15. PRODUCTIVITY IN ITALY: PERFORMANCE AND DETERMINANTS

In Italy, productivity performance is the main factor holding back long-term economic growth. Since the second half of the 1990s, productivity growth has been feeble both by historical standards and compared with the other main euro-area countries. Developments have differed widely across industries and firms, however, with productivity rising again in manufacturing since the early 2000s but stagnating in private non-financial services; the lag in efficiency can be entirely traced back to small firms.

Signs of a restructuring of the production system have emerged since the beginning of the last decade, and more clearly since 2011, with a reallocation of resources to the best firms. During the recession, market selection became an increasingly important driver: mortality increased among less efficient firms, and new entrants were on average more productive and better able to increase employment and productivity in their first years of life.

Several factors contribute to the efficiency of an economy.[1] Some have been addressed by a reform effort that began in 2011; for example, the labour market measures have reduced the gap between fixed-term and permanent employees, increased the incentives for investment in human capital while also fostering the transfer of resources towards more efficient production processes, reducing firms' costs and offering workers more support than had been available in the past in case of job loss.

Reform action has been less effective to date with regard to other factors. Among these, the obstacles to setting up new businesses, the complexity of crisis management procedures, the length of judicial proceedings, the tax and regulatory disincentives to firms' growth all have major implications for allocative efficiency and firm demographics. In addition, insufficient human capital, a managerial structure too heavily based on family ownership, and underdeveloped equity capital markets limit firms' innovative capacity and propensity to adopt advanced technologies. Removing these impediments can create a more business-friendly environment and increase the propensity to invest in order to improve efficiency and expand business.

Productivity and growth

Between 1995 and 2016 Italy's GDP grew by an average of 0.5 per cent per year, well below the rates recorded in France, Germany and Spain (1.5, 1.3 and 2.1 per cent

[1] M. Bugamelli and F. Lotti (eds.), 'Productivity growth in Italy: a tale of slow-motion change', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), forthcoming.

respectively). The gap with respect to the other euro-area countries was common to all the cyclical phases: the decade before the outbreak of the global financial crisis in 2008 (1.5 per cent in Italy, 2.3 in France, 1.6 in Germany and 3.7 in Spain), the ensuing long recession (-1.5 per cent in Italy, 0.3 in France, 0.6 in Germany and -1.4 in Spain) and the recovery that got under way in 2014 (0.6 per cent in Italy, 1.0 in France, 1.7 in Germany and 2.6 in Spain).

Breaking down GDP growth into its main components shows that in the last twenty years the main driver in Italy was the expansion in employment, buoyed by immigration that more than offset the ageing of the population (Table 15.1). The contribution of hourly labour productivity was instead quite modest (0.3 per cent), far lower than in France, Germany and Spain (1.2, 1.2 and 0.7 per cent respectively). In Italy, capital intensity's contribution to labour productivity was nil over the period as a whole; it was negative in recent years (2013-16), partly owing to the reduction in

Table 15.1

Breakdown of real GDP growth (1) (2)
(average changes in the periods indicated; per cent)

		Contributions to growth								
	GDP	Employ-ment	Popula-tion	Share of pop. of working age (15-64)	Employ-ment rate	Productivity per employed person	Hours worked per employed person	Hourly productivity	Capital intensity	TFP
	A=B+C	B=B1+B2+B3	B1	B2	B3	C=C1+C2 C=C3+C4	C1	C2	C3	C4
					France					
1995-2016	1.5	0.8	0.6	-0.2	0.4	0.8	-0.4	1.2	0.3	0.5
1995-2007	2.3	1.1	0.6	0.0	0.5	1.2	-0.6	1.7	0.3	0.8
2007-2013	0.3	0.1	0.5	-0.4	0.0	0.2	-0.3	0.5	0.4	-0.2
2013-2016	1.0	0.5	0.4	-0.5	0.6	0.5	-0.2	0.7	0.2	0.3
					Germany					
1995-2016	1.3	0.6	0.1	-0.2	0.7	0.7	-0.5	1.2	0.2	0.5
1995-2007	1.6	0.5	0.0	-0.2	0.7	1.1	-0.6	1.7	0.4	0.7
2007-2013	0.6	0.8	-0.1	-0.3	1.2	-0.2	-0.7	0.6	0.0	-0.1
2013-2016	1.7	1.0	0.8	0.2	0.0	0.8	0.0	0.8	0.0	0.9
					Italy					
1995-2016	0.5	0.6	0.3	-0.3	0.6	-0.1	-0.4	0.3	0.0	-0.1
1995-2007	1.5	1.2	0.3	-0.4	1.3	0.3	-0.2	0.5	0.1	0.2
2007-2013	-1.5	-0.7	0.5	-0.3	-0.9	-0.9	-0.9	0.1	0.1	-0.9
2013-2016	0.6	0.7	0.1	0.0	0.6	0.0	0.1	-0.1	-0.3	0.2
					Spain					
1995-2016	2.1	1.4	0.7	-0.2	0.9	0.6	-0.1	0.7	0.4	0.2
1995-2007	3.7	3.6	1.1	0.1	2.4	0.1	-0.2	0.3	0.1	0.0
2007-2013	-1.4	-2.9	0.5	-0.5	-2.9	1.6	-0.1	1.7	1.5	0.0
2013-2016	2.6	2.0	-0.2	-0.4	2.6	0.6	0.2	0.4	-0.4	0.9

Source: Based on the European Commission's annual macroeconomic database (Ameco).
(1) GDP at market prices; chained values, reference year 2010. – (2) The GDP growth rate (A) is broken down into the contributions deriving from the change in employment (B) and from that in labour productivity (C). The contribution per employed person is broken down further into that of the population (B1), the share of the population of working age (B2) and the employment rate (B3). Productivity can be broken down by distinguishing between hours worked per employed person (C1) and hourly productivity (C2) or else between capital intensity (C3) and total factor productivity (C4).

investment. The growth rate of total factor productivity (TFP), a measure that proxies for technological and organizational efficiency, was low both compared with the other main countries and by historical standards (see the box 'Long-term trends in total factor productivity in Italy and other industrialized countries').

