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STRUCTURAL CHANGE AND FIRM DYNAMICS IN THE SOUTH OF ITALY

by Francesco Bripi*, Raffaello Bronzini‡, Elena Gentili†,
Andrea Linarello** and Elisa Scarinzi‡

Abstract

In this paper, we study the structural change in the Centre-North and the South of Italy, focusing on its implications for productivity dynamics and its microeconomic determinants. We document three main results. First, between 2001 and 2018 the deindustrialization process involved both parts of Italy, but in the South it started after the financial crisis and was more pronounced. In the southern regions, the employment shares in low knowledge-intensive services increased more than in the Centre-North, whereas those in the high knowledge-intensive services increased less. Second, structural changes slowed down productivity growth in the Centre-North, but had no role in the fall of productivity registered in the South. Finally, in the Centre-North employment growth has been driven by the net creation of jobs among incumbents and larger firms. In contrast, employment dynamics in the southern regions largely reflected the process of firms entering and exiting the market, in particular in less knowledge-intensive service sectors, and in young and smaller enterprises.

Contents

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1. Introduction[1]

The North-South economic gap is a long lasting issue for the Italian economy (Bank of Italy, 2010). In this century the gap widened in terms of per capita GDP, the employment rate and productivity, mainly because of the economic crises that hit the two geographical areas differently during the period – see e.g.: Bank of Italy (2018), Bronzini et al. (2013), Cannari et al. (2019), Svimez (2019), Accetturo et al. (2021), and De Philippis et al. (2021). While in recent years the relative performance of the southern Italy has been widely investigated, much less attention has been devoted to the long-run process of structural change, i.e. the reallocation of employment across the economic sectors, its implications for aggregate productivity, and its microeconomic determinants. This present study tries to fill this gap.

It is well known that over the last few decades the deindustrialization process, i.e. the shifting of employment shares from manufacturing to services, involved almost all western economies (Herrendorf et al. 2014). Our first goal is to verify whether this process encompasses the Centre-North and the South of Italy in a similar way, or if the regions followed different structural change paths. The second contribution of this study is to examine the link between structural change and productivity dynamics; some previous analyses were carried out by Paci and Pigliaru (1997) and Quatraro (2009) among others. To this end, we verify if, and to what extent, structural change has contributed to the sluggish productivity growth of the Italian economy and of the two areas (Brandolini and Bugamelli 2009; Bugamelli and Lotti 2018). Finally, we explore to what extent these aggregate patterns reflect firm entry and exit and the choice of firms to hire and fire in a dynamic process of continuous worker reallocation (Dent et al. 2016).

In the first part of the paper, the process of structural change is analysed by using territorial account data on employment and value added sourced by the Italian National Institute of Statistics (Istat), which cover all sectors of the economy. In the second part of the paper, we employ administrative microdata from the social security records provided by the National Social Security Institute (INPS) to investigate the role of private firm dynamics in the process of job creation, i.e. the effect of net firm entry and that of incumbent firms on employment dynamics.

The main results of the study can be summarized as follows. First, between 2001 and 2018 the deindustrialization process involved both parts of Italy with some differences between the two areas. The Centre-North which, in 2001, had higher manufacturing shares than the South, followed a log-run trend of deindustrialization that started well before the 2008 crisis (similarly to what has been documented for other advanced economies). Deindustrialization in the South started later than in the Centre-North, but was more pronounced. Moreover, while in the southern regions the increase of employment shares in less knowledge-intensive services (especially those linked to retail trade and tourism activities) has been more marked than in the Centre-North, the opposite is true for the knowledge-intensive services.

Second, the process of structural changes, i.e. changes in employment sectoral shares, slowed down the productivity growth in the Centre-North, but it did not do so in the South, where structural changes had no role in the overall productivity fall, rather, the main driver was the drop of productivity within each sector. The fall in investment, which was more intensive for the South, documented by Accetturo et al. (2021), together with the presence of well-known external diseconomies that historically affect this area, may underlie the above mentioned drop in sectoral productivity.

Finally, as regards the role of firm dynamics in employment creation and structural change, our analysis highlights the key differences between the two areas. Employment growth in the Centre-North has been driven by the net creation of jobs

among incumbent firms, which are that the ones we observe in our sample for the entire period of analysis. By 2017, firms located in the Centre-North were employing more workers than in 2001 (our first year of analysis). In contrast, employment dynamics in the southern regions largely reflected the process of firms entering and exiting the market, in particular in less knowledge-intensive services. These differences, common across sectors within each area, have had important implications for firm growth and firm size distribution in the two areas. In the Centre-North, employment growth occurred among large firms, which during the period of analysis increased their average size; in the South, job creation was driven by younger and small firms, leading to a decrease in average firm size.

The rest of the paper is organized as follow: Section 2 illustrates the process of structural transformation using aggregate data; Section 3 reports the analysis using firm-level data. Section 4 summarizes and discusses the main results of the analysis.

2. Sectoral specialization and productivity growth

The deindustrialization process – i.e. the shift of employment and value added shares from manufacturing towards services – is a long-run trend that involves the majority of western countries (Herrendorf et al. 2014). A wide literature studied the deindustrialization focusing either on their causes (see e.g.: Buera and Kaboski 2012; van Neuss 2019; Muhlen and Escobar 2020), or its effects on a variety of economic issues, such as: business recovery (Olney and Pacitti 2017), job polarization (Barany and Siegel 2018), but mainly on aggregate productivity growth – from the earlier studies by Baumol (1967) to the more recent analysis by Léon-Ledesma and Moro (2020).

In this section, we first examine the sectoral specialization and structural change of the two main Italian geographical areas, Centre North and the South, from 2000 to 2018, a period characterized by two economic crises (in 2008 and 2012) followed by a recovery abruptly interrupted by the Covid-19 pandemic (that

is out of our analysis because of data availability). We investigate the structural change focusing mainly by the over-time changes in employment and value added sectoral shares, and sectoral specialization index. Next, we study the dynamic of labor productivity and its interplay with the sectoral dynamics by a shift share analysis.

We start by dissecting sectoral specialization using territorial data sourced by Istat (Conti economici territoriali). Accetturo et al. (2021) show that, in the last years, the southern economy has performed relatively worse than the other regions of the country. These results are confirmed by our examination of employment data by sector (Figure 1; Table 1). From 2001 to 2018, the employment increased on average by 0.7 per cent by year in Centre North, whereas it remained unchanged in the South. In both the areas employment declined in manufacturing and augmented in services, but the Centre North shows a better performance, in that the fall in manufacturing employment is less pronounced, and the increase of employment in services is higher than in southern regions. Notice that, by regrouping the sectors according to the technology classification, in the Centre North employment in high-tech manufacturing has declined only by a small percentage, whereas in the low-tech manufacturing the reduction has been much more pronounced. On the other hand, in the South the employment declined severely in both, high- and low-tech manufacturing. As regards services, in both the areas low knowledge-intensive services perform better than high knowledge-intensive services (public administration excluded), but in the South the difference is more marked. Finally, in public sector[2] – included in high knowledge-intensive services according to the OECD classes – and in constructions employment falls in the South, whereas slightly increases in the Centre North.

The long lasting deindustrialization process that invested advanced countries affected also both parts of Italy. The share of employment in services reached, in

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[2] In this work we proxy the public sector using the sectors of public administration, education, and health care branches, which correspond to sector codes from 84 to 88 using the NACE Rev. 2 classification.

2018, 72.9 per cent in Centre North and 74.8 in the South (Figure 2 and 3 and Table 2); the service share increases slightly more in southern regions (by 5.7 percentage points from 2001) than in Centre North (5.5 percentage points; Figure 4).

Notice that while deindustrialization in central-northern regions started far before the 2008 crisis, similarly to the secular trend undertaken by all the main western countries, in southern area – where at the beginning of the period the weight of manufacturing was much less pronounced than in the Centre North – it started only after the big crisis. As regards the public sector (public administration, education and health care), the employment share has been substantially stable over time in both the areas; much larger in the South (24.0 per cent over the total employment in 2018) than in Centre North (13.8).

The changes in the sectoral shares of employment turn out to be strongly correlated across areas (Figure 4). The shares substantially increased in the low-knowledge intensive services (by more than 5 percentage points) and much less in the high-knowledge intensive services (about 1 point). Among the former, those of real estate and trade, that together cover about one fourth of the total employment, increased in both the areas, with a more pronounced growth in the South. Within the main low knowledge-intensive services, employment shares of hotel and restaurants increased in the South, but they decline in the Centre North. On the other side, the relative weight of the high knowledge-intensive sectors increased in Centre North especially in the ICT and business services, whereas in the South mainly in the branches of professional and scientific activities and arts and entertainments – the latter linked to consumer services.

Overall, the growth of the value added has been slower than that of employment in both areas (see Figure 1 and Table 3 and 4). Namely, value added marginally increased in the Centre North and declined in the South. Moreover, in central-northern regions the value added grew in high-tech manufacturing sectors while it was stable in low-tech ones. These trends together with the decline in the employment in both branches suggest a slight recovery of manufacturing

productivity. However, such a recovery is not present in the South, which shows a decline of the value added in both high- and low-tech manufacturing. Finally, in both the areas the increase in the low-intensive knowledge services employment is not accompanied by a proportional growth of the value added, implying a loss of productivity in this sector. In the following sections productivity dynamics and its relationship with structural changes we will explored in greater depth.

