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Regional value added in Italy (1891-2001): estimates, elaborations

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Abstract
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Keywords: Industrialization, regional inequality, regional income, economic growth.
JEL Classification: N93; N94; R11

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Introduction

The aim of this paper is to present and discuss the pattern of regional inequality in Italy, from the end of the nineteenth century until our days. Value added estimates for the Italian regions, in benchmark years from 1891 until 1951, are linked to those from official figures available from 1971, in order to offer a long-term picture. It is worth anticipating that 1891-1951 estimates are not entirely satisfactory yet (sources and methodologies used for 1891-1951 estimates are explained in some detail in the final appendix). However, at the present stage of research they are comparable to those available for other countries; further refinements can hardly be produced in the short run, while it seems reasonable to think that they would not change significantly the overall pattern. In short, present estimates allow us to set the Italian case within the international context and to draw the basic lines of a long-term picture.

Section §1 presents the picture, whereas the following three sections offer basic elaborations of value added and labor force figures, in order to provide the backbone for further analyses. Section §2 discusses the pattern of regional workforce by sectors and briefly reviews, in the light of workforce and income figures, some of the literature on Italian regional development. Section §3 discusses the regional trends of product per worker, on average and separately for agriculture, industry and services, and of workers per capita. Lastly, the contributions of product per worker and workers per capita to the value added pattern are estimated and discussed in section §4: productivity was the most important determinant until the 1970s, whereas the value added changes of the last two decades are mainly referable to the relative changes in workers per capita.

The Italian case, as compared to other countries and to the economic literature on regional convergence, stands out for the persistence of its regional disparities; mostly, for the most backward areas started to converge in the 1950s and 1960s, but later they lagged behind. To offer an in-depth discussion about the ultimate reasons which can explain the south's 'failure' would go well beyond the scope of this paper. Moreover, although many authors have coped with this matter at the present the literature is still inconclusive; unsurprisingly, since indeed the basic facts about the pattern of regional inequality are still partly unclear. As mentioned, this paper is intended to highlight some of the basic facts. To these, it simply adds a few suggestions which should help on the search for explanations. First, the falling back of southern Italy from the end of the nineteenth century until the interwar years is in line with evidence and prediction by international literature on regional convergence: at its early stages, industrialization would take place in limited areas and thus resulted into an increase of regional disparities within a national country. The convergence of center/north-east (Nec) regions, during the last decades of the twentieth century, is also in line with both neo-classical or cumulative approaches, all the more since it occurred in a phase of overall slow-down of the Italian economy. The second suggestion comes from disaggregating product per workers from workers per capita: the south's convergence during of the 1950s and 1960s seems to be due mostly to the massive regional policies pursued in that period through the state's agency 'Cassa per il Mezzogiorno'; although its benefits were provisional. Thirdly, results are consistent with the thesis that the south's falling back of the last decades is due to cultural and institutional factors – like inadequate levels of social capital, institutional failure, organized crime – as supported by a number of econometric analyses by economists and other social scientists (Leonardi 1995a, 1995b, 2005; Helliwell and Putnam 1995; Lyon 2005): not by chance, these factors impact on workers per capita more heavily than on product per worker.

1. Establishing the basic facts: regional disparities in the long run

Around 1860, the Italian economy was made up of different local economic systems. These followed the political map of pre-unification Italy but with some additional fragmentation, like the disparities within the former Southern kingdom, the Papal states or the kingdom of Savoy. Italy as a whole was not an advanced area in the European context, but neither was it among the most backward ones. It was still overwhelmingly agricultural, with an urban life and manufacturing and tertiary poles mostly located on the western coast, from Turin and Genoa southward to Naples and Palermo.

For the decades immediately after unification, product estimates at the regional level can hardly be produced, given the lack of reliable national accounts as well as of other indispensable information, for instance on regional employment, wages or tertiary activities. However, some authors coped with this task. Fenoaltea has estimated industrial regional production for the census years 1871, 1881, 1901 and 1911 (Fenoaltea 2003), allocating sector-specific estimates of national production in proportion to the regional labor force: in 1871 and 1881 only Lombardy was significantly more industrialized than the other regions; close behind it, we find Piedmont and Liguria, but also Campania, Sicily, Tuscany, Latium. In the mid nineteenth century the peninsula thus appears characterized by a west-east divide, rather than by a north-south one: the western regions were more developed, mainly thanks to the capital cities of the former pre-unification states, where services and manufacturing activities were concentrated. The industrial triangle, made up of Piedmont, Liguria, Lombardy, began to emerge only after 1881. With respect to agriculture, recent estimates by Giovanni Federico of gross saleable production, in 1891, assign to the southern regions higher per capita production, by about 10 per cent (Federico 2003); in terms of total factor productivity, the two areas appear to have been approximately at the same level (Federico 2007); southern lead was due to higher per worker productivity, whereas in terms of per hectare yields the north-west was better off already by 1891 (Felice 2007a: 33). Vittorio Daniele and Paolo Malanima (2007) extrapolated Federico and Fenoaltea's regional estimates for agriculture and industry, and Felice for services in 1891 (Felice 2005b); they found that at the time of Unification per capita product in the north and the south was substantially equal.

This finding contrasts with previous estimates, such as those by Eckaus (1961) and Esposto (1997), based on a wide array of different sources, as well as with the widespread view among many scholars, which tends to regard regional inequalities as entrenched into the Italian past, in some cases dating back to much earlier times. Social indicators such as literacy, life expectancy and

(less clearly) heights all assign a lead to the northern regions by 1871 and suggest that a north-south economic divide was already present by the time of unification, or at least that in the south the distribution of wealth was far more polarized (Felice 2007b). Similar conclusions are suggested the available data on transport infrastructures (Zamagni 1993: 42; Giuntini 1999: 597).

The question about the north-south divide at the time of unification is important, not only for the origins of the 'southern question', but also for the political disputes of our own days. At the beginning of the twentieth century, it was already debated by Francesco Saverio Nitti (1958: 452) [1900], who emphasized the allegedly good financial resources of southern Italy in 1860, and Giustino Fortunato (1973: 541) [1904], who on the contrary insisted on the 'natural poverty' of this area. The latter view became dominant (Cafagna 1965), but Federico's new estimates of agricultural production call it into question. To resolve the issue, we must wait for the reconstruction of regional product accounts; at present significant progress has been made only for the industrial sector, with the second generation estimates by Ciccarelli and Fenoaltea.

For all three sectors (agriculture, industry and services), regional value added estimates are available only from 1891, in benchmark years (Felice 2005a, 2005b)[1]. For 1891 and 1911, today these can be improved by incorporating the second generation estimates by Ciccarelli and Fenoaltea, which at this point cover about half of industry[2]. Table 1 presents the new estimates for 1891 and 1911, together with Felice (2005a) estimates for 1938 and 1951 and with the official figures available from 1971, and captures the evolution of regional income disparities in Italy in the long run. See also figure 1.

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[1] For agriculture, regional value added is derived from Federico's gross saleable production. For most of the specific sectors of industry and services, national value added figures are allocated in proportion to regional employment, using per worker wages to allow for regional productivity disparities: for a discussion of this method, see Geary and Stark (2002) and Crafts (2004).

[2] Among others, textiles (Fenoaltea 2004), mining (Ciccarelli and Fenoaltea 2006), chemicals and rubber (Ciccarelli and Fenoaltea 2008a), utilities (Ciccarelli and Fenoaltea 2008b), construction (Ciccarelli and Fenoaltea 2008c), metalmaking (Ciccarelli and Fenoaltea 2008d), shipbuilding and repairing (2008e). Their further, still unpublished estimates refer to quarries, non-metallic mineral products, clothing and hats: I am grateful to the authors for having made them available to me.

Table 1. *Regional product disparities in Italy, 1891–2001 (per capita value added, Italy=1)*

	1891	1911	1938	1951	1971	1981	2001
Piedmont	1.08	1.15	1.39	1.47	1.21	1.14	1.15
Aosta Valley				1.58	1.35	1.30	1.24
Liguria	1.44	1.54	1.68	1.62	1.16	1.11	1.09
Lombardy	1.15	1.19	1.39	1.53	1.34	1.28	1.30
North-West	*1.16*	*1.22*	*1.43*	*1.52*	*1.28*	*1.22*	*1.24*
Trentino-Alto A.	-	-	0.95	1.06	1.01	1.12	1.29
Veneto	0.80	0.86	0.84	0.98	0.99	1.08	1.13
Friuli	-	-	1.19	1.11	1.00	1.09	1.12
Emilia	1.06	1.08	1.04	1.12	1.14	1.29	1.23
Tuscany	1.03	0.97	1.01	1.05	1.05	1.11	1.09
The Marches	0.88	0.81	0.79	0.86	0.91	1.05	0.99
Umbria	1.02	0.92	0.96	0.90	0.93	0.98	0.96
Latium	1.57	1.49	1.19	1.08	1.07	1.05	1.13
Center/North-East	*1.01*	*1.00*	*0.99*	*1.04*	*1.04*	*1.11*	*1.13*
Abruzzi	0.66	0.68	0.58	0.58	0.80	0.84	0.84
Campania	0.97	0.94	0.82	0.69	0.71	0.67	0.65
Apulia	1.02	0.85	0.72	0.65	0.75	0.72	0.67
Lucania	0.74	0.73	0.57	0.47	0.75	0.68	0.73
Calabria	0.67	0.70	0.49	0.47	0.67	0.65	0.64
Sicily	0.93	0.85	0.72	0.58	0.70	0.71	0.66
Sardinia	0.94	0.92	0.83	0.63	0.85	0.72	0.76
South and islands	*0.88*	*0.84*	*0.70*	*0.61*	*0.73*	*0.70*	*0.68*
Italy (2001 euros)	1,313	2,064	2,596	2,940	10,027	13,199	19,928
Yearly growth rate (%)	-	*2.29*	*0.85*	*0.96*	*6.33*	*2.79*	*2.08*

Notes: at the borders of the time and on current population.

