

Urban Agglomeration and Economic Growth: the role of Human Capital

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provided remarkable contributions to these slides on the basis of their work in progress.*

Economic growth is an increasingly urban phenomenon: the international evidence

- From the early XX century, urban population growth outweighed national population growth (Duranton and Puga, 2013; Giffoni, Gomellini and Pellegrino, 2015).

Population growth rate
(average per decade)

| | period | Urban | National |
|--------|-----------|-------|----------|
| USA | 1920-2010 | 17.9 | 12.6 |
| Spain | 1920-2010 | 18.1 | 8.9 |
| France | 1937-2007 | 7.7 | 5.7 |
| Italy | 1911-2001 | 7.2 | 4.9 |

- In 1971, 51% of population lived in non urban areas.
- From 1981 urban dwellers steadily increased above the 50% share.

Urban vs. non urban areas in Italy

Definitions (based on OECD)

- Urban area is the travel-work-area (LLM) surrounding a dense urban center.
- A dense urban center is a municipality or a cluster of neighboring municipalities whose population density is equal or above 1.5K inhabitants per km².
- There are 74 Urban areas in Italy.
- Non urban areas are the remaining ones (= non dense travel-to-work-areas).

| | Urban | Non Urban | Total | LLM definition |
|------|-------|-----------|-------|----------------|
| 1981 | 74 | 880 | 954 | 1981 |
| 1991 | 74 | 710 | 784 | 1991 |
| 2001 | 74 | 612 | 686 | 2001 |
| 2001 | 74 | 609 | 683 | 2011 |
| 2011 | 74 | 538 | 612 | 2011 |

Economic growth is an increasingly urban phenomenon in Italy: population

| Agglomeration | Intensive margin | Extensive margin | Combined |
|-------------------------|------------------|------------------|----------|
| Period 1981-1991 | | | |
| Non urban | 0.7 | -3.7 | -3.0 |
| Urban | -0.3 | 3.7 | 3.4 |
| Total population growth | | | 0.4 |
| Period 1991-2001 | | | |
| Non urban | 0.4 | -1.0 | -0.7 |
| Urban | 0.0 | 1.0 | 1.0 |
| Total population growth | | | 0.4 |
| Period 2001-2011 | | | |
| Non urban | 1.8 | -3.1 | -1.3 |
| Urban | 2.5 | 3.1 | 5.6 |
| Total population growth | | | 4.3 |

| Agglomeration | Share of total population | | | Share of non-natives on area's population | | |
|---------------|---------------------------|------|------|---|------|------|
| | 1991 | 2001 | 2011 | 1991 | 2001 | 2011 |
| Non urban | 47.7 | 46.9 | 45.7 | 0.5 | 2.0 | 6.3 |
| Urban | 52.3 | 53.1 | 54.3 | 0.8 | 2.6 | 7.2 |

Note: Urban agglomerations vary according to the LLM classification released in each year. The extensive margin refers to the transition of municipalities in and out of a given LLM

Economic growth is an increasingly urban phenomenon in Italy: income

| Agglomeration | Per capita fiscal income | | Share of total income | | Contributions to income growth |
|---------------|--------------------------|-------|-----------------------|------|--------------------------------|
| | 1998 | 2006 | 1998 | 2006 | 1998-2006 |
| Non urban | 11037 | 10661 | 37.8 | 36.4 | 4.1 |
| Urban | 14545 | 15486 | 62.2 | 63.7 | 10.3 |

Economic growth is an increasingly urban phenomenon in Italy: Value added

| Agglomeration | 1996-2002 (1) | | | | 2001-2005 (2) | | | |
|---------------|---------------|-------|---------------|---------------------------|---------------|-------|---------------|---------------------------|
| | VA per person | | Share in 1996 | Contribution to VA growth | VA per person | | Share in 2001 | Contribution to VA growth |
| | 1996 | 2002 | | | 2001 | 2005 | | |
| Non urban | 13330 | 16808 | 39.3 | 10.6 | 15805 | 17732 | 37.6 | 5.4 |
| Urban | 18975 | 24124 | 60.7 | 16.7 | 23115 | 25743 | 62.4 | 8.4 |

(1) Urban agglomerations according to LLM classification in 1991. (2) Urban agglomerations according to LLM classification in 2001.