Summarizing, over the last two decades employment dynamics in the two areas followed different paths. In the South, where manufacturing was less relevant, deindustrialization started after the financial crisis of 2008-09 and turned out to be more marked than in the Centre North. The expansions of service employment did not compensate the fall in manufacturing, as a result the total employment did not grow. Moreover, the increase of low-knowledge intensive services was more pronounced than in the Centre-North, especially those related to retail trade and tourism (e.g. hotel and restaurant). Also the Centre North experienced a process of deindustrialization – that however started far before the big crisis and accelerated afterwards – and a large increase of traditional service jobs, but the expansion of employment share in services interested also some high-knowledge intensive activities, like ICT and business services. Overall in this area the increase of service employment overcomes the job loss in manufacturing, and the total employment increased. As regards the weight of public sector, constantly higher in the South over the whole period examined, it remained substantially stable over time in the two areas.

2.1 Sectoral specialization

In order to examine in more depth the sectoral specialization of the two areas, we look at the following sectoral specialization index *à* la Balassa:

$$SSI_{(i,a)} = \frac{Employm\_share_{i,a}}{Employm\_share_{i,Italy}} - 1$$

where i is the sector and a is the geographical area. The index divides the sectoral employment share of the geographical area by the same share calculated over the total Italian economy, then the unity is subtracted from the result. Positive (negative) values of the index show that the area is more (less) specialized in the sector i than the total Italian economy.[3]

In 2018, the South turned out to be specialized in agriculture, utilities, public services and construction (Figure 5); in 2001 the area was more specialized in the building sector, but less specialized in utilities and agriculture, while the level of specialization did not change over the period for public services. By using more granular branches (28 sectors) we are able to provide more details of the structural patterns (Figure 6). Namely, besides the recalled specialization in the primary sector, utilities, and construction, the area is relatively more specialized in trade, education, public administration and to a lesser extent health care and other services; among the manufacturing, southern regions result specialized only in food and beverage. As regards the Centre North, in 2018 the area is specialized in manufacturing and private intensive knowledge services. In 2001 central-northern regions turned out to be a little more specialized in the private knowledge-intensive services and low-tech manufacturing.

Another distinguishing feature of the economic structure of the areas is the size of the plants. According to Istat data from Census and Asia (Table 5) the average plant size is very low in both areas, but higher in the Centre North (around 4 employees per plant) than in the South (3 employees; see Accetturo et al. 2021); in both the areas it remained substantially stable over time.

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[3] For a discussion of specialization indexes and their use see, among others, Palan (2010) and Moreira et al. (2017).

2.2 Structural change and aggregate labor productivity growth

The impact of the structural change on aggregate productivity has been extensively examined by a large literature from the seminal paper by Baumol (1967), to the more recent analysis by Moro (2015), and Leon-Ledesma and Moro (2020). The mechanism investigated is straightforward. As the economy transits from high productivity (manufacturing) to low productivity sectors (services) aggregate productivity slows down. Also at the regional level the literature has a long tradition. Paci and Pigliaru (1997) examined the role played by structural change on labor productivity convergence of Italian regions over the period 1970-92. Quatraro (2009) studied the relationship between structural change and Italian regional productivity from 1980 to 2003, while Felice (2017) explored similar issues over longer time horizon. Overall, from these analyses structural change turned out to be significantly related to the time-path of aggregate productivity.

In this section we examine the labor productivity dynamic of Centre North and South of Italy, and investigate to what extent it has been affected by structural change using a shift-share analysis. We proxy labor productivity as the ratio between value added at constant prices and labor units.

As it is well known, in the last decades Italian productivity growth has been feeble (Bugamelli and Lotti 2018), moreover, the dynamic has been strongly differentiated across areas. Indeed, from 2001 to 2018 it increased on average by 1.7 in Centre North and declined by 0.8 per cent in the South (Figure 7). In Figure 8 we show the branches that drive or hamper productivity growth. The main contribution to productivity growth in the Centre North were provided by trade, ICT services, real estate, finance and insurance, and business services; on the other side, the most negative contributions by constructions, public administration, utilities and to some low technology manufacturing branches. In the South, real estate provided the main positive contribution to productivity dynamics, together with trade, hotel and restaurants, transports – branches plausibly pushed by the flourishing of tourism – and finance and insurance; the most negative by

constructions – a sector that experienced a strong crisis over the period, with a high employment share – utilities and to business services.

After this initial look at the productivity, we now examine the role of structural change on labor productivity growth, by applying a shift-share approach that allows us to breakdown the growth rate of productivity in three components:

$$\frac{\Delta Y_{jT}}{Y_{j0}} = \underbrace{\frac{\sum_{i=1}^{n} s_{ij0}\Delta y_{ijT}}{Y_{j0}}}_{\text{intra-sectoral effect}} + \underbrace{\frac{\sum_{i=1}^{n} \Delta s_{ijT} y_{ij0}}{Y_{j0}}}_{\text{static sectoral effect}} + \underbrace{\frac{\sum_{i=1}^{n} \Delta s_{ijT}\Delta y_{ijT}}{Y_{j0}}}_{\text{dynamic sectoral effect}}$$

(1)

where: Y is the labor productivity; j is the geographical area (Centre-North, South); 0 and T are the initial and final years (2001 and 2018, respectively); i=28 one-digit sectors (which includes also branches within manufacturing); s_{ij}=the share of employment in sector i over the total employment in area j; Δ is the time difference operator. The *intra sectoral effect* (within) measures the contribution to productivity dynamic given by the intra-sectoral productivity changes. The *static sectoral effect* (between) measures the contribution to productivity growth given by the structural changes taken the intra sectoral productivity constant. This is our core measure of structural change contribution: the effect will be positive if there is an increase of the employment sectoral shares in higher productive sectors and/or a decline in the less productive sectors, keeping sectoral productivity constant. Finally, the *dynamic sectoral effect* (between) measures the combination of both changes, those that occur from the change in productivity interacted with the changes in employment share. The effect will be positive if the shares increase in sectors that gained productivity or, the other way round, if the shares decline in sectors that lose productivity. On the other hand, if the shares increase (decrease) in sectors that lost (gained) productivity the contribution of this effect to productivity growth will be negative.

In the shift share analysis we prefer to exclude the real estate sector because the regional value added of this branch is artificially inflated by the item "rent ascribed" of the regional account, that fluctuate according to housing market swings which, but that are regionally imputed according to statistical criteria that do not necessary reflect geographical value added changes. After excluding this sector, the overall productivity growth is lower (Table 6). Namely, in the Centre North productivity growth declines from 1.7 with all the sectors, to 1.1 per cent without real estate and in the South from -0.8 to -3.2 per cent.

The shift-share decomposition show that in Italy and in Centre North the sluggish productivity growth is strongly due to the negative effect of structural change, i.e. the between effect, whereas the intra sectoral productivity growth, i.e. the within effect, boosts the overall productivity dynamics (Figure 9, Table 7). Differently, in the South of Italy the within effect plunges productivity whereas the contribution of the structural change to the negative productivity dynamic is null.[4] In summary, for Centre North the results turn out to be relatively similar to the international literature for other countries, that find a negative impact of structural change on productivity dynamic, whereas in the South of Italy the main responsible of productivity decline is the negative productivity dynamic within each sector, rather than the structural change.

3. Firm dynamics

3.1 The role of firms in the process of structural transformation

In the previous sections, using aggregate data, we analyzed the gradual shift in employment shares that occurred across sectors and areas in Italy over the last

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[4] This is what we consider our benchmark analysis. The results of the shift-share analysis with real estate sector are shown in Figure 10 and Table 7. Overall the results are qualitatively similar, except for the positive contribution of the structural change to the South's productivity dynamic.

twenty years. In this section, we focus on the role of firms. The process of structural change reflects the choice of firms to hire and fire in a dynamic process of continuous workers reallocation (Dent et al, 2016; Ding et al, 2019). There are several margins through which firms decisions could affect the relative growth of sectoral employment in the economy. First, the employment changes in surviving incumbent firms (the intensive margin). Second, the decision of firms to enter and exit the market (net entry or extensive margin). Finally, form a regional perspective, the decision of firms to move from one area to another within the country (territorial change).

Using detailed micro data on employees for the universe of firms from the Social Security Institute (INPS) between 2001 and 2017[5], in what follows we decompose the growth rate of employees across area into these three margins. Formally, we decompose the growth rate of employees in region (r) into:

$$\left.\frac{E_1 - E_0}{E_0}\right|_r = \underbrace{\frac{E_{1s} - E_{0s}}{E_{0s}} \cdot \omega_{0s}}_{Intesive\ margin} + \underbrace{\frac{E_{1x} - E_{0x}}{E_{0x}} \cdot \omega_{0x}}_{Extensive\ margin} + \underbrace{\frac{E_{1L} - E_{0L}}{E_{0L}} \cdot \omega_{0L}}_{Change\ of\ location}$$

the intensive margin, i.e. the employment growth among firms that are active in the market both at the beginning and the end of the period under analysis (the incumbent surviving firms); the extensive margins, i.e. the difference between the employment created by new firms and those destroyed by firms that exited the market; finally, the last term captures the net employment growth given by the decision of firms to move across the two areas, i.e. Centre North and South of Italy. The weights (ω_0) of each component are the employment shares of each type of firms at the beginning of the period: s denotes incumbent, x exiting firms and L firms switching area. Notice that this decomposition can be further split into the

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[5] While in previous sections we used aggregate data on the overall workforce, in this section our focus will be on employees, that is paid workers. Moreover, data cover only manufacturing, constructions and private non-financial services, thus excluding agriculture, banking and insurance and the public sector. This choice is driven by data availability (e.g. for public sector) or because in these sectors territorial imputation is less reliable, but it does not limit the scope of the analysis.

contribution to employment growth of different groups based on specific characteristics, namely firm size and sectors.