Sources: for 1891 and 1911 see text; for the other benchmark years, Felice 2007a: 125.

By 1891 the north-south divide was relatively modest, but already clear. The rise of the north-west was modest during the Giolitti's age, much speeder over the following four decades; meantime, southern Italy fell back dramatically, whereas the center/north-east (Nec) regions hovered around the Italian average, although with considerable differences among them. It should be noticed that by 1891 southern Italy too was quite diversified, with Campania, Apulia, Sicily and Sardinia near the national average and others far below it: in line with conclusions stemming from qualitative literature and case studies (e.g. Bevilacqua 1993). Over the first half of the twentieth century, differences within the macro-areas decreased; conversely, they augmented within Italy as a whole.

Convergence took place between 1951 and 1971, that is during the very years of most intense national economic growth: it regarded all the southern regions (Campania to a minor degree), whereas the Nec ones did not converge on the national average, although they too managed to

outpace the north-west. In the following decade, the 1970s, characterized by the stagflation crisis, southern Italy began to fall back again, whereas the Nec regions converged towards the north-west at a remarkable speed; during the last two decades of the twentieth century this trend continued at a much slower rate.

Over the long term, this pattern does not fit the prevailing views on regional convergence. The pioneering work by Jeffrey Williamson (1965) suggested extending the Kuznets' inverted U-shaped function to the relationship between income and regional inequalities: one should expect divergence during the early stages of industrialization, or when economic growth is more intense, following convergence once industrialization spreads and the rate of growth of the most advanced regions decreases. Italy fits this pattern until 1951. In the second half of the twentieth century, according to the model, the 1950–70 years should have been a period of divergence, whereas convergence should have begun during the 1970 crisis. It is worth noticing that if we limited the analysis to the comparison between the north-west and the Nec, throughout the period we would have a pattern approximately in line with predictions by the international literature. The problem is southern Italy. A possible explanation is that southern convergence during the 1950s and 1960s was 'exceptional' and thus transitory, due mostly to interregional migration (but there are few studies on this), or to the massive regional policies pursued by the state through the agency called 'Cassa per il Mezzogiorno' (for which the evidence is a bit more convincing). The south's falling back during the last decades, when on the contrary it was expected to converge towards the rest of the country[3], was again exceptional and probably referable to the role of 'conditioning variables', such as low levels of social capital or institutional failure.

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[3] Indeed during the 1973–98 years the south's rate of growth was approximately on the average of western Europe; but its product per capita was just two-thirds (Felice 2007a: 130).

Figure 1. *Regional disparities in Italy, 1891-2001 (per capita value added, Italy=1)*
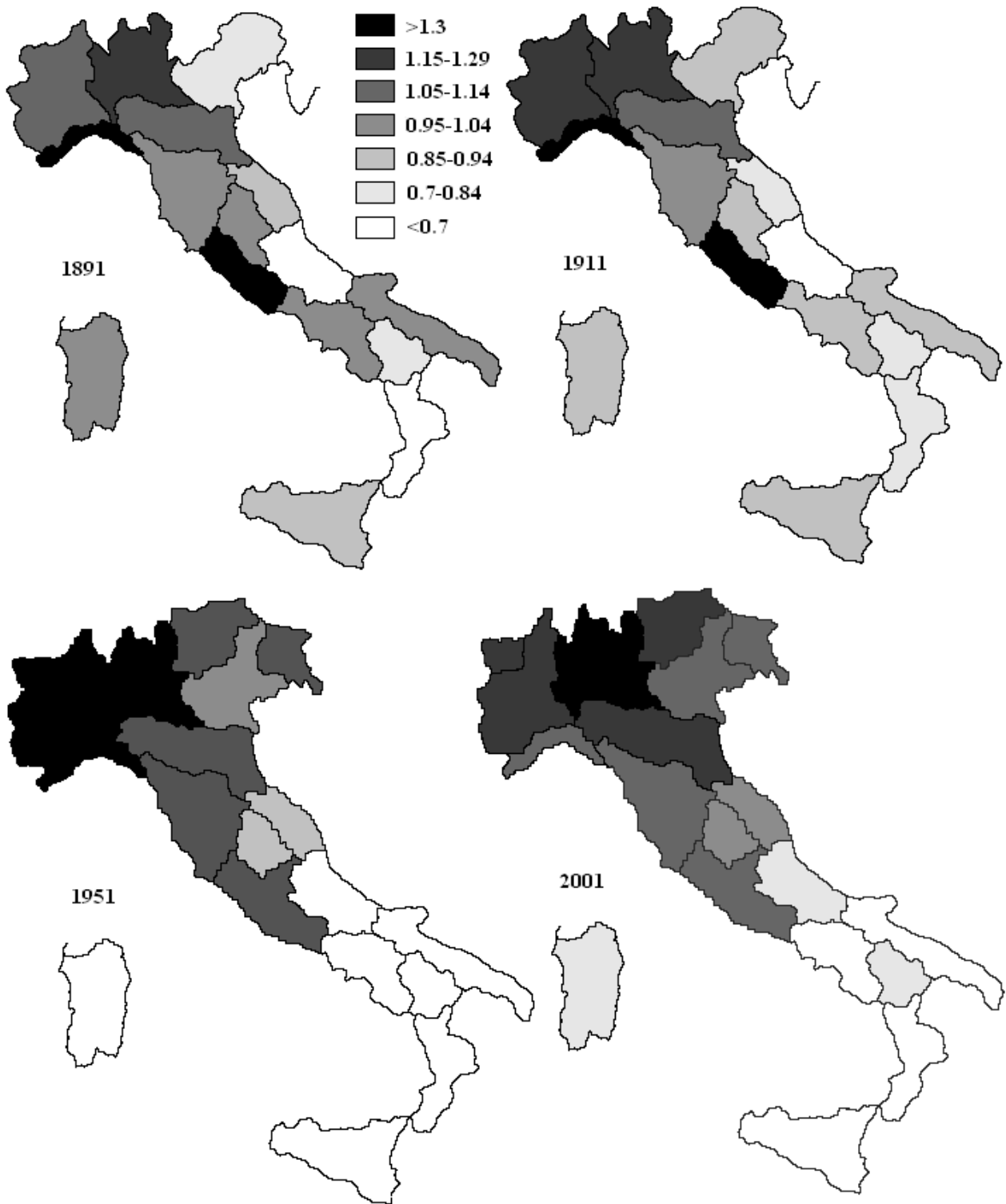
Sources and notes: see table 1.

2. From agriculture to industry and services: an overview

Product per capita can be decomposed in two components: product per worker and workers per capita (the workforce as a share of total population). As from the equation:

[1] Y/P = Y/L*L/P,

where Y is income, P is population and L is labor.

Product per worker, in turn, depends on productivity within each economic sector, and on the allocation of the workforce across sectors with lower productivity (usually agriculture) and those with higher one (industry and services)[4]: the industrial revolution and the rise of services took place at different times in the Italian regions, and this exerted a major impact on the pattern of regional inequalities in per capita value added.

