Regional wages and the North-South disparity in Italy after the Unification

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Abstract. Information on wages has never been exploited in the long-lasting debate on North-South disparities in Italy in the aftermath of the national Unification. The present article is based on a wide array of data on provincial wages in the building sector over the period 1862-78. Nominal wages in the Centre-North and the South, including the Islands, were similar, because of the high wage levels in Sardinia and Sicily. If we exclude the Islands and compare the peninsular South with the Centre-North, nominal wages were, about 10-15 percentage points lower in the South. Yet, whenever we take into account the difference in prices, any disparity between North and South fades away. Geographic differences in real wages are discussed on a regional basis. The conclusion is that the level of wages was primarily conditioned by labour supply and, particularly, by the participation rate, depending on the local economic and social conditions of any region.

Keywords: wages, regional disparities, Italy,

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Introduction

The traditional view of a large economic divide between North and South at the time of national Unification, has been partially revised in the last two decades[1]. New estimates of the agricultural production show how, at the end of the Nineteenth century, agricultural productivity and per capita agricultural output were higher in the South and Isles than in the Centre-North (Federico, 2007a). New series of the industrial value have highlighted how, soon after Unification, there was not yet a clear divide between North and South. The industrial backwardness of the Southern regions, apparent on the eve of World War I, was not the inheritance of pre-Unification history, but began to appear at the end of the Nineteenth century (Fenoaltea, 2001, 2007; Ciccarelli, Fenoaltea, 2013). Socioeconomic indicators suggest a substantial homogeneity in living standards between both parts of the country, except for literacy. Illiteracy rates reached, in fact, 85 percent in the South and Isles, while in the Centre-North they were about 20 percentage points lower (A'Hearn, Auria, Vecchi, 2011). In 1861, neither infant mortality, nor life expectancy at birth revealed remarkable differences between the Mezzogiorno and the rest of the country (Daniele, Malanima, 2011, ch. 1). Nutritional standards seem to have been higher in the South than in the rest of the country (Vecchi, Coppola, 2003, p. 393). Overall, these findings lead us to suppose that the gap in per capita GDP between the two areas should be modest and smaller than that quantified by previous studies (Eckaus, 1961) and ordinarily suggested by the wide literature on the Italian Mezzogiorno[2].

Although available, data on wages has not yet been exploited in the debate on disparities in Italian development[3]. This is all the more remarkable, since, while information on regional per capita GDP in the early decades after the Unification inevitably presents wide margins of uncertainty, direct information on wages is much more reliable. We know, however, that both in preindustrial and advanced economies wages on the one hand, and productivity and GDP per capita on the other may diverge (de Jong, 2015; Bivens, Mishel, 2015). Yet real wages represent an important indicator of relative wellbeing.

The aim of this paper is to present data on wages in the construction sector at the provincial and regional level for the period 1862-78. Ours is primarily an exercise in

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[1] See the Note to Table 4 for a definition of the geographic headings of the regions and areas utilised in the present article. On the North-South differences in the aftermath of the Unification see Daniele and Malanima (2012).

[2] Felice (2015), estimated a gap of about 15 per cent in GDP per capita in 1861-91 between the Centre-North and the Mezzogiorno. A difference not particularly relevant to that estimated by Daniele and Malanima (2011), and that, however, hardly justifies the claim of a disparity in GDP per capita of 20-25 per cent in 1861 as in Felice (2013, p. 41).

[3] With the exception of the work by Federico, Nuvolari, Vasta (forthcoming).

descriptive statistics, in order to contribute to a better understanding of the economic disparities in Italy on the eve of modern growth. This paper is structured into four main sections. Section 2 presents the sources of our series and examines nominal wages for diverse jobs and the provincial and regional differences. Section 3 deals with price differentials between North and South and the elaboration of price indices to deflate nominal wages. Section 4 analyses the disparities in regional real wages in relation to the structure of the labour market.

2. Nominal wages

2.1. Data and sources

In this research, we exploited a primary source reporting nominal wages for diverse jobs and for different categories of workers in the construction sector for the Italian provinces between 1862 and 1878. These data are available in *Statistica dei salari* (Maic, w. d.)[4]. This volume contains nominal wages for diverse industries, including textile, mining, leather manufacture and several handicraft activities and agriculture, from diverse primary sources, just after the Unification. The time span of these data on wages varies, depending on the different sectors, from a few years to more than a decade. The volume represents an extraordinarily rich and detailed source of data on wages, particularly in the construction sector. The wages we used concern the 69 provinces of the Kingdom of Italy at 1878 borders (including, however, Venetia and Latium since 1862). These data were collected by the *Genio Civile*, a public body dependent on the Ministry of Public Works.

After the Italian Unification, the Royal Body of Civil Engineering (*Genio Civile*) was firstly organized by the Royal Decree 148/1861, followed by other regulations; in particular the law 874/1882[5]. The *Genio Civile* was made up of central and provincial offices and its jurisdiction concerned, *inter alia*, public buildings, work on rivers, harbours and railroads. Nominal wages are reported for diverse categories of workers: foremen (*capomastri*), 1st and 2nd class masons, labourers, helper boys (9-14 years old) and women (*ragazzi e donne in aiuto*), male, female and boy navvies (*terraioli*). Given the number of provinces, the time span and the different categories of workers, the dataset we used contains 9,579 observations for the construction sector alone. Table 1 summarizes the main features of the dataset.

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[4] This publication (whose complete title is: *Salari. Prezzi medii di un'ora di lavoro degli operai addetti alle opere di muratura ed ai trasporti di terra e mercedi medie giornaliere degli operai addetti alle miniere (1862-1878)* is not dated. It was quoted by Ellena (1880, p. 13), as *Statistica dei salari in Italia*. Consequently, it was published in 1879-80. This same volume has been exploited by Fenoaltea, 1985, 2002, but only for the calculation of wages on the national scale, and by Federico, Nuvolari, Vasta (forthcoming).
[5] See, Siusa: Sistema informativo unificato per le Soprintendenze archivistiche: Ufficio del genio civile, 1861–1972, http://siusa.archivi.beniculturali.it/cgi-bin/pagina.pl?TipoPag=profist&Chiave=259.

Nominal wages were recorded in thousandths of lira per hour of work. In all Italian provinces, the working day was 10 hours, with the exception of Bologna, Brescia, Como, Ferrara, Lecce, Pavia, Ravenna, Rome, Treviso, Venice, Verona, with 9 hours, Milan and Padua, with 8 hours, and Rovigo, with 8 hours for master builders and 7 for the navvies. In some provinces, firms supplied accommodation to labourers coming from other cities or provinces; in others, the labourers were provided with oil, salt, wine or lighting. These additional supplies were computed in terms of hourly pay and added to wages by the officials of the *Genio Civile*. Adjustments to wages were also made to take into account the wear and tear of equipment used by labourers (Maic, w.d). All of our data is therefore homogeneous.

Table 1. Structure of the dataset and number of observations of nominal wages

Variables		N.
Time	1862-78	16
Geographic coverage	Provinces	69
	Regions	16
Jobs (wages recorded)	Foreman	1,108
	Mason (st class)	1,149
	Mason (2nd class)	1,161
	Labourer	1,147
	Helper boy	1,115
	Helper woman	779
	Navvy	1,156
	Navvy boy	1,110
	Navvy woman	854
Total observations		9,579

Source: Maic (w. d.)

Needless to say, there was no collective wage bargaining system in Italy at that time (Zoppoli, 2011). Workers' organisations were in their infancy. Before 1860 only in the Kingdom of Sardinia did associations of mutual aid already exist. However, they quickly spread after the Unification. In 1862 there were 445 in the whole of Italy and by 1879 there were 2086 (Candeloro, 1968, pp. 180-81; 1970, pp. 34-5; Grohmann, 2004, pp. 703-04; for the Mezzogiorno, Ivone, 2004). As a result, in the period with which we are dealing, wages showed a significant variability both at the regional and the provincial level in connection with the conditions of local labour supply and demand. Despite the differences, the variability between provinces was relatively stable over the entire period 1862-78. The coefficient of variation of nominal wages for any job in the 69 provinces stood mainly between 0.20 and 0.30 without an apparent trend. Provincial differences in wages were higher for boys and women and lower for skilled workers.

The source we used also reports unweighted average nominal wages for the sixteen regions that made up Italy at the time. However, in order to obtain wages for regions and

macro-regions, we weighted provincial data with the workforce of any province from censuses held in 1861, 1871 and 1881 (Maic, 1867, 1876, 1884). The number of foremen (*capomastri*) was only reported in the 1871 and 1881 censuses; that of masons and labourers (*manovali*) in 1861, 1871 and 1881; that of navvies (*terraioli*) male, female and 9-14- year-old boys only in 1881. Thus, the provincial shares of navvies in 1881 were used to obtain regional (weighted) wages in 1861 and 1871 for the same workers' category, while the shares of foremen in 1871 were used for 1861. Provincial and regional nominal wages are reported in the online Appendix.

In the period with which we are dealing, the construction sector represented a marginal share of total employment. In 1871, it employed about 3.5 per cent of the Italian labour force. For a comparison, the primary sector occupied 50-60 percent of the labour force. An investigation on wages should, therefore, mainly focus on the agricultural sector, since the source we use provides average data on agricultural wages in 1870-74 (Maic, w. d., pp. 183-91). However, while provincial-regional wages in the construction sector are easily comparable, those in agriculture are not. In the period in question, agricultural wages were related to the specific conditions of the agrarian structures; they presented sharp seasonal variations due to the diverse activities (e.g. ploughing, harvesting...) and varied in relation to the payment in kind frequently provided to agricultural labourers[6]. However, wages of unskilled labourers in the construction sector may also be taken as reliable proxies of wages for unskilled agricultural labourers. In the population census of 1881 (Maic, 1884), navvies and labourers (*terraioli e braccianti*) were jointly considered. Both tasks and skills of navvies were, after all, not diverse from those of the unskilled agricultural labourers.