We start by exploring the simple decomposition along these three margins. Figure 11 and Table 8 show the results for the entire period of analysis (2001-2017) and for three different sub-periods that are characterized by very different macroeconomic conditions: the first years of the century (2001-07), the years that encompasses the global financial crisis and the sovereign debt crisis (2007-13) and, finally, the recovery periods that followed (2013-17). The first important difference that emerge by comparing employment dynamics in the two areas is that, while in the Centre North the main driver is the intensive margins (i.e. incumbent firm employment, which explain about 80% of the overall employment growth), in the South is the opposite, about 70% of employment growth is explained by the extensive margin, that is the creation of new firms net of exits.

An important question is whether these patterns reflect structural differences between the two areas and whether, as a consequences of the crisis that triggered an important process of restructuring of the productive system, a process of convergence occurred. The overall evidence hides substantial heterogeneity across the three sub-periods, especially in the South. In this area net entry contributed disproportionally to employment growth between 2001 and 2007, but its dynamic reversed to a negative contribution during the crisis years (2007-2013). Afterwards, it remained negative, but with a more limited magnitude. Differently, in the Centre North, the employment growth in incumbent firms counterbalanced the employment destruction of exiting firms during the crisis years, suggesting that the reallocation mechanism favored the shift of workers from weak exiting firms to strong established incumbents. The same did not happened in the South where employment fell also among incumbents during the crisis years.

It is worth stressing that in the recovery period, i.e. 2013-17, the employment growth in the two areas has been very close in magnitude (1.7% in the Centre North and 1.9% in the South), and in both the main contribution come from the growth of

incumbent firms. This evidence suggests that the crisis triggered a cleansing process, especially in the South, where only the soundest firms survived and contributed to the convergence between the two areas in employment creation.

These patterns are important to understand the strengths and the weaknesses of the productive system in the two areas. On the one side, the continuous process of entry and exit of firms can be a good indicator of the business environment as long as new business brings new idea and product into the market in a process of creative destruction (Aghion et al, 2014). These new ventures, by threatening incumbents, can provide the right dynamic incentives to invest in innovative activities that are essential for incumbents to survive in the markets (Acemoglu et al, 2018). Many new business, however, can be created by subsistence entrepreneurs (Decker et al, 2014), and have poor growth perspective.

On the other side, the employment growth among incumbent firms can signal a genuine process of scaling up, which would be relevant in the Italian context where the micro firms employ a relevant share of the workforce (Bugamelli and Lotti, 2018). Larger firms are more competitive, pay higher wages, and invest more in innovative activities (Autor et al, 2020). Notwithstanding their importance for the process of economic growth, when incumbent firms gain dominant position, as it has documented for the US economy, this can have also negative effects on the functioning of the markets, with potentially negative effect in the long run (Akcigit et al, 2021). Whether the evidence just discussed reflects positive or negative developments of the productive systems in the two areas is an open question; in the next sections we will try to gain some useful insights by showing a more in depth analysis of these margins across sectors and firm size distribution.

3.2 A sectoral decomposition of employment growth across firms

In Figure 12 we apply the decomposition to different industries (see also Table 9 and Table 11). In particular, we use the Eurostat classification of sectors, and we divide manufacturing into high and low technology industries, and services

into high knowledge and less knowledge intensive sectors. As we have already discussed in the previous sections, manufacturing employment fell in both areas, and more intensively in low tech manufacturing sectors. Interestingly, however, in both high and low tech sectors, most of the dynamic occurred at the extensive margin, i.e. the reduction in employment was driven by the exit of firms from the market (net of entry). This dynamic started early in the 2000s and become more intense during the crisis years (see Table 11), presumably favored by technological developments, increasing international competition and the cleansing effect of the two crisis.

Despite the overall fall in employment among manufacturing firms in both areas and sectors, the contribution of incumbent firms to employment growth was positive. Firms that were already in the market at the beginning of the period were employing more workers in 2017. Finally, it is worth noticing that during the recovery period employment slightly grew in high-tech sectors in both areas, although not at a sufficient rate to counterbalance the overall fall of the employment share in this manufacturing.

To sum up, in the manufacturing sector there are not significant differences in employment dynamics between the two areas during the period of analysis. Despite the overall reduction in employment, the main differences that were already present at the beginning of the period were also in place by 2017. The fact that most of the reduction in employment occurred at the extensive margin, and that incumbent firms expanded, suggest a reallocation of resources towards firms that were able to embrace the changes brought about by technological change and by globalization, and that survived throughout the two crisis. In perspective, this can be viewed as evidence that the productive system undertook a process of restructuring which enabled firms to become stronger and presumably better equipped to face future shocks (see also Bugamelli et al. 2018 for evidence on the international competitiveness of the Italian productive system).

In services, instead, employment dynamics across sectors and areas reflected different margins of adjustment. In knowledge intensive services, employment growth has been of the same magnitude in the two areas. In the Centre North growth occurred mostly among incumbent firms, while in the South 1/3 took place within incumbent firms, while 2/3 thanks to the net entry of firms in the market (Table 9). Employment growth was positive in both areas also during the crisis period, and in the Centre North it was always higher in knowledge intensive services than that in less knowledge services. As a result, at the end of the period the difference in employment share in knowledge intensive sectors between the two areas increased (see also section 2 and Figure 4).

Employment growth in less knowledge intensive services in southern regions outpaced that in the Centre North (4.9 and 3.5 percent, respectively; Table 9) and the growth occurred both at the intensive and extensive margins, with the latter contributing relatively more in the South (77 percent against 51 percent in the Centre North). Employment shares increased substantially in both areas, but relative more in the South, which reinforced its specialization in these services.

The evidence on employment dynamics in services highlights two important aspects about the process of structural transformation in the two areas. First, employment growth in southern regions has been disproportionately driven by less knowledge intensive sectors. In those sectors, employment is characterized by low level of human capital, low wage, low productivity and small firm size. Second, most of these jobs were created at the extensive margin, by firms with low growth prospect.

3.3 The role of firm size in the process of structural transformation

In Table 10 and 12 we divide firms according to their size measured in terms of employee. It is important to remind that in this section we use information on paid private employees from social security data, which cover only a sub-set of sectors, therefore these numbers are not directly comparable with those used in

previous sections (e.g. Table 5), which include all paid and unpaid employees for all sectors of the economy. We divide firms into four category: micro (up to 9 employee), small (10-49 employee), medium (50-249 employee) and big (more than 250 employee). Interestingly, firm size of incumbent firms can be measured both at the beginning and the end of the period of analysis, therefore it allows us to track also the contribution to employment growth coming from firms that change size class. The change of class dimension captures the net entry of firms in the size class, for example it captures small, micro and medium firms that became big and at the same time big firms that became smaller. In the Centre North, employment growth has largely taken place in big firms along the intensive margin (they account for more than 50% of total employment growth). Among these firms, most of the employment growth occurred in firms that were already big at the beginning of the period. Employment share of large firms at the end of the period increased by almost 4 percentage points reaching 1/3 of the overall employment.

Employment dynamics by firm size in the South has followed different patterns. Micro firms, i.e. those with less than 9 employees, contributed the most to employment growth, accounting for almost 60% of total growth (see: Table 9 and 12). Most of the increase in employment occurred at the extensive margin with net entry explaining almost all variation in employment share within this size class (Table 10). By 2017, the employment share of micro firms exceeded 42% (against 24% in the Centre North). The net entry of new firms provided the largest contribution to employment growth also among small firms. A rather different dynamics emerge for big firms, where about 90% of employment growth is due to firms of smaller size classes becoming large, rather than big firms increasing further their size as in the Centre North.

The evidence on employment growth by size class delivers a rather different picture of the productive system in the two areas. In the Centre North, where a substantial share of the workforce was employed in medium and big firms at the beginning of the period, employment growth occurred mostly at the intensive margin. Larger firms are better able to survive and thus growth over medium time

horizon. A large size is also a crucial characteristic in some sectors (such as high-tech manufacturing and knowledge intensive service), presumably because higher investment are needed to succeed in those sectors and because the competition environment is more dynamic. In southern regions, instead, the share of employee among small and medium firms was 71% in 2017 (Table 10). These numerous fringe of small firms likely reflect the decision of subsistence entrepreneurs to enter less competitive sectors. Upon entry, they employ few workers and they rarely grew over the life cycle. Finally, most of those firms were very unlikely to survive in the medium-to-long run, thus generating high level of entry and exit as well as worker reallocations.

3.4 Average firm size across areas

The combined effects of the micro dynamics by firm, sector and size class affected the resulting firm size distribution in the two areas (see Table 13). In the Centre North the average firm size increased from 9 employees in 2001 to 9.5 in 2018. The increase affected all sectors and size classes[6] and it is consistent with the employment growth driven by the intensive margin, i.e. by firms that were already in the market at the beginning of the period of analysis. A different picture emerge from the data on averages firm size in the South, where the size gap with respect to central-northern firms widen during this period.

In southern regions, the average firm size in 2001 was 5.1 employees and it decreased to 4.8 in 2018. On the one side, the missing growth in average firm size reflected both the inability of incumbent firms to growth in size and the fact that most of the employment growth happened along the extensive margin (young firms are on average smaller than incumbent). On the other side, while in some sector and size classes average firm size actually increases during this period (e.g. among big firms), there has been a reallocation of employees towards smaller firms (indeed,

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[6] Average firm size slightly decreases only in the high-tech manufacturing sectors, from 31.7 to 31.2 employees.

the employment share of micro firms increases by almost 3 percentage points, reaching 42.7).

4.   Conclusions

In this paper we investigated the structural change in the two main Italian territorial areas, the South and the Centre North, over the two last decades, its implications on productivity dynamic and their micro-economic determinants.

