

Italy: Mismatch priority occupations


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Summary

ICT professionals belong to high shortage occupations for Italy.

Looking at past, current and future trends (3-4 years), a number of occupations have been identified as **mismatch priority occupations for Italy**, i.e. they are either in shortage or surplus. **Shortage occupation**: an occupation that is in short supply of workers, and for which the employers typically face difficulties finding a suitable candidate. **Surplus occupation**: an occupation for which there are plenty of suitable workers available but low demand. The employers have no problems filling such posts.

The list below is based on an assessment of the labour market of **Italy**. The occupations presented are not given any rank. All of them present high mismatch.

Mismatch priority occupations

Italy



Shortage occupations

ICT professionals
STEM occupations
Health-related occupations
Teaching professionals
Marketing, design and creative professionals

Surplus occupations

Surpluses reported in almost all low skilled jobs in:

- Construction
- Tourism
- Traditional manufacturing

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Shortage Occupations

ICT professionals ^[1]

The importance of high-skilled jobs involved in software design and implementation and machine programming is growing, both in the service and manufacturing sectors. ICT professionals in the service sector are characterised by one of the highest expected employment growth rates in the medium term (2% per year from 2015 to 2020). ^[2] Within this group, various professionals are in **high demand**:

- mathematicians, actuaries and statisticians are highly demanded not only for developing ICT systems but also for “big data” analysis (e.g. examination of large data sets to uncover market trends, customer preferences and other useful business information) and for the development of companies’ internal data warehouses;
- software and applications developers and analysts - 38% of the companies define such vacancies as hard to fill ^[3]; and

c. electrotechnology engineers. This is an occupation strictly related to the automation of production processes and the development of the so-called Industry 4.0. In 2015, 43% of companies defined such vacancies as hard to fill [4].

There are two main reasons for skill shortages:

1. the **insufficient number of graduates** (few universities are offering degrees in statistics and the number of students enrolled is limited [5]; and
2. the **firms' increasing demand**. These occupations are strongly linked to technological change and the consequent evolution of production and processes in manufacturing and services. As more and more firms adopt new production processes, the demand for these occupations will keep increasing in the future.

The lack of ICT professionals is a well-known problem in Italy since the beginning of the new millennium. No common and comprehensive strategy has been designed so far. In general, the Italian labour market is not able to deliver wage premia sufficiently high to encourage students to invest in education programmes which are perceived as difficult and of long duration. There is also a widespread lack of information about the real career prospects and attractiveness of these occupations. Italian universities (with few exceptions) have long-standing difficulties in developing ties with industries in order to foster collaborations and facilitate and speed up the transition from education to the labour market. This is due mainly to the lack of funds but also of specific expertise and incentives in linking the education system with the industrial sector. Since 2015, a tax deduction for investment in research and development has been granted to all firms. Furthermore, the Ministry of Finance grants a tax deduction for firms which hire new graduates with specific contracts aimed at conducting research activities with universities in order to obtain university or postgraduate degrees (such as PhD). These measures are expected to raise private R&D investment, although the implications in terms of job creation are still to be assessed.

STEM occupations [6]

Employment in these occupations is expected to grow faster than the Italian average in the medium term (3% increase against an average, which is below 1% in the period 2014-2018). [7]

The main reasons for skills shortages include:

1. **insufficient supply of graduates** from vocational technical schools both in terms of number [8] and skills;
2. large heterogeneity of the **quality of engineering study programmes** across different universities – the result is that only graduates from universities offering the best programmes easily find employment;
3. **scarce wage premium** compared to the length and difficulty of the educational path (for example, five years after their graduation, employed engineering graduates enjoy a wage premium which is only 5% higher compared to the wage of economics graduates).

Science graduates have a negative wage premium with respect to economics graduates. In addition,

they experience worse labour market outcomes such as a higher unemployment rate ^[9] and lack of skills necessary for the tasks required. Companies report high levels of training required, which is associated with difficulties in finding the required skills in the market. ^[10] In addition, there remains a substantial gender gap in scientific occupations which are male dominated (about 80%). A similar pattern is reflected among university graduates. ^[11]

As in the case of ICT professionals, the shortage of STEM specialists is a well-known problem, which is still not addressed properly. Italian universities (with few exceptions) have long-standing difficulties in developing ties with industries in order to foster collaborations and facilitate and speed up the transition from education to the labour market. Since 2015, a tax deduction for investment in research and development has been granted to all firms. Furthermore, the Ministry of Finance grants a tax deduction for firms which hire new graduates with specific contracts aimed at conducting research activities with universities in order to obtain university or postgraduate degrees (such as PhD). With reference to technicians, since 2012 high specialisation technological schools (ITS) have been introduced. ITS aim at providing technical and technological competences specifically tailored to the industrial specialisation of the region. These schools provide a level of education equivalent to level 5 of the European Qualification Framework. Currently in Italy there are 86 ITS offering different programmes mainly within the STEM area. Preliminary analysis on the first waves of graduates show that these schools are very effective in providing the skills and competences required by the market and therefore offer good labour market prospects. ^[12]