Overall, we believe that wages in the construction sector were much more representative than the share of sectoral employment would suggest. They cover the entire range of skilled and unskilled jobs. In Italy, as in Europe at the time of the Industrial Revolution, the wages of building craftsmen are indicative of trends in average earnings (Allen, 2001, p. 414). Regional wage levels in the construction sector may to some extent be taken as proxies of provincial and regional differences in wages on the whole[7].

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[6] For wages in the primary sector we can avail of the remarkable work by Arcari (1936). The period we deal with is not included in her book.

[7] The equality of wages for workers with similar degrees of skills and the representativeness of the "average wage" for a given community were clearly pointed out by Bowley (1900, pp. 18 ff.) in his book on wages in the United Kingdom.

2.2. Nominal wages

In Table 2 average nominal wages in selected years between 1862-78 are reported for each job recorded in our source. These data refer to the Italian averages and were computed by weighting provincial nominal wages with the respective shares of workers from population censuses.

Table 2. Nominal wages in 1862, 1870 and 1878 (thousandths of lira per hour), rates of yearly growth and overall increase, 1862-78

	1862	1870	1878	Average 1862-78	Yearly growth (%) 1862-78	1862-78 (1862=1)
Foreman	356	404	452	408	1.50	1.27
Mason (1st class)	236	275	301	275	1.53	1.27
Mason (2nd class)	196	229	242	227	1.32	1.23
Labourer	140	164	176	163	1.44	1.26
Helper boy	80	96	105	95	1.68	1.31
Helper woman	73	87	92	85	1.46	1.26
Navvy	138	162	168	158	1.21	1.21
Navvy boy	87	106	94	97	0.48	1.08
Navvy woman	63	75	76	72	1.12	1.20

Source: see text.

Note: the wages of helper boys and women are unweighted, due to the lack of data on employment and the marginal role they played in the building sector. For a comparison, per capita GDP at current prices was comprised in 1862-78 in the range 320-420 lire per year (Baffigi, 2015).

In the period under examination, nominal wages increased on average by 20-30 per cent with small differences among the diverse categories, with the only exception of navvy boys, whose wages remained basically stable. In Table 3, wages in each macro-area are expressed in terms of those of the unskilled navvies. The difference of wages for any job with that of a navvy represents the "skill premium" for each category (Van Zanden, 2009). In all areas, there were significant variations in wages depending on the required skills and the age-gender gap. In 1862-78, the wage of a foreman was 2.6 times that of a navvy. In Italy on the whole, skilled workers' wages were 40-80 percent higher than those of unskilled labourers, while those of boys and women were 35-60 percent lower. There were no relevant differences in relative wages between the South, the Isles and the Centre-North: the skill premium was roughly the same, but in the former regions women received a comparatively lower salary.

Table 3. The ranking of nominal wages 1862-78 (navvy=1)

	Ratios (navvy = 1)		
	Centre-North	South-Islands	Italy
Foreman	2.56	2.54	2.58
Mason (1st class)	1.71	1.78	1.74
Mason (2nd class)	1.41	1.47	1.44
Labourer	1.00	1.08	1.03
Helper boy	0.60	0.60	0.60
Helper female	0.56	0.51	0.54
Navvy	1.00	1.00	1.00
Navvy boy	0.63	0.61	0.61
Navvy female	0.48	0.43	0.45

Source: see text.

The regional nominal wages for each type of job, with respect to the Italian average, are reported in Table 4. We find the lowest wages in the Marche and the highest in Sardinia, followed by Liguria. In Sicily and Piedmont, wages were significantly higher than the average, while in Campania and Calabria lower. In general, Southern unskilled workers received lower wages than those in the North. For masons and building labourers North-South differences were smaller.

Table 4. Regional nominal wages as percentages of the Italian average 1862-78

	Foreman	Mason (1st cl.)	Mason (2nd cl.)	Labourer	Helper boy	Helper female	Navvy	Navvy boy	Navvy female
Piedmont	97.1	103.6	104.4	110.6	130.9	110.3	112.1	131.1	97.6
Liguria	104.7	114.8	111.8	129.8	128.9	124.1	136.3	118.9	128.9
Lombardy	103.9	92.8	91.7	94.4	100.0	123.0	105.7	96.2	102.4
Veneto	108.1	106.1	109.2	101.2	105.2	120.7	98.7	84.9	109.6
Emilia	93.1	93.9	93.0	91.9	97.9	106.9	91.7	91.5	92.8
Tuscany	102.0	97.8	100.9	101.9	94.8	83.9	103.8	101.9	125.3
Umbria	81.6	100.7	100.9	104.3	113.4	123.0	103.8	114.2	80.7
Marche	91.9	76.5	77.7	71.4	66.0	73.6	66.9	73.6	96.4
Latium	120.6	110.5	109.6	78.3	106.2	104.6	105.1	104.7	103.6
Abruzzi	90.2	97.1	91.7	92.5	78.4	88.5	87.3	80.2	86.7
Campania	92.2	85.9	82.1	83.2	83.5	81.6	79.0	75.5	83.1
Apulia	109.6	96.0	94.8	101.9	103.1	87.4	92.4	84.9	90.4
Basilicata	92.6	94.2	101.7	100.6	95.9	94.3	96.8	117.0	94.0
Calabria	92.6	91.3	94.3	81.4	74.2	77.0	78.3	73.6	103.6
Sicily	106.6	111.6	110.0	120.5	109.3	104.6	114.6	98.1	102.4
Sardinia	112.3	124.5	127.5	139.8	122.7	101.1	129.9	134.0	102.4

Source: Maic, w.d., pp. 14-17, 24-25. *Note*: see in Table 5 the national average nominal wages.

Fig. 1 provides a visual perspective, on a provincial basis, of the average nominal wages for masons, together with labourers, and for navvies. It is apparent how the North-South disparity in wages was larger for navvies than for masons and labourers.
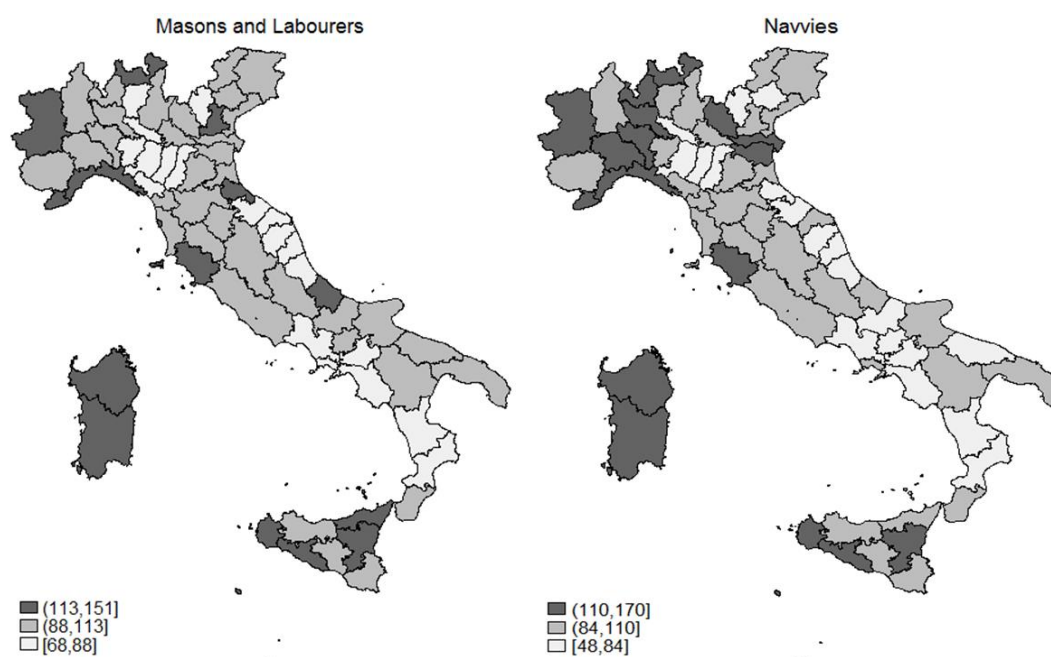
Fig. 1. Average provincial nominal wages for masons-labourers and navvies 1862-78 (Italy = 100)

Source: see text.

The average wages weighted by the workforce, together with the differentials among macro-regions, are reported in Table 5. For the most representative categories in terms of employees (masons, labourers and navvies), the gap between the Centre-North and the South and the Isles was very small or negligible. The difference was larger between the Centre-North and the peninsular Southern regions: it was, in fact, around 10 per cent for masons and labourers and larger, roughly 20 percent, for the unskilled workers, and particularly for navvies, helper boys and women.

Table 5. Average weighted wages 1862-78 in the macro-areas (thousandths of lira per hour) and differentials among macro-areas

	Foreman	Mason (1st cl.)	Mason (2nd cl.)	Labourer	Helper boy	Helper female	Navvy	Navvy boy	Navvy female
Centre-North	**415**	**277**	**229**	**162**	**97**	**91**	**162**	**103**	**77**
North-West	437	270	221	166	106	101	180	111	87
North-East	381	289	241	157	98	99	160	104	84
Centre	419	277	230	161	87	80	146	95	70
South-Islands	**388**	**272**	**223**	**165**	**91**	**78**	**152**	**93**	**66**
South	357	248	203	144	80	72	133	82	63
Islands	471	318	262	201	111	91	191	122	85
Italy	**408**	**275**	**227**	**163**	**95**	**85**	**158**	**97**	**72**
CN/Italy (%)	101.9	100.7	100.9	99.5	102.1	107.5	102.9	105.7	107.8
SI/Italy (%)	95.1	98.8	98.5	101.0	96.4	92.0	96.6	96.1	92.3
South/CN (%)	86.0	89.4	88.9	88.8	82.3	79.0	81.6	79.4	81.3
SI/CN (%)	93.4	98.1	97.6	101.5	94.4	85.6	93.8	90.9	85.7

Source: see text (section 2.1). *Note*: Centre-North (CN) includes North-West: Piedmont, Lombardy, Liguria; North-East: Venetia, Emilia Romagna; Centre: Toscana, Umbria, Marche, Lazio. South-Islands (SI) includes South: Abruzzi and

Molise, Campania, Basilicata, Puglia, Calabria; Islands: Sicily, Sardinia. Provinces are assigned to the respective regions and macro-regions following present regional borders.