We documented three main results. First, in the South the deindustrialization process started afterward than the Center North and was more pronounced. While in southern regions the employment shares in low knowledge intensive services has increased more than in the Centre North, those in the knowledge intensive services increased less. Second, the employment shift from manufacturing to services slowed down the productivity growth in the Centre North. In the South, instead, the drop of productivity was mainly driven by within sector dynamics that might be caused by the intensive fall in investment and/or by the presence of well-known external diseconomies that historically affect the area. Finally, we show that the employment growth has been driven in the Centre North by the net creation of jobs among incumbents firms and the larger ones. In contrast, in southern regions, employment growth largely reflected the process of entry and exit of firms from the market, in particular in less knowledge intensive service sectors, and in young and smaller enterprises.

Our findings have important implications both for explaining past performance and, looking forward, for the growth potential and the competitiveness of the two areas. On the one side, in the Centre North the relative employment growth in high tech and knowledge intensive sectors, the increase in productivity driven by the within sectoral component, and the role of big incumbent firms in employment creation all contributed to widen the performance gap with respect to southern regions. On the other side, the available evidence for the southern regions highlights the persistence of some structural weaknesses. In this area employment

growth was driven by less knowledge intensive service sectors, and within these sectors by the creation of new firms, which may reflect the entry into the market of subsistence entrepreneurs with lower growth potential and limited innovation capabilities. In the South, however, some positive signals emerged after the 2008 crisis: the productive system enhanced the exploitation of local comparative advantages, as shown by the expansions of agri-food industry, and some less knowledge intensive sectors linked to tourism and consumption activities.

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Figures and Tables
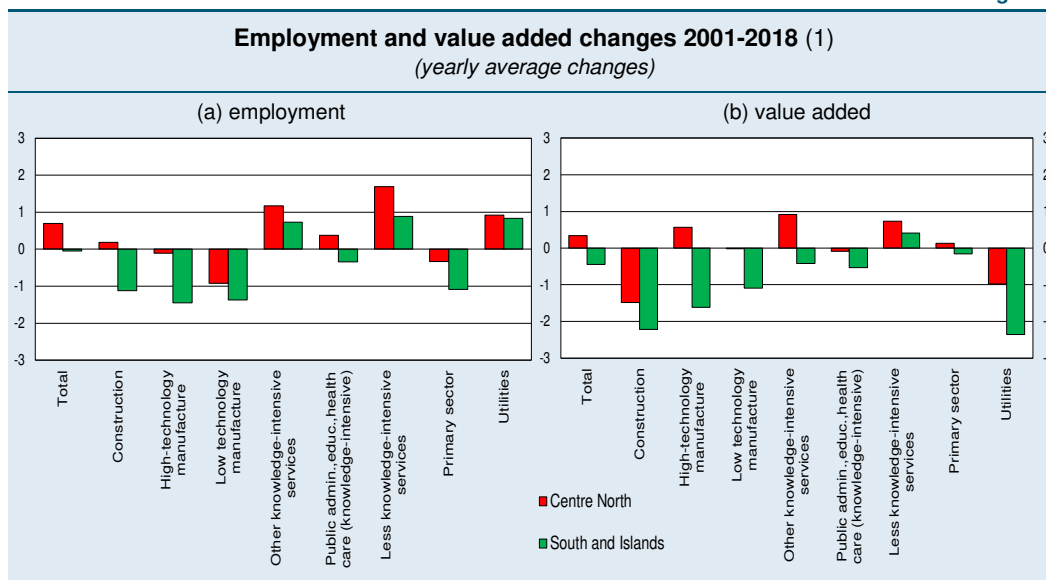
Employment and value added changes 2001-2018 (1)
(yearly average changes)

Source: Own elaborations from territorial accounts, ISTAT.
(1) Chain-linked values, reference year 2015.

Shares of employment 2001-2018
(shares on total economy)

Source: Own elaborations from territorial accounts, ISTAT.

Figure 3

Shares of value added 2001-2018 (1)
(shares on total economy)

(a) industry without construction and services

- Industry without construction - Centre North
- Industry without construction - South and Islands
- Services - Centre North
- Services - South and Islands

(b) within services

- Public admin, educ., health - Centre North
- Public admin, educ., health - South and Islands
- Other services - Centre North
- Other services - South and Islands

Source: Own elaborations from territorial accounts, ISTAT.
(1) Chain-linked values, reference year 2015.

Figure 4

Changes of employment shares by sector 2001-2018
(percentages)

- Centre North
- South and Islands

Source: Own elaborations from territorial accounts, ISTAT.

Figure 5

Specialization index by sector 2001 e 2018
(Index à la Balassa)

Source: Own elaborations from territorial accounts, ISTAT.

Figure 6

Specialization index by branches 2001

(Index à la Balassa)

a)   2001

b)   2018

Source: Own elaborations from territorial accounts, ISTAT.

Figure 7

Productivity dynamics 2001-2018 (1)
(Index − 2001=100)
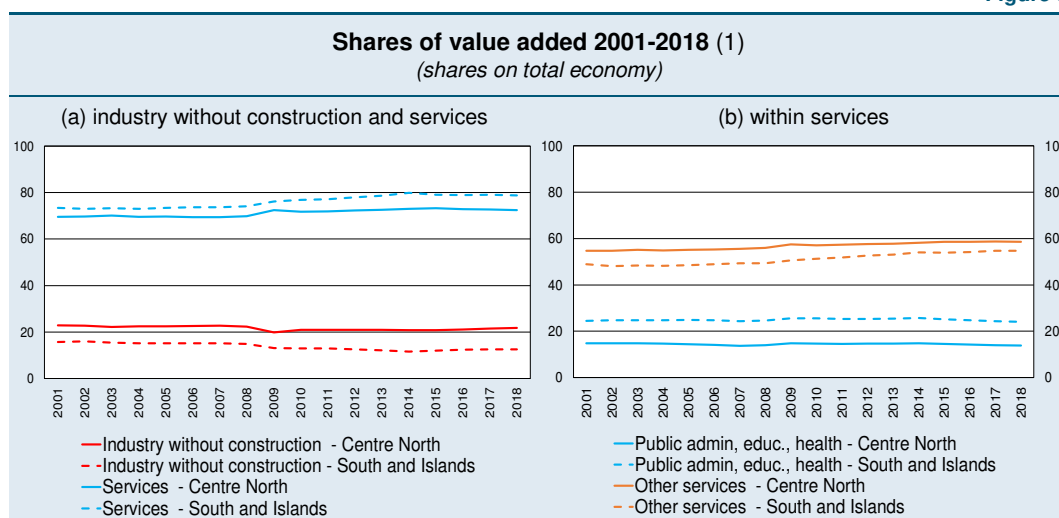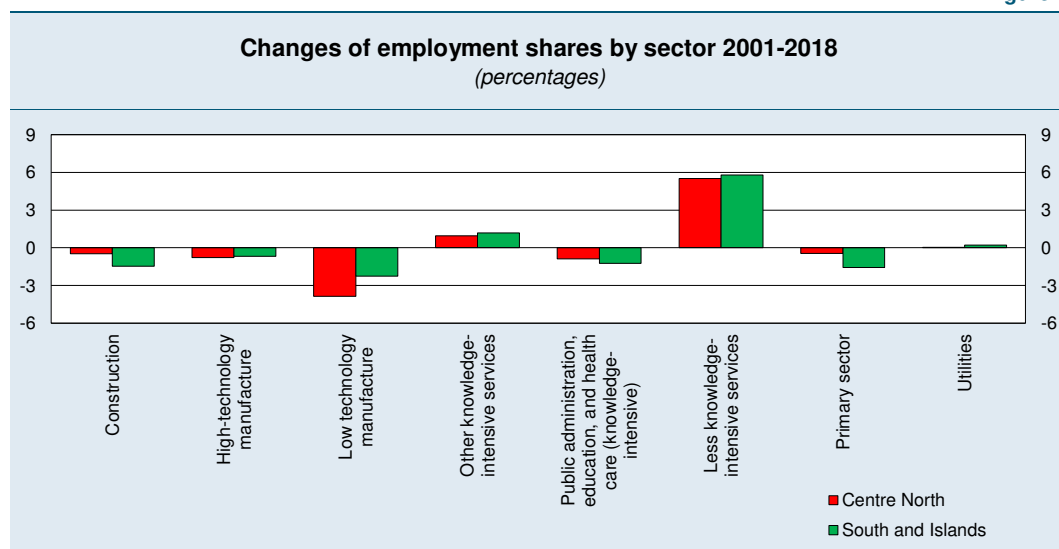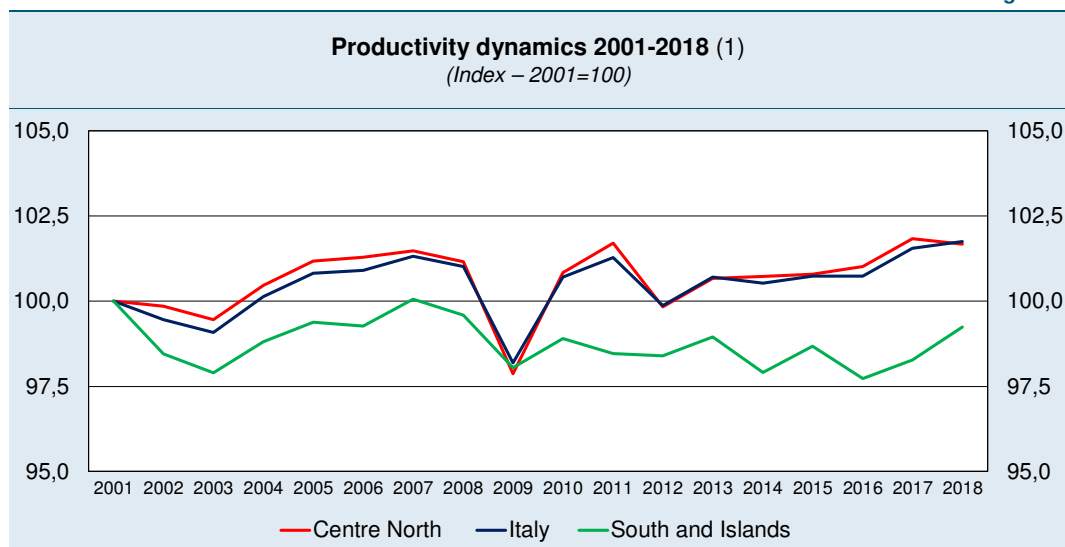
Source: Own elaborations from territorial accounts, ISTAT.
(1) Productivity is defined as the ratio of value added and units of labour; value added is in chain-linked values, reference year 2015.