LONG-TERM TRENDS IN TOTAL FACTOR PRODUCTIVITY IN ITALY AND OTHER INDUSTRIALIZED COUNTRIES

A recent paper reconstructed value added as well as the inputs of labour and capital in the Italian economy starting from 1861, making it possible to put Italy's slow growth in the last twenty years into a historical perspective.[1]

In terms of economic development, Italy lagged considerably behind the other main industrial countries up to the Second World War, but rapidly closed the gap in the period between 1951 and 1973. This was due to an increase in capital intensity and, especially, to very fast growth in total factor productivity (TFP; see the table). By the end of that process, Italy's labour productivity had caught up with that of the United Kingdom, although it was still significantly behind that of the United States.

Historical trends in total factor productivity in some industrialized countries (1)
(average percentage changes in the periods)

A. Italy	GDP	TFP	B. United Kingdom	GDP	TFP
1861-1896	1.3	0.3	1871-1891	1.8	0.6
1896-1913	2.3	0.6	1891-1911	1.7	0.3
1919-1929	2.7	1.7	1911-1929	1.3	0.6
1929-1938	1.5	-0.4	1929-1937	2.3	1.1
1950-1973	6.0	3.5	1950-1973	2.7	1.2
1973-1995	2.6	1.3	1973-1995	1.2	0.5
1995-2007	1.5	0.2	1995-2007	2.9	1.4
2007-2013	-1.5	-0.9	2007-2013	0.4	-0.3
2013-2016	0.6	0.2	2013-2016	2.3	0.7
C. United States	**GDP**	**TFP**	**D. Germany**	**GDP**	**TFP**
1869-1889	4.3	0.0	1871-1891	2.4	0.7
1889-1909	4.2	0.8	1891-1911	2.1	0.8
1909-1929	3.0	1.3	1911-1929	-0.3	0.6
1929-1937	0.6	0.3	1929-1935	0.1	0.7
1950-1973	3.6	1.4	1950-1973	5.4	7.0
1973-1995	1.8	0.3	1973-1995	4.1	2.1
1995-2007	3.6	1.3	1995-2007	1.6	0.7
2007-2013	1.0	0.5	2007-2013	0.6	-0.1
2013-2016	2.3	0.4	2013-2016	1.7	0.9
E. France	**GDP**	**TFP**	**F. Spain**	**GDP**	**TFP**
1995-2007	2.3	0.8	1995-2007	3.7	0.0
2007-2013	0.3	-0.2	2007-2013	-1.4	0.0
2013-2016	1.0	0.3	2013-2016	2.6	0.9

Source: C. Giordano, G. Toniolo and F. Zollino, 'Long-run trends in Italian productivity', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), forthcoming.
(1) For Italy GDP is measured as value added net of rental income.

[1] C. Giordano, G. Toniolo and F. Zollino, 'Long-run trends in Italian productivity', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), forthcoming.

However, the gap with the leading countries started to widen again in the 1990s, especially in private services, mainly owing to worsening TFP. Historical data – harmonized between countries – show that between 1995 and 2007 TFP in Italy grew by a mere 0.2 per cent per year, compared with 1.3 per cent in the previous twenty years. In the same period the average annual increase was 0.8 per cent in France, just below that figure in Germany, and close to 1.5 per cent in the United Kingdom and the United States. While in Italy and Germany TFP has been gradually slowing since the mid-1970s, it had instead accelerated in the United Kingdom and the United States, but this was interrupted by the cyclical downturn that began in 2008. TFP declined during the crisis in all the main industrial countries, but the decrease was sharper in Italy; the cyclical upturn over the last three years has led to a widespread recovery in TFP, though more moderately so in Italy.[2]

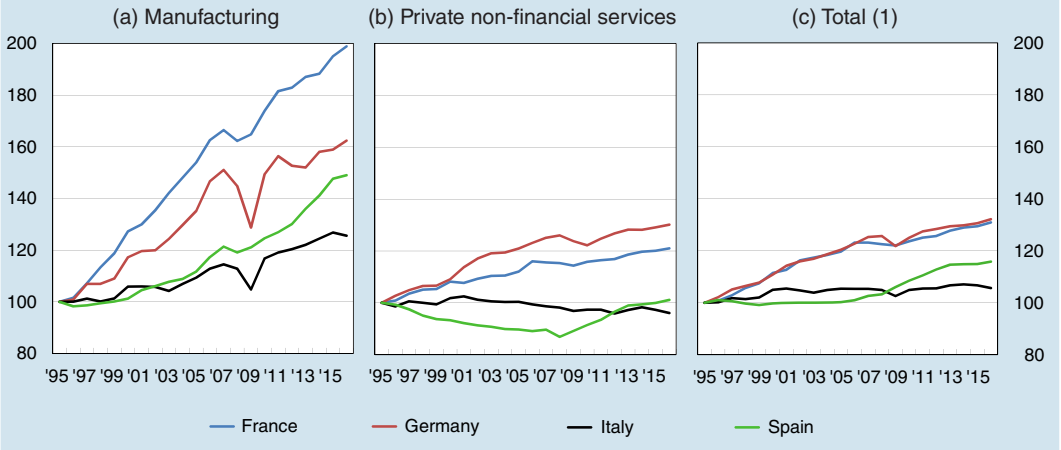
[2] A new study focusing on trends in Italy in the last twenty years takes into account the composition of productive services of capital and labour and the role of technical progress embodied in capital goods, and finds more favourable indications as to the performance of TFP since the beginning of the crisis, especially in manufacturing (see A. Mistretta and F. Zollino, 'Recent trends of activity and TFP in Italy with a focus on embodied technical progress', Banca d'Italia, Temi di Discussione (Working Papers), forthcoming).

