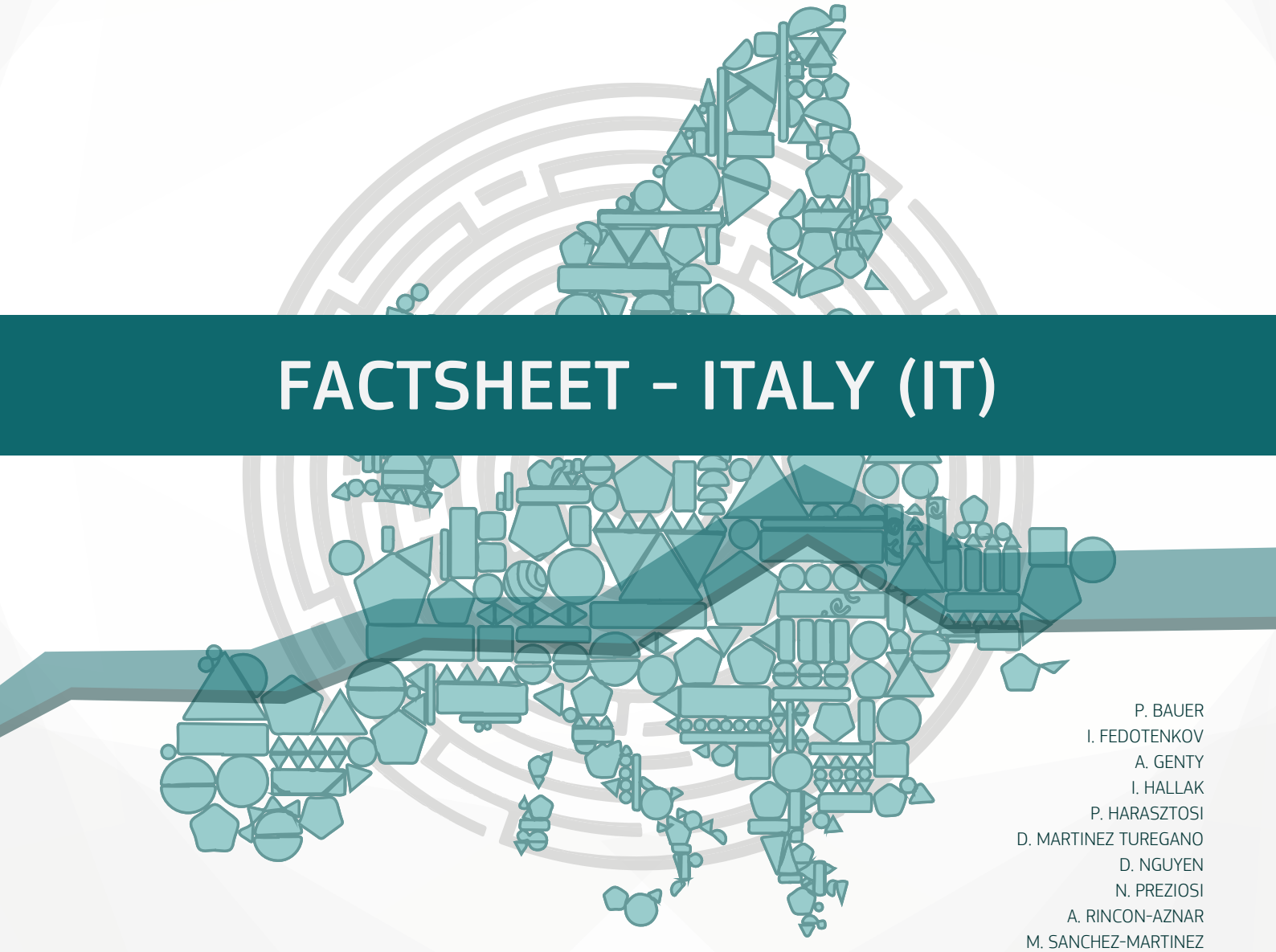
European Commission

ANNEX A9 JRC TECHNICAL REPORT

Productivity in Europe

Trends and drivers in a service-based economy



FACTSHEET – ITALY (IT)

P. BAUER
I. FEDOTENKOV
A. GENTY
I. HALLAK
P. HARASZTOSI
D. MARTINEZ TUREGANO
D. NGUYEN
N. PREZIOSI
A. RINCON-AZNAR
M. SANCHEZ-MARTINEZ

doi:10.2760/469079

Joint Research Centre

2020

Contents

Key messages 1
1 Impact of structural change and productivity in services 1
2 Role of intangibles in productivity in services 3
3 Firm size distribution and sectoral labour productivity 3
4 Role of firm demography in productivity growth 4
5 Labour dynamics and productivity 5
6 Impact of zombie firms on productivity 6
7 Role of business cycle dynamics in productivity 7
8 Policies for addressing low productivity growth 8