Figure 8
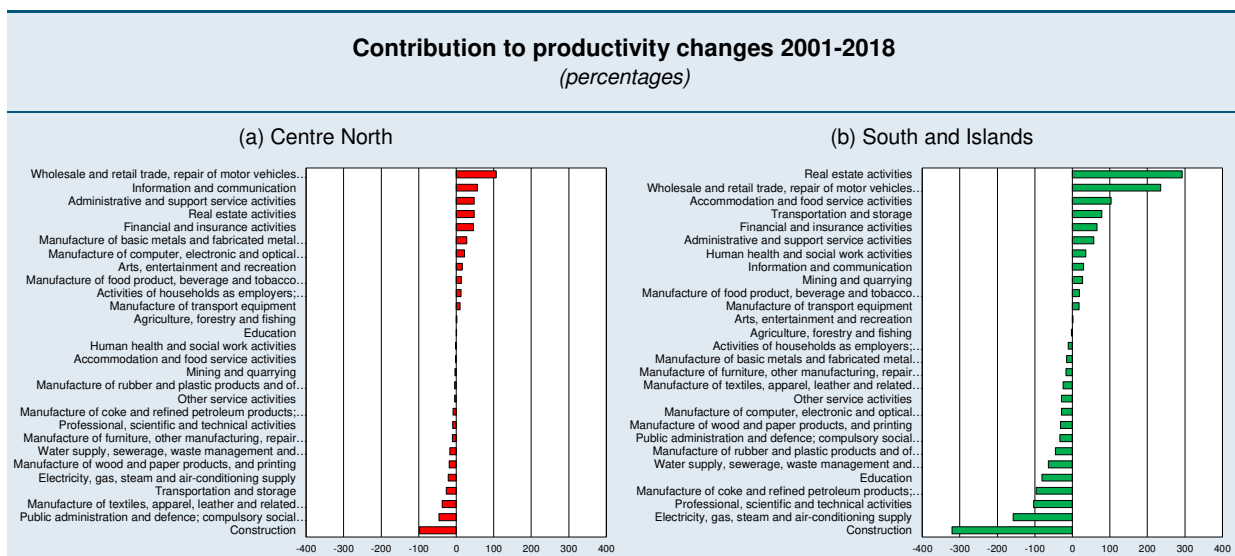
Contribution to productivity changes 2001-2018
(percentages)

(a) Centre North   (b) South and Islands

Source: Own elaborations from territorial accounts, ISTAT.

Figure 9

Productivity decomposition without real estate – Benchmark model (1)
(percentage changes)
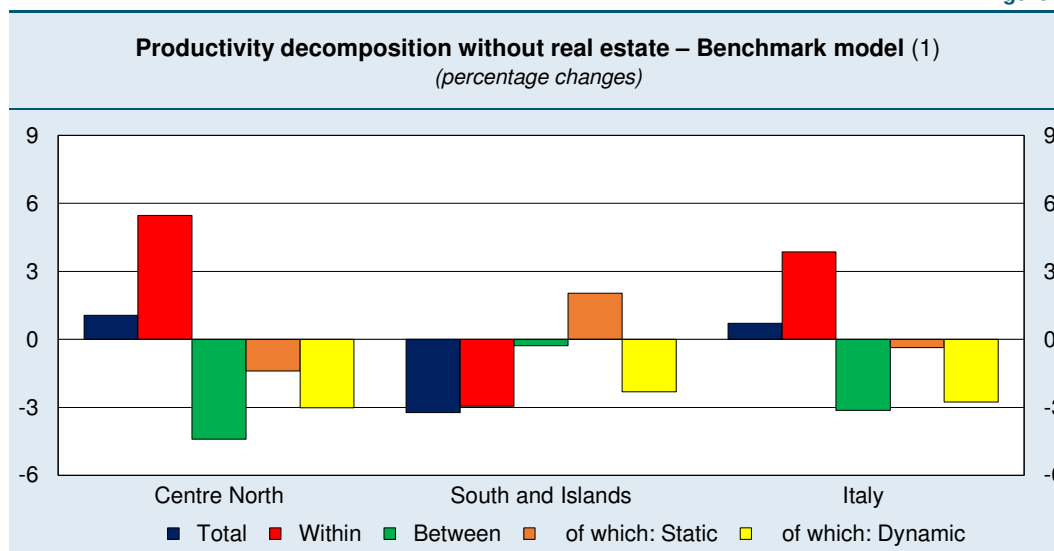
Source: Own elaborations from territorial accounts.
(1) Real estate sector is excluded.

Figure 10

Productivity decomposition with real estate
(percentage changes)
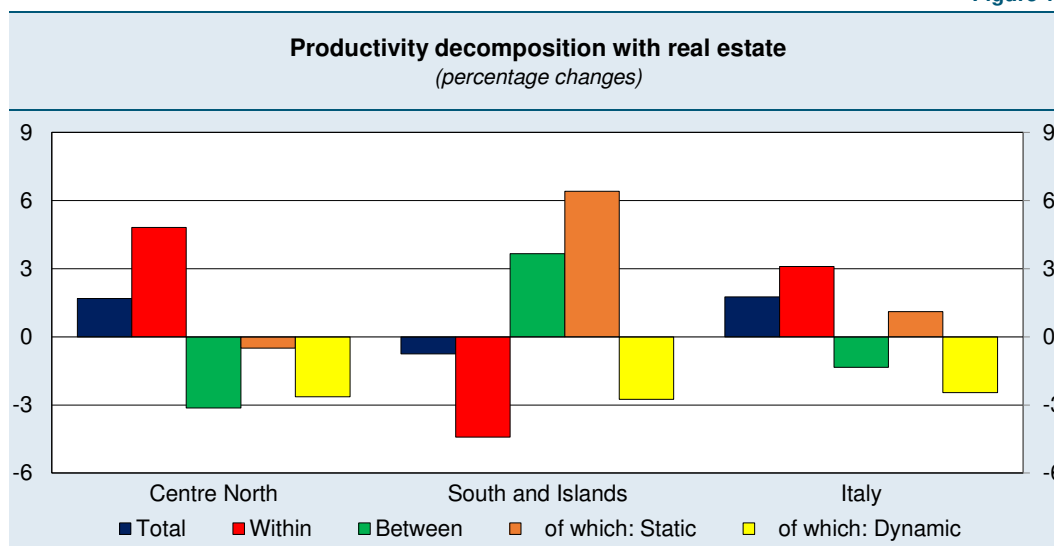
Source: Own elaborations from territorial accounts.

Figure 11

Net entry and intensive margins
(percentage changes)
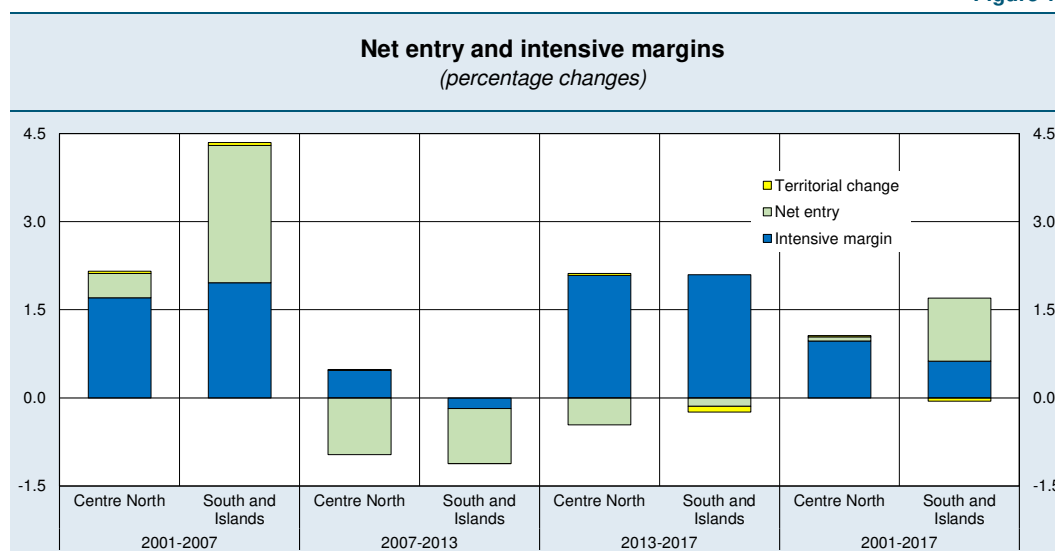
Source: Own elaborations from Inps dataset.