In manufacturing, hourly labour productivity rose by 1.6 per cent per year between 2003 and 2007 after stagnating up to the beginning of the last decade and accelerated to 1.9 per cent after 2009. In private non-financial services, instead, it has diminished at an average annual rate of 0.4 per cent over the last 15 years, reflecting declines in business services and stagnation in both retail and wholesale trade and in transport and warehousing services (Figure 15.1).

Figure 15.1

Hourly labour productivity

(value added per hour worked at 2010 prices; index: 1995=100)



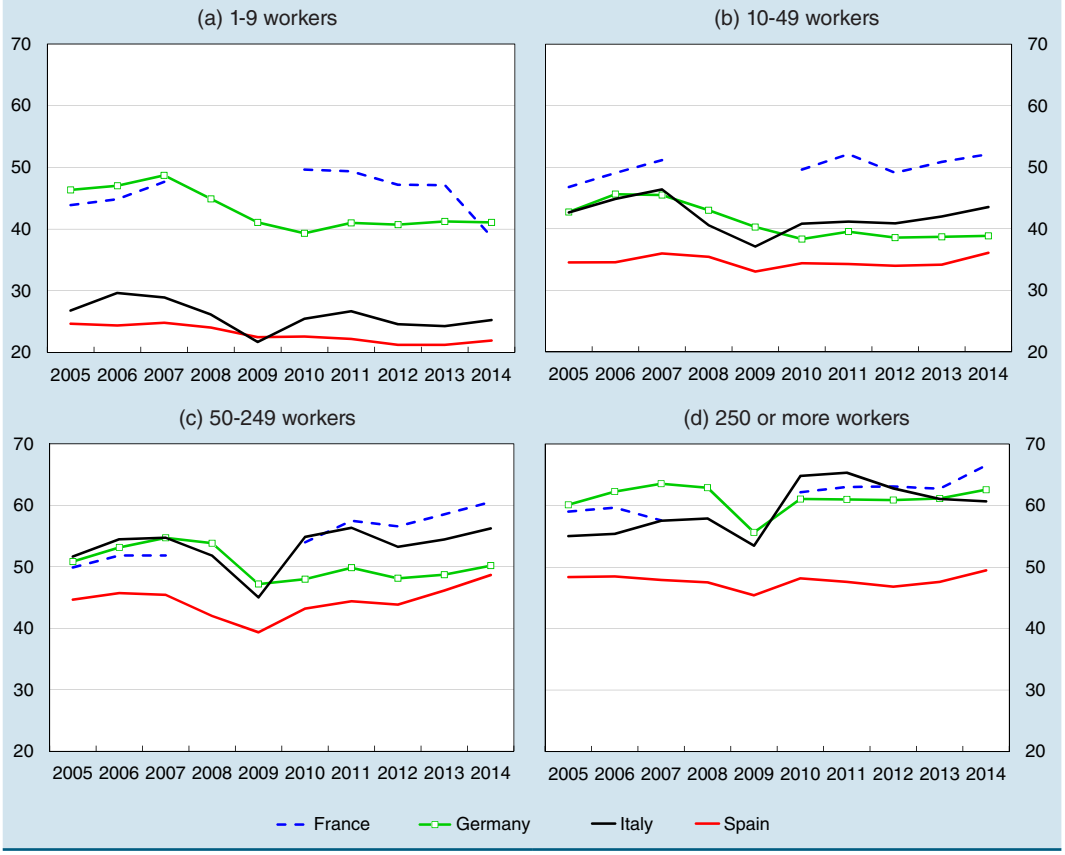
Sources: Eurostat, national accounts.
(1) Manufacturing and private non-financial services

Italy's efficiency lag can be traced entirely to the country's numerous small and micro firms. Those with fewer than 10 workers, which account for more than 95 per cent of the total number of businesses and for respectively 27 and 44 per cent of total value added and employment, display low levels of labour productivity and productivity

growth rates that are often worse compared not only with larger firms but also with French and German firms of the same size class (Figure 15.2).

Figure 15.2

Labour productivity by size class: total economy (1)
(value added per worker at 2005 prices; thousands of euros)



Source: Eurostat, *Structural Business Statistics*.
(1) Manufacturing and private non-financial services. The data for 2008 and 2009 are not available for France.

Productivity, allocative efficiency and firm demographics

A country's aggregate productivity growth rate depends on the efficiency gains achieved by individual businesses and by the ability of the economic and institutional system as a whole to channel resources to the most productive uses (allocative efficiency), partly in connection with firms' entry and exit from the market.

When there are large productivity gaps between the companies situated on the technological frontier and those that are not,[2] the intensity and speed with which resources are reallocated to the best firms can provide an important boost to economic growth. In Italy, the contribution of allocative efficiency – measured by the covariance

[2] D. Andrews, C. Criscuolo and P.N. Gal, 'Frontier firms, technology diffusion and public policy: micro evidence from OECD countries', OECD, The Future of Productivity: Main Background Papers, 2015.

between size and productivity at firm level[3] – to aggregate productivity is less marked than in the other advanced countries.[4]

According to analyses based on the universe of Italian firms belonging to the non-financial, non-farm private sector,[5] there has been evidence of structural change with an increase in allocative efficiency in manufacturing since 2000. After the sovereign debt crisis, this process strengthened, in line with what occurred in other European countries,[6] and also extended to private non-financial services, albeit at a milder pace. A comparison among sectors shows that the improvement in allocative efficiency is positively correlated with the intensity of competitive pressures, measured by the degree of market concentration and by the impact of imports from developing countries, where production costs are lower.[7]

While average company productivity declined, the disparities among firms increased. Before the global crisis, employment had grown at an average annual rate of 1 per cent among the least efficient firms and 3 per cent among the most efficient. Subsequently, and particularly after the sovereign debt crisis, this divergence widened: firm size shrank among all firms except the most productive. These trends stemmed partly from the greater propensity of firms more exposed to competition in international markets to modify their corporate strategies, concentrating their production on more competitive goods and raising their overall efficiency (Figure 15.3).

