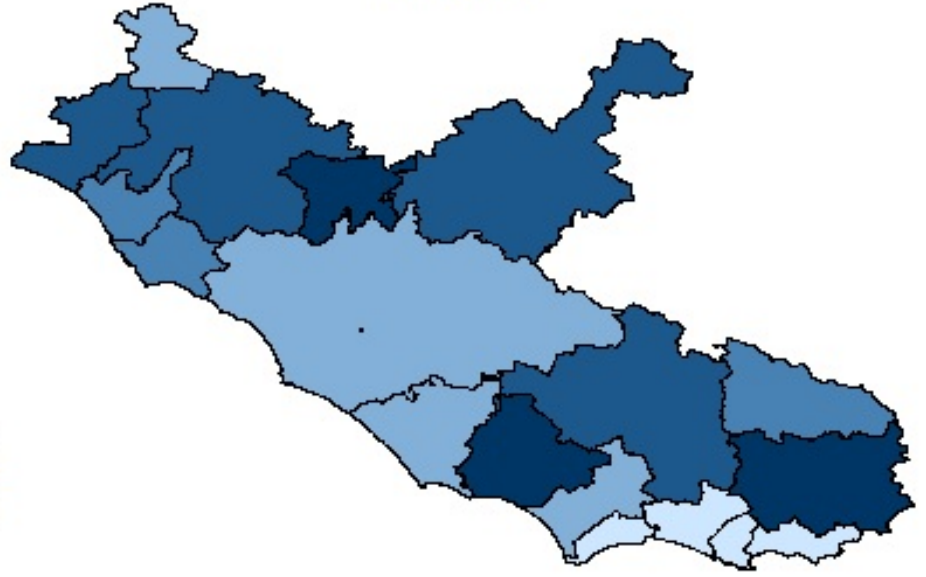
- Example. Real wage in Rome are not dark, as nominal wage.
- And real wages are greater in the South, consistently with Boeri et al (2017).

Data By LLM

nominal wages
Lazio, 2005



real wages
Lazio, 2005



THE ECONOMETRIC PART

Econometric specification

- The main specification is:

$$\ln(W_{i(c),t}) = \alpha + \rho * \ln(\text{PopDen}_{i,t}) + \beta * X + \delta_r + \delta_t + u_i + \varepsilon_{i,t}$$

- ρ : **estimate of the UWP elasticity**: variables are in log.
- Matrix X : individual controls (age, occupation, part time, fixed term); firm controls (size).
- To control for the **centralized national bargaining** we include (250) dummies for all national contracts (roughly industries)
- Year and Regional dummies;
- Standard errors clustered at the LLM level.

UWP Estimates : Nominal Wages

| VARIABLES | (1) OLS | (2) + worker charact. | (3) + firm charact. |
|----------------------|---------------------|--------------------------|------------------------|
| log pop dens | 0.046*** (0.017) | 0.006*** (0.002) | 0.002 (0.002) |
| part time | | -0.154*** (0.007) | -0.072*** (0.006) |
| fixed term | | -0.103*** (0.008) | -0.119*** (0.004) |
| log firm size | | | 0.023*** (0.002) |
| occupational dummies | no | yes | yes |
| age dummies | no | yes | yes |
| contract dummies | no | no | yes |
| province fe | no | yes | yes |
| year fe | yes | yes | yes |
| Observations | 77,015,891 | 77,015,891 | 77,015,891 |
| R-squared | 0.041 | 0.515 | 0.608 |