Key messages

- **Over the period 1970-2016, average labour productivity growth in Italy was the lowest (1.04 % per year) amongst all EU-15 Member States.** Structural change, marked by tertiarisation, has played a significant role in driving these dismal results. Importantly, during this period, labour productivity in the financial and insurance activities sector shrunk, whereas it was one of the best performing service subsectors in the majority of the EU-15 economies.
- **While Italy ranks better than average among EU-15 countries in terms of National Accounts intangible investment, it lags behind in terms of non-National Accounts intangible investment (33 % versus the average, 36 %).** The investment rate of brand is especially low. As non-National Accounts intangibles have a major role in production, the contribution from total intangible capital growth to productivity growth is quite weak in Italy (less than 0.1 %).
- **Italy is characterised in many sectors by a higher share of employment in small firms (below 10 employees), which has a significant negative impact on sectoral labour productivity.** The highest negative impact of firm size distribution on productivity is observed for manufacturing, wholesale and retail trade, accommodation and food services and professional activities.
- **Italy is among the countries which have the highest shares of zombie firms: 9 % in manufacturing and 8 % in service sectors.** Zombies are a major concern as they negatively affect healthy firms. Compared to EU average, the negative effect of zombies in Italy is more pronounced for employment growth, but less for productivity.
- **Enterprise dynamism is a relevant factor in the context of discrepancies between labour productivity and gross value added growth for the sectors Information and Communication and Professional Services.** During these periods, steep growth in the rate of enterprise churn generally corresponds to lower labour productivity growth. Here gross value added shows positive developments simultaneously to a rise in labour utilisation and total factor productivity.

1 Impact of structural change and productivity in services

Table 1. IT – Average labour productivity growth in the period 1910-2017 computed using the 1-digit sector nominal value added weights prevailing in each base year, including and excluding services (%).

Base year	All industries (including services)	All excluding services
1970	1.33	2.38
1980	1.31	2.48
1990	1.00	2.31
2000	0.88	2.33
2010	0.71	2.09
2017	0.73	2.21
Actual	1.04	2.25

Source: STAN and EU KLEMS, 2019.
Note: the real estate sector is excluded from these computations.

Italy is the country in our sample that has fared the worst in terms of labour productivity growth in the period 1970-2017; its average growth rate stood at 1.04 %, compared to 1.82 % for the EU-15.[1] In addition, average real labour productivity growth in this period would have been about 0.29 percentage points higher (about 28 % higher) compared to the actual one if the economic structure prevailing in 1970 had remained the same (see Table 1).[2] This is the largest impact of structural change on labour productivity growth for all the countries analysed[3] and follows from the distinct underperformance of the Italian service sectors.[4] When excluding services from the computation of the counterfactual average labour productivity growth rates, the latter increases from 1.33 % (services included) to 2.38 % (services excluded) when using 1970 value added weights, and from 0.73 % to 2.21 % with 2017 weights.

Table 2 shows that the negative impact of structural change on Italian labour productivity growth is due to two main factors. First, labour productivity growth in professional service activities exhibits by-and-large the highest drop in the period from all the countries analysed (see Table 2), whereas financial and insurance activities have recorded no growth in labour productivity on average, in stark contrast with the majority of the EU-15 economies, where it is one of the best performing subsectors within services. Since these service subsectors have increased their economic weight significantly, they have acted as a major drag on aggregate labour productivity growth. Second, the relative economic weights of both the primary and secondary sectors have substantially fallen in the period considered, by about 73 % and 31 %, respectively. Since these sectors have experienced a stronger performance in terms of productivity developments than other sectors, the reduction in their shares has crucially contributed to very sluggish economy-wide labour productivity growth.

Table 2. IT – Value added shares and average labour productivity growth, 1970-2017 (%).

	Value added share 1970	Value added share 2017	Average labour productivity growth
Agriculture, forestry and fishing	9.3	2.5	3.6
Mining and quarrying	0.6	0.3	3.2
Manufacturing	27.7	19.3	2.9
Electricity and water supply, waste management and others	2.4	2.9	0.0
Construction	9.5	5.4	0.2
Wholesale and retail trade; repair of motor vehicles and motorcycles	12.6	13.6	1.4
Transportation and storage	5.0	6.5	1.7
Accommodation and food service	2.9	4.5	-0.8
Information and communication	3.0	4.3	1.5
Financial and insurance	4.8	6.0	0.0
Professional, administrative and other activities	5.4	11.0	-2.1
Other services (community, social, and personal services)	17.1	23.8	-0.1
Services overall	*50.6*	*69.6*	*0.2*

Note: the real estate sector is excluded.