What matters for urban (and economic) growth? Specialization vs diversification

- Urban centers are increasingly service and innovation prone centers more than production sites

| | share of total employment 2001 | | share of total employment 2011 | |
|-----------------------------------|--------------------------------|-----------|--------------------------------|-----------|
| | urban | non-urban | urban | non-urban |
| Industry (including construction) | 27.89 | 40.56 | 23.13 | 34.99 |
| Services | 71.62 | 58.19 | 76.57 | 64.13 |
| KIS | 37.78 | 28.12 | 38.68 | 28.83 |
| - KIS high tech | 4.21 | 1.28 | 3.97 | 1.26 |
| - market-oriented KIS | 7.28 | 4.37 | 8.85 | 5.40 |
| - financial KIS | 3.76 | 2.19 | 3.62 | 2.24 |
| - other KIS | 22.52 | 20.28 | 22.24 | 19.93 |

The dissolving advantage of industrial districts and the increasing premia associated to diversified urban centers

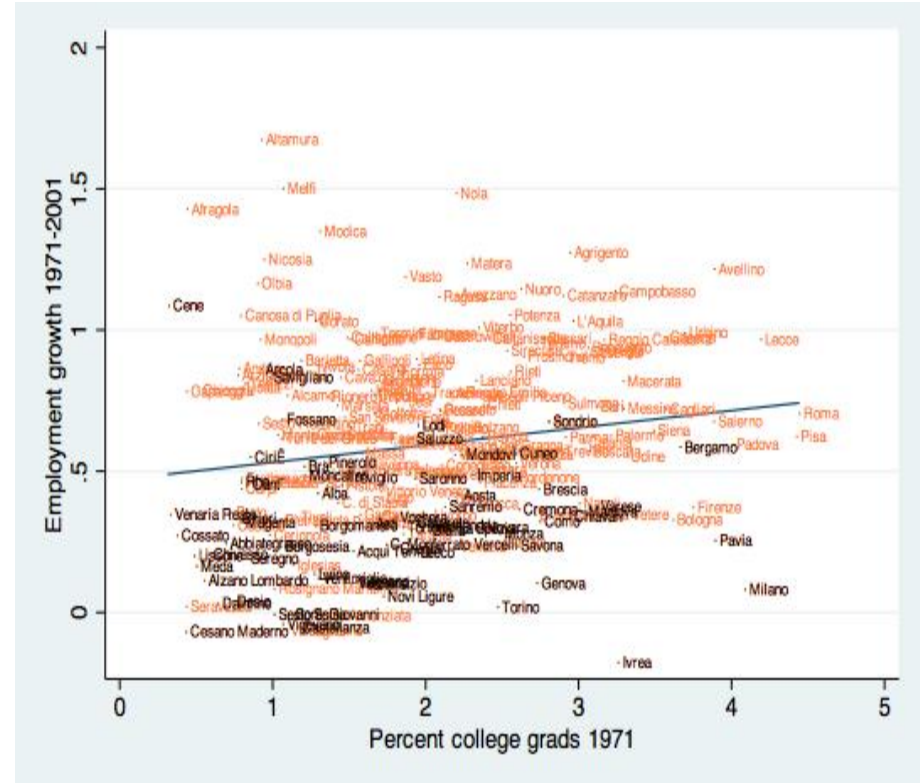
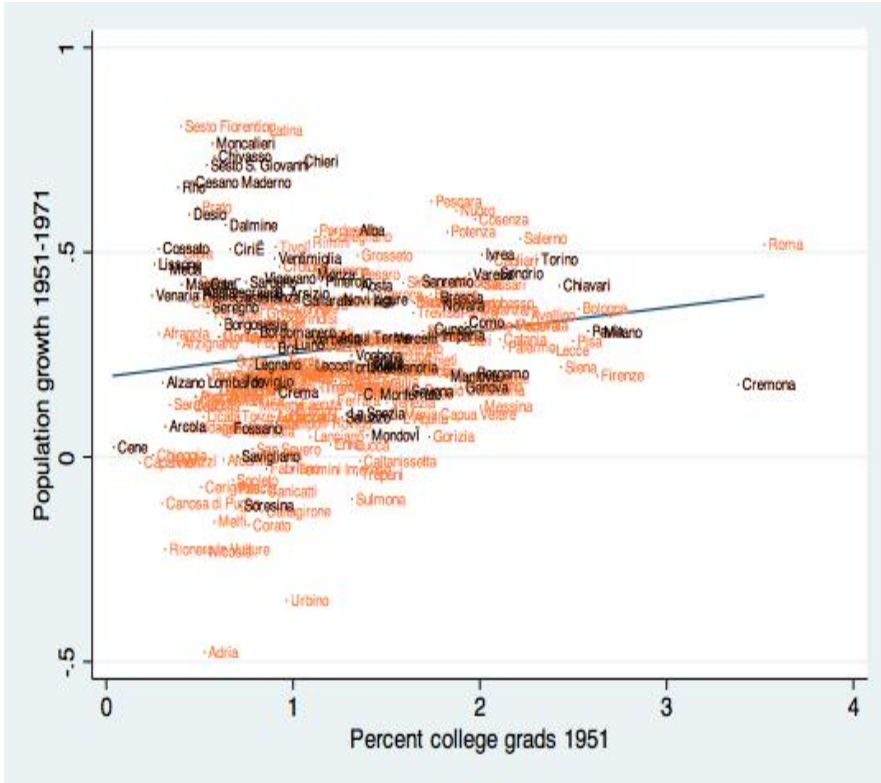
- Industrial agglomerations (distretti industriali) have been extensively studied (also at the Bank of Italy)
- In recent years the benefits of these agglomerations seem to have diminished, while the advantages of urban agglomerations have raised:
 - Di Giacinto et al (JOEG 2014) and Andini et al (RSUE 2014) provide evidence on both firm productivity and wages
- Whether the urban supremacy can be entirely explained by the cluster of services, or an industrial base is still necessary to push the local demand for nontradables is an open question (see Glaeser 2011 and Moretti 2012)