Figure 15.3

Productivity growth of exporting firms by degree of exposure to competition on international markets, 2000-2014 (1)

(average annual changes; per cent)

Source: Based on Istat data referring to the universe of exporting firms.
(1) The horizontal axis indicates the quintiles of the distribution of the rates of change in firms' potential foreign demand, a measure associated with changes in their degree of exposure to competition on international markets. For each firm, the change in foreign demand was calculated as the average of the growth rates of imports per product and foreign market, weighted by the share of each product and market in the firm's export sales revenues. The first (last) quintile contains the firms with the lowest (highest) rates of growth in demand on foreign markets For the different quintiles, the bars show the average change in real sales revenues per worker, sector and year being equal.

Firm demographics sustained productivity more strongly during the recession, particularly as a result of market exits, with an increase in mortality rates

[3] In an efficient economic system, this covariance should be high because the more productive firms grow more than the others.

[4] D. Andrews and F. Cingano, 'Public policy and resource allocation: evidence from firms in OECD countries', *Economic Policy*, 29, 78, 2014, 253-296.

[5] A. Linarello and A. Petrella, 'Productivity and reallocation; evidence from the universe of Italian firms', *International Productivity Monitor*, forthcoming, also published in Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 353, 2016; A. Linarello. A Petrella and E. Sette, 'Allocative efficiency and finance', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 349, 2016, forthcoming.

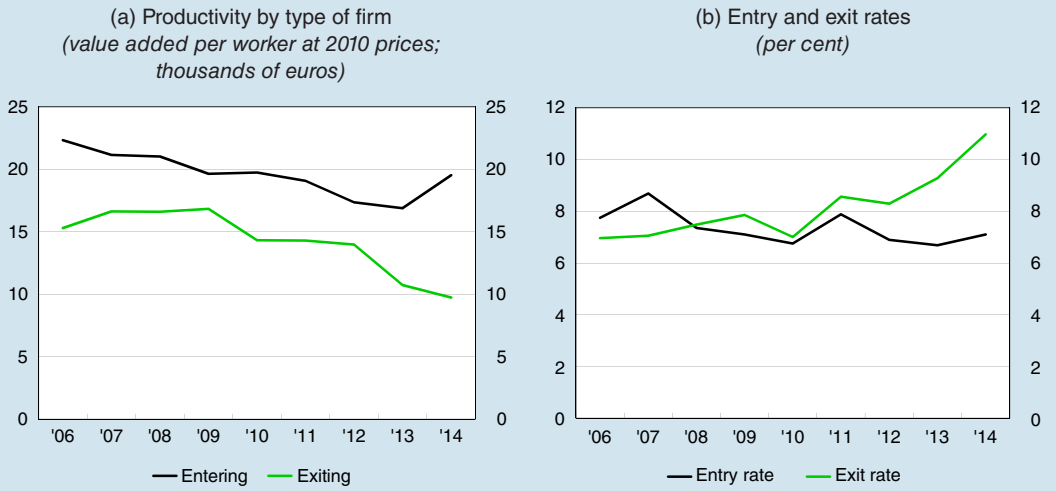
[6] E. Gamberoni, C. Giordano and P. Lopez-Garcia, 'Capital and labour (mis)allocation in the euro area: some stylized facts and determinants', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 340, 2016.

[7] E. Adamopoulou, E. Bobbio, M. De Philippis and F. Giorgi, 'Allocative efficiency and aggregate wage dynamics in Italy', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 340, 2016.

notably among the least efficient firms (Figure 15.4). The support coming from new enterprises intensified somewhat in manufacturing, thanks to the entry of generally more efficient firms than in the past, with higher post entry employment and productivity growth rates. However, the contribution from market entry is limited as a consequence of structural characteristics already in place before the crisis: start-ups in Italy are smaller and grow less and for fewer years than is the case, for example, in the United States.[8]

Figure 15.4

Firm demographic dynamics and productivity



Source: Based on Istat data referring to the universe of firms.

The determinants of productivity growth

The determinants of productivity are to be sought in the interaction among several company characteristics, the rules governing the functioning of the production factors and output markets, and the legislative and institutional framework. The reforms adopted in Italy since the second half of 2011 have acted on some of these factors, creating the conditions for higher productivity and economic growth in the long term (see the box 'The assessment of the macroeconomic effects of the reforms').

THE ASSESSMENT OF THE MACROECONOMIC EFFECTS OF THE REFORMS

For some time now reforms to strengthen productivity – affecting, for example, the institutional environment, resource allocation, human capital, and the efficiency of the public sector – have been at the heart of the debate on how to spur growth in the European Union and its member states. These reforms have also been the subject of recommendations by the European Commission with respect to the Macroeconomic Imbalance Procedure (MIP).

[8] F. Manaresi, 'Net employment growth by firm size and age in Italy', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 298, 2015.

It is difficult to empirically assess the macroeconomic effect of reforms: the data available are limited by nature and vary little over time, their effects are only seen in the long term and they are not always distinguishable from those of other concurrent factors. For these reasons the recent economic literature has taken two approaches.

The first approach involves estimating, on a sample panel of countries or sectors, the correlations between GDP growth rates (or some other measure of economic performance) and quantitative indicators of certain structural characteristics of the country or the introduction of certain reforms, for example, OECD product market regulation or employment protection legislation indicators. This approach offers useful guidance, but it is often inevitably conducted on a limited number of observations, making it impossible to identify the different channels and causal nexuses.