It is worth noting how, according to the 1881 census (Maic, 1884), in the South – especially in some provinces - the share of navvies and other unskilled workers was significantly larger than in the Centre-North. This was perhaps the reason for their lower wages. Certainly, the lower wages of the navvies contributed to reducing the average of the South as a whole suggesting, as a consequence, a wide North-South disparity.
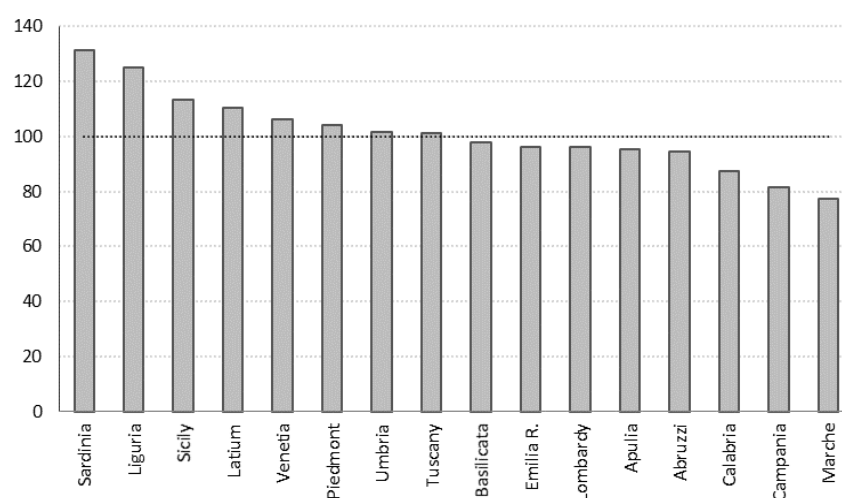

Figure 2. Nominal weighted building wages, averages 1862-78 (Italy = 100)
  Source: see text.

Regional weighted wages are reported in Fig. 2. In order to present an average wage per region for the building sector as a whole, we assumed that masons (averages of first and second classes), labourers and navvies each represented 30 percent of the labour force in the building industry, while foremen 5 percent and women and boys employed in the building industry together with navvy boys and women another 5 percent. We above all considered the 1881 census (Maic, 1884) where, however, masons and labourers in building are not distinguished. Since the population censuses do not allow for exact specification of the percentage for any class of workers, we tried sensitivity tests with alternative plausible assumptions on their percentage, thereby obtaining very similar results.

We see that the sectoral wage was significantly higher than the national one in Sardinia (31 percent), Liguria (25), Latium and Sicily (10 and 13), but lower in Calabria (-13 per-cent), Campania (-18) and particularly Marche (-23). In Lombardy and Emilia, it was similar to that of Apulia. It is apparent that the comparison of the Centre-North and the South

and the Isles in terms of nominal wages results in a deceiving perspective, because of the high levels of Sardinia and, to lesser extent, Sicily. The exclusion of these regions, and then a comparison between the South (without the Islands) and the Centre-North, is more realistic. We will come back to the high wages in Sardinia and Sicily in section 4.

Trends in the wage for the construction sector as a whole in the macro-regions in 1862-68 are reported in Figure 3. Everywhere wages increased, with very similar rates of growth (around 1.3 per cent per year). Particularly between 1862 and 1873, wages increased rapidly in all regions by 25-28 percent. This trend was related to the dynamics of prices that increased in the years 1871-73, as we will show in the next section. Because of the remarkable increase in foodstuff prices, several strikes occurred in 1873 (Maic, 1898, p. 166; Candeloro, 1970, p. 36). The price index, however, dropped in 1875 by about 14.4 percent respect to the previous year[8]. As a consequence, nominal wages significantly decreased.
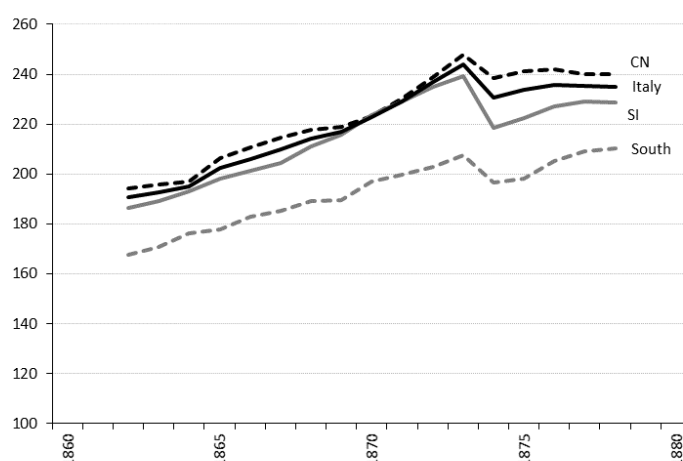

Figure 3. Nominal weighted wages in the construction sector in the macro-regions in thousandths of lira per hour, 1862-78

Source: see text.

On the whole, nominal wages in the building sector in the South and the Isles were just 4 percentage points lower than in the Centre-North. In the peninsular South, however, the average wage of the building sector was, instead, 14 percentage points lower than in the Centre-North. These differences may in part be explained by the lower wages of the unskilled workers in the Southern regions and especially of the navvies. We will see in section 4 that, when real wages are considered, this picture changes.

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[8] The increase in food prices was recorded by the national price index (Istat, 2011, p. 884).

3. Prices

3.1 Relative prices

Only recently past and present North-South price differences drew the attention of the Italian National Institute of Statistics and scholars (Caruso et al. 1993; Cannari, Iuzzolino, 2009; Massari et al., 2010). The disparity in the level of prices in the North and South has been computed from the aftermath of World War I until 1938 by Amendola and Vecchi (2011), and, from 1951 until 2011, by Amendola et al. (2009). On the whole, from the aftermath of World War I until 2011, prices in the South were about 10-15 percent lower than in the North; both for foodstuff prices and the cost of living as a whole (Amendola, Vecchi, 2011, pp. 436-37). For the period 1862-1913, Amendola and Vecchi (2011, p. 410-11) worked out the disparity of the relative price growth rate in the North and South, but not differences in the level because of the scarcity of information for that period. They suggested, however, that, because of the absence of convergence and divergence in that period, the North-South difference in prices already existed before World War I. Actually, our knowledge on prices in the first decades after the Unification is poor. Yet in our view, it is not insufficient to provide the basis for a comparison of real wages in both macro-areas. For the period 1862-84, the General Direction of Statistics collected in a volume, published in 1885, monthly data for eleven agricultural products essential to the budget of workers' families: two qualities of wheat, two of maize, two of wine, two of olive oil, two of beef and one of rice (Maic, 1885)[9].

The prices of these products were collected in several Italian markets both in the North and South: twenty-two cities for wheat, twenty for maize, seven for wine, six for oil, seven for beef and four for rice. A primary interest of the Direction of Statistics was to evaluate, through this data, changes in the standard of living of the workers. This aim is clear in a following publication, where a deflation of wages was calculated using the series of wheat and maize prices already published in 1885 (Maic, 1886). Excluding rice, whose prices refer only to Northern Italian cities, we elaborated the other series in order to deflate our provincial wages in the North and South for a comparison in real terms. The Direction of the Statistics collected only food prices. Information on other prices such as those of manufactured goods and house rents, important to define the standard of living of workers' families, are not available for our period. Food, in any case, represented the bulk of household spending. In the budgets of 69 relatively poor families in the years 1878-79, food accounted for around 80-85 percent (Vecchi, 1994, Tab. A2; Malanima, 2016, p. 17). This

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[9] Data from Maic (1885) were exploited by Romani (1968, Appendice statistica).

figure is certainly too high for industrial workers' households. A percentage around 75 percent seems more plausible (Vecchi, 1994, Tab. A4). Private consumption of food in Italy on the whole was, according to Barberi (1961, p. 24), equal to 75 percent of the whole private expense in 1874-93.

In the following section we will discuss, first of all, the relative level of prices for the items recorded in the North and South; then we will proceed to the elaboration of two indices in order to establish the purchasing parity powers (PPP) for the North and South in food prices; finally, we will deflate our provincial wages.

Table 6 reports the average differentials in 1862-84 prices, that is the ratio between prices in the South and in the North[10]. We compare the results for 1862-84 to the same relative prices in two quite close years, 1889 (Maic, 1891, pp. 540-50) and 1892 (Maic, 1893, pp. 505-18). Since in both years data on prices were collected for many more cities than in 1862-84, the comparison allows to check whether the relative prices in the North and the South are confirmed by later data.

Tab. 6. Ratio between food prices in the South and the North in 1862-84 (averages), 1889 and 1892

	1862-84	1889	1892
Wheat (1st quality)	1.01	1.03	1.04
Wheat (2nd quality)	1.02	1.03	1.03
(Bread)	(0.84)	0.81	0.81
Maize (1st quality)	1.10	0.88	0.99
Maize (2nd quality)	1.06	0.92	0.99
Wine (1st quality)	0.66	0.58	0.56
Wine (2nd quality)	0.68	0.60	0.63
Oil (1st quality)	0.61	0.67	0.58
Oil (2nd quality)	0.68	0.75	0.60
Beef (1st quality)	1.45	1.10	1.21
Beef (2nd quality)	1.54	1.02	1.14

Sources: Maic, 1885, 1891 and 1893. *Note*: the price of bread in 1862-84 (in brackets) is computed on the basis of wheat prices (averages of 1st and 2nd qualities) multiplied by 1.7 for the North and by 1.4 for the South (such as explained in the text). Both coefficients are drawn from Maic, 1891, 1893, and concern the years 1889 and 1892. The prices of 1st quality beef are missing for Naples 1862-71 in Maic, 1885, and are taken from Maic, 1888, p. 421. We reconstruct the missing data for 2nd quality beef in 1862-71 assuming the same difference existing in 1871-84 with respect to the national series in Istat, 2011, Ch. 21.