Figure 12

Net entry and intensive margins by firm size and sector (2001- 2017)
(percentage changes)
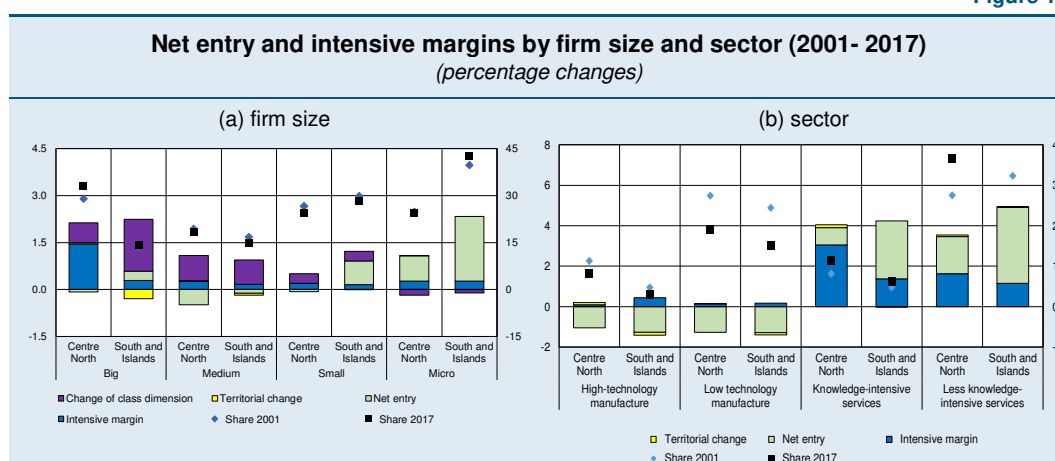
Source: Own elaborations from Inps dataset.

TABLES

Table 1

Percentage changes in employment
(yearly averages)

SECTOR	Centre North				South and Islands			
	2001-2007	2007-2013	2013-2018	2001-2018	2001-2007	2007-2013	2013-2018	2001-2018
Agriculture, forestry and fishing	**-1.3**	**-1.5**	**2.6**	**-0.3**	**-1.4**	**-1.4**	**-0.5**	**-1.1**
Total Industry	**0.9**	**-1.8**	**-0.3**	**-0.4**	**1.5**	**-4.0**	**-0.6**	**-1.2**
Mining and quarrying	-0.2	-2.3	-1.6	-1.3	-1.9	-2.9	-3.0	-2.2
Total Manufacturing	**0.0**	**-2.0**	**0.0**	**-0.7**	**0.4**	**-3.9**	**-0.5**	**-1.4**
Manufacture of food product, beverage and tobacco products	1.4	0.4	0.9	0.9	1.8	-1.5	1.3	0.5
Manufacture of textiles, apparel, leather and related products	-2.5	-3.3	-0.6	-2.0	-2.7	-4.7	0.6	-2.2
Manufacture of wood and paper products, and printing	-1.0	-2.7	-1.5	-1.6	-0.6	-5.3	-1.7	-2.3
Manufacture of coke and refined petroleum products; manufacture of chemical and pharmaceutical products	-0.1	-1.6	0.4	-0.5	-1.0	-2.7	-2.2	-1.8
Manufacture of rubber and plastic products and of other non-metallic mineral products	-1.0	-2.7	-1.2	-1.5	-0.2	-5.7	-2.4	-2.5
Manufacture of basic metals and fabricated metal products, except machinery and equipment	1.4	-2.4	1.3	0.0	2.5	-4.9	-1.0	-1.4
Manufacture of computer, electronic and optical product, electrical equipment, machinery and equipment n.e.c.	1.3	-1.2	0.1	0.0	1.2	-4.4	-1.8	-1.7
Manufacture of transport equipment	0.1	-1.6	1.0	-0.3	-0.2	-3.5	0.5	-1.2
Manufacture of furniture, other manufacturing, repair and installation of machinery and equipment	0.7	-2.3	-0.6	-0.7	1.8	-3.0	-0.7	-0.7
Electricity, gas, steam and air-conditioning supply	-2.2	-0.4	-1.3	-1.2	-3.1	-1.2	-0.6	-1.6
Water supply, sewerage, waste management and remediation	3.8	1.1	2.1	2.6	4.2	0.2	0.7	1.8
Construction	3.7	-1.6	-1.3	0.2	3.2	-4.8	-0.9	-1.1
Total Services	**1.8**	**0.3**	**1.4**	**1.2**	**1.0**	**-0.4**	**0.7**	**0.4**
Wholesale and retail trade, repair of motor vehicles and motorcycles	1.3	-0.5	0.5	0.4	0.6	-0.8	0.6	0.1
Transportation and storage	0.1	-0.8	1.1	0.0	0.5	-0.6	1.9	0.5
Accommodation and food service activities	3.2	1.3	4.3	3.3	2.2	0.3	5.0	2.6
Information and communication	1.2	-0.2	1.4	0.8	1.3	-1.9	0.5	-0.1
Financial and insurance activities	1.2	-1.1	-0.8	-0.2	2.2	-1.4	-1.1	-0.1
Real estate activities	3.2	0.3	0.4	1.4	2.2	0.8	2.2	1.9
Professional, scientific and technical activities	3.2	1.0	1.3	2.0	2.2	0.6	0.6	1.2
Administrative and support service activities	5.4	0.8	5.6	4.6	5.6	1.6	3.1	4.1
Public administration and defence; compulsory social security	-1.4	-0.9	-1.7	-1.2	-0.3	-1.7	-1.6	-1.1
Education	0.8	-1.2	1.8	0.3	-0.5	-2.2	0.4	-0.8
Human health and social work activities	1.4	1.8	1.9	1.9	1.2	1.0	1.2	1.2
Arts, entertainment and recreation	1.2	1.0	2.7	1.7	2.4	0.2	1.5	1.4
Other service activities	2.4	0.9	1.3	1.7	1.1	0.2	1.5	0.9
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	6.4	2.6	0.7	3.9	1.7	1.3	-2.2	0.3
Total	**1.5**	**-0.4**	**1.0**	**0.7**	**0.9**	**-1.3**	**0.4**	**0.0**

Source: Own elaborations from territorial accounts, ISTAT.

Table 2

Employment shares
(percentages)

SECTOR	Centre North				South and Islands			
	2001	2007	2013	2018	2001	2007	2013	2018
Agriculture, forestry and fishing	**2.8**	**2.4**	**2.2**	**2.4**	**8.7**	**7.5**	**7.5**	**7.2**
Total Industry	**29.8**	**28.8**	**26.3**	**24.7**	**22.2**	**23.0**	**18.9**	**18.0**
Mining and quarrying	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1
Total Manufacturing	**22.3**	**20.6**	**18.5**	**17.6**	**12.7**	**12.3**	**10.2**	**9.8**
Manufacture of food product, beverage and tobacco products	1.7	1.7	1.8	1.8	2.0	2.1	2.1	2.2
Manufacture of textiles, apparel, leather and related products	3.8	2.9	2.4	2.2	2.0	1.6	1.3	1.3
Manufacture of wood and paper products, and printing	1.8	1.6	1.4	1.2	1.2	1.1	0.8	0.7
Manufacture of coke and refined petroleum products; manufacture of chemical and pharmaceutical products	1.1	1.0	1.0	0.9	0.5	0.4	0.4	0.3
Manufacture of rubber and plastic products and of other non-metallic mineral products	2.4	2.0	1.7	1.6	1.5	1.4	1.0	0.9
Manufacture of basic metals and fabricated metal products, except machinery and equipment	3.6	3.6	3.2	3.2	1.9	2.1	1.6	1.5
Manufacture of computer, electronic and optical product, electrical equipment, machinery and equipment n.e.c.	4.1	4.1	3.9	3.7	1.0	1.1	0.8	0.8
Manufacture of transport equipment	1.3	1.2	1.1	1.1	1.3	1.2	1.0	1.0
Manufacture of furniture, other manufacturing, repair and installation of machinery and equipment	2.5	2.4	2.1	1.9	1.2	1.3	1.2	1.1
Electricity, gas, steam and air-conditioning supply	0.5	0.4	0.4	0.3	0.4	0.3	0.3	0.3
Water supply, sewerage, waste management and remediation	0.6	0.7	0.7	0.8	0.9	1.1	1.2	1.3
Construction	6.4	7.2	6.6	5.9	8.0	9.1	7.0	6.6
Total Services	**67.4**	**68.7**	**71.5**	**72.9**	**69.1**	**69.5**	**73.6**	**74.8**
Wholesale and retail trade, repair of motor vehicles and motorcycles	14.7	14.5	14.4	14.0	16.2	15.9	16.4	16.6
Transportation and storage	5.4	4.9	4.8	4.8	4.0	3.9	4.1	4.4
Accommodation and food service activities	4.8	5.2	5.8	6.7	4.5	4.8	5.3	6.5
Information and communication	2.8	2.7	2.8	2.8	1.5	1.5	1.4	1.4
Financial and insurance activities	3.2	3.1	3.0	2.7	1.9	2.0	2.0	1.8
Real estate activities	0.7	0.8	0.8	0.8	0.3	0.4	0.4	0.4
Professional, scientific and technical activities	5.9	6.4	6.9	7.0	4.6	4.9	5.5	5.6
Administrative and support service activities	3.9	4.8	5.1	6.2	2.9	3.7	4.4	5.0
Public administration and defence; compulsory social security	6.0	5.0	4.8	4.2	8.0	7.4	7.2	6.5
Education	5.8	5.6	5.3	5.5	9.3	8.6	8.1	8.1
Human health and social work activities	6.5	6.5	7.3	7.7	6.7	6.8	7.8	8.1
Arts, entertainment and recreation	1.2	1.2	1.3	1.4	1.0	1.1	1.2	1.3
Other service activities	2.5	2.6	2.8	2.8	2.7	2.7	2.9	3.1
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	4.2	5.3	6.3	6.2	5.6	5.9	6.8	6.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Own elaborations from territorial accounts, ISTAT.