Table 2. *Regional labor force by sectors, 1891-2001 (%)*

	Agriculture					Industry					Services				
	1891	1911	1951	1971	2001	1891	1911	1951	1971	2001	1891	1911	1951	1971	2001
Piedmont	62.68	55.36	34.81	13.80	3.68	21.55	27.36	39.11	50.43	38.18	15.77	17.29	26.07	35.77	58.14
Aosta Valley			54.95	22.58	5.67			27.15	34.54	22.90			17.89	42.88	71.43
Liguria	45.63	35.09	25.81	10.78	3.51	25.22	32.32	29.86	32.42	23.08	29.14	32.59	44.33	56.80	73.41
Lombardy	52.59	43.32	23.22	6.35	1.88	30.14	37.63	46.26	54.65	39.89	17.27	19.05	30.52	39.00	58.23
North-West	*55.89*	*47.02*	*27.56*	*9.22*	*2.56*	*26.14*	*33.02*	*41.87*	*50.75*	*37.75*	*17.97*	*19.96*	*30.58*	*40.03*	*59.69*
Trentino-Alt. A.	n.a.	(66.5)	49.27	19.73	8.27	n.a.	(15.5)	21.64	29.05	26.72	n.a.	(18.0)	29.08	51.22	65.01
Veneto	62.49	61.05	48.60	17.07	4.22	20.38	21.47	25.50	42.59	40.65	17.14	17.48	25.90	40.35	55.13
Friuli	n.a.	(51.9)	38.98	14.49	3.23	n.a.	(25.2)	28.71	37.66	32.51	n.a.	(22.9)	32.31	47.85	64.26
Emilia	61.81	58.29	47.74	18.71	5.64	20.25	24.18	24.13	39.04	35.92	17.93	17.53	28.13	42.25	58.44
Tuscany	56.57	50.86	41.00	13.04	3.87	24.60	30.78	30.75	42.98	34.08	18.83	18.36	28.25	43.98	62.05
The Marches	68.78	67.39	55.86	26.75	3.97	17.64	19.21	21.90	35.15	40.84	13.58	13.40	22.24	38.10	55.19
Umbria	73.00	69.51	55.64	23.38	4.71	14.38	17.48	21.59	36.12	32.78	12.63	13.01	22.77	40.50	62.51
Latium	52.60	44.86	32.84	10.00	3.64	19.07	23.03	20.54	26.30	19.71	28.33	32.11	46.62	63.70	76.65
Cent./North-Ea.	*61.28*	*57.48*	*44.47*	*16.04*	*4.46*	*20.52*	*23.94*	*24.87*	*36.78*	*32.84*	*18.20*	*18.58*	*30.66*	*47.19*	*62.70*
Abruzzi	76.00	77.17	69.31	36.40	6.82	14.55	12.95	13.05	25.99	32.57	9.45	9.88	17.65	37.61	60.61
Campania	54.25	53.38	46.59	25.69	6.86	22.96	23.33	20.93	29.59	24.36	22.80	23.30	32.48	44.72	68.78
Apulia	63.91	62.99	64.70	39.88	11.74	19.28	20.10	13.36	24.08	26.09	16.81	16.92	21.93	36.04	62.17
Lucania	76.59	76.68	75.24	43.65	10.80	12.83	12.79	10.99	23.80	34.55	10.58	10.54	13.77	32.54	54.65
Calabria	64.44	67.33	66.39	38.76	12.04	22.04	20.56	15.31	25.56	19.43	13.52	12.11	18.31	35.67	68.53
Sicily	53.91	52.71	56.43	30.28	9.55	23.49	22.77	16.89	26.05	19.92	22.61	24.52	26.69	43.68	70.53
Sardinia	61.28	58.97	56.52	27.02	8.49	18.72	20.90	17.51	26.93	23.04	20.00	20.13	25.97	46.05	68.47
South and isl.	*60.97*	*60.45*	*59.17*	*32.76*	*9.21*	*20.67*	*20.57*	*16.34*	*26.46*	*24.26*	*18.37*	*18.98*	*24.49*	*40.78*	*66.53*
Italy	59.56	55.39	44.55	18.89	5.19	22.25	25.47	26.83	38.07	31.97	18.19	19.13	28.62	43.05	62.84

Sources and notes: Felice (2007a: 137); data for 1891 are obtained through interpolation between 1881 and 1901. 1881 textile employment was re-estimated from Ellena's industrial census (1880), following Zamagni (1987: 38).

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[4] It must be added that lower productivity of agriculture is often only apparent, due to the fact that rural women are considered 'farm-wives' (in the labor force), and urban women 'house-wives' (not in the labor force). Of course, the inclusion of the former reduces product per worker but raises workers per capita.

Regional data on labor force by sectors are shown in table 2, suggesting that industrialization in Italy was a long-term process which took place through 'waves', from the XIX century until the 1970s. Lombardy was the most industrialized Italian region and it would maintain this primacy through most of the twentieth century, whereas Liguria ranked second. In the north-west as the whole industrial workforce had reached one third of the total; less than half the labor force was engaged in agriculture. For some sectors the north-west reached remarkable shares of the national industrial production: in textiles, for example, in 1901 and 1911 almost 50 per cent of the Italian total production was in Lombardy. At the same time, in Lombardy and Piedmont the three main industrial sectors – textiles, food and engineering – barely absorbed 50 per cent of total industrial production[5]. In short, these three regions could boast a wide range of manufacturing activities above the national average: it meant that the north-west benefited of general systemic advantages, rather than of specific sectoral ones.

In 1951, in the Nec regions the share of industrial workers averaged about one fourth of total employment. Veneto and Emilia-Romagna were both below the national average, even though the former boasted some of the most important national textile companies in the second half of the nineteenth century, and the latter had begun to industrialize during the Giolitti years (D'Attorre and Zamagni 1992). In the Nec significant advances were made in the 1950s and 1960s, but in some of the Nec regions industrialization proceeded in the following decades – characterized by deindustrialization at the national level – and particularly in the 1970s, to the point that today the Marches and Veneto rank as Italy's most industrialized regions. In this period there was as also a relative rise in per capita product: unsurprisingly, the very idea of a 'third Italy' – the 'Nec' distinct from both the north-west and the south – originated during the 1970s (Bagnasco 1977).

As emphasized by Ercole Sori (1987: 380), in Italy industrialization spread through geographical proximity. By 1971, Veneto ed Emilia-Romagna had joined Piedmont, Lombardy and Tuscany in the group of regions with a percentage of industrial workers higher than the national average (Liguria had left this group). By 2001, this group included Friuli, Marches, Umbria and Abruzzi. This may suggest the relevance of transport costs and closeness. But other factors were clearly involved. The new industrial regions were characterized by a peculiar business morphology, the industrial districts (Becattini 1979, 2007), based on common social and cultural features. The precondition was a high level of social capital (Leonardi 1995a; Helliwell and Putnam 1995), which in these regions, according to Putnam (1993), may date back to the municipalities of late medieval times. Arnaldo Bagnasco (1988) saw more recent causes: he emphasized the positive role of sharecropping, which up to the mid-twentieth century helped the farmers develop entrepreneurial

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[5] For a comprehensive picture of the industrial specialization by regions and sectors in the 1871–911 period, see Fenoaltea 2006: 242–58.

attitudes and the skills to run a family business (Bagnasco 1988). This explanation is focused on the countryside, rather than on the city, but can be taken to complete, rather than supplant, that proposed by Putnam and Leonardi (or viceversa).

As the Nec rose, the south fell back. During the liberal age, as noted, the Mezzogiorno was characterized by significant internal differences: for example, in 1911 Sicily and Campania – the regions with the most important southern cities – displayed below average shares of agricultural employment, whereas Abruzzi and Basilicata were more than 20 percentage points above average. During the first half of the twentieth century, southern Italy became progressively more uniform, and fell further the rest of the country. From 1911 to 1951, the share of the southern agricultural workforce remained practically unchanged; in some regions (Apulia, Sicily) it even increased.

The negative trend of southern Italy was reversed in the 1950s and 1960s, thanks to the rise of both industry and services. However, by 1971 the share in labor force of these two sectors, and particularly that of industry, remained below the national average. During the following decades services increased, more than in the rest of the country, and the decline of industry was on the whole modest; at the same time, the share of agriculture lost more than 23 points, 10 above the Italian average. As we are going to see in the next paragraph, these trends resulted into an overall good performance of the south's product per worker, at least during the 1980s and 1990s. It is true that the average productivity of industry and services in the south decreased as compared to the rest of the country, but this was more than offset by the decline of labor force in agriculture. For southern Italy, the problem was that workers per capita decreased much more than in the rest of the country, at least according to the official figures.

3. Product per worker and workers per capita

Regional trends in product per worker are shown in tables 3 and 4, on average and separately for agriculture, industry and services respectively.

At 1891, southern Italy scored lower product per worker than the north-west; its ranking worsened until 1951, at first very slowly during the Giolitti age, then faster during the interwar period; conversely, it improved during the years of convergence, 1951–71, as well as in the last two decades (1981–2001) at a slower rate. North western regions rose up until 1951, later they lost some points but managed to maintain their primacy. Nec regions have always been hovering around the Italian average: if they succeeded in keeping pace with the north-west in the interwar period, with a rise during the 1938–51 years, throughout the second half of the twentieth century their improvement was modest, confined to the 1970s; not by chance, the only two periods of relative improvement, 1938–51 and 1971–81, were also the ones of faster catching-up in product per capita.

Within the three macro-areas, regional paths are highly diversified. By 1891 disparities were significant within southern Italy, then decreased. The north-west was firmly led by Liguria from 1891 to 1951. At the same time, the Nec regions scored remarkable disparities and different paths: Latium declined but it managed to remain first; Tuscany and Emilia ranked second during the liberal age, but in the interwar period they would have been overcome by Friuli, annexed after world war I. Throughout the period, convergence seems to be high within the three macro-areas: as with income, also in this case the threefold classification must be regarded as an ex-post construction.

