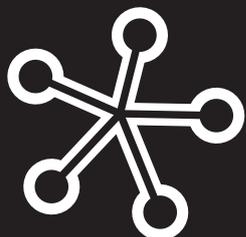




# Skills and occupational needs: labour market forecasting systems in Italy

*Giovanni Castiglioni & Kea Tijdens*



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Algemeen contact: [aias@uva.nl](mailto:aias@uva.nl)

Contactinformatie: Dr. Kea Tijdens, Amsterdams Instituut voor ArbeidsStudies (AIAS), Universiteit van Amsterdam, P.O. Box 94025, 1090 GA Amsterdam, 020-5254199, [K.G.Tijdens@uva.nl](mailto:K.G.Tijdens@uva.nl)

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# **Skills and occupational needs: labour market forecasting systems in Italy**

**Giovanni Castiglioni**

*Università Cattolica of Milano  
Italy*

**Kea Tijdens**

*University of Amsterdam  
Netherlands*



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# Abstract

The development of forecasting systems for occupational needs represents, for different actors, such as enterprises, employers' associations, trade unions, an opportunity to receive information and to anticipate labour market trends. Also, this information could be used to develop an effective vocational and educational training system aimed to guarantee more employability, to address labour policies and manage industrial relations. Starting from this theoretical framework, the paper aims to give an overview of the initiatives carried out in Italy to collect information on skill projections and the needs of the labour market through a deepening of the main surveys and initiatives for occupational needs analysis and labour market forecasting adopted in the Italian context from the 1980s until today.

Also, because of the lack of reviews of labour market forecasting methodologies, the goal of this working paper will be to offer an illustration of the approaches and research techniques that have been adopted in the Italian context on the side of labour supply (*The Italian Occupational Information System promoted by ISFOL and ISTAT and connected to the other public institutions*) and on the side of labour demand (*Excelsior survey conducted by the Italian Union of the Chambers of Commerce – Unioncamere*).

All the information is now available at the website <http://professionioccupazione.isfol.it> 'Occupations, employment and labour market needs' [Professioni, occupazione, fabbisogni]<sup>1</sup> which hosts data on labour market information and surveys carried out by various institutes. The paper also focuses on the techniques used to measure occupations and on the classifications and nomenclatures provided to classify work activities in Italy.

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1 In Italian, in common language, the terms occupation (occupazione) and profession (professione) are considered synonymous. In this connection we should make a linguistic clarification. If indeed the word 'profession' in English refers to a job that needs a high level of education and training, in Italian the term 'professione' does not. At the same time, in Italian, the same word is used for the terms 'employment' and 'occupation'.

e.g.:

Employment rate: Tasso di occupazione

Classification of occupations: Classificazione delle occupazioni

We therefore decided to translate the term 'professione' with 'occupation'. The web-portal 'Professioni, occupazione, fabbisogni' has been translated as follows 'Occupation, employment, (labour market) needs' in order to make the text more comprehensible and to avoid any doubt concerning the meaning of the words.



# 1 Introduction: defining skills and occupational needs

From a sociological point of view the analysis of skills and occupational needs can be defined as a process of social research intended as a set of activities and resources which, when appropriately coordinated, allows to collect information on labour market trends. The different methods of analyses of occupational needs can be considered mainly as social research activities: they require interaction and communication among a plurality of actors, such as researchers, policy makers, institutions (Censis, F.a.r.o. Lab, 2011). Besides, the analysis of occupational needs use tools and techniques for collecting data and their interpretations that are typical of the social research such as questionnaire, data analysis, focus groups, Delphi and scenario studies. According to Isfol<sup>2</sup> (2005), the analysis of occupational needs is a research activity aimed to make labour market needs clearer (from the perspective of labour demand) with regard to occupations and/or jobholders' characteristics (such as skills).

Analyses of occupational needs are characterized by anticipatory and predictive connotations that are collocated during the formulation of the policies by process programmers. The objective is to provide information about labour market needs both at quantitative (employment projections) and qualitative levels (characteristics and skills required) allowing for identification of the vacancies and skills gap (skills shortages) with the mismatches between skills demanded and supplied included. Consequently anticipating labour market trends is a fundamental activity for increasing the efficiency of the match between labour demand and supply, with the aim of developing and planning vocational education and training policies to ensure more employability.

In recent decades, most of the advanced economies have set up systems for the analysis of occupational and skills needs. Several national systems have developed and implemented different approaches and methodologies in order to provide preventive information and anticipation of labour market trends (Gasparre, 2012). Thus the debate and the deepening concern about various initiatives, methodologies and approaches adopted by European countries have increased in recent years. While it is generally accepted that in a market economy it is not possible to predict the future precisely, the need to make strategic plans and choices which can influence and shape the future path taken by the economy and labour market is widely accepted (Cedefop, 2008a).