Cities are increasingly where high skill people live ...

| Educational attainment by degree | share of total population in 2011 | | share by educational attainment in 2011 | | contributions to growth by educational attainment in 2011 | |
|----------------------------------|-----------------------------------|-------|---|-------|---|-------|
| | non-urban | urban | non-urban | urban | non-urban | urban |
| Bachelor | 8.9 | 13.4 | 35.0 | 65.0 | 76.4 | 124.5 |
| High school | 28.9 | 31.4 | 42.5 | 57.5 | 34.1 | 33.8 |
| Middle school | 30.6 | 28.8 | 46.1 | 53.9 | 3.2 | -2.4 |
| Primary school | 21.9 | 18.4 | 48.9 | 51.1 | -16.2 | -19.3 |
| None | 9.7 | 8.0 | 49.6 | 50.4 | -22.6 | -13.7 |

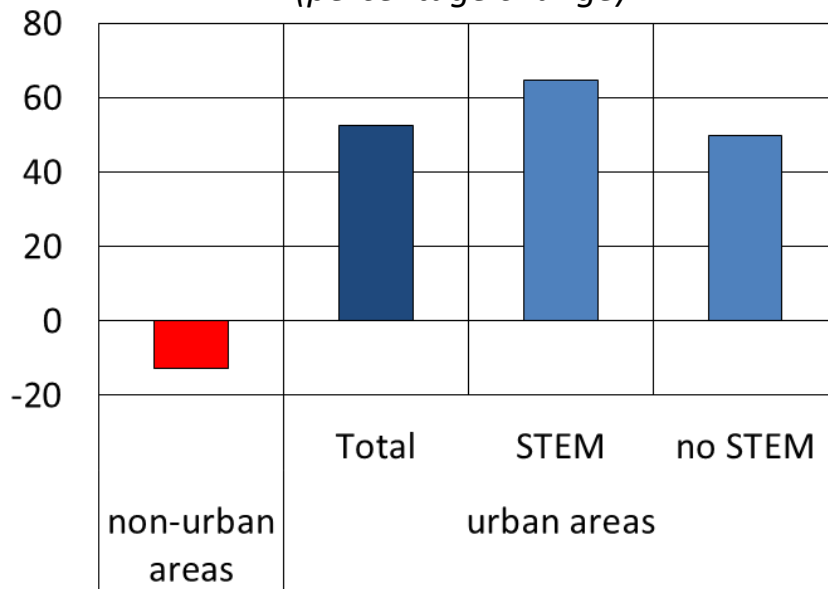
Notes: Residents above 6 years of age.