Table 3. *Value added per worker, 1891-2001 (Italy=1)*

	1891	1911	1938	1951	1971	1981	2001
Piedmont	0.96	0.99	1.14	1.23	1.01	1.03	1.02
Aosta Valley				1.12	1.10	0.98	1.02
Liguria	1.45	1.50	1.61	1.66	1.07	1.09	1.11
Lombardy	1.05	1.13	1.26	1.37	1.06	1.15	1.10
North-West	*1.06*	*1.11*	*1.26*	*1.35*	*1.04*	*1.10*	*1.08*
Trentino-Alto A.	-	-	0.87	1.00	0.97	0.92	1.08
Veneto	0.81	0.87	0.84	0.96	1.01	1.00	0.96
Friuli	-	-	1.12	1.06	0.92	1.01	0.98
Emilia	1.08	1.05	0.96	1.08	1.09	1.10	1.03
Tuscany	1.25	0.96	0.98	1.01	1.00	1.01	1.00
The Marches	0.81	0.78	0.72	0.80	0.90	0.91	0.88
Umbria	0.64	0.91	0.92	0.88	0.88	0.97	0.94
Latium	1.50	1.55	1.21	1.09	1.02	1.09	1.14
Center/North-East	*1.02*	*0.99*	*0.96*	*1.01*	*1.01*	*1.03*	*1.02*
Abruzzi	0.62	0.66	0.58	0.59	0.91	0.86	0.87
Campania	0.99	0.97	0.94	0.83	0.93	0.82	0.92
Apulia	1.12	0.94	0.85	0.71	0.92	0.85	0.83
Lucania	0.68	0.69	0.57	0.42	0.87	0.74	0.82

Calabria	0.66	0.67	0.54	0.47	0.84	0.79	0.85
Sicily	1.10	1.05	0.92	0.74	0.99	0.92	0.92
Sardinia	1.15	1.12	0.98	0.71	1.12	0.87	0.86
South and islands	*0.94*	*0.91*	*0.81*	*0.69*	*0.94*	*0.85*	*0.88*
Italy (2001 euros)	2,607	4,358	5,984	6,986	27,043	33,704	54,211
Yearly growth rate (%)	-	*2.60*	*1.92*	*1.20*	*7.00*	*2.23*	*2.40*

Sources: see appendix.

In agriculture, during the liberal age southern Italy could boast higher per worker (and per capita) production. This primacy lies behind the south's relatively good ranking in value added at the same period. However, in terms of total factor productivity, in agriculture the centre-north and the south appear to have been approximately at the same level (Federico 2007); that is, the former scored higher *per hectare* productivity than the south (Felice 2007a: 133), already by 1891. Higher per hectare productivity meant greater returns to land investments and thus favoured capital accumulation: it was one of the sources of the north's impressive rise of the in *per worker* productivity during the first half of the twentieth century; this, in turn, a determinant of the north-west's value added improvement (per capita and per worker) during the 1911–51 years, together with industrialization.

Table 4. *Value added per worker in agriculture, industry and services, 1891-2001 (Italy=1)*

	Agriculture					Industry					Services				
	1891	1911	1951	1971	2001	1891	1911	1951	1971	2001	1891	1911	1951	1971	2001
Piedmont	0.80	0.86	1.35	0.82	1.14	1.65	1.16	1.16	1.04	1.03	0.98	1.08	1.03	1.04	1.03
Aosta Valley				0.49	0.48			1.76	1.66	0.95			0.98	0.97	1.03
Liguria	0.71	1.05	1.52	1.36	1.16	2.46	1.48	1.56	1.16	1.13	1.22	1.23	1.46	0.96	1.06
Lombardy	0.74	0.91	1.53	1.28	1.81	1.28	1.13	1.18	1.02	1.09	1.27	1.21	1.11	1.08	1.09
North-West	*0.76*	*0.90*	*1.47*	*1.07*	*1.43*	*1.52*	*1.18*	*1.21*	*1.04*	*1.08*	*1.16*	*1.17*	*1.15*	*1.05*	*1.07*
Trentino-Alt. A.	-	-	1.13	0.98	0.85	-	-	1.11	1.17	1.16	-	-	1.05	0.86	1.08
Veneto	0.71	0.88	1.04	1.15	1.24	1.18	0.98	1.02	0.87	0.93	0.89	0.87	0.99	1.10	1.00
Friuli	-	-	0.87	0.77	1.42	-	-	1.03	1.03	0.95	-	-	1.18	0.89	0.98
Emilia	1.18	1.24	1.12	1.45	1.24	1.20	1.05	0.99	1.00	1.11	0.91	0.91	1.02	1.02	1.01
Tuscany	1.03	0.93	1.03	1.02	0.88	1.12	0.88	0.93	0.96	0.98	1.01	0.99	1.00	1.04	1.00
The Marches	0.93	0.91	0.98	0.67	1.19	0.65	0.78	0.61	0.89	0.78	0.83	0.78	0.80	1.07	0.96
Umbria	1.26	1.07	1.05	0.65	1.11	0.89	0.99	0.97	1.00	0.93	0.89	0.84	0.79	0.90	0.93
Latium	1.27	1.50	1.02	1.31	0.86	1.27	1.32	0.91	0.99	1.18	1.47	1.24	1.02	0.98	1.09
Cent./North-Ea.	*1.00*	*1.04*	*1.05*	*1.11*	*1.09*	*1.11*	*0.98*	*0.95*	*0.96*	*1.01*	*1.01*	*0.97*	*1.01*	*1.01*	*1.02*
Abruzzi	0.78	0.75	0.71	0.78	0.97	0.17	0.74	0.65	1.07	0.88	0.84	0.93	0.76	0.91	0.87
Campania	0.88	0.83	0.74	0.91	0.84	0.89	0.90	0.74	0.94	0.90	1.03	1.00	0.91	0.94	0.92
Apulia	1.62	1.10	0.83	0.85	0.72	0.25	0.73	0.72	0.96	0.77	0.88	0.96	0.94	0.97	0.88
Lucania	0.83	0.79	0.57	0.67	0.80	0.26	0.72	0.33	1.12	0.76	0.80	0.86	0.63	0.96	0.91
Calabria	0.91	0.83	0.65	0.78	0.83	0.17	0.49	0.37	0.75	0.82	0.64	0.78	0.61	0.98	0.87
Sicily	1.66	1.40	0.97	1.07	0.76	0.54	0.76	0.55	1.01	0.90	0.75	0.77	0.85	0.92	0.94
Sardinia	1.59	1.62	0.98	1.23	0.89	0.98	0.82	0.81	1.43	0.86	0.78	0.71	0.69	0.87	0.87
South and isl.	*1.18*	*1.03*	*0.79*	*0.91*	*0.80*	*0.50*	*0.77*	*0.64*	*1.00*	*0.85*	*0.86*	*0.88*	*0.83*	*0.94*	*0.90*

Sources: Felice 2007a: 132. For further details see appendix and text.

Unlike in agriculture, in industry at 1891 north-south productivity differences were remarkable. This gap, however, was partly bridged in the following two decades and it increased at a very slow rate during the interwar years. These were the very decades when the north-western lead was

progressively consolidated, also in terms of product per worker: primacy seems to be attributable to the workforce's enlarging share in industry and services, not to the productivity rise of the industrial workers; at the early stages, it was industrialization that mattered, following the long established arguments by Simon Kuznets (1966) and Edward Denison (1967). It must be added once more that, at 1891, productivity differences in industry were high also within the Nec, the north-west and, even more, among the southern regions. Convergence took place not only between north and south, but also within the three macro-areas.

During the 1950s and 1960s, however, in industry regional productivity differences were largely overcome. This seems a point in favour of the fact that convergence was due to the top-down regional policies of the 'Cassa per il Mezzogiorno', which funded sectors with higher capital/labor ratios. However, the benefits of regional policy were provisional: at risk of over-simplifying, they can be seen as a sort of drug, which pumped up the economy of southern Italy, but left it unable to improve on its own. Stefano Fenoaltea (2007), among the others, complained that the Cassa, (almost)[6] unanimously supported by the mainstream economists of the time, financed highly capital intensive industrial sectors and overlooked the labour intensive ones, such as tourism, which would have had larger benefits on employment. In fact, convergence came to a halt and was reversed in the 1970s, during the stagflation crisis. Industrial subsidies decreased. Anna Spadavecchia (2007) estimated that from the second half of the 1970s, on average, north-central Italy was the main beneficiary of subsidized credit. During the second half of the 1980s, Abruzzi, a relatively small region, absorbed one third of southern industrial subsidies, thanks to a central position and to more advanced social and infrastructural standards (Felice 2003, 2007c): not by chance, it continued to converge until the 1990s. Not only did subsidized credit shrink in southern Italy, but this was often 'unproductive': cases of misuse and waste are reported also for the national and European schemes which followed the end of the Cassa per il Mezzogiorno in 1983. Taking into account the negative consequences on social capital, it may be concluded that in the last decades public funds contributed to create a 'vicious circle', which pushed southern Italy back into cultural and economic backwardness.

In services, until world war II productivity differences were approximately in between those in agriculture and industry. By 1951, however, services had become the sector where regional disparities were less pronounced. Probably the growth of public administration played an important role in this result: here, in fact, both estimates in benchmark years and the official accounts available from 1971 do not consider the 'real' productivity, since they are based on the employees' wages; moreover, for every rank wages are (and were) approximately equal among the Italian

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[6] For a dissenting voice, see Vera Lutz (1962).

regions, independently from consumer prices. Thus we could say that the public sector has been having a re-equilibrating impact over productivity disparities. Unsurprisingly, from 1971 to 2001 the south's falling back in services has been relatively modest, all the more since regional policies were partly redirected towards 'unproductive' expenditures of the public administration.