2 **Isfol** (Institute for Development and Vocational Training of Workers) works in vocational training and social and employment policies domain. Its aim is to contribute to employment growth, improvement in HR, social inclusion and local development. It is subject to the supervision of the Ministry of Labour and Social Policies and it works to support the competences of the State, Regions and Autonomous Provinces ([www.isfol.it/](http://www.isfol.it/)).

The *Lisbon Strategy* and the *New Skills for New Jobs* initiative (2008) stressed the need for Europe to place more emphasis on anticipating changing skill needs. This was confirmed by the initiative *New Skills and Jobs* (2010) which was part of EU's overall *Europe 2020* strategy: "A European Strategy for smart, sustainable and inclusive growth". Accordingly, Cedefop<sup>3</sup> and several European countries developed *labour market intelligence information* (LMII) on current and future occupational needs. Both at the European level and in the *OECD Skills Strategy* the aim is that these analyses are also articulated at the sectoral level with the active participation of the social actors and training institutions in order to adapt training systems to labour market demand (Bulgarelli, 2011).

To sum up, all these initiatives and surveys have the opportunity to play a strategic role in the support of national training and employment policies. According to Cedefop (2008a), a range of approaches for assessing future skill needs is required. These need to encompass both quantitative and qualitative methods and serve a range of audiences. The anticipation of labour market trends and projections of occupational needs can offer useful information to different types of actors: individuals who are looking for a job, enterprises, employers' associations, trade unions, employment agencies, public institutions, policy-makers, stakeholders and social partners.

This paper details the main approaches and research techniques concerning the forecasting systems for occupational needs which are utilised in Italy. Section 2 explains the methodology and the criteria that have been used in order to analyse the research carried out by institutes and labour market observatories. Section 3, after a historical introduction, focuses on the Italian Occupational Information System and its evolution. Section 4 outlines the main Italian survey of the occupational and training needs of companies. Section 5 presents the final results and draws the main conclusions.

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3 **Cedefop** (European Centre for the Development of Vocational Training), founded in 1975 and based in Greece since 1995, supports development of European vocational education and training (VET) policies and contributes to their implementation ([www.cedefop.europa.eu](http://www.cedefop.europa.eu)).

## 2 Methodology

The research consisted of an evaluation of forecasting systems in Italy through the analysis of the methodologies carried out by institutes and labour market observatories. In order to evaluate the different employment forecasting systems, the following criteria have been used:

- the analysis of the realization and the implementation of different employment forecasting systems;
- how different institutions have developed responses and approaches to the same issues (anticipation of labour market trends and preventing skill mismatches);
- the methodologies that have been adopted by different institutes;
- how the data and information has been collected;
- what kind of classifications of occupations has been used.

Before proceeding to the analysis of the various initiatives a scheme was carried out that contains information concerning:

- the institutes involved;
- the objectives of the surveys;
- the classifications of occupations adopted;
- the methods, research designs and sample designs;
- the questionnaires and surveys;
- the results and findings of different research.

The working paper intends to focus on the process of construction, development and implementation of systems for the analysis of occupational needs in Italy, offering an overview of the approaches and research techniques that have been carried out in the Italian context.



## 3 From a National system of permanent observation of training and occupational needs to the Informative system 'Occupations, employment, labour market needs'

### 3.1 The main surveys and initiatives for occupational needs analysis and labour market forecasting adopted in Italy (1993-2006)

Since the 1980s, the need to define active education and training policies that would be able to cope with the demands of the labour market has become stronger in Italy. In particular, the initial surveys of employment needs (1993-2006) in the Italian context have developed along two lines which are not properly connected to each other: the first one is related to labour market needs and the second is concerned with labour demand and its characteristics (Marcaletti, 2006). From 1993 and then through the Pact on Labour of September 1996, ad hoc surveys were conducted in order to detect the skills needed for a great number of initiatives. Towards the end of the nineties, the Ministry of Labour financed surveys that were carried out by the social partners organised in bilateral bodies [Organismi bilaterali].

The aim of Central Government was to create the basis for a continuous and updated national survey system for the vocational and training needs in order to support Government planning and policies aimed at improving employment and employability. With the assistance of the European Social Fund (2000-2006), initiatives have proceeded in three ways:

- 1) Between 2000-2006 continuing surveys were led by bilateral organizations;
- 2) Some local, territorial and regional surveys experiences were still being carried out;
- 3) A technical committee [Cabina di Regia] was activated with the responsibility of addressing and coordinating all the initiatives in the field of early identification of future skills needs.