1 The sample includes all EU-15 Member States except EL, IE and PT.

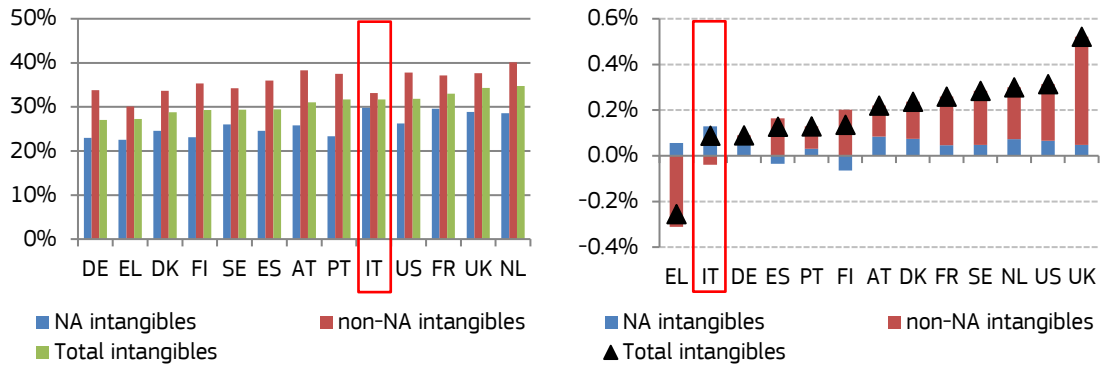
2 The difference between the 1970 base-year counterfactual and the actual growth rate in the first column of table 1 isolates the impact of structural change.

3 For the EU-15 average, the 1970 counterfactual growth rate is about 14% higher than the actual one.

4 In fact, the average labour productivity growth rate in the services sector as a whole in Italy, at a meagre 0.19%, is the lowest among the countries analysed.

2 Role of intangibles in productivity in services[5]

Figure 1. Investment-to-capital ratio (left) and contribution of intangible capital growth to productivity growth (right) in 2015.

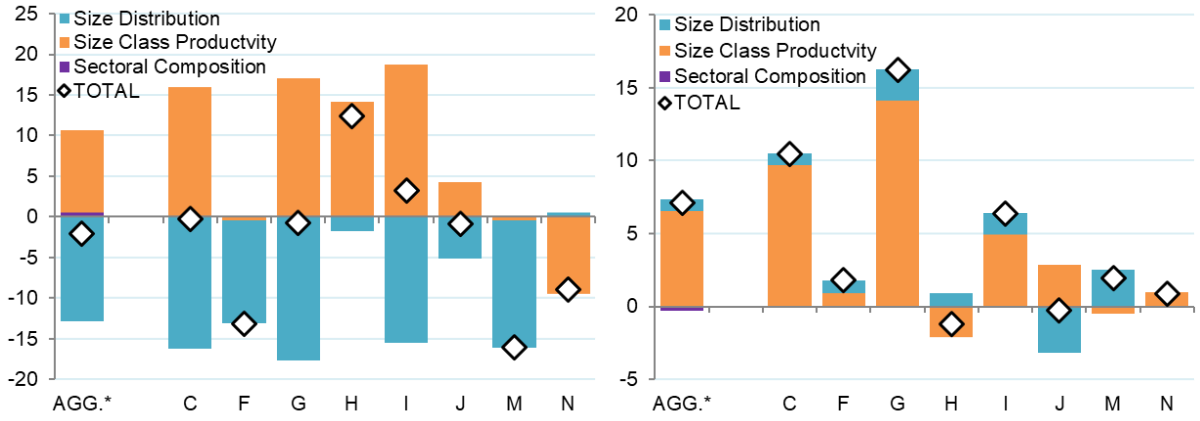


While Italy ranks better than average among EU-15 countries in terms of intangible investment-to-capital ratio, it lags behind in terms of non-National Accounts intangible investment (33 % versus the average, 36 %). The investment rate in brands is especially low. As non-National Accounts intangibles have a major role in production, the contribution from intangible capital growth to productivity growth is quite weak from a EU-wide perspective (less than 0.1 %, about half of the average).

3 Firm size distribution and sectoral labour productivity

Figure 2. IT – Percentage difference in labour productivity at the aggregate and sectoral levels relative to the EU28 contributing effects (2016)

Figure 3. IT – Percentage change in labour productivity at the aggregate and sectoral levels, contributing effects (2012-2016)



* AGG.: representative aggregate of the market economy; it includes NACE sections C, F, G, H, I, J, M and N.[6] Source: based on SBS data.

Apparent labour productivity in a representative aggregate of the market economy in Italy was 2.1 % below the EU28 figure in 2016. This difference is the result of higher intrinsic productivity levels than peers across firm size classes – contributing positively by 10.2 percentage points (pp) - being more than compensated by negative firm size distribution effects (-12.8 pp).

---

5 National Accounts intangible assets: Software and database, Reasearch and development, Mineral exploration and artistic originals. Non-National Accounts intangible assets: Design, Brand, Organisational capital, Training.

6 C: Manufacturing; F: Construction; G: Wholesale and retail trade; repair of motor vehicles and motorcycles; H: Transportation and storage; I: Accommodation and food service activities; J: Information and communication; M: Professional, scientific and technical activities; N: Administrative and support service activities.

In particular, the average size of enterprises is smaller than for the EU benchmark due to a larger employment share in smaller firms (below 10 persons employed), which has been shown to be highly conditional on a relatively weak institutional and judicial framework. In turn, the existence of bigger firms has been shown to be not sufficiently supported by a large domestic market.