... and high skill cities are the ones growing more

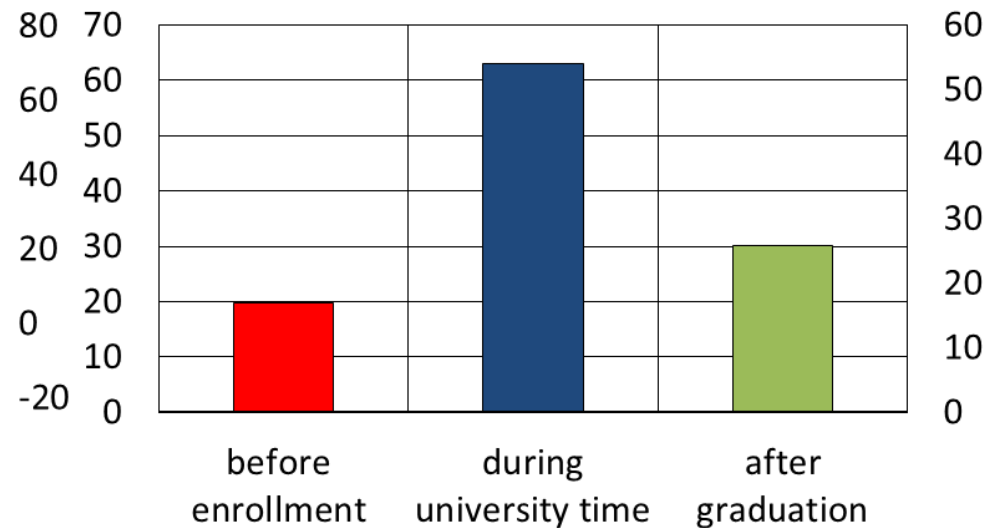


Cities accumulate more human capital mostly by attracting the most skilled ...

Graduates by residence (1)
(percentage change)



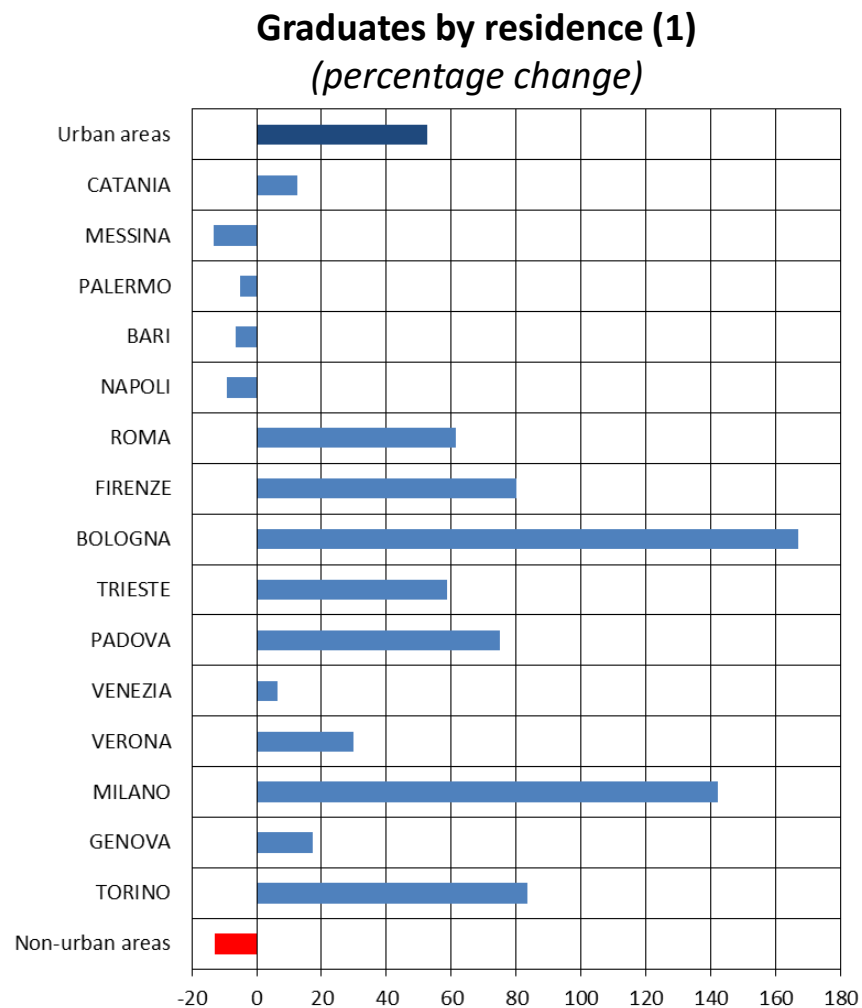
Share of graduates resident in urban areas



Source: Istat, Indagine 2011 sull'inserimento professionale dei laureati.