Table 3

Percentage changes in value added
(yearly averages)

SECTOR	Centre North				South and Islands			
	2001-2007	2007-2013	2013-2018	2001-2018	2001-2007	2007-2013	2013-2018	2001-2018
Agriculture, forestry and fishing	**-0.7**	**1.1**	**0.6**	**0.3**	**0.1**	**-0.7**	**-0.8**	**-0.4**
Total Industry	**1.4**	**-3.0**	**1.3**	**-0.3**	**0.2**	**-5.3**	**0.4**	**-1.7**
Mining and quarrying	-3.4	-1.7	3.0	-1.0	-0.3	-2.2	11.3	2.0
Total Manufacturing	**1.4**	**-2.4**	**2.4**	**0.2**	**1.1**	**-5.4**	**1.8**	**-1.3**
Manufacture of food product, beverage and tobacco products	0.7	0.6	1.9	1.1	0.7	-2.5	2.9	0.1
Manufacture of textiles, apparel, leather and related products	-2.8	-1.6	0.6	-1.3	-1.6	-5.2	4.8	-1.4
Manufacture of wood and paper products, and printing	-0.6	-3.0	0.3	-1.2	-0.6	-4.5	-1.3	-2.0
Manufacture of coke and refined petroleum products; manufacture of chemical and pharmaceutical products	0.0	-2.0	1.8	-0.2	1.6	-7.3	-8.4	-3.8
Manufacture of rubber and plastic products and of other non-metallic mineral products	1.0	-3.0	3.0	0.0	1.2	-6.9	1.2	-2.0
Manufacture of basic metals and fabricated metal products, except machinery and equipment	3.7	-2.2	3.2	1.3	3.6	-5.8	1.3	-0.9
Manufacture of computer, electronic and optical product, electrical equipment, machinery and equipment n.e.c.	3.8	-2.3	1.4	0.8	2.6	-5.5	-0.9	-1.5
Manufacture of transport equipment	1.8	-5.5	11.2	0.9	0.6	-6.6	12.7	0.1
Manufacture of furniture, other manufacturing, repair and installation of machinery and equipment	2.0	-3.7	1.7	-0.3	1.0	-4.6	0.9	-1.1
Electricity, gas, steam and air-conditioning supply	-0.2	-1.9	-0.5	-0.9	-3.2	-4.0	-2.1	-2.6
Water supply, sewerage, waste management and remediation	-0.8	-2.5	-0.2	-1.2	-2.0	-2.5	-1.8	-1.9
Construction	2.9	-5.1	-1.6	-1.5	0.8	-6.2	-1.1	-2.2
Total Services	**1.2**	**-0.5**	**1.1**	**0.6**	**0.5**	**-0.9**	**0.4**	**0.0**
Wholesale and retail trade, repair of motor vehicles and motorcycles	1.6	-0.3	2.9	1.4	-0.6	0.5	1.9	0.5
Transportation and storage	1.7	-2.5	0.7	-0.2	0.1	-0.6	1.3	0.2
Accommodation and food service activities	0.1	-1.2	2.1	0.2	0.5	-0.3	2.6	0.8
Information and communication	3.8	0.1	1.7	2.0	2.4	-1.7	0.3	0.2
Financial and insurance activities	2.8	0.7	-0.4	1.2	3.1	-0.2	-1.5	0.5
Real estate activities	0.9	0.0	1.0	0.6	1.5	-0.4	0.7	0.6
Professional, scientific and technical activities	0.9	-1.5	1.3	0.1	-0.2	-3.3	0.4	-1.1
Administrative and support service activities	3.3	-1.0	3.8	2.0	2.4	-1.4	1.3	0.7
Public administration and defence; compulsory social security	-0.7	-0.1	-1.1	-0.6	0.1	-0.7	-1.1	-0.5
Education	0.4	0.2	0.2	0.3	-0.1	-1.8	-0.8	-0.9
Human health and social work activities	0.4	-0.2	0.4	0.2	1.2	-1.4	-0.3	-0.2
Arts, entertainment and recreation	3.7	-0.6	2.6	2.0	2.8	-4.2	1.6	-0.3
Other service activities	-0.6	0.9	-0.4	0.0	-2.9	-0.4	0.7	-1.0
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	3.0	1.0	0.2	1.6	-0.6	-0.6	-1.3	-0.8
Total	**1.3**	**-1.2**	**1.2**	**0.3**	**0.4**	**-1.9**	**0.4**	**-0.4**

Source: Own elaborations from territorial accounts, ISTAT.

Table 4

Value added shares
(percentages)

SECTOR	Centre North				South and Islands			
	2001	2007	2013	2018	2001	2007	2013	2018
Agriculture, forestry and fishing	**1.7**	**1.5**	**1.8**	**1.7**	**3.7**	**3.6**	**3.9**	**3.7**
Total Industry	**28.8**	**29.1**	**25.7**	**25.9**	**22.9**	**22.6**	**17.4**	**17.5**
Mining and quarrying	0.3	0.2	0.2	0.2	0.5	0.4	0.4	0.7
Total Manufacturing	**19.4**	**19.6**	**17.9**	**19.0**	**10.5**	**10.9**	**8.3**	**8.9**
Manufacture of food product, beverage and tobacco products	1.7	1.6	1.8	1.9	1.6	1.7	1.6	1.8
Manufacture of textiles, apparel, leather and related products	2.5	1.9	1.9	1.8	1.1	0.9	0.7	0.9
Manufacture of wood and paper products, and printing	1.4	1.2	1.1	1.1	0.8	0.8	0.6	0.6
Manufacture of coke and refined petroleum products; manufacture of chemical and pharmaceutical products	1.8	1.7	1.6	1.6	1.2	1.3	0.8	0.5
Manufacture of rubber and plastic products and of other non-metallic mineral products	1.9	1.8	1.6	1.8	1.2	1.2	0.8	0.9
Manufacture of basic metals and fabricated metal products, except machinery and equipment	2.6	3.0	2.8	3.0	1.2	1.4	1.0	1.1
Manufacture of computer, electronic and optical product, electrical equipment, machinery and equipment n.e.c.	4.2	4.9	4.5	4.6	1.1	1.2	0.9	0.9
Manufacture of transport equipment	1.5	1.5	1.1	1.6	1.4	1.4	1.0	1.5
Manufacture of furniture, other manufacturing, repair and installation of machinery and equipment	1.8	1.9	1.6	1.6	1.0	1.0	0.8	0.9
Electricity, gas, steam and air-conditioning supply	2.0	1.9	1.8	1.6	2.9	2.3	2.0	1.7
Water supply, sewerage, waste management and remediation	1.2	1.1	1.0	0.9	1.8	1.5	1.5	1.3
Construction	5.8	6.4	4.8	4.1	7.3	7.4	5.3	4.9
Total Services	**69.5**	**69.4**	**72.6**	**72.4**	**73.4**	**73.7**	**78.6**	**78.8**
Wholesale and retail trade, repair of motor vehicles and motorcycles	9.9	10.1	10.6	11.5	10.5	9.8	11.5	12.3
Transportation and storage	6.1	6.2	5.7	5.5	5.5	5.4	5.8	6.1
Accommodation and food service activities	3.8	3.5	3.5	3.7	3.4	3.5	3.8	4.3
Information and communication	3.3	3.7	4.0	4.1	1.9	2.1	2.2	2.2
Financial and insurance activities	5.2	5.6	6.3	5.9	3.1	3.5	3.9	3.6
Real estate activities	12.7	12.5	13.4	13.3	11.8	12.6	13.9	14.1
Professional, scientific and technical activities	7.2	7.1	6.9	6.9	6.0	5.8	5.2	5.2
Administrative and support service activities	2.8	3.1	3.2	3.6	2.2	2.5	2.5	2.7
Public administration and defence; compulsory social security	5.9	5.3	5.6	5.0	10.6	10.4	11.2	10.4
Education	3.4	3.2	3.5	3.4	6.9	6.7	6.7	6.3
Human health and social work activities	5.5	5.3	5.6	5.4	7.0	7.3	7.5	7.3
Arts, entertainment and recreation	1.0	1.1	1.1	1.2	1.1	1.2	1.0	1.1
Other service activities	1.8	1.6	1.8	1.7	2.2	1.7	1.9	2.0
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.0	1.1	1.2	1.2	1.3	1.2	1.3	1.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Own elaborations from territorial accounts, ISTAT.

Table 5

Plant average size
(number of employees over local units of active firms)

SECTOR	Centre North		South and Islands	
	2001	2018	2001	2018
Agriculture, forestry and fishing	**2.5**	**-**	**4.7**	**-**
Total Industry	**6.2**	**6.0**	**4.8**	**4.3**
Mining and quarrying	6.8	9.1	6.7	6.8
Manufacturing	9.2	9.9	5.8	5.7
Electricity, gas, steam and air conditioning supply	26.7	5.3	25.1	5.5
Water supply; sewerage, waste management and remediation activities	12.2	14.6	12.8	13.7
Construction	2.7	2.6	3.3	2.6
Total Services	**3.0**	**3.3**	**2.3**	**2.7**
Wholesale and retail trade; repair of motor vehicles and motorcycles	2.6	3.2	1.9	2.3
Transportation and storage	5.8	7.8	5.9	6.8
Accommodation and food service activities	3.5	4.6	2.7	3.5
Information and communication	5.7	5.2	4.7	3.6
Financial and insurance activities	5.3	4.4	4.0	3.0
Real estate activities	1.5	1.3	1.5	1.1
Professional, scientific and technical activities	1.9	1.8	1.4	1.4
Administrative and support service activities	6.2	8.2	6.3	7.1
Education	2.7	2.9	3.1	3.5
Human health and social work activities	2.0	2.9	2.1	2.8
Arts, entertainment and recreation	2.2	2.5	1.9	2.5
Other service activities	1.9	2.3	1.6	2.0
Total	**3.8**	**3.9**	**2.9**	**2.9**

Source: Own elaborations from ASIA dataset, ISTAT.