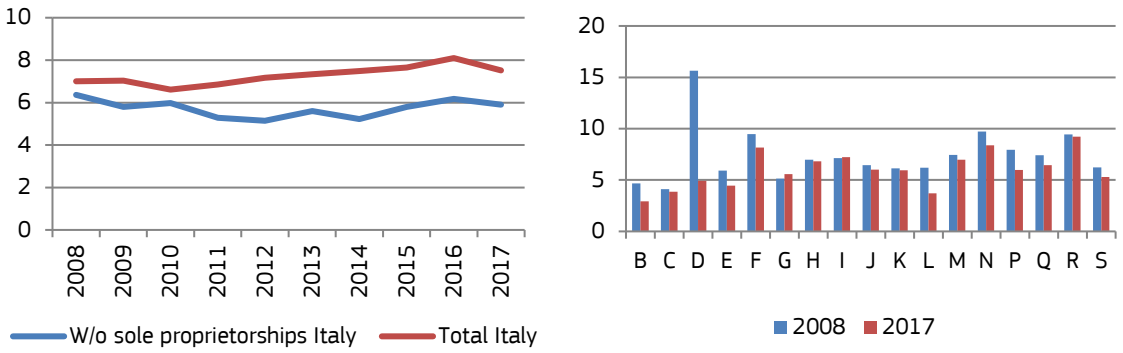
The overall picture – i.e. negative size distribution effects against positive pure productivity effects – is to a large extent shared at the sectoral level, particularly for manufacturing activities (NACE section C), wholesale and retail trade (G), and accommodation and food services (I). The picture is rather homogenous within these sections, although in the manufacturing sector the negative size distribution effect is more limited for industries with higher technological content (e.g. motor vehicles and transport equipment).

The most negative assessment corresponds to the construction (F) and professional activities (M) sectors, for which the firm size distribution effect alone fully explains the negative gap relative to the EU average. For instance, the negative size distribution effects on productivity are estimated at 20 pp of the EU benchmark for legal and accounting activities and close to 30 pp for architectural and engineering activities.

On a dynamic perspective, recent developments (2012-2016) suggest a slight positive contribution of firm size distribution to productivity growth (0.8 pp out of 7.1 %), a feature that is shared across most sectors with the noticeable exception of ICT services (J). The positive effect has been more intense in those sectors where the gap relative to the EU28 is larger, such as wholesale and retail trade (G) and professional activities (M).

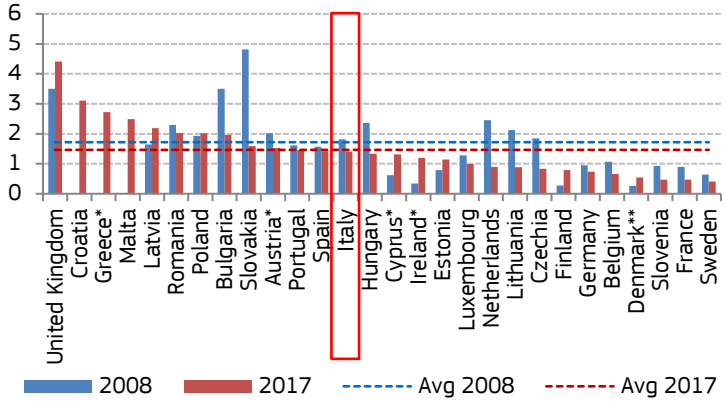
4 Role of firm demography in productivity growth

Figure 4. IT – Entry rates in business services (left-hand side) and in 1-digit industries[7] (right-hand side), percentages



[7] One-digit industries include: Mining and quarrying (B); Manufacturing (C); Electricity, gas, steam and air conditioning supply (D); Water supply; sewerage, waste management and remediation activities (E); Construction (F); Wholesale and retail trade; repair of motor vehicles and motorcycles (G); Transportation and storage (H); Accommodation and food service activities (I); Information and communication (J); Financial and insurance activities (K); Real estate activities (L); Professional, scientific and technical activities (M); Administrative and support service activities (N); Education (P); Human health and social work activities (Q); Arts, entertainment and recreation (R); Other service activities (S).

Figure 5. Entry rate for firms with at least 10 employees in business services, percentages.