Note: (1) Percentage change between the number of graduates resident in the 15 Italian main urban areas before enrollment and after graduation.

... but not all cities are attracting: the Mezzogiorno lacks of urban growth poles

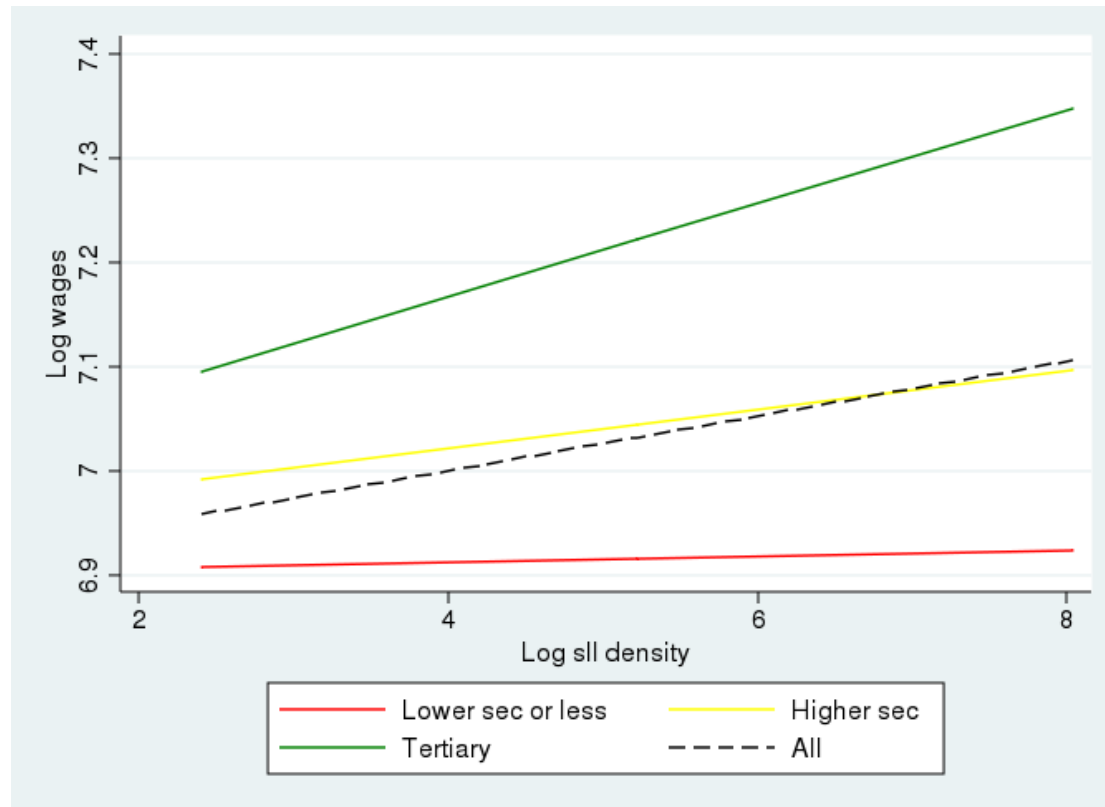


Source: Istat, Indagine 2011 sull'inserimento professionale dei laureati.

Note: (1) Percentage change between the number of graduates resident in each urban area before enrollment and after graduation.