We can see that the price of wheat in Northern and Southern Italian markets is the same[11]. Market integration for wheat already existed at the time of the Unification (Federico, 2007b). People, however, eats bread and not wheat. In our price index we must include bread. In order to derive the price of bread from that of wheat, the simplest way is to multiply the

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[10] Since data on prices refer to a wider period than wage data, in the following we present our CPI for the entire period 1862-84 in order to set the trend in a wider perspective.
[11] Wheat prices in Cagliari, however, were lower than in Florence, Genoa and Milan in the first two decades after the Unification. See: Delogu (1959) for Cagliari, Bandettini (1957) for Florence, Felloni (1957) for Genoa and De Maddalena (1957) for Milan.

price of wheat by a coefficient representing the cost of bakery. On the national scale, in the twenty years after the Unification, the price of bread was 1.5-1.7 times the price of wheat (Istat, 2011, ch. 21). Data referring to twenty-four cities in the North and South in 1889 and 1892 shows, however, that the cost of transforming wheat into bread was not the same in the North and South (Maic 1891, 1893). While in the North the price of bread was 1.7 that of wheat, in the South it was 1.4. Apparently, this difference depended on the difference in nominal wages in bread making. The result is that, in 1862-78, the price of bread in the South was 16 percent lower than in the North.

As regards the other documented main cereal, maize, its price was higher in the South than in the North in 1862-84, but lower in 1889 and the same in 1892. In our following CPI the price of maize in the South is on average 10 percent higher than in the North.

A remarkable disparity existed in the prices of wine and oil. In the South, the prices of both items were lower than in the North (probably since Southern Italy was - and is - the main producing area of the country in both items and especially in olive oil). This holds true for Sardinia as well (Delogu, 1959). Since the Southern markets documented in our source are few for the period we are dealing with, we checked the existence and extent of this disparity in the following years 1889 and 1892, when the prices recorded are more numerous. The comparatively lower prices in the South for both products are confirmed.

Beef was considerably more expensive in the South than in the North. We know, however, that lamb was far cheaper in the South. In 1872-77 the price of lamb in Naples was 73 percent of that in Turin, Genoa and Leghorn (Maic, 1881, pp. 262-63). We could hypothesise that beef was less consumed in Southern regions since livestock breeding was less widespread than in the Po Valley. However, the higher price of beef certainly depended on the different systems of sale: in the South beef was sold without bone; in the North with bone (Maic, 1891, p. 548; Maic, 1892, p. 515). We could assume some average weight of bone per kg of meat and try to solve the problem of comparability. In the following calculations (such as in those of the officials of the Direction of Statistics), we took the figures of our sources at their face value.

As can be seen, the higher price of maize in the South in 1862-84, together with the higher relative price of beef in comparison with the following years 1889 and 1892, make the basket in the South more expensive in those years than later.

3.2 The food index

The baskets utilised today for Purchasing Parity Power (PPP) measurements in different countries are not the same: their utility for the purchaser must be equal taking

diverse diets and preferences into account. In the case of Northern and Southern Italy, the diet of the poor, workers included, was not so varied at the time. Yet it was not the same! A main difference between the diet in the North and the South was maize consumption, widespread in the North and modest indeed in the South. On average, in the years 1862-84, the price of maize was 0.67 the price of wheat (both for the first and second quality of maize and wheat). It is apparent that the inclusion of maize only in the basket for the North would results in overvaluation of real wages for the same area. The point is, however, if a basket with maize could be seen as equivalent in terms of quality to a basket with wheat. This problem of quality comparability today implies continuous adjustments in PPP measurements because of the differences in the quality of goods and services of the countries compared. With regard to maize in Italy, coeval workers would have felt the substitution of bread with maize as a loss of utility and then as a deterioration of their standard of living. The utility – in terms of individual welfare – of a diet composed almost exclusively of maize, such as that of the peasant households of the North, was surely lower than a more varied diet including wheat. Northern inhabitants were forced to base their diet on boiled maize meal (*polenta*) not only because of their budget constraint, but also since maize represented almost a monoculture at that time particularly in Emilia, Lombardy and Veneto (Cazzola, 1996, pp. 58-62; Ginnaio, 2011). In fact, the consumption of maize-derived food was incomparably lower for the wealthy families of the same regions that consumed wheat bread instead (Maic, 1879, p. 42).

The preference of bread to maize is not only a matter of taste. Maize is poorer in nutrients than wheat, namely it is poor in vitamin B3 (niacin or nicotinic acid) and tryptophan. Both niacin and tryptophan in maize were one-third of those in wheat (Latham, 1997, Tab. 33). A diet widely based on maize-derived foods – and poor in other nutrients - results in a cellular deficiency of niacin and its precursor, the essential amino acid tryptophan (Hegyi, Schwartz, 2004). A consequence in the past was the pellagra disease. In 1879, in many Northern provinces, particularly Venetia, 20-40 cases of pellagra per 1000 inhabitants were usually recorded, with peaks of 60 cases (Maic, 1881, p. 247; Ginnaio, 2011). The qualitative difference between wheat and maize is the reason why we will measure the purchasing power of wages in terms of a "national", unique basket, instead of different baskets for the South and North. A short-cut in inter-country comparisons of purchasing parity power, such as the Big Mac Index, based as it is on the price of equal ingredients all over the World, may provide better results than the comparison in prices of similar, but actually qualitatively diverse, products (San Vincente Portes, Atal, 2014).

The choice of different baskets for the North and South would imply other changes. A significant change would have to regard meat in particular. In coeval research on

consumption per regions and per cities, the authors specified that "in Northern Italy and Rome beef represents about two-thirds of meat consumption, in Emilia, Marche and Tuscany, about a half, in Sardinia a half and Campania and Sicily, hardly a third" (Maic, 1879, p. 74 and pp. 72-3). A replacement of beef with pork and lamb would result, in the South, in higher real wages than if including only beef.

Following the information for the same time span on the diet of the Italians and particularly calorie consumption by adult workers, always within the constraints of the available price series, and assuming a plausible balance between carbohydrates, fats and proteins, we established the basket reported in Table 7. Ours is not a bare-bone basket, but a basket fit for the kind of jobs we are dealing with. The prices of this basket have been exploited to deflate the wages of adult male workers, whose consumption is set at about 3000 kilocalories per day; taking into account the energy requirement in terms of muscular power in the building sector. Following the human energy requirements established by FAO (2004), the relative level of Calorie consumption for boys 10 to 14 years old and women (in order to deflate their wages) has been established equal to 85 percent of that of adult workers (with the same balance between proteins, carbohydrates and fats).

Table 7. Composition of the basket in order to compute the Food Consumer Price Index in 1862-1884

	quantity per year	unit	kcal per unit	kcal per day	proteins per unit	fats per unit	carbohydrates per unit	proteins per year	fats per year	carbohydrates per year
Bread	180	kg	2600	1282	70	13	520	12,600	2,340	93,600
Maize	110	kg	3200	964	83	6	590	9130	660	64,900
Beef	40	kg	2000	219	180	180		7200	6,300	
Oil	10	liter	8500	232		950			9,500	
Wine	180	liter	700	345	10			1800		
Total				3044				30,730	19,700	158,500

Note: Calorie consumption by adult workers was higher than the average Italian consumption, given the hard physical labour. See a summary of the data on Calorie consumption in post-Unification Italy in Malanima (2016, p. 33), Federico (2003), Sorrentino and Vecchi (2011). We followed the information reported by Somogyi (1973, p. 489) on Calorie consumption by Italian workers in 1883. Wine consumption in the South was far higher than 180 litres: 270-280 litres around 1883 (Somogyi, 1973). The availability of olive oil is also low in our basket in comparison with the national estimate of fats availability (Barberi, 1961, p. 44). These choices have been made in order to avoid the advantage of the South for the lower prices of both goods. Because of the data constraints we were forced to exploit only marginally the abundant information on food consumption in Maic (1879, pp. 37-96).

The resulting CPIs for the North and South (Figure 4) present a parabolic trend: stability and then increase until 1873-74, followed by fast decline. The beginning of the so-called Great Depression, starting in 1873-74, marks a watershed between the relative stability prior to 1873 and the ensuing decline. The correlation between both indices is 0.85.
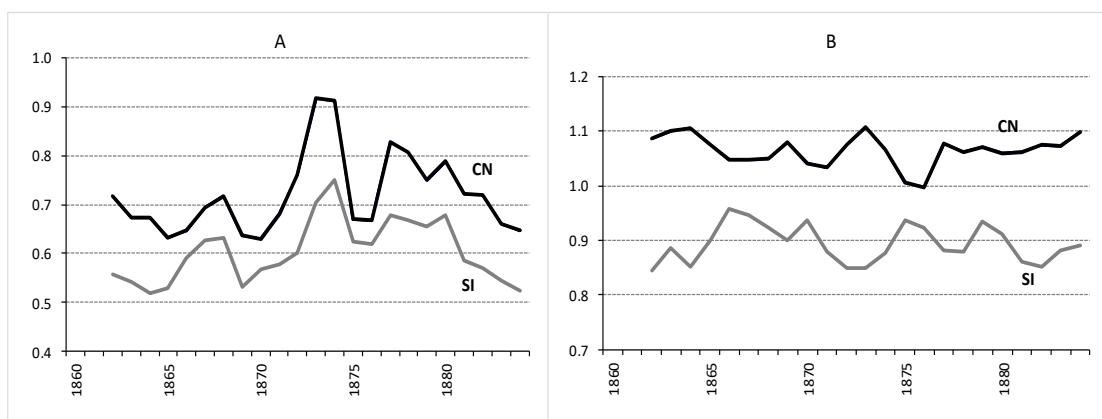
Figure 4. Daily price of the food basket in the Centre-North (CN) and South-Islands (SI) (A) (in lire) and ratio between the series for CN and SI and the national average (= 1) (B) in 1862-84

Sources: see text. *Note*: the national average utilised in (B) in order to show the relative northern and southern CPI is computed with the same data and same basket of the series in (A). Diagram B is presented to allow a comparison with those of Amendola, Vecchi, 2011, pp. 404-05.