Health-related occupations ^[13]

For the period 2015-2020 employment in the health sector is expected to increase at approx. 2% per year - well above the national average rate, which is below 1%. ^[14] This will drive the growth of all health-related occupations. The reasons underlying the expected shortages are twofold: on the one hand, the **ageing of the population** will bring an increase of all occupations that are associated with health and healthcare; and on the other hand, these occupations will be affected in the medium term (5 years) by massive **staff turnover** due to the age structure of the workforce. It is expected that in the medium term the turnover of medical doctors and nurses will be above 30%, mostly due to replacement demand. ^[15] It is unclear whether the expected demand will be met by an increase in supply or if there will be substantial shortages. The demand for health-related occupations in fact is largely determined by the State as hospitals and related institutions are predominantly public. This implies that wages are set centrally through national contracts and **do not reflect relative scarcities** (related to particular specialisations or regions) e.g. doctors have almost the same wage irrespective of their type of specialisation and place of work. Moreover, the number of students enrolled in medical degrees (medicine health-related degrees) and in subsequent graduate schools of medicine ^[16] is predetermined by the Ministry of Education and there is a risk that these numbers will not be determined according to the expected level of demand.

The government is currently designing a reform of the access to medical degrees and also to graduate schools. At this stage it is not clear which direction will be taken. The health system in Italy is funded under the regional budget and there are different types of approaches. Albeit predominantly public, in some regions there is a private health system which is on the same foot as the public one (private

hospitals receive a reimbursement from the state for treatments provided). In the private sector the market for health professionals is more flexible with wage premia and demand responding more adequately to shortages and skills needs. More flexibility should be introduced in the public health system allowing wages to reflect relative scarcities (related to particular specialisations or regions) and skill differentials. At national level, more thorough planning should be made in order to match the supply of young graduates with the expected trends in demand.

Teaching professionals ^[17]

The education sector is expected to experience a modest increase in employment in the medium term (below 1% per year in the period 2015-2020). However, there will be strong demand for teachers at various levels due to the **high number of retirements** that are occurring and are expected to continue in the next few years. Overall the expected staff turnover in the education sector will be approximately 20% in the next 5 years. ^[18] Similar problems arise in universities. On the one hand, the high level of retirements considerably reduced employment, on the other hand, the **austerity measures** implemented in Italy since the 2008 crisis froze public hiring at all levels. One of the reasons for shortages in the education sector is the inefficient territorial distribution of the supply of teachers. The **geographical mobility** of public sector employment is low due to:

1. the length and complexity of the transfer process; and
2. the fact that nominal wages are equalised across regions, which does not take into consideration territorial differences in costs of living e.g. real wages are lower in the Northern regions where shortages are highest.

Often shortages are only at local level but due to the low mobility of public sector employment, they tend to become structural. In 2015, the Italian government introduced a new centralised system for allocating teaching professionals which is expected to increase the efficiency of the allocation of teachers. The government is tackling the shortage by programming specific hiring plans. One was implemented in 2015, another is expected in 2016.

Marketing, design and creative professionals ^[19]

The development of new technologies and new communication tools has brought a drastic change in several occupations, for example: marketing sales and public relations professionals need to use more and more extensively the internet and social media; and architects, planners and designers need to adapt their products to new technologies (accessibility through different devices). For the latter occupation group, and in particular for architects, there is a **growing demand** for green competences as customers are increasingly concerned about environmental impact. The shortages in these cases relate more to **lack of skills** required by employers than to insufficient number of professionals. Demand is concentrated in specific occupations that require a combination of technical and creative skills which are not easy to find.

No specific policy actions have been implemented. At the same time remains a need to develop tools and instruments for updating skills and competences as technologies in this field evolve rapidly.

Surplus Occupations

Surpluses are present in almost all low skill occupations but are concentrated in three sectors:

1. *Construction*. This sector has lost more than 20% of the labour force since the beginning of the 2008 crisis ^[20] and employment is expected to remain flat in the next five years. This will affect the demand for specific occupations such as Painters, building structure cleaners and related trades workers ^[21], Building frame and related trades workers ^[22]; Wood treaters, cabinet-makers and related trades workers ^[23] and Sheet and structural metal workers, moulders and welders, and related workers.^[24]
2. *Tourism*. The tourism sector is expected to grow steadily with an increase in employment of about 0.5% per year in 2015-2020. ^[25] However, the skills and competences required within the sector are evolving fast and require new knowledge following the increasing use of new technologies, social media (e.g. Tripadvisor etc.) and the progressive internationalisation of the sector. Low skill occupations in the sector, for which surpluses are expected include: Food preparation assistants ^[26]; Domestic, hotel and office cleaners and helpers ^[27]; Waiters and bartenders ^[28]. Workers employed in these occupations face strong competition from foreign immigrants able to accept lower wages and hard working conditions.
3. *Traditional manufacturing*. As in the majority of EU countries, the manufacturing sector in Italy is experiencing a dramatic change in organisation of the production process. The introduction of new technologies, the automation of entire phases of production and the relocation of parts of the value chain abroad has significantly reduced employment demand. Machine operators and mobile plant operators ^[29] are the most affected occupations. Some sectors are particularly affected such as the textile and steel industries where employment is expected to shrink by approximately 1% per year between 2015 and 2020.