UWP Estimates : Nominal vs Real Wages

| VARIABLES | nominal wages | | | real wages | | |
|----------------------|---------------------|--------------------------|------------------------|-------------------|--------------------------|------------------------|
| | (1) OLS | (2) + worker charact. | (3) + firm charact. | (4) OLS | (5) + worker charact. | (6) + firm charact. |
| log pop dens | 0.046*** (0.017) | 0.006*** (0.002) | 0.002 (0.002) | -0.006 (0.017) | -0.041*** (0.012) | -0.051*** (0.004) |
| part time | | -0.154*** (0.007) | -0.072*** (0.006) | | -0.185*** (0.010) | -0.070*** (0.006) |
| fixed term | | -0.103*** (0.008) | -0.119*** (0.004) | | -0.120*** (0.008) | -0.124*** (0.004) |
| log firm size | | | 0.023*** (0.002) | | | 0.022*** (0.002) |
| occupational dummies | no | yes | yes | no | yes | yes |
| age dummies | no | yes | yes | no | yes | yes |
| contract dummies | no | no | yes | no | no | yes |
| province fe | no | yes | yes | no | yes | yes |
| year fe | yes | yes | yes | yes | yes | yes |
| Observations | 77,015,891 | 77,015,891 | 77,015,891 | 77,015,891 | 77,015,891 | 77,015,891 |
| R-squared | 0.041 | 0.515 | 0.608 | 0.005 | 0.444 | 0.591 |

Standard errors clustered at the LLM level. *** p<0.01, ** p<0.05, * p<0.1

Main estimates and refinements

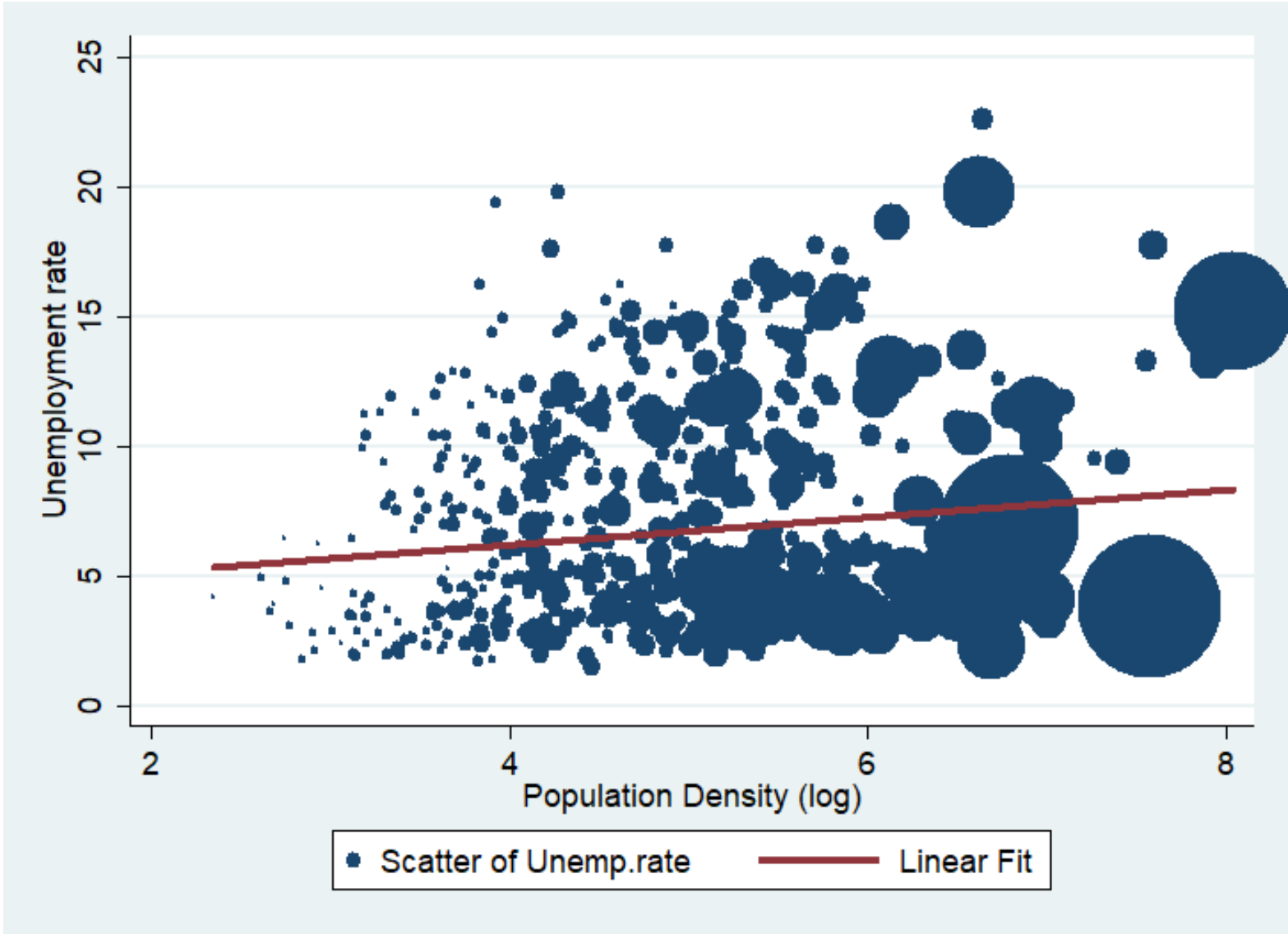
- Preferred UWP estimate: including all controls of individuals and firms