All in all, the price of the food basket in the South is 84 percent that of the Centre-North and 90 percent that of Italy. The existence of lower prices in the South is not a real discovery. The relative level of prices in the North and South agrees with the estimates by Amendola and Vecchi (2011, pp. 408, 436) for six years between 1923 and 1938, when the ratio between the prices in the South and those in the North was comprised in the range 0.86-0.88. A similar ratio has been computed by Cannari and Iuzzolino (2009) for the year 2006. Actually, it seems that a difference of 10 to 15 percent between the prices in the South and those in the North represents a long-term constant.

To check our results, in Figure 5 we present a comparison among the national Istat CPI, a revised cost of living index by S. Fenoaltea and the price of our food basket in diagram A, and between our food index and a similar index (with the same basket) computed on the Istat series of national food prices, in diagram B. In the first case the correlation is 0.87 between our index and the Istat index and 0.81 between our index and that by Fenoaltea. Between the series in diagram B the correlation is 0.84. The parabolic trend of prices is confirmed. Given the relative importance of food in any basket in the aftermath of the Unification an index of food prices seems to be representative of the cost of living on the whole.
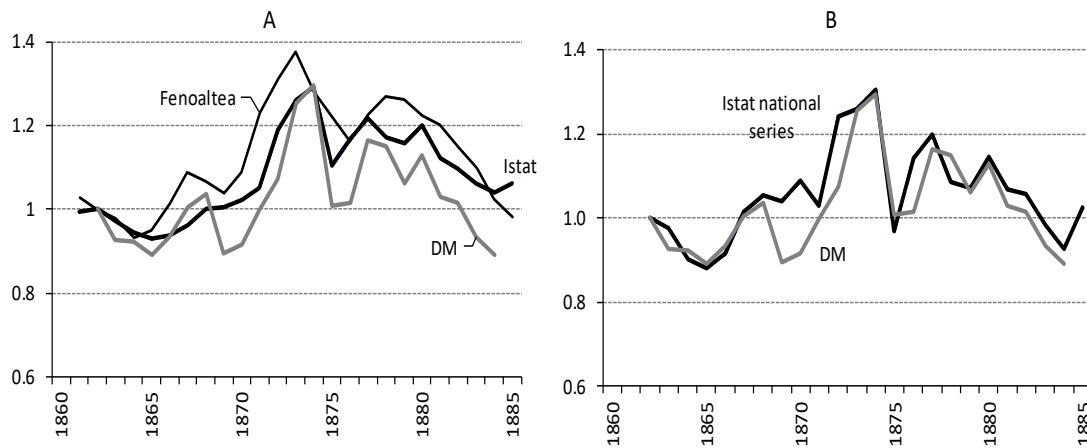
Figure 5. Comparisons among different CPI, by Istat (from 1861), Fenoaltea (from 1861) and ours (DM)(from 1862) in A and among two national series of food prices in B in 1862-84 (1862=1)

Sources: for the sources of our food CPI see text. *Note*: in (A) we used for comparison Istat CPI in Istat, 2011, p. 896 (thick, black curve) and the revised cost of living index by Fenoaltea, 2002, p. 282 (thin, black curve). Then the comparison in (A) is between two CPI and a food index (ours). In (B) we utilised the national series of food prices in Istat (2011), ch. 21, to establish the price of the food basket (curve in black), and our national food price index with the same basket of Table 8 (grey curve).

4. Real wages

4.1 The overall trend

The results of our wage deflation must be read as the number of potential daily baskets a worker in the North and South could purchase to get a balanced diet both in terms of calories and nutrients. Our calculation of real wage rates follows the simplest procedure of dividing daily earnings by the price of the basket. We could call the results "welfare ratios", or real wages expressed in terms of their capacity to purchase a certain basket of goods (Allen, 2001). Real wages are then compared on the basis of the daily baskets the different workers could buy. It is worth noting that resorting to the old method of deflating wages through the price of bread our results would be similar to those we reach through our basket. By chance, in fact, in the years 1862-84, the price of bread in the South was 0.84 of that in the North[12], exactly the same as the North-South ratio between the prices of our national basket.

Two premises are in order. First of all, our calculations always refer to daily wages. Since our nominal wages are per hour, we simply assume that workers, as was the norm, worked 10 hours per day (as specified in Section 2.1). Then wages always refer to the same working time. We do not know how many days the workers of our sample actually worked in

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[12] As in the previous Table 6.

a year[13]. Probably women and boys in the building industry worked much less than male masons, labourers and navvies. Any assumption would be imprecise and would bias our comparisons. What we know for sure is that the average number of daily baskets bought by any worker was naturally lower than that of our calculation on a daily basis, since any worker did not work 365 days a year. If, for instance, a daily wage was equal to the price of 2 baskets and the worker actually worked 240 days, he could not allow the yearly purchase of 2 baskets per day, but only of 1.32 (2·240/365) or 0.66 multiplied by 2.

A second premise is that including the house rent and the prices of other items ordinarily bought by workers we would have to increase the price of the basket by about 25 percent. The average daily price of our basket was 0.676 lire in 1862-78. This price would rise approximately to 0.845 whenever we were to include other non-food items. The average nominal wage, in the same years in the building sector for ten hours work per day, was 2.19. In terms of the food basket, the deflated wage per day was 3.2. In terms of a complete basket on a yearly basis (assuming 240 working days) it would be 2.6.
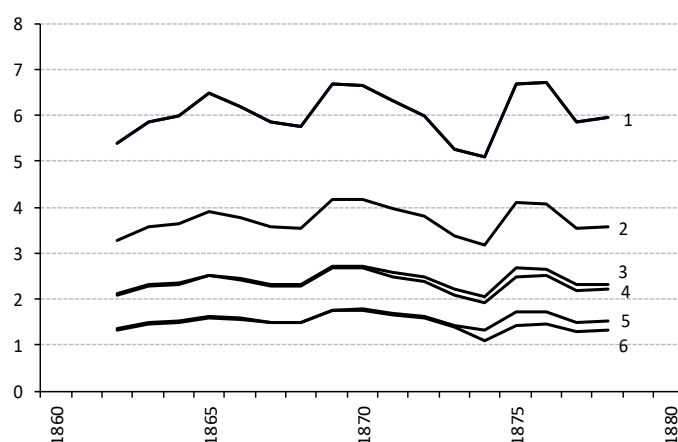

Figure 6. Real daily wages for six classes of workers in the building industry 1862-78 (daily food baskets bought on the vertical axis)

Source: see text. *Note*: 1. foreman; 2. mason (average of 1st and 2nd classes); 3. labourer; 4. navvy; 5. helper woman and boy (average); 6. navvy woman and boy (average).

In the following section, we start from real earnings per class of workers and per area and then we focus on the main differences between North and South in 1862-78[14]. We can see, in Figure 6, that the overall trend of real wages in building was relatively stable in the long run, although characterised by high volatility.

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[13] We will explicitly specify whenever we will refer to the working days in a year (such as in Table 8).
[14] In the Appendix, we set our real wages for the years 1862-78 in a wider perspective, within the long-term trend 1800-1913.

More specifically, in Table 8 we can see the average real wage rates in terms of food baskets and complete baskets. Looking at the first column, the workers, both skilled and un-skilled and even women and boys are able to cover, through their daily wages, their elementary food needs. Any wage procures to the worker at least one basket per day equal to 3000 kilocalories, in the case of adult males, and to 2500, in the case of women and boys. The number of baskets diminishes whenever we look at complete baskets in col. 2. Finally, assuming a hypothetical working year of 240 days (in cols. 3 and 4), both values fall even more. Wages of boys and women especially were considered as mere contributions to the family budget since hardly able to cover the food cost per person and nothing else, in the lucky event, but little realistic in their case, of an employment over 240 days per year[15].

Table 8. Food baskets and complete baskets bought per day by different categories of workers 1862-78

	1	2	3	4
	Daily food baskets (daily wage)	Daily complete baskets (daily wage)	Daily food baskets (on yearly basis)	Daily complete baskets (on yearly basis)
Foreman	6.04	4.83	3.97	3.18
Mason (1st class)	4.07	3.26	2.68	2.14
Mason (2nd class)	3.36	2.69	2.21	1.77
Labourer	2.41	1.93	1.59	1.27
Helper boy	1.65	1.32	1.09	0.87
Helper woman	1.48	1.18	0.97	0.78
Navvy	2.34	1.87	1.54	1.23
Navvy boy	1.70	1.36	1.12	0.89
Navvy woman	1.25	1.00	0.82	0.66

Sources: see text. *Note*: daily baskets (on a yearly basis) in cols. 3 and 4 refer to the baskets bought per day by any worker assuming a yearly working time of 240 days (computed by multiplying the daily wage of cols. 1-2 by 240 days and dividing by 365). While the daily food baskets for adult workers correspond to 3000 kcal, those referring to women and boys are equal to about 2500. By complete baskets we mean baskets that include non-food items and whose price is 25 per-cent higher.

In 1886, the employees of the Direction of Statistics tried, for Italy as a whole, a reconstruction of the real wages (Maic, 1886, p. 28) (Fig. 7). Since their attempt was based only on cereal prices (wheat and maize), which fell after 1874 as a consequence of the increasing importation of wheat from America, their trend is upward bent in 1875-78. The authors of the series were conscious that their trend reflected the specific behaviour of cereal prices from 1874 and not food prices as a whole. Although the correlation between the series is high (0.67), our deflation results in a less optimistic perspective about the workers' standard of living.