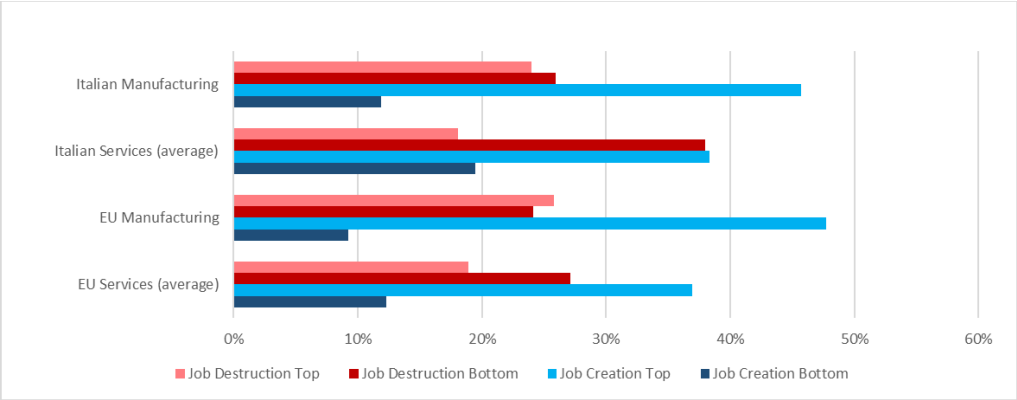


*: data for 2016, **: data for 2009 and 2016

Entry rates (without sole proprietorships) in services showed a decline after the crisis but recovered almost fully until 2016 but started deteriorating again in 2017 (6.4 % in 2008 versus 5.9 % in 2017). We also observe a widespread but only slight decrease between 2008 and 2016 across Italian industries. A decline can be observed also for larger-than-micro firms in the business services sector (1.8 % in 2008 versus 1.4 % in 2016), a segment of the corporate sector where entry rates are shown to be relevant for aggregate productivity growth. Thus there is room to improve productivity growth by stimulating business entry and business dynamism in general in Italy.

5 Labour dynamics and productivity

Figure 6. IT and EU – Job creation (growing firms) and destruction (shrinking firms) along the productivity distribution.



Note: the graph shows in red the share of jobs destroyed by the 25 % most productive shrinking firms (top) and the 25 % least productive shrinking firms (bottom). It shows in blue the share of jobs created by the 25 % most productive growing firms (top) and the 25 % least productive growing firms (bottom). The figures represent averages over the sample period.

Current labour reallocation dynamics in Italy are in line with an economy that is increasing its allocative efficiency as at the top of the distribution relatively more jobs are created than destroyed. Furthermore, the opposite is true at the bottom.

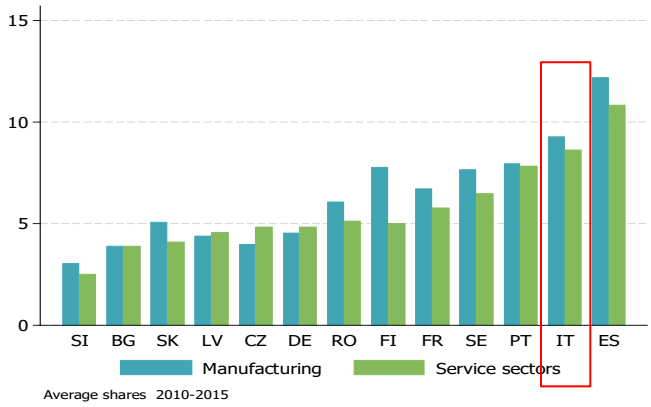
In Italy we see that allocative efficiency increases in both the Service and Manufacturing sectors. In the manufacturing and service sectors, over 45 % and about 38 %, respectively, of job creation is due to the most productive companies. Both sectors create some inefficient jobs as well. This share is smaller in the case of Manufacturing, however still somewhat higher than the EU average.

An apparent difference between the Service and Manufacturing industries in Italy is the share of job destruction at the bottom of the distribution. In the Service sector, about 38 % of job destruction occurs in the least productive firms, while in the case of Manufacturing it is only around 25 percent. In other terms, job

destruction is even more efficient in the service sectors, though in both cases figures are higher than the EU average.

6 Impact of zombie firms on productivity

Figure 7. Average share of Zombie firms between 2010 and 2015.



Source: JRC (2019).

In recent years, zombie firms have become prevalent in Europe (Figure 7). Italy is among the countries where this phenomenon is the most evident: we classify 9 percent of the firms in the Manufacturing and 8 percent of the firms the Service sectors as zombie firms.

A major policy concern related to the existence of zombie firms is their impact on the rest of the economy. Table 3 investigates the impact of the share of the resources held by zombies on the performance of non-zombie firms via regression analysis. We measure the Industry Zombie share as the share of real capital held by zombie firms within a 2-digit NACE sector in a year and look at the see its effect on non-zombie firms.

Results suggest that zombies have negative spill-over effect on employment growth and investment. We find that productivity gap between healthy and zombie firms decrease as zombie share increases. When compared to EU level results, we find that zombies have a more negative effect on healthy firms in terms of employment growth, but productivity implications are smaller for Italy. As for this latter, the results for total factor productivity difference in Italy are not significant, between zombies and healthy firms across sectors.

Table 3. The effects of zombie congestion on non-zombies in Italy

	employment growth	Investment rate	labour productivity	TFP
Non-Zombie	0.0424***	0.0861***	0.535***	0.519***
	(0.002)	(0.003)	(0.005)	(0.005)
Non-Zombie x IndustryZombie share	-0.160***	-0.320***	-0.390***	-0.0424
	(0.023)	(0.027)	(0.048)	(0.047)
Number observations	2354107	3060827	2930074	2815263
R2	0.095	0.049	0.181	0.272
Economic significance				
Congestion at p75	-1.5 %	-2.9 %	-3.6 %	-0.4 %
Congestion at p75 - EU level results	-0.3 %	-2.6 %	-7.3 %	-5.2 %

Note: Each column shows results from separate regressions. They include controls for firm size, year, sector controls. The uppermost line shows the dependent variables: Employment growth is measured as $2*(e_t-e_t-1)/(e_t+e_t-1)$ where e_t is employment stock of the firm in year t, investment rate as log change in real capital. Congestions refer to the percentage difference in the outcome variable between non-zombies in sector with median or p75 zombies share and those in sectors without zombies. The p75 for EU is 8.4 %, while for 9 % for Italy. The last line gives results for an EU level estimation with the following countries involved: Bulgaria (BG), Czech Republic (CZ), Germany (DE), Denmark (DK), Spain (ES), Finland (FI), France (FR), Italy (IT), Latvia (LV), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK).