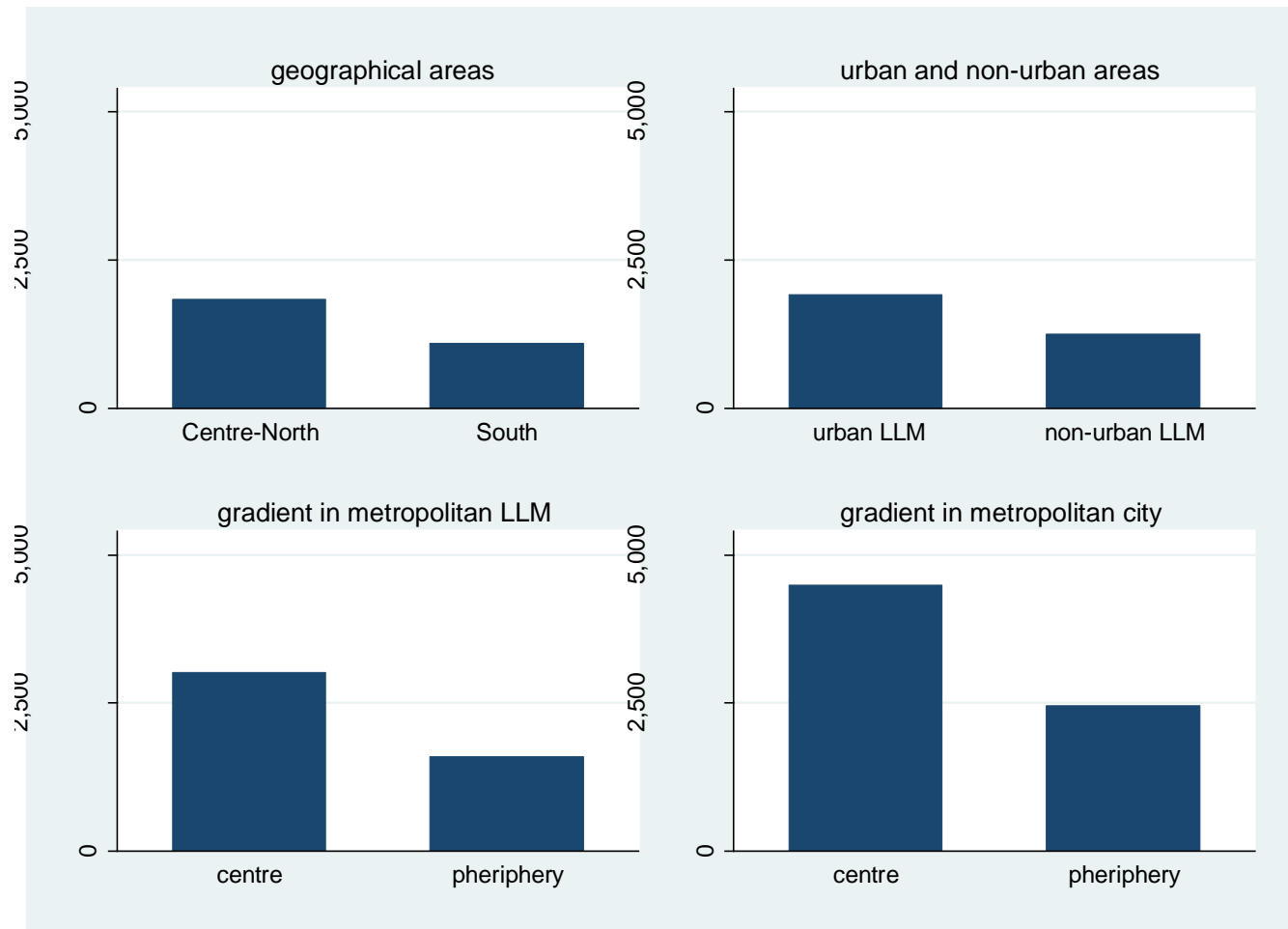
Wages and cities

Wages and cities
(linear fit by education)