An alternative approach simulates general equilibrium models, specifying some of the structural characteristics of the economies that may be directly affected by a reform: for example, the degree of market competition for products and services, which is measured by the size of firms' profit margins, or the trend in total factor productivity. These models have the advantage of serving as a reference for discussion, on a consistent basis, of the mechanisms for transmitting the effects of the reforms. However, they suffer from a certain degree of arbitrariness in the selection of values for the parameters and the effect of the reforms on them. Since these models are usually based on the behaviour of a representative agent, such as a representative firm or a representative household, they are not able to provide information on any distributive impacts of the reforms, which are often broad and influence both economic effects and political feasibility.

Even with these limitations in mind, all the analyses available suggest a positive impact on long-term GDP (table) of the various reforms in Italy in the last ten years. According to the OECD, using the first approach, the reforms undertaken between 2012 and 2015 had a positive effect on GDP equal to 6.3 per cent after ten years.[1] Based on the simulations of general equilibrium models, the long-term effects of the liberalization of the service sector undertaken up until 2012 are projected to be between 3 and 6.9 per cent of GDP.[2] The European Commission, taking into consideration a broader set of reforms carried out up until 2015, estimates that the long-term effect on GDP is 2.8 per cent.[3] The Ministry for Economy and Finance (MEF), referring to all the reforms implemented during the same period, estimates an impact equal to 8.2 per cent.[4]

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1 OECD, *Structural Reforms in Italy: Impact on Growth and Employment*, 2015.

2 A. Gerali, A. Locarno, A. Notarpietro and M. Pisani, 'Every cloud has a silver lining. The sovereign crisis and Italian potential output', Banca d'Italia, Temi di Discussione (Working Papers), 1010, 2015; L. Lusinyan and D. Muir, 'Assessing the macroeconomic impact of structural reforms: the case of Italy', IMF Working Paper, 22, 2013.

3 European Commission, 'The economic impact of selected structural reform measures in Italy, France, Spain and Portugal', European Commission, *European Economy*, Institutional Paper, 23, 2016.

4 Ministry for Economy and Finance, *Documento di economia e finanza 2016, Sezione III. Programma nazionale di riforma*, 2016.

Effects of the reforms on GDP in the long term

SOURCE	Method	Reforms	Reform period	Horizon	Effect on GDP (%)
OECD	Reduced-form estimates	(1)	(2012-2015)	10 years	6.3
A. Gerali et al.	Structural models	Liberalization	(2008-2012)	Long term (2)	3.0
L. Lusinyan and D. Muir	Structural models	Liberalization	(2008-2012)	Long term (2)	6.9
European Commission	Structural models	(3)	(2012-2015)	Long term (2)	2.8
MEF	Structural models	(4)	(2012-2015)	Long term (2)	8.2

(1) The OECD treats all the reforms (liberalization, labour market, tax system, public administration and the justice system) as measurable by using its indicators. – (2) 'Long term' refers to the new steady-state equilibrium of the structural model. – (3) Of the reforms carried out in 2012-15 the European Commission only considers those for which there is sound evidence of the effects on the model parameters. – (4) The MEF examines all the reforms during the period 2012-15 that were eligible for the adoption of structural reforms under the Stability and Growth Pact. If the MEF's assessment is limited to the subset used by the European Commission, the estimated impact declines to 6.1 per cent.

The reforms are not, however, a substitute for policies that stabilize the economic cycle and support demand. An ample body of international literature has shown how the reforms' short-term effects can be limited or even negative depending on various factors such as the speed and credibility of implementation; economic-cycle conditions; flexibility allowed under monetary policy; financial and real constraints that could delay investment response; and distributive effects.[5] Labour market reforms that reduce the costs of dismissing employees could be recessive if enacted during periods of low economic activity. The liberalization of markets, which reduces mark-ups and prices, can be depressive if short-term interest rates are close to zero and economic growth is weak. The distributive consequences of the reforms can lead to resistance by those who do not benefit and can have negative repercussions on aggregate demand in the face of lending constraints.

A growing consensus in the international literature shows that reforms must be designed to mitigate or counter short-term negative effects. An example of this is what occurred with the labour market reform in Italy, with the concurrent introduction of legislation on the termination of employees' contracts (applying it gradually to new contracts only) and of temporary measures to boost employment in the short term, such as social contribution relief. It is also important that reforms be accompanied by suitable policies to support demand in the short term.

[5] IMF, *World Economic Outlook*, April 2016; OECD, *OECD Employment Outlook 2016*, 2016; A. Gerali, A. Notarpietro and M. Pisani, 'Structural reforms, investment and zero lower bound in a monetary union', *The Manchester School*, 83, S3, 2015, 102-139.

Innovation and technology. – Innovation and the adoption of new technologies are the chief determinants of increments in firms' efficiency.

Because of their delayed adoption, information and communication technologies' contribution to growth was slight between 2000 and 2007; it fell to nil during the crisis but has revived over the last three years. Numerous empirical analyses, based in part

on Italian firms, find a positive link between expenditure on research and development (R&D) and company productivity; this link persists even when an indicator of the propensity to realize innovations is used in place of expenditure, a measure that better captures the innovative effort of small firms, which often introduce changes without making or officially recording R&D investment.[9]

Taking account of a set of indicators, the European Commission ranks Italy among the 'moderate innovators', with a lag vis-à-vis the main euro-area countries. In 2016 investment in intangibles made up 15.8 per cent of total investment in Italy, a smaller share than in France (24 per cent) and Germany (18 per cent). The ratio of R&D expenditure to GDP in Italy, though inching upwards since 2006, is still below the European Union average (1.3 against 1.9 per cent), especially as regards the private sector component. The number of patents filed with the European Patent Office by Italian residents has been rising since 2015, but the overall share is still low by international standards.