- Still, we carry out:
 - Individual FE regressions to control for sorting on unobservables
 - IV regressions to control for endogeneity

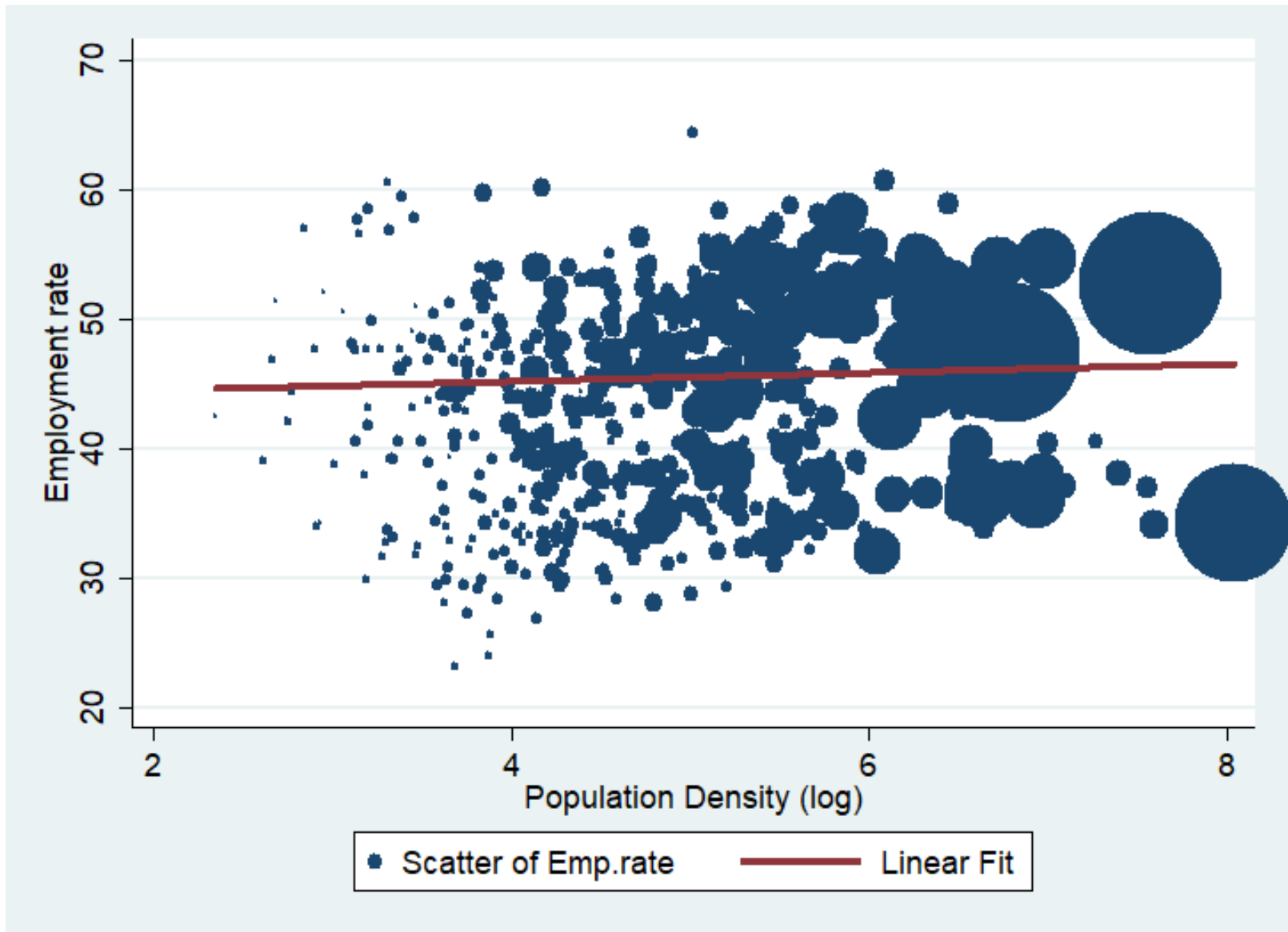
Interpretation

- **Workers are penalized in terms of real wage when living in big cities.**
- According to Boeri et al (2017), lower real wages in cities should be balanced by lower unemployment rate.
- It is the case?
- We merge our data with data by Istat on unemployment, employment and inactivity rate by LLM (2006-2015)
- Next slides: unemployment rate increases in population density, and employment rate has a flat pattern.

Unemployment rate and Population density – by LLM - 2006



Employment rate and Population density – by LLM - 2006



Baseline estimates adding Unemployment Rate: results do not change, i.e. unemployment is not much correlated with density

| VARIABLES | nominal wages | | | real wages | | |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) OLS | (2) FE | (3) IV-FE | (4) OLS | (5) FE | (6) IV-FE |
| log pop dens | 0.003 (0.002) | 0.000 (0.001) | 0.001 (0.002) | -0.052*** (0.004) | -0.055*** (0.004) | -0.101*** (0.011) |
| part time | -0.072*** (0.006) | 0.046*** (0.003) | 0.046*** (0.003) | -0.070*** (0.006) | 0.046*** (0.003) | 0.047*** (0.003) |
| fixed term | -0.119*** (0.004) | -0.048*** (0.003) | -0.048*** (0.003) | -0.124*** (0.004) | -0.049*** (0.003) | -0.050*** (0.003) |
| log firm size | 0.023*** (0.002) | 0.016*** (0.001) | 0.016*** (0.001) | 0.022*** (0.002) | 0.016*** (0.001) | 0.017*** (0.001) |