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[15] The comparisons of the Italian with non-Italian wages are the object of the paper by Federico, Nuvolari, Vasta, in progress. They clearly specify the low level of the Italian real wages in an international perspective.
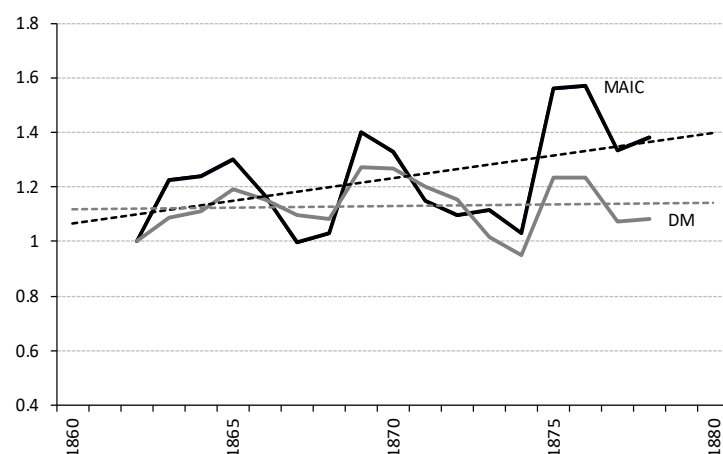
Figure 7. Two views of real wages in 1862-78 on the national scale (Maic in black and ours in grey; 1862=1)

Sources: for our series DM of real wages (in grey) see text. The series by Maic (in black) is computed on the basis of the series in Maic, 1886, p. 28 (prices of a quintal of wheat and a quintal of maize). *Note*: the series of real wages by Geisser, Magrini (1904, p. 89), is deflated through a series of cereal prices (as the authors write on p. 14) and is similar to that by Maic. The trends of the series by Fenoaltea (2002, pp. 269-70 and 273-74), deflated through a revised CPI, are stable (skilled workers) or declining (unskilled workers). Their trends are similar to those of our series.

4.2. Real wages in the North and South

Including Sardinia and Sicily, and then dividing the aggregate real wage in the South-Islands by that of the Centre-North, the result is that wages were higher by 16 percent in the South Islands (Table 9 and Fig. 8). As said previously, however, this view is partial, influenced as it is by the high nominal wages in Sardinia and, to a lesser extent, Sicily. Much more realistic is the result we achieve dividing the aggregate real wages in the South (in this case excluding Sardinia and Sicily) by those in the North. The relative advantage of the South is only 3 percent. We could summarise saying that in 1862-78 real wages in the Southern regions were the same as those in the Centre and North.

From the perspective of wages, a North-South divide did not exist in the first two decades after the Unification. Emigrating from the South a worker would have found higher wages in the North, but also higher prices. His living condition would have remained unaltered.

Table 9. Weighted average real wages (baskets per day) in building in Centre-North, South, South-Islands, Italy (cols. 1-4) and differential per area in real wages (cols. 5-9) in 1862-78

|	1	2	3	4	5	6	7	8	9
	CN	**SI**	**South**	**Italy**	**SI/CN**	**South/CN**	**SI/Italy**	**South/Italy**	**CN/Italy**
1862	2.41	3.01	2.70	2.58	1.25	1.12	1.16	1.04	0.93
1863	2.58	3.13	2.82	2.81	1.21	1.09	1.11	1.00	0.92
1864	2.60	3.35	3.05	2.87	1.29	1.17	1.17	1.06	0.91
1865	2.90	3.37	3.02	3.08	1.16	1.04	1.09	0.98	0.94
1866	2.89	3.06	2.78	2.99	1.06	0.96	1.03	0.93	0.97
1867	2.74	2.93	2.65	2.83	1.07	0.97	1.04	0.94	0.97
1868	2.69	3.01	2.69	2.80	1.12	1.00	1.07	0.96	0.96
1869	3.05	3.64	3.20	3.28	1.19	1.05	1.11	0.97	0.93
1870	3.14	3.54	3.10	3.28	1.12	0.99	1.08	0.95	0.96
1871	3.00	3.54	3.08	3.10	1.18	1.02	1.14	0.99	0.97
1872	2.79	3.50	3.01	2.98	1.25	1.08	1.17	1.01	0.94
1873	2.40	3.06	2.65	2.63	1.27	1.10	1.16	1.01	0.91
1874	2.37	2.65	2.38	2.45	1.12	1.00	1.08	0.97	0.97
1875	3.26	3.24	2.89	3.19	0.99	0.89	1.02	0.91	1.02
1876	3.27	3.34	3.01	3.19	1.02	0.92	1.05	0.94	1.02
1877	2.61	3.06	2.79	2.77	1.17	1.07	1.11	1.01	0.94
1878	2.67	3.11	2.86	2.80	1.16	1.07	1.11	1.02	0.96
Averages	2.79	3.21	2.86	2.92	1.16	1.03	1.10	0.98	0.95

Source: see text..
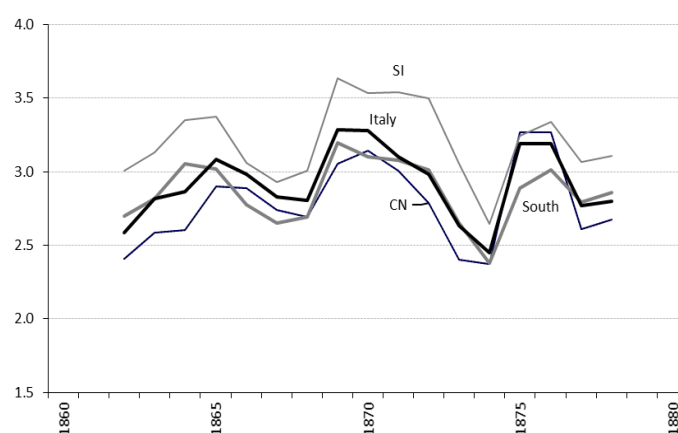
Figure 8. Weighted average real wages (baskets per day) in Italy, in South-Islands, in Centre-North and South 1862-78

Sources: see text.

The trends of the North-South differential in real wages (that is the ratio between real wages in the South and South-Islands and those in the Centre-North), deserve attention. The trend represented in Figure 9 is clearly downward: the advantage of the South-Islands and the South in real wages was slightly declining in the seventeen years under investigation, and particularly after 1873-74. While the average wage differential South/CN was equal to 1.05 in 1862-73, it was 0.99 in 1874-78. This slight decline in the differential was occurring at the

time when coeval observers such as Pasquale Villari, Leopoldo Franchetti and Giustino Fortunato were beginning to highlight the economic divide between North and South (Galasso, 1978, pp. 14-9). The Mezzogiorno (both with or without the Islands) was at that time losing ground. If a real North-South disparity from the perspective of real wages did not exist in Italy in the aftermath of the Unification, 10-15 years later the disparity was in progress.
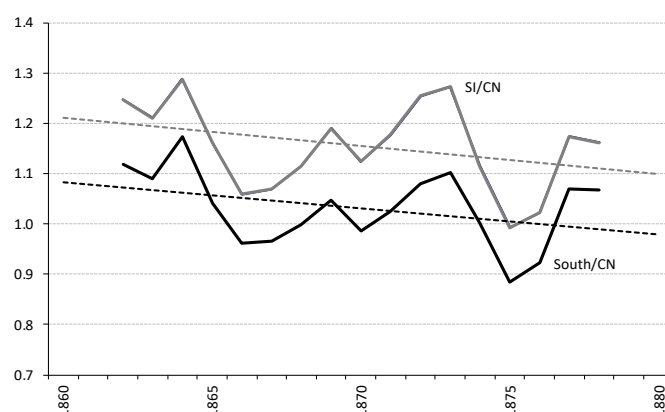

Figure 9. Differentials in real wages in South-Islands and South as ratio between relative wages in South or South-Islands (SI) and Centre-North (CN) and their trends 1862-78

Source: see text.

4.3. Regional real wages

We have, until now, tracked the differences in the level of wages and reached the conclusion that the overall level of real wages in the South plus the Islands was higher than in the Centre-North; without the Islands, that is the peninsular South, after the Unification the level was the same as in the North.

Figure 10 summarises the results of our research on real wages in 1862-78 on a regional scale. Whenever we exclude the first three and the last three regions represented in the diagram, wages in the other regions stay in the relatively narrow range of about 15 percent. Sardinia boasted the first place in the regional hierarchy of wages and Sicily was in the second position, while the bottom was occupied by Campania, Emilia and Marche, with Lombardy very close to them. This regional ranking of wages may appear puzzling, as the perspective from the wages point of view does not fit in well with what is generally considered to be the post-Unification economic geography.
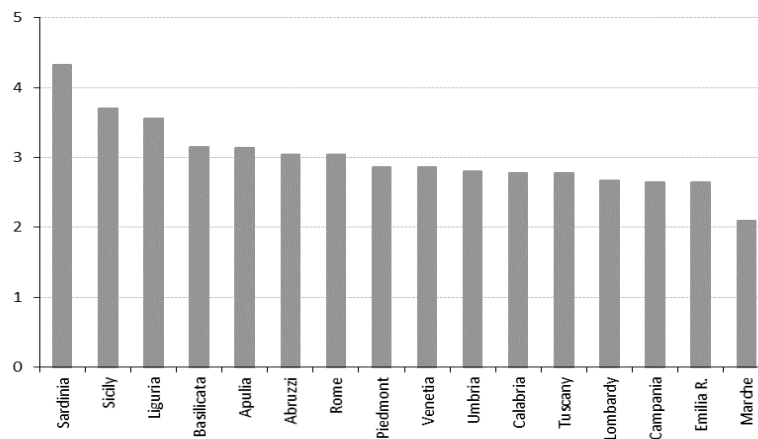
Figure 10. Weighted real regional wages (food baskets per day) over the years 1862-78
Sources: see text.

In the economic system we deal with, where institutions and workers' organisations played a marginal role, the price of labour was primarily determined by the interrelationship of supply and demand. Since interregional migrations were still modest, regional differences were to reflect differences in productivity levels, hence in regional labour markets, in particular on the supply side.