Italy's innovation gap stems from multiple factors: small firm size, the shortage of human capital, the availability of financing and the institutional context (see Chapter 11, 'Innovation', in the *Annual Report for 2012*). The set of policies intended to support innovation has been thoroughly revised since 2013. In accordance with international best practices, they envisage intervention along the whole chain of innovation: financing of start-ups, fiscal incentives for R&D, and a patent box.

Regulation. – Spurs to competition, which also reflect sector-specific regulations, foster innovation and productive and allocative efficiency by encouraging an optimal use of resources within individual firms and across sectors and firms.

Studies based on the product market regulation (PMR) indicators developed by the OECD show that excessively tight regulation in some branches of services impedes resource reallocation, investment in intangibles and changes in firm demographics, acting as a drag on productivity. There are also negative impacts on the growth rates of value added, productivity and exports of the manufacturing firms that need those services.[10] Assessments of the measures to liberalize retail trade introduced in Italy at the end of the 1990s find positive effects on employment, productivity and technological innovation; in addition, sale prices fell, to the benefit of consumers.[11]

According to the PMR indicators, Italy is in an intermediate position in the ranking of countries analysed (see Chapter 9, 'The productive economy and the reforms', in the *Annual Report for 2013*). However, regulation in sectors such as retail and wholesale trade, postal services and professional services remains among the most restrictive.

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[9] B.H. Hall, F. Lotti and J. Mairesse, 'Employment, innovation and productivity: Evidence from Italian microdata', *Industrial and Corporate Change*, 17, 4, 2008, 813-839; B.H. Hall, F. Lotti and J. Mairesse, 'Innovation and productivity in SMEs: empirical evidence for Italy, *Small Business Economics*, 33, 2009, 13-33.

[10] G. Barone and F. Cingano, 'Services regulation and growth: evidence from OECD countries', *The Economic Journal*, 121, 555, 2011, 931-957.

[11] E. Viviano, 'Entry regulations and labour market outcomes: evidence from the Italian retail trade sector', *Labour Economics*, 15, 6, 2008, 1200-1222; F. Schivardi and E. Viviano, 'Entry barriers in Italian retail trade', *The Economic Journal*, 121, 551, 2011, 145-170.

The degree of competition is also affected by the regulatory burdens weighing on start-ups. In addition to sector-specific constraints on market access (for example, restrictions on the number of operators or legal limits on certain activities), the costs of entering the market also depend on the complexity of the procedures for setting up and starting a business. According to the World Bank's Doing Business indicators, the costs of red tape for starting a business are generally higher in Italy than in other developed economies.

Recent studies indicate that the reduction of administrative barriers to entry has positive effects. The 2010 reform of the one-stop-shop for productive activities raised the birth rate of firms by 0.2 percentage points, an increase concentrated among sole proprietorships and in the private services and construction sectors (see the box 'Start-up costs and firm dynamics' in Chapter 11 of the *Annual Report for 2014*). According to a model simulated on the Italian economy, shortening the time required to start up a business would have a stronger positive effect on GDP and total factor productivity than that linked to a reduction of monetary costs (see the box 'Limiting red tape for start-ups' in Chapter 12).

Productivity growth is also influenced by the set of rules governing company crisis procedures. Good bankruptcy law assists the reallocation of resources by shortening the time and reducing the costs of market exit by firms that are no longer profitable and facilitating the restructuring of those in temporary difficulty; reducing the costs associated with a possible bankruptcy improves credit conditions[12] and promotes the creation of new businesses. The Doing Business indicators show that crisis management procedures are lengthier and costlier and the recovery percentages lower in Italy than in the other euro-area countries; the degree of efficiency of the civil justice system plays a role in this too.

The judicial system. – The channels through which an efficient justice system exerts a positive influence on productivity and resource allocation are multiple and arise from its crucial role in ensuring the enforcement of contracts and property rights. By lessening the need to resort to informal mechanisms, such as reputation or long-term business relations, in order to guarantee fulfilment of contractual obligations, an effective safeguarding of contracts reduces the competitive advantage of incumbent firms, favouring the entry of new businesses and increasing competition; it also has positive effects on the credit market, helping to improve the terms and conditions offered to new firms and to businesses with opportunities for growth.

According to the Doing Business indicator, the efficiency of Italy's civil justice system is low by international standards (see Chapter 12, 'Business activity regulation and the institutional environment'). Studies comparing courts' respective areas of jurisdiction show that where the functioning of the justice system is more efficient, manufacturing firms are on average larger and more likely to participate in global value chains as suppliers of intermediate inputs.[13]

[12] G. Rodano, N. Serrano-Velarde and E. Tarantino, 'Bankruptcy law and bank financing', *Journal of Financial Economics*, 120, 2, 2016, 363-382.

[13] S. Giacomelli and C. Menon, 'Does weak contract enforcement affect firm size? Evidence from the neighbour's court', *Journal of Economic Geography*, 2016, 1-32; A. Accetturo, A. Linarello and A. Petrella, 'Judiciary efficiency and trade in tasks', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), forthcoming.

Legal enforcement. – The presence on the market of firms that do not play by the rules, evading taxes, bribing public officials or operating in tandem with criminal organizations, limits the ability of the economy to grow through different channels. (see Chapter 12, 'Business activity regulation and the institutional environment')

Tax evasion, which is extensive in Italy by international standards, together with the high tax burden and the complexity and instability of tax law, fuels unfair competition that reduces the returns to innovation and dampens business dynamism, with negative effects on productivity growth. It is estimated that, in the absence of evasion, average annual GDP growth would have been at least 0.2 percentage points higher in the period 1995-2006 (see the box 'Taxation and corporate dynamics' in Chapter 6 of the *Annual Report for 2015*).