7 Role of business cycle dynamics in productivity[8]

Figure 8. IT – Information and Communication Cycle Decomposition (2008-2018).

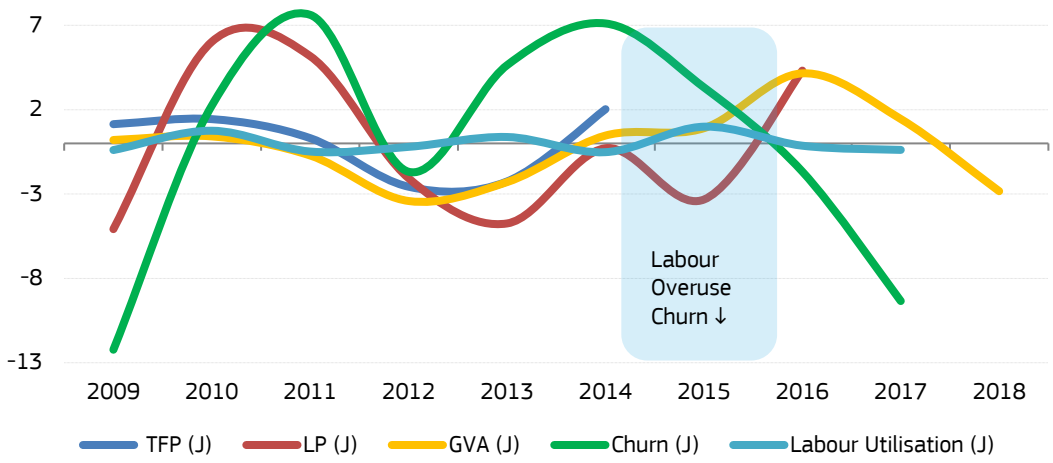
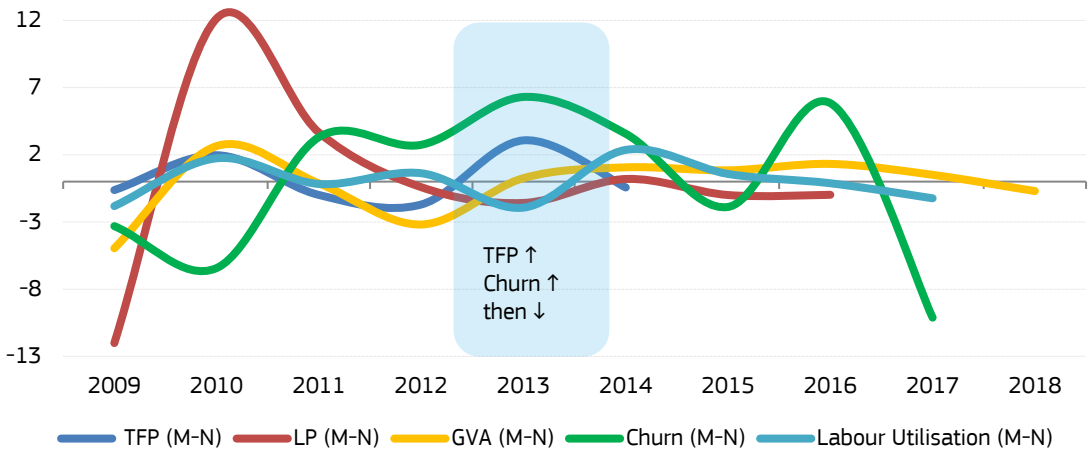


Figure 9. IT – Professional Services Cycle Decomposition (2008-2018).



Source: EU KLEMS and Eurostat – Structural Business Statistics (SBS), Business Demography, Annual National Accounts.

Note: Year-Over-Year Growth (%); Professional, Scientific, Technical, Administrative and Support Service Activities; HP-filtered values; Total Factor Productivity (TFP) measured as valued added based growth not accounted by labour and capital inputs; Labour Productivity (LP) measured as wage-adjusted labour productivity by average personnel costs; Enterprise Churn computed as the percentage of firm's births+deaths over all active firms; Labour Utilisation (LU) defined as the ratio between hours worked and employees of all active firms in a given year.

In Italy the rate of enterprise dynamism is associated to periods of discrepancy between Labour Productivity (LP) and Gross Value Added (GVA) growth for the sectors Information and Communication in 2015 and Professional Services in 2013. In 2015 some labour over-utilisation seems relevant for Italy's Information and Communication sector with a peculiar rise in labour productivity just afterwards. For the same sector, growth in enterprise dynamism has instead been steadily decreasing since 2014, when also LP growth starts to fall sharply. Looking at the developments in GVA and LP from 2015 onwards for this sector, it would appear how the rate of enterprise churn was overly high for a prolonged timespan during previous years, so that a progressive decrease in business dynamism has probably facilitated a revamp of GVA and LP afterwards.