Together with product per worker, the other component of product per capita is workers per capita, that is the share of the labor force out of the present population. Regional trends are shown in table 5. Unlike productivity, in this case absolute figures decreased almost continuously over time (last row), because of demographical and social reasons – demographic transition, the spread of mass education and of social security systems – which more than offset changes in the opposite direction – mainly the rise of female employment.

Table 5. *Total workforce as a share of total population (Italy=1)*

	1891	1911	1938	1951	1971	1981	2001
Piedmont	1.12	1.17	1.22	1.19	1.20	1.11	1.13
Aosta Valley				1.42	1.23	1.33	1.22
Liguria	0.99	1.03	1.04	0.98	1.09	1.02	0.99
Lombardy	1.10	1.06	1.10	1.12	1.27	1.12	1.18
North-West	*1.09*	*1.10*	*1.13*	*1.12*	*1.23*	*1.11*	*1.15*
Trentino-Alto A.	-	-	1.09	1.06	1.04	1.22	1.20
Veneto	0.99	1.00	1.00	1.02	0.98	1.08	1.17
Friuli	-	-	1.06	1.05	1.08	1.08	1.14
Emilia	0.99	1.03	1.09	1.03	1.05	1.18	1.19
Tuscany	0.82	1.01	1.03	1.05	1.05	1.10	1.09
The Marches	1.08	1.05	1.10	1.08	1.01	1.15	1.12
Umbria	1.60	1.01	1.05	1.02	1.06	1.01	1.03
Latium	1.05	0.96	0.98	0.99	1.05	0.97	0.99
Center/North-East	*0.99*	*1.01*	*1.04*	*1.03*	*1.03*	*1.08*	*1.11*
Abruzzi	1.06	1.02	0.99	0.98	0.88	0.98	0.97
Campania	0.97	0.98	0.87	0.84	0.76	0.81	0.71
Abulia	0.92	0.91	0.85	0.92	0.82	0.85	0.81
Lucania	1.08	1.06	1.00	1.12	0.86	0.93	0.89
Calabria	1.01	1.05	0.91	1.01	0.79	0.82	0.75
Sicily	0.84	0.81	0.79	0.79	0.71	0.77	0.72
Sardinia	0.82	0.82	0.85	0.89	0.76	0.83	0.88
South and islands	*0.94*	*0.92*	*0.87*	*0.89*	*0.77*	*0.82*	*0.77*
Italy (total)	50.4	47.3	43.4	42.1	37.1	39.2	36.8

Note: for 1938 and 1951 workforce is from Vitali (1970). For 1891 see table 2.

Around 1891, southern Italy scored the lowest share of workers per capita and this gap was bound to increase through most of the twentieth century, at a faster pace during the 1911–38 years and the last two decades (1981–2001). Since from 1981 to 2001 a slight convergence in productivity took place (see again table 3), the decline in product per worker must be entirely attributed to workers per capita. This finding seems in line with the argument which points to low social capital, culture and institutional failure as the ultimate causes of southern Italy falling back.

These factors are not only responsible of lower female employment rates, but also, more importantly, of the higher shares of workers (and product) from the illegal economy. But a further consideration is warranted. If we considered the illegal economy, probably the situation of southern Italy would not appear in such a poor light: this means that convergence may have proceeded well beyond what the statistics record; low social capital would thus determine the falling back of southern Italy only *if* – and *because* – we limit ourselves to the official accounts.

4. On the determinants of the pattern

The shares of product-per-worker and workers-per-capita over product-per-capita can be obtained from equation [1]. For every region, we have

[2] $\Delta(Y/P) = \Delta(Y/L) * \Delta(L/P)$

where Δ stays for the ratio between the regional and the national value.
For every t period, we define the ratio between the final (t1) and the initial value (t0) as

[3] $\Delta(Y/P)_{t1}/\Delta(Y/P)_{t0} = [\Delta(Y/L)_{t1}/\Delta(Y/L)_{t0}]*[\Delta(L/P)_{t1}/\Delta(L/P)_{t0}]$

and we define the three terms $(Y/P)c$, $(Y/L)c$ and $(L/P)c$ respectively, where c stays for change. The logarithmic form of [3] is

[4] $\ln(Y/P)c = \ln(Y/L)c + \ln(L/P)c$

from which the share of product-per-worker is

[5] $(Y/L)c / (Y/P)c = \ln(Y/L)c/[\ln(Y/L)c+\ln(L/P)c]$.

The figures of table 6 are from equation [5][7].

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[7] The national shares (the last row) are obtained through the formula

$$[6]\ \sum_{x=1}^{n} \left\{ \frac{[\Delta(Y/P)_{ti1} - \Delta(Y/P)_{ti0}]}{\sum_{y=1}^{n}\{[\Delta(Y/P)_{tiy1} - \Delta(Y/P)_{tiy0}] * P_y/P_N\}} * [(Y/L)c_{ix} / (Y/P)c_{ix}] \right\} * P_x/P_N$$

where x and y both refer to the regions and N stands for the national total.

Table 6. *Percentage of value added increase/decrease (on Italian average) due to product per worker*

	1891-1911	1911-1938	1938-1951	1951-1971	1971-1981	1981-2001
Piedmont	48.4	75.5	All	*All*	*None*	None
Aosta Valley				8.6	*All*	*None*
Liguria	44.9	79.9	*None*	All	*None*	None
Lombardy	All	71.7	84.9	All	*None*	None
North-West	89.1	78.6	All	All	*None*	None
Trentino-Alto A.	-	-	All	*62.9*	None	All
Veneto	87.5	*All*	85.0	*All*	None	None
Friuli	-	-	*83.0*	*All*	All	None
Emilia	*None*	*All*	All	31.2	5.2	*All*
Tuscany	*All*	71.5	59.6	None	14.3	65.8
The Marches	*44.7*	*All*	All	All	10.0	*54.9*
Umbria	*None*	46.3	*62.1*	None	All	*All*
Latium	*None*	*All*	*All*	*All*	*None*	67.2
Center/North-East	*All*	*All*	All	None	33.1	None
Abruzzi	All	*80.7*	All	All	None	*None*
Campania	*All*	*18.5*	*73.7*	All	*All*	*None*
Apulia	*95.4*	*62.3*	*All*	All	*All*	*31.4*
Lucania	*None*	*74.8*	*All*	All	*All*	All
Calabria	46.3	*60.5*	*All*	All	*All*	*None*
Sicily	*67.9*	*80.0*	*99.9*	All	None	*3.0*
Sardinia	*All*	*All*	*All*	All	*All*	None
South and islands	*65.3*	*64.6*	*All*	All	*All*	*None*
Productivity national shares	71.31	71.74	88.37	98.15	25.10	40.41

Legend: income decrease in *italics*.

Sources: see text.

During the liberal age and most of the interwar years, the falling back of southern Italy was due for two-thirds to product per worker, for about one third to the declining share of workers per capita. During the 1891-1911 years, mass migration may have affected negatively the share of workers per capita in some southern regions, but this had a minor impact on convergence. Conversely, during the interwar years the anti-migratory policy of the fascist regime may have slowed down the decline of workers per capita in the south, but they resulted in higher underemployment in agriculture and thus in a falling back of product per worker; at the same time, the expansive demographic policy probably affected negatively both the indicators.

The convergence of the 1950s and 1960s was entirely due to productivity, which confirms the hypothesis that the top-down plants funded by the 'extraordinary intervention' had a remarkable, although provisional, impact. In this period, two elements seem to point towards a relative minor role of emigration as compared to regional policy: the fact that the south fell back in terms of workers per capita and, moreover, the evidence that the sector with by far the highest rate of productivity convergence was industry, the one supported by the Cassa (whereas most of the southern emigrants came from agriculture).

If the decline of the 1970s was still referable to productivity, this was not the case, quite significantly, for the last two decades of the twentieth century. Moreover, productivity was of minor importance in the rise of the Nec regions in the second half of the twentieth century, and for Italy as a whole since the 1970s. Vittorio Daniele and Paolo Malanima (2007) also estimated the contributions of product per worker productivity and workers per capita to the north-south divide, over almost 150 years from 1861 to 2004. Although until world war I their income figures are slightly different from the ones presented here, and yearly figures are not reliable until at least the 1960s, they support the view that product per worker determined most of the north-south inequality trend (divergence and later convergence) from unification until the 1970s. During the last two decades, 1980s and 1990s, the falling back of southern Italy was due to its decreasing share of workers per capita: it was a problem of employment, rather than of productivity. As mentioned, in terms of productivity southern Italy continued to converge[8].

Different explanations may be advanced to account for the singularity of the Italian regional pattern, that is for the falling back of southern Italy after a period of convergence. Some too were proposed to explain the increase in regional inequalities until the 1950s, which however is more easily reconcilable with international evidence and literature. Any review would go well beyond the scope of this paper[9], whose goal is rather to provide the basic facts which would serve as the backbone for further analyses and for international comparisons: to sketch the pattern of regional inequality in the long run and the contributions to it of product per worker and workers per capita; as mentioned, although some parts of the early estimates are still unsatisfactory, on the whole results could hardly to be changed by further refinements.