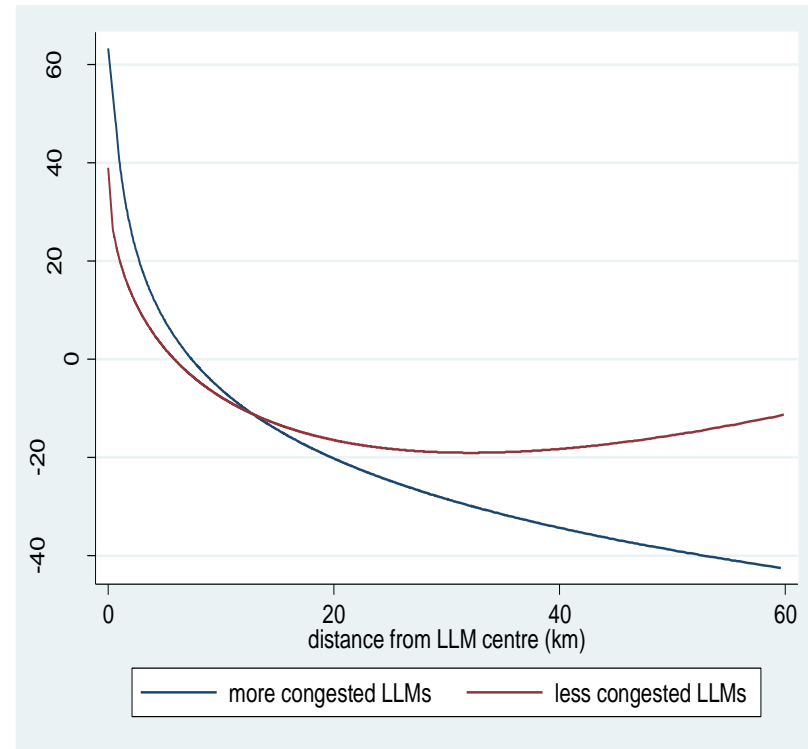
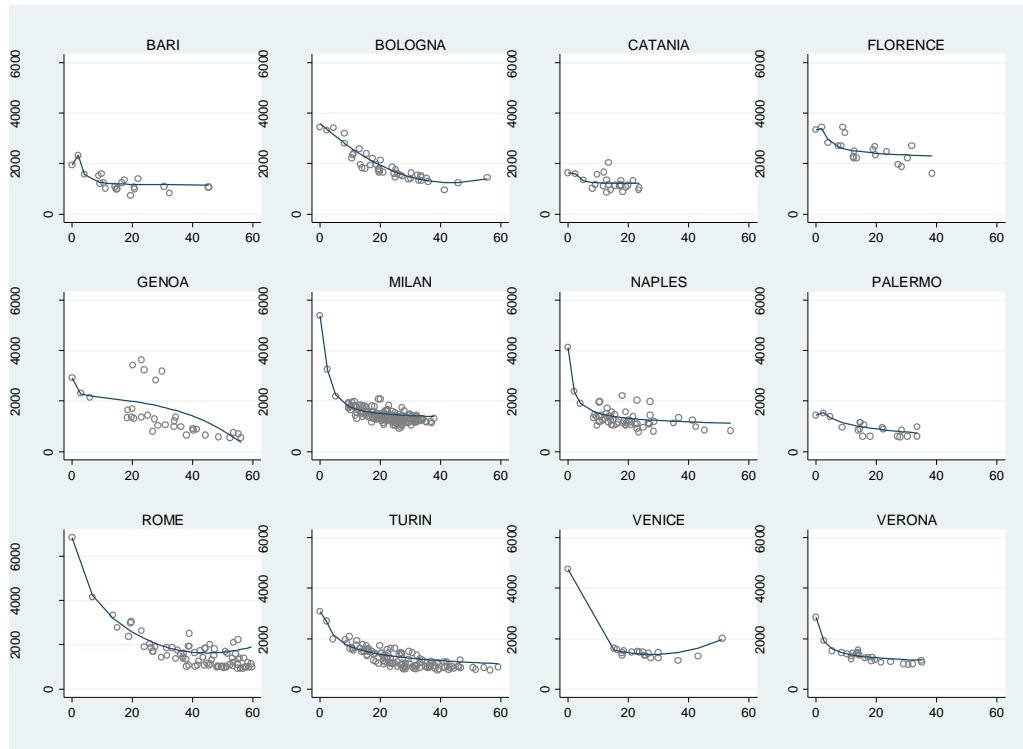


Source: ISTAT, LFS, 2008-2014, age group: 30-49

The risk of rent dissipation: housing prices differential across areas and within each LLM



The centre-periphery housing prices gradient within each city(LLM) is not a constant feature