According to international indicators that measure the spread of corruption,[14] Italy has one of the highest levels in the EU. There is evidence that corruption reduces the growth of output in the Italian regions and the efficiency of their public investment expenditure;[15] organized crime erodes economic growth, partly by diverting public resources for its own benefit[16] (see the box 'The economic effects of the spread of organized crime in the Centre and North of Italy' in Chapter 12); a higher crime rate is associated with a smaller supply of bank credit, to the detriment of investment.[17]

Human capital. – The differences in human capital resources between Italy and other countries go a long way toward explaining those in per capita GDP growth.

The use of skilled workers is crucial in producing innovation. Studies conducted on Italian firms confirm that greater human capital resources are associated with a higher return on R&D spending[18] and a greater propensity to undertake the organizational innovations that go together with the adoption of new technologies.

Italy lags significantly behind other industrial countries in terms of the levels of formal education and competencies actually possessed by the population with the same levels of educational attainment. In 2015, 60 per cent of the population aged 25 to 64 had a high school qualification and 18 per cent a university degree, against an average of 79 and 32 per cent respectively in the European Union. The gap is only

[14] Transparency International, *Corruption Perception Index 2016*, 2017.

[15] N.Fiorino, E. Galli and I. Petrarca, 'Corruption and growth: evidence from the Italian regions', *European Journal of Government and Economics*, 1, 2, 2012, 126-144; A. Del Monte and E. Papagni, 'Public expenditure, corruption and economic growth: the case of Italy', *European Journal of Political Economy*, 17, 1, 2001, 1-16.

[16] P. Pinotti, 'The economic costs of organized crime: evidence from southern Italy', *The Economic Journal*,125, 586, 2015, F203-F232; G. Barone and G. Narciso, 'Organized crime and business subsidies: where does the money go?', *Journal of Urban Economics*, 86, 2015, 98-110; G. Barone and S. Mocetti, 'Natural disasters, growth and institutions: a tale of two earthquakes', *Journal of Urban Economics*, 84, 2014, 52-66; L. Mirenda, S. Mocetti and L. Rizzica, 'The real effects of 'ndrangheta: firm-level evidence', Banca d'Italia, Temi di Discussione (Working Papers), forthcoming.

[17] E. Bonaccorsi di Patti, 'Weak institutions and credit availability; the impact of crime on bank loans', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 52, 2009.

[18] B.H. Hall, F. Lotti and J. Mairesse, 'Evidence on the impact of R&D and ICT investments on innovation and productivity in Italian firms', *Economics of Innovation and New Technology*, 22, 3, 2013, 300-328.

partly due to the paths chosen by past generations: the share of university graduates in the population aged 25 to 34 (25 per cent) is also lower than the EU average (32 per cent). The low rate of participation in formal schooling directly affects people's logical, analytical and cognitive abilities: in the survey conducted as part of the Programme for the International Assessment of Competencies (PIAAC)[19] with reference to 2012, Italy ranked lowest among the OECD countries in language skills and near the bottom in numeracy; the higher the education level, the bigger the gap, suggesting critical weaknesses in the functioning of the education system.

Despite the low percentage of workers with a diploma beyond compulsory schooling, the returns to education in Italy are low by international standards. This reflects a production structure that continues to rely mainly on less skilled workers and a significant difficulty in matching labour demand and supply, which provides little incentive for investment in human capital.[20]

Ownership and management structure. – Firms' ownership and management structure determines their strategic choices and the quality of their managerial practices, affecting their propensity to grow and to innovate.

Concentrated ownership, as in family businesses, can help reduce information asymmetries and possible conflicts between ownership and control, fostering corporate strategies that look to the long term. However, the prevalence of one family in a company's ownership may make it less open to new equity investors and overly cautious in its management, with adverse effects on innovation, the adoption of new technologies and the propensity for internationalization; the presence of too many family firms can curb the ability of the production system as a whole to shift towards sectors and projects offering higher returns.[21]

Compared with other countries, Italy has a high percentage of family-owned businesses. According to the data of the research project 'European Firms in a Global Economy' on a sample of manufacturing firms with 10 or more workers, the share of firms under family ownership is nearly 90 per cent in Germany and Italy, slightly lower in France and the United Kingdom. Our calculations based on Chamber of Commerce data for the universe of corporations and partnerships indicate that the share of family firms – defined as those in which more than two-thirds of the members belong to the two main families – rose by 10 percentage points, from 55.5 to 65.6 per cent, between 2008 and 2015. The share is higher in agriculture, traditional manufacturing industries, hospitality, retail trade and in the South of Italy.

Family firms, particularly those in Italy, tend to prefer an executive selection process based on closeness and loyalty to the owners rather than on specific expertise with regard

[19] The PIAAC survey, conducted by the OECD in more than 40 countries throughout the world, evaluates a population's cognitive skills (literacy, numeracy and problem-solving in complex environments).

[20] F. Colonna, 'Chicken or the egg? Human capital demand and supply', *Politica economica*, 33, 1, 2017, 97-124.

[21] C. Michelacci and F. Schivardi, 'Does idiosyncratic business risk matter for growth?', *Journal of the European Economic Association* 11, 2, 2013, 343-368.

to the company's business sector and strategies.[22] This negatively affects the quality of management and managerial practices and, consequently, production efficiency.[23]

In Italian and German family firms, the managing director or entrepreneur is often a member of the owner family, but only in Italy is there a large proportion of firms in which all the managerial roles are filled by members of the owner family.[24] In these businesses, the propensity to innovate is lower (see Chapter 11, 'Innovation', in the *Annual Report for 2012*).

The financing of firms. – The financial system promotes company growth and efficiency gains by supplying the resources needed to undertake innovative investment and projects, and it helps to decide the allocation of resources among existing firms and the intensity of firm demography by selecting the business initiatives that deserve financing.