Regarding the supply of labour, the main sources of documentation for the period we are dealing with are the three population censuses held in 1861, 1871 and 1881. Yet those censuses have been the object of criticism in the past and have been regarded as little reliable. V. Zamagni (1987) in particular revised the 1881 census in depth. Her revision resulted in a lower participation rate for the regions of Southern Italy (with the Islands) in comparison to the original census data: on the whole, in her revision, 9 percentage points separate the South-Islands from the Centre-North. Recently the approach has been less critical than in the past and those censuses have been exploited in order to specify the trend of the industrial sector (Fenoaltea, 2001, 2003; Ciccarelli, Missiaia, 2013). All in all, we cannot but agree with the criticism on the reliability of the first three censuses and particularly on the overestimation of the female labour force in Southern industry and, within industry, especially in the textile sector; such as the coeval observers already knew (Giordano, Zollino, 2015, p. 162). Despite the efforts by recent scholars, we have to acknowledge that, from a statistical viewpoint, a convincing way to deal with the overcounting of female employment rates in the South has not yet been devised. The linkage between the female activity rate and total activity rate is straightforward: the participation rate depends primarily on female activity (Figure 11). In

Sardinia and Sicily, female labour supply was modest indeed, while it was remarkable (even allowing for an overestimation in our sources) in Calabria, Basilicata and Abruzzi.
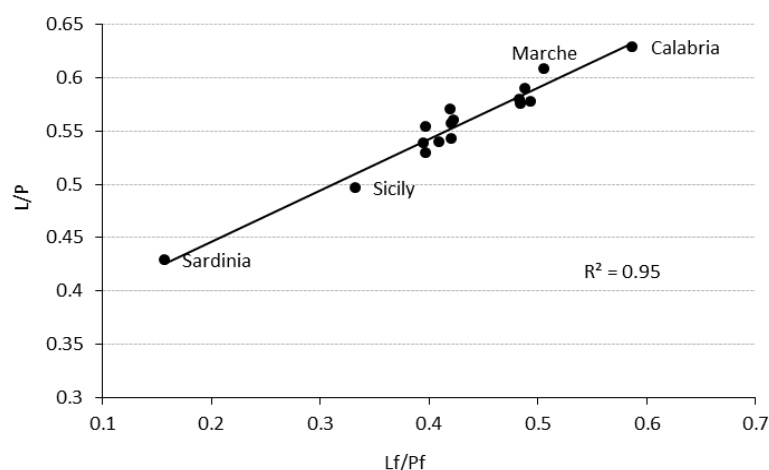

Figure 11. Relationship between total activity rate (L/P) and female activity rate (Lf/Pf) in 1881
Source: Vitali (1968, 1970).

In order to clarify the regional participation rate, in Table 10 we present the activity rate for both sexes together (cols. 1-3), exclusively for male workers (cols. 4-6) and exclusively for female workers (cols. 7-9).

Table 10. Participation rates in 1861, 1871, 1881 (total, male workers and female workers)

	Total			Male labour force			Female labour force		
	1861	**1871**	**1881**	**1861**	**1871**	**1881**	**1861**	**1871**	**1881**
Piedmont	0.60	0.57	0.58	0.73	0.69	0.67	0.48	0.44	0.48
Liguria	0.54	0.56	0.53	0.70	0.71	0.67	0.40	0.41	0.40
Lombardy	0.60	0.58	0.59	0.73	0.71	0.69	0.47	0.45	0.49
Venetia	..	0.51	0.54	..	0.70	0.67	..	0.33	0.41
Emilia	0.59	0.55	0.56	0.74	0.72	0.70	0.44	0.37	0.42
Tuscany	0.55	0.54	0.56	0.72	0.72	0.69	0.39	0.35	0.42
Marche	0.64	0.62	0.61	0.76	0.74	0.72	0.53	0.50	0.51
Umbria	0.64	0.59	0.57	0.76	0.78	0.71	0.51	0.41	0.42
Latium	..	0.56	0.55	..	0.75	0.70	..	0.34	0.40
Abruzzi	0.69	0.56	0.58	0.78	0.72	0.68	0.61	0.40	0.48
Campania	0.58	0.55	0.54	0.71	0.70	0.67	0.46	0.41	0.42
Apulia	0.58	0.52	0.54	0.71	0.69	0.68	0.47	0.35	0.39
Basilicata	0.68	0.53	0.58	0.74	0.68	0.67	0.63	0.40	0.49
Calabria	0.72	0.61	0.63	0.76	0.74	0.67	0.68	0.49	0.59
Sicily	0.49	0.48	0.50	0.68	0.70	0.66	0.31	0.26	0.33
Sardinia	0.42	0.37	0.43	0.71	0.66	0.68	0.14	0.08	0.16
Italy	**0.59**	**0.54**	**0.56**	**0.73**	**0.71**	**0.68**	**0.46**	**0.38**	**0.43**
Centre-North	0.59	0.56	0.57	0.73	0.71	0.68	0.46	0.40	0.44
South-Islands	0.59	0.52	0.54	0.72	0.70	0.67	0.46	0.35	0.41
South	0.63	0.55	0.57	0.73	0.70	0.68	0.54	0.41	0.46
Islands	0.48	0.45	0.48	0.69	0.69	0.67	0.28	0.23	0.30

Sources: Maic, 1866 (1861 census), Maic, 1876 (1871 census), Vitali, 1970 (1881 census).

We see that in the South and Islands the participation rate was the same as the Centre-North in 1861 and was hardly lower in 1871 and 1881, as a consequence of the low rates in the Islands. Sardinia especially and Sicily were characterised by the lowest rates.

Particularly in the peninsular South, the high female activity rate in 1861-81 (in cols. 7-9) resulted in the highest activity rates for both sexes together. Since the problem of overcounting concerned women and not men, we also present data on male participation rate (cols. 4-6). Hardly lower values can be found in the South plus Islands, because of the low figures for Sardinia and Sicily. There is no difference in participation rates between the South without Islands and the Centre and North. The lower activity rate which characterised (and continues to characterise) the Mezzogiorno from the start of the Twentieth century simply did not exist in the early decades of the Italian Kingdom.

Although our knowledge of the forces that, in each region, determined the level of demand for labour is superficial, we know that the period we are dealing with was an age of stability in per capita GDP, and that capital formation was increasing no faster than population and labour force (Giordano, Zollino, 2015; Broadberry et al., 2013). However, it is entirely possible that, in specific conditions, wage levels were influenced by temporary shifts in labour demand. A notable increase of the wages of master builders, was registered, for instance, in the period 1862-73, in some Southern regions, particularly in Sicily. The building of railways boosted labour demand that, due to the shortage of a local workers, was in part satisfied by labourers from other regions and especially from the North (Geisser and Magrini, 1904, p. 132). We could hypothesize, however, that the supply side and, then, population and participation rate, had to play a main role in the relationship demand-supply on the labour market. The statistician Luigi Bodio, in a report published in 1879 on the living conditions of peasant population (Maic, 1879, p. 200), was convinced that the high wages in Sardinia, depended on the scarcity of the workforce, that is on the supply side of the labour market. The workers - he stated - are in Sardinia true "tyrants" of the entrepreneurs and are able to bargain the highest earnings because of the competition among employers for the labour force.

The scatter plot in Figure 12, in fact, suggests the existence of a significant relationship (with $R^2=0.70$) between participation rate (on the horizontal axis) and real wage (on the vertical axis). Sardinia, Sicily and Liguria, with the lowest participation rates were the regions where real wages were higher, while Marche and Calabria, characterised by a high participation rate, were the regions with the lowest salaries.
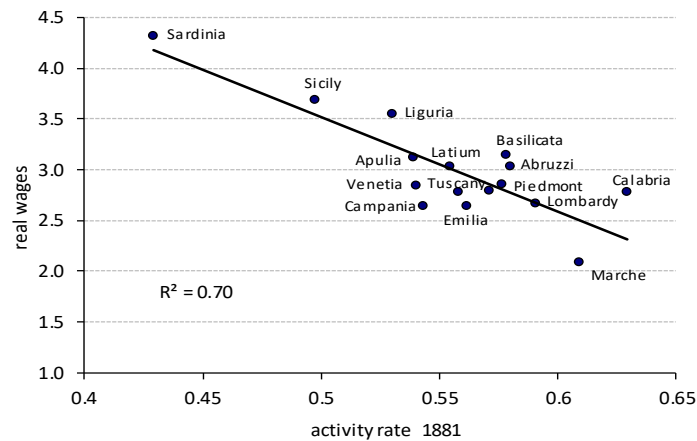
Figure 12. Real regional wages per day 1862-81 (averages) as a function of the regional activity rates in 1881

Sources: for wages see text and for the activity rate Table 11 Activity rates on a provincial basis in 1871 are from Maic, 1876. The choice to use the activity rate in 1881 (from Vitali, 1970) depends on the higher reliability of the 1881 census. *Note*: although the activity rates in the revision of data on workers by Zamagni, 1987, are lower than those used in the graph, a cross-section test for 1881 with her figures is significant ($w = 6.62-7.01L/P$, with $R^2 = 0.51$ and p-value=0.0019; w real wage and L/P participation rate).

To test the relationship between wages and activity rates we estimated a panel data model for the 16 Italian regions. Data on labour force and population were taken from the censuses 1861, 1871 and 1881. Regional real wages in the building sector were computed, as in section 2, by weighting the wages of each job category for the respective share, and refer to the years 1862, 1871 and 1878. Since in 1862 Latium and Veneto were not yet part of the Italian Kingdom, the panel data is composed of 46 observations. Real wages were regressed on activity rates including population density as a control variable. Although population is used both in the calculation of activity rate and density, the correlation between the independent variables is very low ($R^2 \leq 0.12$ computed on data for the three censuses 1861, 1871, 1881). While density captures both the potential supply of labour and the demand of goods (and the derived demand for labour), the activity rate captures the real supply of labour, conditioned by the local economic structure together with social or geographic constraints influencing the supply of female labour.

The results of estimates are reported in Table 12. The Hausman test indicates that the random effect (GLS) model is consistent and, thus, should be preferred to that with fixed effects. However, the fixed effects (within) estimates are also reported for comparison. It is worth noting how the sign of the coefficients and the degree of significance do not change whatever the estimator used, while the magnitude of coefficients remains quite stable, even

though in fixed effects estimates they are lower. In all estimates, the activity rate is negatively and significantly related, at a level of 1 percent, to regional real wages, while population density is not significant. The example of Sardinia and Sicily is straightforward. Both shared a low participation rate (which influenced the level of wages), although their density was very diverse: among the highest in Sicily and the lowest in Sardinia.