Table 6

Productivity decomposition - Real estate sector excluded

(percentage changes)

VOCI	Centre North	South and Islands	Italy
2001-2007			
Total productivity	1.9	-0.8	1.4
Intra-sectoral effect	2.6	-1.7	1.6
Structural change	-0.7	0.9	-0.2
Static sectoral effect	-0.3	1.4	0.3
Dynamic sectoral effect	-0.5	-0.5	-0.4
2007-2013			
Total productivity	-1.9	-2.5	-1.7
Intra-sectoral effect	-0.8	-2.1	-0.8
Structural change	-1.0	-0.4	-0.9
Static sectoral effect	-0.8	-0.3	-0.6
Dynamic sectoral effect	-0.3	-0.2	-0.3
2013-2018			
Total productivity	1.1	0.0	1.1
Intra-sectoral effect	2.5	0.0	2.1
Structural change	-1.5	0.1	-1.0
Static sectoral effect	-1.2	0.2	-0.8
Dynamic sectoral effect	-0.3	-0.1	-0.2
2001-2018			
Total productivity	1.1	-3.2	0.7
Intra-sectoral effect	5.5	-3.0	3.8
Structural change	-4.4	-0.3	-3.1
Static sectoral effect	-1.4	2.0	-0.4
Dynamic sectoral effect	-3.0	-2.3	-2.8

Source: Own elaborations from territorial accounts, ISTAT.

Table 7

Productivity decomposition
(percentage changes)

PRODUCTIVITY	Centre North	South and Islands	Italy
2001-2007			
Total productivity	1.5	0.1	1.3
Intra-sectoral effect	0.9	-1.8	0.2
Structural change	0.6	1.9	1.1
Static sectoral effect	1.1	2.4	1.7
Dynamic sectoral effect	-0.6	-0.5	-0.5
2007-2013			
Total productivity	-0.8	-1.1	-0.6
Intra-sectoral effect	0.1	-2.7	-0.2
Structural change	-0.9	1.6	-0.4
Static sectoral effect	-0.6	1.9	-0.2
Dynamic sectoral effect	-0.2	-0.3	-0.2
2013-2018			
Total productivity	1.0	0.3	1.0
Intra-sectoral effect	3.0	-0.8	2.3
Structural change	-2.0	1.1	-1.3
Static sectoral effect	-1.7	1.3	-1.1
Dynamic sectoral effect	-0.3	-0.2	-0.2
2001-2018			
Total productivity	1.7	-0.8	1.8
Intra-sectoral effect	4.8	-4.4	3.1
Structural change	-3.1	3.7	-1.3
Static sectoral effect	-0.5	6.4	1.1
Dynamic sectoral effect	-2.6	-2.8	-2.5

Source: Own elaborations from territorial accounts, ISTAT.

Table 8

Entry and exit analysis
(percentage changes)

	Centre North	South and Islands
2001-2007		
Intensive margin	1.7	2.0
Net entry	0.4	2.3
Territorial change	0.0	0.0
Total variation	**2.2**	**4.3**
2007-2013		
Intensive margin	0.5	-0.2
Net entry	-1.0	-0.9
Territorial change	0.0	0.0
Total variation	**-0.5**	**-1.1**
2013-2017		
Intensive margin	2.1	2.1
Net entry	-0.5	-0.1
Territorial change	0.0	-0.1
Total variation	**1.7**	**1.9**
2001-2017		
Intensive margin	1.0	0.6
Net entry	0.1	1.1
Territorial change	0.0	-0.1
Total variation	**1.1**	**1.6**

Source: Own elaborations from Inps dataset.

Table 9

Entry and exit analysis by firm sector 2001-2017
(percentage changes)

	Centre North	South and Islands
High-technology manufacture		
Intensive margin	0.1	0.4
Net entry	-1.1	-1.3
Territorial change	0.1	-0.2
Share 2001	11.3	4.7
Share 2017	8.3	3.1
Total variation	**-0.8**	**-1.0**
Low technology manufacture		
Intensive margin	0.1	0.2
Net entry	-1.3	-1.3
Territorial change	0.0	-0.1
Share 2001	27.5	24.5
Share 2017	19.1	15.2
Total variation	**-1.1**	**-1.2**
Knowledge-intensive services		
Intensive margin	3.1	1.4
Net entry	0.9	2.9
Territorial change	0.1	0.0
Share 2001	8.2	4.7
Share 2017	11.4	6.1
Total variation	**4.1**	**4.2**
Less knowledge-intensive services		
Intensive margin	1.6	1.1
Net entry	1.8	3.8
Territorial change	0.1	0.0
Share 2001	27.5	32.3
Share 2017	36.6	44.8
Total variation	**3.5**	**4.9**

Source: Own elaborations from Inps dataset.

Table 10

Entry and exit analysis by firm size 2001-2017
(percentage changes)

	Centre North	South and Islands
Big		
Intensive margin	1.5	0.3
Net entry	-0.1	0.3
Territorial change	0.0	-0.3
Change of class dimension	0.6	1.7
Share 2001	29.0	13.6
Share 2017	33.0	14.1
Total variation	**2.1**	**1.9**
Medium		
Intensive margin	0.3	0.2
Net entry	-0.5	-0.1
Territorial change	0.0	-0.1
Change of class dimension	0.8	0.8
Share 2001	19.4	16.8
Share 2017	18.2	14.9
Total variation	**0.6**	**0.8**
Small		
Intensive margin	0.2	0.2
Net entry	-0.1	0.8
Territorial change	0.0	0.0
Change of class dimension	0.3	0.3
Share 2001	26.7	29.9
Share 2017	24.4	28.3
Total variation	**0.4**	**1.2**
Micro		
Intensive margin	0.3	0.3
Net entry	0.8	2.1
Territorial change	0.0	0.0
Change of class dimension	-0.2	-0.1
Share 2001	24.9	39.8
Share 2017	24.4	42.7
Total variation	**0.9**	**2.2**

Source: Own elaborations from Inps dataset.

Table 11

Contribution to average growth by technology sector (1)

(percentages)

TECHNOLOGY SECTOR	Centre North	South and Islands
	Growth contribution	Growth contribution
2001-2007		
High-technology manufacture	-0,1	0,0
Low technology manufacture	-0,2	0,1
Knowledge-intensive services	0,5	0,3
Less knowledge-intensive services	1,2	2,3
2007-2013		
High-technology manufacture	-0,2	-0,1
Low technology manufacture	-0,5	-0,6
Knowledge-intensive services	0,0	0,1
Less knowledge-intensive services	0,6	0,6
2013-2017		
High-technology manufacture	0,1	0,0
Low technology manufacture	-0,1	-0,1
Knowledge-intensive services	0,6	0,2
Less knowledge-intensive services	0,9	1,5
2001-2017		
High-technology manufacture	-0,1	0,0
Low technology manufacture	-0,3	-0,3
Knowledge-intensive services	0,3	0,2
Less knowledge-intensive services	1,0	1,6

Source: Own elaborations from Inps dataset.
(1) The shares refer to the total of employees in all (non-agricultural) sectors of the territorial economy.

Table 12

Contribution to average growth by firm size (1)

(percentages)

DIMENSION	Centre North	South and Islands
	Growth contribution	Growth contribution
2001-2007		
Big	0,7	0,5
Medium	0,2	0,4
Small	0,5	1,2
Micro	0,8	2,3
2007-2013		
Big	0,2	0,1
Medium	-0,2	-0,3
Small	-0,4	-0,7
Micro	-0,2	-0,2
2013-2017		
Big	1,0	0,1
Medium	0,4	0,5
Small	0,3	0,8
Micro	0,0	0,5
2001-2017		
Big	0,6	0,3
Medium	0,1	0,1
Small	0,1	0,4
Micro	0,2	0,9

Source: Own elaborations from Inps dataset.
(1): The shares refer to the total number of employees in the sectors analysed (manufacturing, construction and private non-financial services).

Table 13

Average size (1)

(units)

DIMENSION	Centre North				South and Islands			
	2001	2007	2013	2018	2001	2007	2013	2018
Size								
Big	1014.3	984.1	1053.7	1070.6	665.1	690.4	715.5	675.3
Medium	97.8	99.2	98.9	99.0	95.0	95.8	95.4	95.1
Small	19.2	19.2	19.2	19.1	18.8	18.6	18.7	18.8
Micro	2.5	2.5	2.5	2.6	2.1	2.2	2.2	2.1
Sector								
Construction	4.4	4.4	4.4	4.5	3.7	3.8	3.3	3.1
Manufacturing	14.6	13.9	13.7	15.0	8.4	7.8	7.6	7.2
Services	7.0	7.4	7.7	8.5	4.2	4.4	4.7	4.3
Technology sector								
High-technology manufacture	31.7	30.2	30.0	31.2	18.1	16.1	17.1	15.7
Low technology manufacture	11.9	11.5	11.2	12.4	7.6	7.2	6.9	6.5
Knowledge-intensive services	8.2	9.3	9.0	10.8	3.5	4.4	4.5	4.3
Less knowledge-intensive services	6.7	6.9	7.4	8.0	4.3	4.4	4.7	4.3
Construction	4.4	4.4	4.4	4.5	3.7	3.8	3.3	3.1
Total								
Total dimension	**9.0**	**8.6**	**8.8**	**9.5**	**5.1**	**5.1**	**5.1**	**4.8**

Source: Own elaborations from Inps dataset.
(1) The shares refer to the total of employees in all (non-agricultural) sectors of the territorial economy.