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[8] We should remind, however, that for the public sector value added figures do not consider 'real' per worker productivity.
[9] For an overview of the interpretative hypotheses, see Felice "Regional Development: Reviewing the Italian Mosaic" forthcoming in the Journal of Modern Italian Studies (2010).

Some conclusions

The region is among the main stage-sets of economic history, but it is not an easy subject, for historians and for comparative approaches, given the widespread lack of data and, more in particular, of official accounting figures for the period before world war II. To bypass regional value added can be a possible solution: trying to make the best of information about labor force, which in most of the western countries is available on a regional basis already from the second half of the nineteenth century. The other solution is to estimate regional Gdp through indirect procedures, based on employment and wage data as well as on a wide array of other available sources, such as production, equipment, or taxation. This present paper has chosen the latter, as well as to integrate the results with information on regional employment.

Estimates of regional value added support the view that, in the first decades after Unification, the north-south Italian divide was relatively modest: within southern Italy regional disparities were remarkable, but on average this area scored a level of per capita income not far below the rest of the country. According to the available data, product per worker in agriculture had a remarkable role in this result; conversely, at 1891 in industry there was a clear gap in favour of the north.

The north-south divide took shape mostly during the 1911–51 years, product per worker being its major determinant. Also the south's convergence of the 1950s and 1960s was due to productivity; on the contrary, the falling back of the last three decades (1971–2001) is referable to the decreasing share of (official) workers per capita. The North-East-Centre, which too in the nineteenth century was highly diversified, was different: during all the second half of the twentieth century the increase in the share of workers per capita played the major part in its economic rise, some relative improvement in industrial productivity notwithstanding.

Generally speaking, the minor role of product per worker in the last decades is in line with the thesis that cultural and institutional factors are the main determinants of the recent south's falling back, which took place after a period of convergence: i.e. that these factors are the ultimate reasons behind the peculiarity of the Italian regional pattern, as compared to the evidence for other countries and to predictions by economic literature on regional convergence.

Appendix 1. Notes on the 1891-1951 value added estimates

For agriculture, value added comes from estimates of regional gross saleable production (Federico 2003): production was transformed into value added under the hypothesis of three different shares of costs, depending on the agricultural regime prevailing in each Italian region: 9% for intensive production, 7% for sharecropping, 4% for extensive production, as from Tassinari (1931).

For industry and services, as mentioned data are from Felice 2005a for 1938 and 1951, from Felice 2005b for 1891 and 1911; these latter have been improved by incorporating the latest estimates by Ciccarelli and Fenoaltea, which cover about a half of the industrial sectors. In Felice, in principle the procedure is analogous to the one formalized by Geary and Stark (2002, see also Crafts 2004). As a first step, national value added was allocated in proportion to the regional labor force, then the results (VA 1) were refined with the avail of estimates of female and children wages (VA 2); VA 2 figures, in turn, were corrected to allow for regional productivity differences within the same specific sector: using wages from the Censuses of Industry and Commerce for 1951 and 1938, wages from Zamagni (1978) for 1911, estimates of the textile sector from Fenoaltea (2004) for 1911 and 1891, a number of different proxies for other sectors of the services. The sectoral breakdown of VA 1 and VA 2 was at the highest detail allowed by the intersection between census sources and the new national VA estimates (for industry, 54 sectors in 1891, 81 in 1911; for services, 74 sectors in 1891, 82 in 1911), while the breakdown of VA 3 estimates is lower but still relatively accurate (for industry, 17 sectors in 1891, 16 in 1911; for services, 13 in 1891, 18 in 1911). For a full list of the sectors, as well as for the VA 1 and VA 2 results, see Felice 2005a and 2005b.

In Felice 2005b, for 1911 and more for 1891, given the lack of statistical information to estimate productivity was problematic. More hypotheses had to be introduced. For industry in 1891, the solution proposed was based on the comparison between Fenoaltea's new textile estimates (2004) and his previous ones (2003a and 2003b) which did not allow for regional productivity differences: The assumption was that in 1891 productivity regional disparities of each i industrial sector scored with textile disparities the same ratio as in 1911, following the equation:

[A1] $\Delta P y i 1891 = \Delta P y t 1891 * (\Delta P y i 1911 / \Delta P y t 1911)$

where y is the region, P is productivity, Δ is the difference compared to the Italian average and t is the textile sector. For services the methodology was similar, yet making use of other proxies,

such as the productivity of the credit sector (as derived from per capita savings), or for 1911 the regional wages in constructions at 1910, these correlated in turn with 1938 wages.

Admittedly, this procedure could yield unsound results. For industry, to give an example, the differences in Fenoaltea's textiles seem to be mostly textile-specific (stemming primarily from the distinction among fibers and only secondarily from within-fiber productivity differences) and thus they can hardly be applied to other sectors. Nowadays, however, many industrial sectors have been re-estimated by Carlo Ciccarelli and Stefano Fenoaltea, on a yearly basis from 1861 to 1913. These 'second generation' estimates can be classified in two groups: those which reconstruct regional total 'directly' from local production ('bottom-up'), and those which allocate the national product in proportion to a number of regional indicators, such as workforce, horsepower, etc. ('top-down'). It is a methodology much more expensive than the one based on workforce and wages, but, of course, more reliable. The results stand out as a monumental work, hundreds of sheets, probably with no parallel in any other country. For 1891 and 1911, where available Ciccarelli and Fenoaltea estimates have been substituted to Felice: as a whole, the new estimates cover 64% of the national industrial value added in 1911, 44% in 1891.

The four benchmarks, 1891, 1911, 1938 and 1951 are the only ones for which new and reliable national value added estimates are available, at a very detailed sectoral breakdown, produced by the group coordinated by Guido Maria Rey and published in 1992 and 2000: with estimates by Federico (1992 and 2000) for agriculture, Fenoaltea (1992) and Fenoaltea and Bardini (2000) for industry, Zamagni (1992) and Zamagni and Battilani (2000) for services. These four benchmarks make possible to analyse the pattern of regional inequality over the main periods of recent Italian history: the rise during the Giolitti's age, then the interwar period until world war II and reconstruction, which closed roughly on 1951 when the golden age began.

In Felice, for 1911, 1938 and 1951, labor force is drawn from both the Census of population (CP) and the Census of industry and services (CI), considering the CP's exceeding workers as underemployment or homework. In 1891 there was not a census at all, and so for this benchmark labour force had to be interpolated (with the continuous compounding yearly rate) from 1881 and 1901 CPs, using sometimes Ellena's 1876 figures (Ellena 1880) – since they are more reliable (see Zamagni 1987) – instead of the 1881 CP data.

The use of the new national value added estimates, of productivity estimates, of labor force figures based on both CP and CI to account for underemployment, as well as of the new Federico estimates of regional gross saleable production in agriculture, is the main difference between Felice (2005a and 2005b) estimates and the previous ones: Zamagni (1978) for 1911, Esposto (1997) for 1891 and 1911, Fenoaltea (2003) for the only industrial sector in 1871, 1881, 1901 and 1911,

Svimez (1961) for 1938 and 1951, Tagliacarne (1960) for 1951; for a comparison of the results, see Felice 2005a and 2005b. For 1891 and 1911, in turn, the use of Fenoaltea and Ciccarelli most recent industrial estimates is the difference between present estimates and Felice 2005b ones.

Regional figures for 1971, 1981 and 2001 are, respectively, from Svimez (1993) and Istat (1995; 2006).

It should be added that value added estimates do not consider regional disparities in the cost of living: my prime impression is that, in real terms, this can result into an overestimate of the north-south divide, mainly in 1938 and 1951. To build a reliable regional price index for the years previous to world war II should be regarded as a major task for further researches.

Appendix 2. Comparison of 1891 and 1911 different estimates

Tables A.1 and A.2 are intended to give some information about the reliability of the new figures for 1891 and 1911, by showing the on-going refinement of estimates, from Fenoaltea 2003 (which did not consider regional productivity disparities within each specific sector) up to the present ones.

With regard to industry, new figures are closer to Felice 2005 estimates than to the previous Fenoaltea's. Yet the key issue is another. After Felice 2005 estimates are improved by incorporating Ciccarelli and Fenaoltea second generation estimates for constructions – the column 'Felice rev. (1)' – these tend to 'stabilize', so much so as further refinements, via incorporating all the other second generation estimates by Ciccarelli and Fenoaltea, bring only marginal changes. The picture changes significantly when passing from Fenoaltea 2003 to Felice 2005, even more from Fenoaltea 2003 to the present estimates; yet the improvements are marginal when passing from Felice 2005 to the present data; finally, the picture remains practically unchanged when passing from Felice 2005 revised with constructions to the present estimates.

This result rises some hopes that in the future new sectoral estimates are not going to modify the picture in a significant way. It is also a point in favour of the assumptions of 'Geary and Stark' methodology. In Felice 2005 estimates, in fact, for constructions labor force figures were unsound because of the seasonality of the workers; moreover, 1891 labor force was interpolated between 1881 and 1901 and thus it couldn't trace the construction bubble of the beginning of the 1890s. These problems can explain the remarkable changes introduced by Ciccarelli and Fenoaltea second generation estimates for constructions. For the other sectors, instead, where labor force figures are more reliable and reported on a very detailed sectoral breakdown, changes are marginal and thus possible errors uninfluential.