| unemployment rate | -0.001*** (0.001) | -0.002*** (0.000) | -0.002*** (0.000) | 0.001 (0.001) | -0.002 (0.001) | -0.001 (0.001) |
| occupational dummies | yes | yes | yes | yes | yes | yes |
| age dummies | yes | yes | yes | yes | yes | yes |
| contract dummies | yes | yes | yes | yes | yes | yes |
| province fe | yes | yes | yes | yes | yes | yes |
| year fe | yes | yes | yes | yes | yes | yes |
| worker fe | no | yes | yes | no | yes | yes |
| Observations | 77,015,891 | 77,015,891 | 77,015,891 | 77,015,891 | 77,015,891 | 77,015,891 |
| R-squared | 0.608 | 0.892 | 0.892 | 0.591 | 0.886 | 0.885 |
| K-P rk Wald F statistic | | | 125.423 | | | 125.423 |

Is Collective Bargaining driving our results?

- Urban Economics literature: lower real wages in cities could be due to, at least, three different factors:
 - Amenities and/or quality of public goods
 - Idiosyncratic preferences for locations
 - Collective bargaining
- How is it possible to isolate the role of Centralized Bargaining if any?
- Our strategy: considering a group of self-employed:
 - located in the same areas and sharing the same amenities, quality of public goods, average preferences for locations
 - but are not subject to the national bargaining.

An Analysis on Self-Employment

- A group of self-employed workers, the so called '*Collaborazioni*', which are:
 - not subordinate employees but anyway associated to a firm;
 - usually act as a consultant, as external staff
 - temporary
 - both skilled and unskilled labour
- These workers are not subject to the Centralized Wage Setting: their earnings are just bargained between employees and employers.