All surplus occupations are affected by the rapid transformation of production processes, particularly in manufacturing. This implies that the skills requirements of occupations are evolving e.g. even simple manual jobs now require a complex set of activities and the ability to use machines and computers. Therefore, the need for training in order to up-skill the labour supply and foster its employability is to be taken into consideration

At local (regional) level, several initiatives have been implemented to provide lifelong training for the employed. For the unemployed, specific training initiatives were also undertaken. Over the last 10 years the Italian regional governments have repeatedly reformed the apprenticeship contracts. Overall, these contracts account for approximately 15% of total employment. They foresee compulsory training by the firm which in turn receives a tax incentive if the apprenticeship contract turns into a standard employment contract. In general, apprenticeship programmes are successful in facilitating the transition from education to the labour market. ^[30]

Note on the methodology

The list has been compiled by Cedefop in the first half of 2016 combining quantitative and qualitative methods. In particular, a list of mismatch occupations was formulated following quantitative analysis of labour market indicators. Country experts were then asked to build on and scrutinise this list. Their expert assessment and knowledge of the country's labour market has provided rich insights about the reasons behind the skills shortages or surpluses at occupational level. These are also accompanied by measures and policies that aim to tackle such mismatches. Country's stakeholders have also been included in validating the final list of occupations.

Find here more [data](#) and [information](#) about Italy.

References

[1] Mathematicians, actuaries and statisticians (ISCO code 212), Software and applications developers and analysts (ISCO code 251), electrotechnology engineers in development of the so-called Industry 4.0 (ISCO code 215)

[2] Sistema Informativo Excelsior, Occupation forecasts 2015-2020.

[3] Sistema Informativo Excelsior. excelsior.unioncamere.net

[4] As above

[5] There is no aggregate data at national level. There is regional data, however, it is not entirely comparable. According to OECD education statistics, in Italy the share of graduates in mathematics and statistics is 1% well below the European average.

[6] Engineering professionals (excluding electrotechnology (ISCO 214); Physical and earth science professionals (ISCO 211).

[7] ISFOL. <http://professionioccupazione.isfol.it>

[8] There is no aggregate data at national level, there is regional data; however it is not entirely comparable.

[9] Almalaurea, Indagine sulle condizioni lavorative dei laureati www2.almalaurea.it/. See also the recent study by CEPS "How returns from tertiary education differ by field of study", WP 411, July 2015.

[10] Sistema Informativo Excelsior. <http://excelsior.unioncamere.net/>

[11] Almalaurea, Indagine sulle condizioni lavorative dei laureati www2.almalaurea.it/

[12] INDIRE: Istituto Nazionale Documentazione Innovazione Ricerca Educativa. Read more: www.indire.it

[13] We refer to skilled occupations such as Medical doctors (ISCO group 221), Other health professionals, (ISCO group 226), Life science professionals (ISCO group 213) as well as to skilled-technical occupations such as Other health associate professionals (ISCO group 325), Nursing and midwifery associate professionals (ISCO group 322)

[14] Sistema Informativo Excelsior, Occupation forecasts 2015-2020.

[15] ISFOeorkers oryhave been used to draft the PPAM.ISFOL.or Survey, from the Survey oach similar to the one followed by Cedefop ()camerL, INAPP: Public Policy Innovation <http://professionioccupazione.isfol.it> and Sistema Informativo Excelsior <http://excelsior.unioncamere.net/>

[16] The standard education pattern for doctors is first to take a degree in medicine (6 years) and subsequently to enrol in a postgraduate school choosing the type of specialisation (i.e. cardiology, internal medicine, surgery etc.)

[17] ISCO group 231, 235

[18] Sistema Informativo Excelsior, Occupation forecasts 2015-2020.eorkers oryhave been used to draft the PPAM.ISFOL.or Survey, from the Survey oach similar to the one followed by Cedefop ()camer

[19] ISCO group 243 and 216.

[20] Istat National Accounts.eorkers oryhave been used to draft the PPAM.ISFOL.or Survey, from the Survey oach similar to the one followed by Cedefop ()camer

[21] ISCO 713

[22] ISCO 711

[23] ISCO 752

[24] ISCO 721

[25] Istat National Accounts.eorkers oryhave been used to draft the PPAM.ISFOL.or Survey, from the Survey oach similar to the one followed by Cedefop ()camer

[26] ISCO 941

[27] ISCO 911

[28] ISCO 513

[29] ISCO 815, 818, 834.

[30] ISCO 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

[30] ISFOL, XV rapporto sull'apprendistato, 2015 workers oryhave been used to draft the PPAM.ISFOL.or Survey, from the Survey oach similar to the one followed by Cedefop ()camer

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