Table A.1. Comparison of 1891 different estimates

	VA per worker in industry				Total VA per worker				Total per capita VA			
	Fenoa. 2003*	Felice 2005b	Felice rev. (1)	Present ones	Fenoa. 2003*	Felice 2005b	Felice rev. (1)	Present ones	Fenoa. 2003*	Felice 2005	Felice rev. (1)	Present ones
Piedmont	1,04	1,65	1,38	1,36	0,90	0,98	0,96	0,96	1,02	1,10	1,08	1,08
Liguria	1,14	2,46	2,19	2,02	1,23	1,50	1,46	1,45	1,22	1,49	1,45	1,44
Lombardy	0,99	1,28	1,14	1,14	1,01	1,06	1,05	1,05	1,11	1,16	1,15	1,15
North-West	*1,03*	*1,52*	*1,33*	*1,31*	*0,99*	*1,08*	*1,06*	*1,06*	*1,09*	*1,18*	*1,16*	*1,16*
Veneto	1,05	1,18	1,01	1,03	0,82	0,81	0,81	0,81	0,81	0,80	0,80	0,80
Emilia	0,98	1,20	1,08	1,08	1,06	1,10	1,08	1,08	1,04	1,08	1,06	1,06
Tuscany	1,12	1,22	1,18	1,24	1,22	1,24	1,23	1,24	1,00	1,02	1,02	1,03
The Marches	0,87	0,68	0,66	0,73	0,83	0,80	0,79	0,81	0,89	0,86	0,86	0,88
Umbria	0,65	0,48	0,53	0,56	0,64	0,63	0,64	0,64	1,02	1,01	1,02	1,02
Latium	1,17	1,27	1,31	1,33	1,45	1,45	1,49	1,50	1,52	1,52	1,56	1,57
North-East-C.	*1,01*	*1,11*	*1,02*	*1,05*	*1,00*	*1,01*	*1,01*	*1,02*	*1,00*	*1,01*	*1,00*	*1,01*
Abruzzi	0,80	0,17	0,32	0,40	0,68	0,60	0,62	0,62	0,71	0,63	0,65	0,66
Campania	1,05	0,89	0,93	0,93	1,02	0,99	1,00	0,99	1,00	0,97	0,97	0,97
Apulia	0,97	0,25	0,44	0,47	1,20	1,09	1,12	1,12	1,10	1,00	1,02	1,02
Lucania	1,00	0,26	0,60	0,68	0,72	0,64	0,68	0,68	0,77	0,69	0,73	0,74
Calabria	0,65	0,17	0,34	0,38	0,72	0,64	0,65	0,66	0,72	0,64	0,66	0,67
Sicily	1,09	0,54	0,69	0,62	1,21	1,10	1,12	1,10	1,02	0,93	0,94	0,93
Sardinia	1,08	0,98	0,96	0,85	1,19	1,17	1,17	1,15	0,97	0,95	0,95	0,94
South and islands	*0,97*	*0,50*	*0,65*	*0,65*	*1,00*	*0,93*	*0,94*	*0,94*	*0,94*	*0,87*	*0,89*	*0,88*

* With Felice 2005b for agriculture and services.

Notes: Felice rev. (1): Felice 2005b estimates with Ciccarelli and Fenoaltea 2008c for constructions.

Table A.2. Comparison of 1911 different estimates

	VA per worker in industry				Total VA per worker				Total per capita VA			
	Fenoa. 2003*	Felice 2005b	Felice rev. (1)	Present ones	Fenoa. 2003*	Felice 2005b	Felice rev. (1)	Present ones	Fenoa. 2003*	Felice 2005	Felice rev. (1)	Present ones
Piedmont	1,01	1,16	1,15	1,09	0,97	1,01	1,00	0,99	1,14	1,18	1,17	1,15
Liguria	1,18	1,48	1,51	1,50	1,41	1,49	1,50	1,50	1,44	1,53	1,54	1,54
Lombardy	1,02	1,13	1,12	1,09	1,12	1,15	1,13	1,13	1,19	1,22	1,20	1,19
North-West	*1,03*	*1,18*	*1,17*	*1,13*	*1,09*	*1,13*	*1,12*	*1,11*	*1,20*	*1,24*	*1,23*	*1,22*
Veneto	1,00	0,98	1,04	1,04	0,86	0,85	0,86	0,87	0,85	0,84	0,86	0,86
Emilia	1,04	1,04	1,03	1,04	1,05	1,05	1,05	1,05	1,08	1,08	1,08	1,08
Tuscany	0,89	0,88	0,89	0,94	0,95	0,94	0,95	0,96	0,97	0,96	0,96	0,97
The Marches	0,87	0,78	0,79	0,80	0,79	0,77	0,77	0,78	0,82	0,81	0,81	0,81
Umbria	0,99	0,99	1,06	1,17	0,87	0,87	0,89	0,91	0,88	0,88	0,90	0,92
Latium	1,04	1,32	1,34	1,36	1,46	1,54	1,54	1,55	1,40	1,48	1,48	1,49
North-East-C.	*0,96*	*0,98*	*1,00*	*1,03*	*0,98*	*0,98*	*0,99*	*0,99*	*0,99*	*0,99*	*1,00*	*1,00*
Abruzzi	0,89	0,74	0,74	0,75	0,67	0,66	0,66	0,66	0,68	0,67	0,68	0,68
Campania	1,05	0,90	0,87	0,90	1,00	0,97	0,96	0,97	0,97	0,94	0,94	0,94
Apulia	1,03	0,73	0,72	0,72	1,00	0,95	0,94	0,94	0,90	0,86	0,85	0,85
Lucania	0,93	0,72	0,82	0,89	0,69	0,67	0,68	0,69	0,72	0,70	0,72	0,73
Calabria	0,67	0,49	0,50	0,50	0,70	0,67	0,67	0,67	0,73	0,70	0,70	0,70
Sicily	1,08	0,76	0,76	0,79	1,11	1,05	1,05	1,05	0,90	0,85	0,85	0,85
Sardinia	1,09	0,82	0,89	0,93	1,14	1,09	1,11	1,11	0,93	0,90	0,91	0,92
South and islands	*1,00*	*0,77*	*0,76*	*0,79*	*0,95*	*0,91*	*0,91*	*0,91*	*0,87*	*0,84*	*0,84*	*0,84*

Notes: as above.

References

Bagnasco, Arnaldo (1977) *Tre Italie. La problematica territoriale dello sviluppo italiano*, Bologna: il Mulino.

—— (1988) *La costruzione sociale del mercato. Studi sullo sviluppo di piccola impresa in Italia*, Bologna: il Mulino.

Becattini, Giacomo (1979) 'Dal "settore" industriale al "distretto" industriale. Alcune considerazioni sull'unità di indagine dell'economia industriale'*, Rivista di economia e politica industriale* 5 (1): 7–21.

—— (2007) *Il calabrone Italia. Ricerche e ragionamenti sulla peculiarità economica italiana*, Bologna: il Mulino.

Bevilacqua, Piero (1993) *Breve storia dell'Italia meridionale dall'Ottocento a oggi*, Rome: Donzelli.

Cafagna, Luciano (1965) 'Intorno alle origini del dualismo economico in Italia', in Alberto Caracciolo (ed.) *Problemi storici dell'industrializzazione e dello sviluppo*, Urbino: Argalià, pp. 103–150.

Carreras, Albert (1990) 'Fuentes y datos para el análisis regional de la industrialización española', in Albert Carreras and Jordi Nadal Oller (eds) *Pautas regionales de la industrialización española (siglo XIX y XX)*, Barcelona: Ariel, 3–20.

Ciccarelli, C. and Fenoaltea, S. (2006) 'Mining Production in Italy, 1861-1913: National and Regional Time Series', *Rivista di Storia Economica* 22(2): 141–208.

—— (2008a) 'The Chemicals, Coal and Petroleum Products, and Rubber Industries in Italy's Regions, 1861-1913: Time-Series Estimates', *Rivista di Storia Economica* 24(1): 3–58.

—— (2008b) 'The Growth of the Utilities Industries in Italy's Regions, 1861-1913', *Rivista di Storia Economica* 24(2): 175–206.

—— (2008c) 'Construction in Italy's regions, 1861-1913', *Rivista di Storia Economica* 24(3): 303–40.

—— (2008d) 'Metalmaking in Italy, 1861-1913: National and Regional Time Series', MPRA Paper No. 8983, June, downloadable at http://mpra.ub.uni-muenchen.de/8983/.

—— (2008e) 'Shipbuilding and Repairing in Italy, 1861-1913: National and Regional Time Series', MPRA Paper No. 10974, October, downloadable at http://mpra.ub.uni-muenchen.de/10974/.

Crafts, Nicholas (2004) 'Regional GDP in Britain 1871-1911: some estimates', LSE Dept of Economic History WP 03/04.

Daniele, V. and Malanima, P. (2007) 'Il prodotto delle regioni e il divario Nord-Sud in Italia (1861-2004)', *Rivista di Politica Economica*, third series, 67(3-4): 267–315.