Self-Employment: collaboratori in INPS data

- The INPS archives include the universe of *collaborazioni*.
- The information available are as follows:
 - Earnings
 - Age and Gender
 - Duration of the contracts
 - Type of Contract, which refer to the type of *collaborazioni* (general contract, statutory auditor, company administrator, legal representative, etc).

Econometric specification

- The specification is the same as before:

$$\ln(W_{i(c),t}) = \alpha + \rho * \ln(Ed_{i,t}) + \beta * X + \delta_r + \delta_t + \varepsilon_{i,t}$$

- **Dependent variable: daily wage.**
- **ρ : estimate of the UWP.**
- Matrix X : individual controls (age, type of contract); firm controls (size, sectoral dummies at 2 digits)
- Year and Regional Fixed effects
- Standard errors clustered at the LLM level.

Employees vs Self-Employed: Nominal Wages

| | Employees | | Self Employed | |
|------------------|---------------------|---------------------|---------------------|---------------------|
| | OLS | FE | OLS | FE |
| ln(pop. density) | 0.002*** (0.009) | 0.002*** (0.003) | 0.049*** (0.009) | 0.009*** (0.003) |
| Observations | 77,015,891 | 77,015,891 | 5,828,279 | 5,828,279 |
| R-squared | 0.600 | 0.892 | 0.209 | 0.783 |
| Year Dummies | YES | YES | YES | YES |
| ALL Controls | YES | YES | YES | YES |
| Individual FE | NO | YES | NO | YES |

*, **, *** stand for 10%, 5%, 1% statistical significance. Controls include age fixed effects, industry fixed effects, province fixed effects. Regressions for all self-employed include also type of contract fixed effects.

- Controlling for all observable characteristics, nominal UWP around 20 times bigger for self-employed
- Sorting more at work for self-employed: when wages can adjust there are more incentives for skilled workers to sort in a city.

Employees vs Self-Employed: Real Wages

| | Employees | | Self Employed | |
|------------------|----------------------|----------------------|-------------------|----------------------|
| | OLS | FE | OLS | FE |
| ln(pop. density) | -0.051*** (0.004) | -0.056*** (0.004) | -0.010 (0.009) | -0.057*** (0.008) |
| Observations | 77,015,891 | 77,015,891 | 5,828,279 | 5,828,279 |
| R-squared | 0.892 | 0.885 | 0.216 | 0.785 |
| Year Dummies | YES | YES | YES | YES |
| ALL Controls | YES | YES | YES | YES |
| Individual FE | NO | YES | NO | YES |

*, **, *** stand for 10%, 5%, 1% statistical significance. Controls include age fixed effects, industry fixed effects, province fixed effects. Regressions for all self-employed include also type of contract fixed effects.

- No penalty in full OLS for self-employed;
- Sorting still more at work for self-employed

Policy implications

- Is there a need to reform the collective bargaining rules?
- Reforms applied in Germany, Spain, Portugal, Greece, have favoured the bargaining at the local/firm level.
- Cons: reducing the protection and the bargaining power of workers in SME against the monopsonistic power of firm
- Pros: relating more closely wages and productivity at the local/firm level; providing the right incentives for firm and workers in the location choices.

Policy implications

- Existing proposal: Boeri, Ichino, Moretti (2017)→ collective bargaining at the firm level; introduction of a national minimum wages to protect workers, especially in SME.
- Possible alternative: applying reforms similar to other countries, such as Germany:
 - Giving more space to the local/firm productivity
 - Allowing the possibility to derogate 'in peius', with a stronger role of unions at the local/firm level.

Policy Discussion

- The unions might play a stronger role more at local level, in order to:
 - Ask for higher wages in high productive and high cost of living areas (or firm)
 - Bargaining lower wages in exchange of higher employment rates in area with low productivity/cost of living
- Issue: How to apply this scheme in small firms, over represented in Italy?
- Could they refer to some local contracts?

Conclusion

- First paper addressing the impact of collective bargaining on UWP, in nominal and (spatial) real terms
- In Real Terms the UWP is negative and substantial, non compensated by lower unemployment rate
- This is not the case when considering Self-Employed, with greater UWP : this suggests collective bargaining is driving the results
- Policy discussion