For Professional Services, a higher growth rate in enterprise churn is coupled with falling LP growth since 2011. In 2013 LP and GVA growth diverge when there is a peak in enterprise dynamism, which then starts to gradually decrease at the same time as there is a recovery in LP. A higher GVA growth during 2013 could then

[8] The purpose of this exercise is to review asymmetries between LP and GVA growth during specific years with respect to developments in the role of a) technology (proxied with TFP); b) enterprise dynamism (churn); c) labour hoarding (utilisation).

be related to Total Factor Productivity (TFP) which increases at the same time, in spite of LP growth slowdowns.

8 Policies for addressing low productivity growth

Low productivity growth is a long standing problem of the Italian economy and is associated to a variety of supply and demand factors. Italian firms have a lower presence in high technology sectors compared to other major European countries and their innovative activities are more oriented towards labour-replacing new processes than to developing new products and creating new markets (Lucchese at al. 2016)[9]. Since the 2008 crisis, the fall of demand has further depressed private investment and constrained economic growth and productivity dynamics. In this context, the most important policy effort for productivity in recent years has focused on indirect tax incentives to firms for a wide range of activities, including R&D, patents, human capital, and investment in machinery and in the digital technologies of the Industry 4.0 programme.

The approach is typical of "horizontal" industrial and innovation policies where no public priorities are identified in terms of research missions, technologies, industries, social or environmental objectives, and no selective criteria are introduced. The assumption is that firms and markets are efficient and effective in making decisions on R&D, innovation and investment projects and on the direction that technological change may take and that government action should not introduce 'distortions' with 'selective' measures. The rationale for such 'horizontal' policies relied on the expected benefits of continued market liberalisation, the provision of context conditions such as education and infrastructures, rule-setting in line with European Commission actions (De Vincenti, 2014)[10]. However, the effectiveness of such 'horizontal' policies has been increasingly questioned in policy debates, with a new set of policies recently introduced at the European level and in Italy (Lucchese at al. 2016).

A significant departure from the 'horizontal' approach to policy has come at the European level with the launch of the Smart Specialisation Strategy that has asked each region to identify its areas of strength in research and innovation, providing EU funds to support them. Since 2013 Italy's strategy is managed by the government agency Invitalia in cooperation with Ministry of Economic Development (MISE) and Ministry of Public Education (MIUR), and has led to an extensive involvement of regional authorities and economic actors. By 2016 all regions had set up their strategy, leading to five national thematic areas and twelve regional thematic areas of specialisation. The five national areas include: aerospace and defence; health, nutrition and life quality; smart and sustainable manufacturing, energy and environment; tourism, cultural heritage and creative industries; and digital agenda, smart communities, infrastructures and smart mobility. In 2016, the Agency for territorial cohesion assessed current policy measures, pointing out the contrast between the high quality of the research output, the small size of Italy's skill-intensive industries and the lack of a common governance of the R&I system[11] (Agenzia per la coesione territoriale, 2016).

The main departure from the 'horizontal approach' in Italy has come with the Industry 4.0 programme. From 2016 the government has introduced the programme 'Industry 4.0' for the development of digital technologies with incentives offered to firms of all types (mainly large, high technology enterprises). The concept of 'Industry 4.0' originated in Germany to support the digital transformation of production. The Italian government identified the specific goal of spreading advanced digital technologies such as robotics and automation, cloud computing, big data, sensors, 3D printers and introduced a wide range of measures. In 2017 the programme was renamed 'Impresa 4.0'.

MISE is in charge of the implementation of 'Impresa 4.0' with a multi-level coordinating body that includes six Ministries, 'Cassa Depositi e Prestiti', business organisations, trade unions and polytechnics[12] (MEF et al., 2017). According to an estimate of the 'Ufficio Parlamentare di Bilancio', the body in charge of the estimation of the costs of policy measures, the reduction in tax revenue due to these incentives would amount to €2.3 billion in 2018 and around €4 billion in 2019-2020[13] (UPB, 2017).

---

9 Lucchese, M., Nascia, L., Pianta, M. (2016) 'Industrial policy and technology in Italy', *Journal of Industrial and Business Economics*, Vol. 43, pp. 233–260

10 De Vincenti, C., 2014, Una politica industriale che guardi avanti, *ItalianiEuropei*, 1, 17 Gennaio 2014.

11 See: www.agenziacoesione.gov.it/opencms/export/sites/dps/it/documentazione/politiche_e_attivita/Programmazione_2014_2020/Strategie/Strategia_Nazionale_di_Specializzazione_Intelligente_Italia.pdf

12 MEF (Ministero dell'economia), MISE, MIUR, ML (2017), Piano nazionale IMPRESA 4.0 Risultati 2017-linee guida 2018, Sep, 2017

13 UPB – Ufficio Parlamentare di Bilancio (2017), Rapporto sulla politica di bilancio 2018, dicembre.

While 'Impresa 4.0' plays a positive role in bringing attention to the technological backwardness of Italian industry and the need for an innovative leap, some aspects appear questionable. The focus on advanced automation is relevant in Italy for a rather small number of companies - which are already technologically advanced. Rather, a major problem is broadening the number of innovative firms that at present do not have the internal structures and skills – including a significant number of employees with university education - to invest in digitalisation.