Bank loans are the main source of external financing in Italy. A severe tightening of credit can have significant effects on the real economy: in the four years 2007-10, the decline in credit supply caused by the crisis accounted for about a quarter of the total fall in investment.[25] On the other hand, restrictions on credit supply during the recent crisis fostered the downsizing of the least efficient firms and their exit from the market, thereby positively influencing the growth of aggregate productivity.[26]

Unlike the other advanced countries, in Italy bank debt is the chief source of financing for innovation after internal resources. This reflects firms' undercapitalization and the underdevelopment of the venture capital sector, shortcomings that were recently addressed with fiscal policy measures (see Chapter 6, 'Firms'). An analysis of firm-level data for the period 1998-2014 confirms that an expansion in bank lending has a positive impact on productivity growth, spurring an increase in R&D spending.[27]

However, bank debt is less suitable for financing initiatives marked by high risk and pronounced information asymmetries, and its widespread use could therefore reduce the total amount of funds available for innovation and direct them towards projects that are less innovative in scope. This effect is more marked among younger firms with more growth potential but less collateral available.

The banking system is also decisive in shaping firm dynamics. An increase in competition in the credit market is associated with higher firm entry and survival rates

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[22] O. Bandiera, L. Guiso, A. Prat and R. Sadun, 'Matching firms, managers, and incentives', *Journal of Labor Economics*, 33, 3, 2015, 623-681; F. Lippi and F. Schivardi, 'Corporate control and executive selection', *Quantitative Economics*, 5, 2, 2014, 417-456.

[23] N. Bloom, R. Sadun and J. Van Reenen, 'The organization of firms across countries', *The Quarterly Journal of Economics*, 127, 4, 2012, 1663-1705.

[24] M. Bugamelli, L. Cannari. F. Lotti and S. Magri, 'Il gap innovativo del sistema produttivo italiano: radici e possibili rimedi', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 121, 2012.

[25] F. Cingano, F. Manaresi and E. Sette. 'Does credit crunch investment down? New evidence on the real effects of the bank-lending channel', *The Review of Financial Studies*, 29, 10, 2016, 2737-2773.

[26] A. Linarello, A. Petrella and E. Sette, 'Allocative efficiency and finance', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), forthcoming.

[27] F. Manaresi and N. Pierri, 'Credit constraints and firm productivity: evidence from Italy', Mo. Fi. R. Working Paper, 137, 2017.

and in allocative efficiency.[28] The pronounced credit frictions observed during the crisis slowed the growth of start-ups in their early years of life.[29]

The labour market and industrial relations. – Regulation that entails significant labour adjustment costs harms productivity growth,[30] impairing the ability of firms to respond to external shocks and reducing allocative efficiency and the propensity to start new businesses in more dynamic but riskier sectors. On the other hand, an excessive instability in employment relations can weaken a firm's incentive to invest in employee training; the interest in training is lessened from the workers' point of view as well, if the skills acquired are too specific to the firm's requirements and thus are not easily marketable.[31] Effective, active policies, which favour the matching of labour demand and supply and human capital accumulation during periods of unemployment, increase the likelihood of re-employment[32] and help to boost allocative efficiency.

In recent years the labour market has been affected by far-reaching reform measures.[33] A shift in the composition of new hiring towards more stable jobs has been encouraged;[34] firms have been given more certainty as to the costs of individual dismissals; the employment shock absorber system has been extended and rationalized, so that it now offers universal unemployment insurance comparable to that of the other main European countries; a redesigning of active policies is currently under way (see the box 'The Jobs Act: a preliminary evaluation' in Chapter 8 of the *Annual Report for 2015*).

Another factor that can impinge on a firm's productivity is the system of industrial relations, particularly the importance and scope of company-level bargaining. The latter can be conducive to agreements that provide greater organizational flexibility and more extensive worker participation in decision-making, resulting in proposals for changes in the way production is organized and assisting their implementation. In addition, company pay policies based on the attainment of individual and firm-level objectives favour an alignment between wages and productivity and make it possible to better motivate workers. In Italy, the subordination of company-level contracts to national labour agreements limits their importance and prevalence (see the box 'Current trends in labour relations' in Chapter 8).

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[28] F. Lotti and F. Manaresi, 'Finance and creative destruction: evidence for Italy', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 299, 2015.

[29] F. Manaresi and F. Scoccianti, 'Battle Scars. New firms' capital, labour and revenue growth during the double-dip recession', Banca d'Italia, Questioni di Economia e di Finanza (Occasional Papers), forthcoming.

[30] D.H. Autor, W.R. Kerr and A.D. Kugler, 'Does employment protection reduce productivity? Evidence from US states', *The Economic Journal*, 117, 521, 2007, F189-F217; A. Bassanini, L. Nunziata and D. Venn, 'Job protection legislation and productivity growth in OECD countries', *Economic Policy*, 24, 58, 2009, 349-402.

[31] M. Belot, J. Boone and J. Van Ours, 'Welfare-improving employment protection', *Economica*, 74, 295, 2007, 381-396; L. Cappellari, C. Dell'Aringa and M. Leonardi, 'Temporary employment, job flows and productivity: a tale of two reforms', *The Economic Journal*, 122, 562, 2012, F188-F215.

[32] D. Card, J. Kluve and A. Weber, 'What works? A meta analysis of recent active labor market program evaluation', *Journal of the European Economic Association*, forthcoming.

[33] Law 92/2012 (the Fornero reform) and the rules introduced in 2015 on the basis of Enabling Law 183/2014 (the Jobs Act).

[34] P. Sestito and E.Viviano, 'Hiring incentives and/or firing cost reduction? Evaluating the impact of the 2015 policies on the Italian labour market', Banca d'Italia, Questioni di Economia e Finanza (Occasional Papers), 325, 2016.