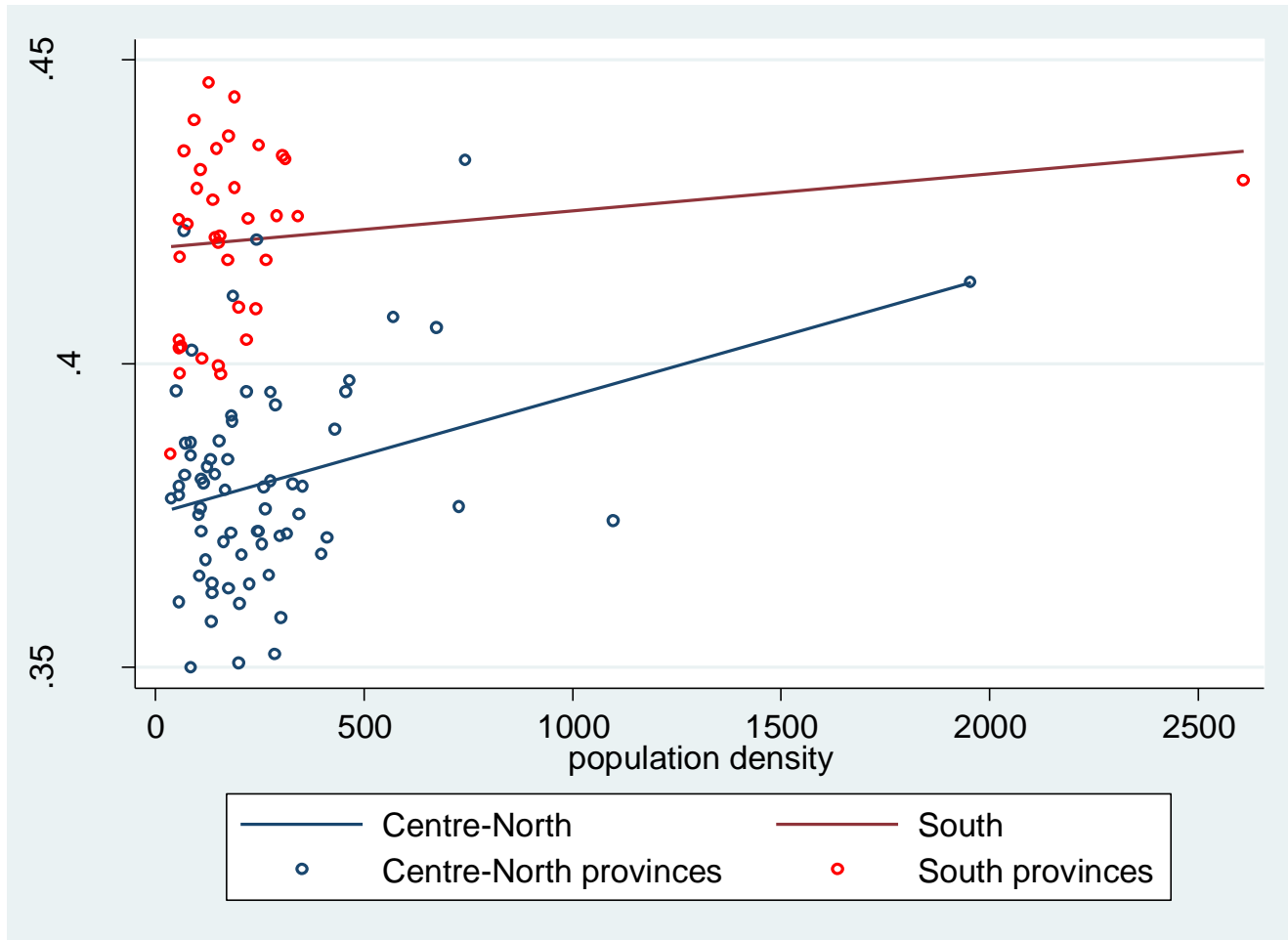
- It does not exist in several depressed (South) centres

- It is the steepest in the most congested centres

Urban incomes are overwhelmingly “dedicated” to purchasing housing services

| House prices and incomes | | | | |
|-------------------------------------|------------|-------------------|---------------|----------------------|
| | Total | Non-urban LLMs | Urban LLMs | Metropolitan LLMs |
| Core city | | | | |
| <i>House price</i> | 2.021 | 1.438 | 2.474 | 3.005 |
| <i>House size</i> | 96,5 | 100,3 | 93,6 | 90,1 |
| <i>Average income (tax records)</i> | 21.225 | 18.044 | 23.364 | 24.598 |
| (house price × size)/income | 9,2 | 8,0 | 9,9 | 11,0 |
| Non-core city | | | | |
| <i>House price</i> | 1.245 | 1.140 | 1.377 | 1.564 |
| <i>House size</i> | 101,0 | 102,1 | 99,6 | 94,9 |
| <i>Average income (tax records)</i> | 18.233 | 16.638 | 19.820 | 20.530 |
| (house price × size)/income | 6,9 | 7,0 | 6,9 | 7,2 |

Income inequality (within city) is increasing with city density



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