Measures of 'Impresa 4.0' have mainly focused on allowances for accelerated depreciation of the cost of acquisition of advanced machinery. In addition, a range of measures for R&D Tax credits and tax incentives on investment have been introduced, offered to all firms. The targets of such policy included €10 billion of expected additional private investments in 2017-2018; €11.3 billion of expected R&D and innovation expenditure by business in 2017-2020; €2.6 billion of expected early stage investments in new firms in 2017-2020.

Some assessments of the main policies carried out in Italy in this field are now available and their results are summarized below.

For 'Industry 4.0' an ISTAT[14] study found that in the first year of the programme mainly large, technologically advanced firms benefitted from such measures; the impact on additional investment is estimated at 0,1 % only (ISTAT, 2018). Larger effects may be anticipated in later years.

The OECD[15] has carried out an evaluation of the effects of the Start-up law, L.211/2012 (OECD, 2018), the most relevant policy measure for HGIEs in Italy. The OECD counterfactual analysis is referred to the start-ups active in 2017, five years after the start-up law. The main findings show how the start-up policy has had an overall positive impact on firms; it allowed firms to experience a growth in revenue, value added, book value of capital and total assets of 10-15 % higher than that of similar start-up firms that did not benefit from the policy. Beneficiary firms had greater access to bank credit and Venture Capital (VC), although the overall size of Italy's VC market has remained small and not affected by the success of the start-up policy.

Another important policy measure to support investment in Italy has been the tax allowance for accelerated depreciation of investment costs. An analysis by ISTAT[16] (2019) on the impact of the accelerated depreciation measure for 2016 on the investment and tax benefits for companies has shown that out of a total of 800,000 firms potentially interested by the measure, 191,000 firms (24.1 %) received the benefit, with a reduction of the tax base of €1.72b. Larger firms obtained the greater advantages; two thirds of firms over 500 employees have benefitted from such policy; they obtained 35 % of all the tax reductions. Looking at the sectoral distribution, however, we find that 43.1 % of benefits have gone to services with low knowledge intensity, mainly to companies active in car rentals and leasing, which obtained alone one fifth of all tax allowances. Manufacturing firms with medium-high technological intensity received 13.8 % of benefits, the same share these firms have in the total employment of beneficiary firms. While beneficiary firms experienced a faster employment growth than non-beneficiary ones, the conclusion of the study is that the measure did not favour high technology firms, nor the firms with greater employment growth (ibid, p.43).

Moreover, ISTAT[17] has carried out an assessment of the R&D tax credit showing that in 2015 7,993 private businesses benefitted from the tax credit for around €590 million; the average per firm is modest (less than €75,000), three quarters of recipients are located in Northern regions and no additionality of the tax credit measure was found (ISTAT, 2018). In a context of low demand and stagnating GDP, the potential effects of tax incentives for R&D and innovation have been limited.

In 2017 R&D expenditure by firms has increased by 5.3 % over the previous year, driven by the expansion of the number of firms reporting R&D activities; these 'new R&D performers' account for 6.8 % of the total. Conversely, 'old R&D performers' have had a stable performance[18] (ISTAT, 2019).

Finally, attention should be paid also to labour market reforms that have favoured the diffusion of jobs with lower employment protection and with fixed-term contracts. They have contributed to expand precarious work,

[14] ISTAT (2018) Statistiche report. I profili dei nuovi imprenditori e delle imprese a elevata crescita, Anno 2016, Roma, 14/12/2018.
[15] OECD (2018), "The evaluation of the Italian "Start-up Act"", OECD Science, Technology and Industry Policy Papers, No. 54, OECD Publishing, Paris, https://doi.org/10.1787/02ab0eb7-en
[16] ISTAT (2019) Rapporto annuale 2019. La situazione del paese, Roma, Istat.
[17] ISTAT (2018) Statistiche report. I profili dei nuovi imprenditori e delle imprese a elevata crescita, Anno 2016, Roma, 14/12/2018.
[18] ISTAT (2019c) Statistiche Report. Ricerca e sviluppo in Italia. Anni 2017-2019, Roma, 10/09/2019.

generally associated to low-productivity and low wages, with negative effects on innovation performances in Italy and other European countries[19] (Guarascio et al, 2019).

[19] Guarascio, D., Cetrulo, A., Cirillo, V. (2019), Weaker jobs, weaker innovation. Exploring the effects of temporary employment on new products, Applied Economics, May 2019, DOI: 10.1080/00036846.2019.1619015

KJ-NA-30076-EN-N

The European Commission's science and knowledge service

Joint Research Centre

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with indipendent evidence throughtout the whole policy cycle.

EU Science Hub
ec.europa.eu/jrc

@EU_ScienceHub

EU Science Hub - Joint research Centre

EU Science, Research and Innovation

EU Science Hub

Publications Office
of the European Union

doi:10.2760/469079