Table 12. Regressions' results. Dependent variable: real wage

	1	2	3	4
	Within	Within	GLS	GLS
const	5.60***	5.63***	6.34***	6.56***
	(7.76)	(5.52)	(9.58)	(9.71)
Activity rate	-4.67***	-4.68***	-5.99***	-5.93***
	(-3.65)	(-3.55)	(-5.14)	(-5.14)
Density		-0.0003		-0.0028
		(-0.051)		(-1.24)
n	46	46	46	46
Adj. R^2	0.71	0.70		
Hausman - H			1.325	1.005
(p-value)			(0.249)	(0.605)

Note: Robust (HAC) standard errors; t-statistics in parentheses; *significant at the 10 percent level; **significant at the 5 percent level; *** significant at the 1 percent level. Hausman test - null hypothesis: GLS estimates are consistent. The results of the panel equation are confirmed by cross-section tests of real wages on activity rate and density for 1862, 1871 and 1878. In every case participation rate is significant and density insignificant.

These results support our hypothesis that regional variations in wages were, to a great extent, explained by variations in activity rates. In our opinion, regional activity rates were, in turn, influenced by the participation of female workforce in the labour market. The size of the female workforce played a crucial role in the labour market as a whole. Even though, as already noted, there is a degree of uncertainty in data from censuses on female employment, especially in some Southern regions over the period 1862-68, the relationship between real wages and female activity rates also supports our hypothesis (Fig. 13).
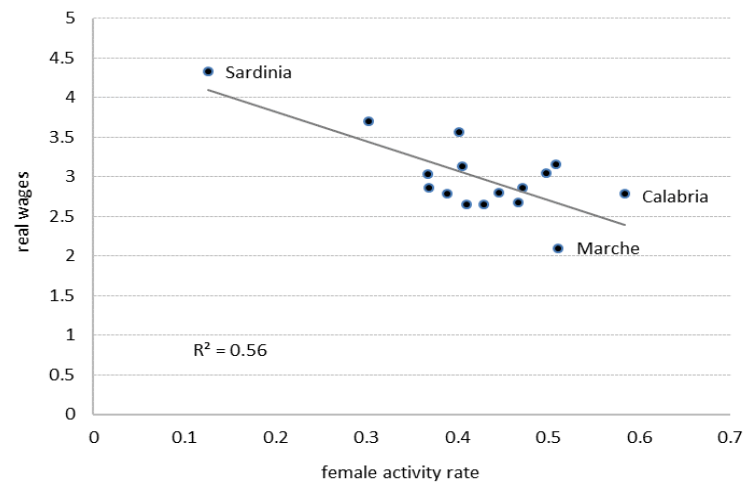
Figure 13. Real regional wages per day 1862-78 and female activity rates in Italian regions

Source: for real wages see text; for female activity population censuses. *Note*: real wage averages of the period 1862-78; female activity, averages of 1861, 1871, 1881. Female activity rates are significantly related with nominal wages as well (R^2 = 0.42).

Female participation largely depended on the structure of the agriculture, as shown by Federico and Martinelli (2015). Wherever the agricultural work was "male intensive" and no alternative domestic industrial labour demand existed for women, female activity rate was low, consequentially activity rate was low, and real wages high. Where agricultural work was "female intensive" (such as in the Centre and North) or domestic industrial labour demand in textile was high (such as in Calabria), women's participation was high, the activity rate as a whole was high and wages were low.

We add that in Sardinia and Sicily agricultural activity implied long periods of absence from homes for the workforce, on fields located far from the villages. Women could not be part of a labour force together with male workers far from their homes for long periods. In central Italy, share tenancy favoured the participation of women in agriculture together with men. Activity was "female intensive" and the fields to cultivate were close to where the peasant family lived. Macro-regional differences were rooted in the diverse productive structures. The agrarian structures in particular, were shaped by diverse factors: diversity in crops, in climatic and geographic conditions, and also in relation to historical and institutional factors that presented significant regional differences and influenced labour participation.

It is important, however, to stress that higher wages cannot result in higher per capita incomes and better standards of living. We hardly need to recall that Sardinia was not the most advanced Italian region - as the report by G.M. Lei-Spano (1922) clearly highlights.

Whenever the activity rate is low, as it was in Sardinia, the contribution of the salary to total income is lower and per capita income can be lower as well. This holds true also for Sicily whose participation rate was low, but does not seem to hold true for the Mezzogiorno as a whole. We saw that, even taking the male participation rate (excluding the controversial rates of women), the South shared the same levels of activity as the North and Centre.

5. Conclusion

Although wages cannot replace estimates of GDP, they are, however, first-hand evidence of local economic conditions. Strangely enough, information on wages has never been exploited to contribute to the long-debated topic of the regional disparities in the first decades after the Unification. On the basis of the information on wages, our results are that, in the period 1862-78, the nominal wage in the building sector in the Mezzogiorno (South plus Islands) was similar to that of the Centre-North. In the peninsular South, instead, nominal wages were lower. At the same time, however, the prices of the basket for the subsistence of workers, that is food prices, were lower as well (such as they are lower from the aftermath of World War I until today). In real terms, any disparity in wages between the North and South fades away. Wherever labour supply, given the structural conditions of agriculture, was limited, wages were high; wherever labour supply was abundant, wages were low. Our analysis suggests that differences in activity rates - and, thus, in labour supply - were a main factor influencing regional labour markets.

These results are at odds with the widespread opinion that the Italian economic disparities in productive capacity were already sizable when the Kingdom of Italy was established, rooted as they were in the long history of the Italian Mezzogiorno since the late Middle Ages, or even since Antiquity. We cannot deny regional diversities between the North and South and among Italian regions in political and institutional effectiveness and history. Whenever we look, instead, at the productive capacity, we see that, at the start of Italy as a nation, a true North-South divide did not exist. Yet our reconstruction of wages seems to suggest that a divide was undergoing from the end of the 1870s, just when coeval observers were beginning to consider the North and South as two well distinguishable economic realities. The start of modern growth in Italy was beginning to diversify the Italian economy between advanced areas and those regions lagging behind. We do not think, however, that the following North-South divide was the inevitable outcome of deep rooted agricultural and industrial disparities. Structural change was, in our opinion, the determinant of the inequalities in development, when part of Italy began to industrialise (Daniele, Malanima, Ostuni, 2016). At the time, more new productive sectors developed where wages were higher

and the geographic distribution of those sectors became the mainspring of the North-South divide.

Appendix

The trend of wages in Italy 1800-1913

The general trend of daily real wages in Italy between 1800 and 1913 (1861=1), represented in the following Figure, is the result of: *1*) an average between masons' real wages in Milan, Vercelli and Naples in 1800-1861 (deflated though three different baskets with local prices) (Malanima, 2013a, 2013b, 2016); *2*) our national index of masons' wages (average of first and second class) for the period 1862-78; *3*) the series worked out by S. Fenoaltea for skilled workers for the years 1879-1913 (Fenoaltea, 2002, pp. 269-70). We see that from the 1820s real wages recovered in Italy for a few years and gently diminished in the 1830s, 1840s and 1850s, reaching the lowest values during the famines of 1853-54 and the collapse of wheat importation from the Black Sea because of the Crimean war (whose consequence was a rapid increase in cereal prices, Battilossi, 1999, pp. 79, 81-2). The years from 1860 until 1866 marked a sudden recovery and rise in wages. In those years, nominal wage rates rose in Milan and Pavia by about 30 percent for masons (Aleati, 1961), in Genoa by 30-37 percent for mason and labourers (Felloni, 1963) and in Florence by 30 percent for masons and 20 for labourers (Bandettini, 1960). At the time, agricultural prices were quite low. Real wages then jumped after 1860, reaching again the high level of the 1820s and exceeding this in 1870-71. It was a happy period! Yet it lasted few years. In particular, the years of high prices 1873-74, although accompanied by a rise in nominal wages as a consequence of workers' frequent strikes (Battilossi, 1999, p. 123), registered a fall in real terms. Despite the volatility, from 1866 until 1878 the trend of real wages was flat. We see that the rise in real terms was remarkable only from 1878. It was the start of Italy's modern growth in wages. From 1887-88 a period of stability began, lasting until 1905, when wages rose again.

For Italian wages in a European perspective, see the contribution by Zamagni (1989) and Federico, Nuvolari, Vasta (forthcoming).

Fig. A. 1. Real daily wage rates in building (skilled workers) 1800-1913 (1861=1).
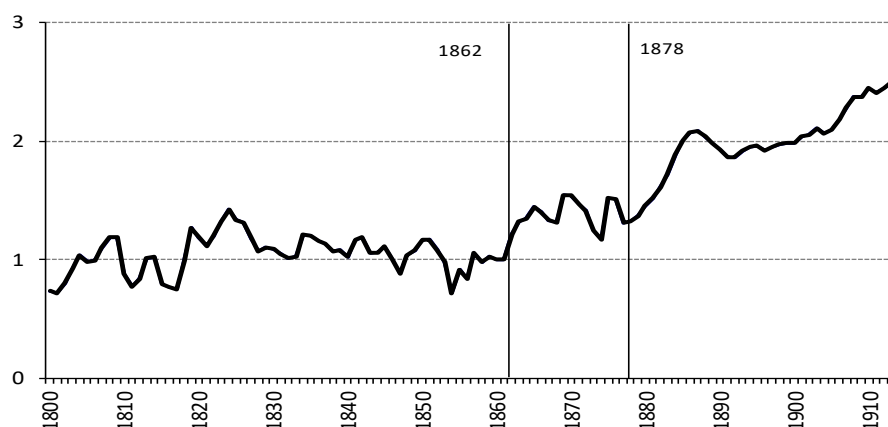
Sources: see text and Malanima (2007, 2013a, 2013b, 2016).

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