Denison, Edward F. (1967) *Why Growth Rates Differ: Postwar Experience in Nine Western Countries*, Washington DC: Brookings Institution.

Eckaus, Richard S. (1961) 'The north-south differential in Italian economic development', *The Journal of Economic History*, 21(3): 285–317.

Ellena, Vittorio (1880) 'La statistica di alcune industrie italiane', *Annali di Statistica*, 2nd serie, 13: 1–141.

Esposto, Alfredo G. (1997) 'Estimating regional per capita Income: Italy, 1861-1914', *Journal of European Economic History*, 26(3): 585–604.

Federico, Giovanni (1992) 'Il valore aggiunto dell'agricoltura', in Guido M. Rey (ed.) *I conti economici dell'Italia. 2. Una stima del valore aggiunto per il 1911*, Rome-Bari: Laterza, pp. 3–103.

—— (2000) 'Una stima del valore aggiunto dell'agricoltura italiana', in Guido M. Rey (ed.) *I conti economici dell'Italia. 3**. Il valore aggiunto per gli anni 1891, 1938, 1951*, Rome-Bari: Laterza, pp. 3–112.

—— (2003) 'L'agricoltura italiana: successo o fallimento?', in Pierluigi Ciocca and Gianni Toniolo (eds) *Storia economica d'Italia, vol. III. Industrie, mercati, istituzioni. 1. Le strutture dell'economia*, Rome: Laterza, pp. 99–136.

—— (2007) 'Ma l'agricoltura meridionale era davvero arretrata?', *Rivista di Politica Economica*, third series, 67(3-4): 317–40.

Felice, Emanuele (2003) *Cassa per il Mezzogiorno. Il caso dell'Abruzzo*, L'Aquila: Consiglio Regionale dell'Abruzzo, Collana di Studi Abruzzesi.

—— (2005a) 'Il reddito delle regioni italiane nel 1938 e nel 1951. Una stima basata sul costo del lavoro', *Rivista di Storia Economica*, 21(1): 3–30.

—— (2005b) 'Il valore aggiunto regionale. Una stima per il 1891 e per il 1911 e alcune elaborazioni di lungo periodo (1891-1971)', *Rivista di Storia Economica*, 21(3): 273–314.

—— (2007a) *Divari regionali e intervento pubblico. Per una rilettura dello sviluppo in Italia*, Bologna: il Mulino.

—— (2007b) 'I divari regionali in Italia sulla base degli indicatori sociali (1871-2001)', *Rivista di Politica Economica*, third series, 67(3-4): 359–405.

——— (2007c) 'The "Cassa per il Mezzogiorno" in the Abruzzi. A successful regional economic policy', *Global & Local Economic Review* 10: 9–33.

Fenoaltea, Stefano (1992) 'Il valore aggiunto dell'industria nel 1911', in Guido M. Rey (ed.) *I conti economici dell'Italia. 2. Una stima del valore aggiunto per il 1911*, Rome-Bari: Laterza, pp. 105–90.

——— (2003a) 'Lo sviluppo dell'industria dall'Unità alla Grande guerra: una sintesi provvisoria', in Pierluigi Ciocca and Gianni Toniolo (eds) *Storia economica d'Italia, vol. III. Industrie, mercati, istituzioni. 1. Le strutture dell'economia*, Rome: Laterza, pp. 137–93.

——— (2003b) 'Peeking backward: regional aspects of industrial growth in post-unification Italy', *The Journal of Economic History*, 63(4): 1059–102.

——— (2004) 'Textile production in Italy's regions', *Rivista di Storia Economica*, 20(2): 145–74.

——— (2006) *L'economia italiana dall'Unità alla Grande Guerra*, Rome-Bari: Laterza.

——— (2007) 'I due fallimenti della storia economica: il periodo post-unitario', *Rivista di Politica Economica* third series, 67(3-4): 341–58.

Fenoaltea, Stefano and Bardini, Carlo (2000) 'Il valore aggiunto dell'industria', in Guido M. Rey (ed.) *I conti economici dell'Italia. 3**. Il valore aggiunto per gli anni 1891, 1938, 1951*, Rome-Bari: Laterza, pp. 113–238.

Fortunato, Giustino (1973) [1904] *Il Mezzogiorno e lo stato italiano*, ed. M. Rossi-Doria, Florence: Vallecchi.

Geary, Frank and Stark, Tom (2002) 'Examining Ireland's post-famine economic growth performance', *Economic Journal* 112(482): 919–35.

Giuntini, Andrea (1999) 'Nascita, sviluppo e tracollo della rete infrastrutturale', in Franco Amatori, Duccio Bigazzi, Renato Giannetti and Luciano Segreto (eds) *Storia d'Italia. L'industria*, Torino: Einaudi, pp. 551–616.

Helliwell, John and Putnam, Robert D. (1995) 'Economic Growth and Social Capital in Italy', *Eastern Economic Journal* 21(3): 295–307.

Istat, Istituto Centrale di Statistica (1995) *Conti economici regionali: anni 1980–92*, Rome.

——— (2006) *Sistema di indicatori territoriali* (www.istat.it).

Kuznets, Simon (1966) *Modern Economic Growth*, Oxford: Oxford University Press.

Leonardi, Robert (1995a) 'Regional Development in Italy: Social Capital and the Mezzogiorno', *Oxford Review of Economic Policy* 11(2): 165–79.

——— (1995b) *Convergence, cohesion and integration in the European union*, Houndmills: Macmillan.

——— (2005) *Cohesion policy in the European Union. The building of Europe*, Hampshire: Palgrave Macmillan.

Lutz, Vera (1962) *Italy. A Study in Economic Development*, Oxford: Oxford University Press.

Lyon, Thomas P. (2005) 'Making Capitalism Work: Social Capital and Economic Growth in Italy, 1970-1995', FEEM Working Paper No. 70.05, May 2005, downloadable at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=726201.

Nitti, Francesco Saverio (1958) [1900] *Scritti sulla questione meridionale, vol. II. Il bilancio dello stato dal 1862 al 1896-97 / Nord e Sud*, ed. A. Saitta, Bari: Laterza.

Petrakos, George, Rodríguez-Pose, Andrés and Rovolis, Antonis (2005) 'Growth, integration, and regional disparities in the European Union', *Environment and Planning* 37(10): 1837–55.

Putnam, Robert D. (1993) *Making democracy work: civic traditions in modern Italy*, with Robert Leonardi and Raffaella Y. Nanetti, Princeton: Princeton University Press.

Rey, Guido M. (ed.) (1992) *I conti economici dell'Italia. 2. Una stima del valore aggiunto per il 1911*, Rome-Bari: Laterza.

——— (2000) *I conti economici dell'Italia. 3**. Il valore aggiunto per gli anni 1891, 1938, 1951*, Rome-Bari: Laterza.

Sori, Ercole (1987) 'Dalla manifattura all'industria (1861-1940)', in Sergio Anselmi (ed.) *Storia d'Italia. Le regioni. Le Marche*, Turin: Einaudi, pp. 299–392.

Spadavecchia, Anna (2007) 'Regional and National Industrial Policies in Italy. Where Did the Subsidies Flow?', Working Paper Series, University of Reading (UK), downloadable at http://www.reading.ac.uk/nmsruntime/saveasdialog.asp?lID=15832&sID=34517.

Svimez (1961) *Un secolo di statistiche storiche italiane: Nord e Sud, 1861-1961*, Rome.

——— (1993) *I conti del Mezzogiorno e del Centro-Nord nel ventennio 1970-1989*, Bologna: il Mulino.

Tagliacarne, Guglielmo (1960) 'Calcolo del reddito prodotto dal settore privato e dalla pubblica amministrazione nelle provincie e regioni d'Italia dal 1951 al 1959. Indici di alcuni consumi e del risparmio', *Moneta e Credito* 13(52): 439–551.

Tassinari, Giuseppe (1931) *La distribuzione del reddito nell'agricoltura italiana*, Piacenza: Federazione Italiana dei Consorzi Agrari.

Vitali, Ornello (1970) *Aspetti dello sviluppo economico italiano alla luce della ricostruzione della popolazione attiva*, Rome: Failli.

Williamson, Jeffrey (1965) 'Regional inequality and the process of national development: a description of the pattern', *Economic Development and Cultural Change* 13(July): 3-84.

Zamagni, Vera (1978) *Industrializzazione e squilibri regionali. Bilancio dell'età giolittiana*, Bologna: il Mulino.

—— (1987) 'A century of change: trends in the composition of the Italian labour force', *Historical Social Research*, 44 (October): 36–97.

—— (1992) 'Il valore aggiunto del settore terziario italiano nel 1911' in Guido M. Rey (ed.) *I conti economici dell'Italia. 2. Una stima del valore aggiunto per il 1911*, Rome-Bari: Laterza, pp. 191–239.

—— (1993) *Dalla periferia al centro. La seconda rinascita economica dell'Italia (1861-1990)*, Bologna: il Mulino.

Zamagni, Vera and Battilani, Patrizia (2000) 'Stima del valore aggiunto dei servizi', in Guido M. Rey (ed.) *I conti economici dell'Italia. 3**. Il valore aggiunto per gli anni 1891, 1938, 1951*, Rome-Bari: Laterza, pp. 239–371.