During this period the Ministry of Labour and Social Policies also promoted the *National system of permanent observation of training and occupational needs* (see next paragraph). This project, which was included in the programme of the European Social Fund 2000-2006, was implemented by ISFOL. The aim was to create

a web interface which was designed to offer a flow of qualitative, quantitative and forecasting information about the needs expressed by the economic system towards an educational system in order to provide support for the training system for the identification and development of the aspects which are useful for planning the measures required to update the training supply (Gatti, 2004; Cedefop 2008b). Subsequently the Ministry of Labour created a Steering Committee, established by ministerial decree, to enhance the system. This body was composed of representatives of the Ministry of Labour, the regional Authorities, Social Partners, Unioncamere<sup>4</sup> and ISFOL.

### 3.2 Towards an integrated system (2006 – onwards)

As mentioned in the previous paragraph, approximately ten years ago, in order to implement the surveys on vocational and training needs, the Ministry of Labour and Social Policies instructed ISFOL to arrange for national long-term observation of occupational needs, partly to hold together and bring coherence to the results of the research which had been carried out until then.

ISFOL therefore worked towards a *National system of permanent observation of training and occupational needs* in order to organise the surveys and analysis which aimed to identify the occupational and training needs of the workforce and focus on the qualitative aspects of forecasting labour market changes, providing information about skills and training needs and also identifying short and medium-term job forecasts.

The main objective was in particular to design and calibrate a change of perspective in investigations aimed at identifying the occupational and training needs of the workforce, with a focus on analysis of the qualitative aspects and the construction of logical forecasting and anticipating changes in the labour market.

---

4 Founded in 1901, **Unioncamere** is an Italian public entity with the duty of representing and caring for the general interests of the Italian Chambers of Commerce, in any relationship, from the local level to the international level, including those with business, workers and consumers associations. At the European level, Unioncamere represents the Italian Chambers of Commerce at Eurochambers, the association of all European Chambers systems (<http://www.unioncamere.gov.it>)

The *National system of permanent observation of training and occupational needs* is now available on the website <http://professionioccupazione.isfol.it> ‘Occupations, employment, labour market needs’. Its goal is to support the actions undertaken by labour market actors to prevent skill mismatches, based on:

- A detailed classification of occupations;
- A taxonomy that describes individual occupations through various dimensions (knowledge, skills, work conditions, work activities) and that explores the occupational sphere of every worker, in each context of economic productivity;
- The opportunity to make occupations ‘mutually comparable’ using variables and descriptors;
- The increasing propensity towards employment predictions concerning the occupations, both from a qualitative and quantitative point of view (Mereu, Franceschetti, 2013).

The structure of *National system of permanent observation of training and occupational needs* has been rebuilt by ISFOL, basing the Informative System ‘Occupations, employment, labour market needs’ on a new classification of occupations: the NUP - Nomenclature of Occupational Units<sup>5</sup> (see Appendix 1). It represents an innovation in the field of labour market policies and training and it aims to include an increasing number of institutions and organisations, both at national and local level, in the future. Through the use of NUP, the system is based on the opportunity to share information about occupations. The information system then tracks the open web pathways that allow a visitor to see and explore data about different occupations (*ibidem*).

### 3.3 The structure of the system ‘Occupations, employment, labour market needs’

The web site <http://professionioccupazione.isfol.it> hosts data on labour market information and surveys carried out by different institutes and from other sources. The structure of the system ‘Occupations, employment and labour market needs’ is found in the information organised through the Classification of Occupations (CP-2011) and on the Classification of Economic Activities (ATECO) (see Appendix 2, 3, 4). The data and information hosted in the system refers to:

- Characteristics of jobs and evolutionary aspects of occupational tasks;
- Forecasts of trends in the economy and the employment sector in the coming years;
- Employment by occupation and medium-term forecasts at the national and regional level.

5 NUP code is the communication protocol used to link a wide range of data and information from the labour market and education, all related to individual occupations.

### 3.3.1 Aims and objectives

The system is a general resource for increasing information to all labour market stakeholders. Its main aim is to understand the nature and the evolution of the labour market trends involved in the definition of labour policies concerning the organisational development of human resources.

### 3.3.2 The institutes involved and the different surveys

The Informative System available on <http://professionioccupazione.isfol.it> is part of the Informative Integrated System of Occupations accordingly promoted by ISFOL and ISTAT<sup>6</sup>. The system is built on the basis of the research, data and evidence from several institutions.

### 3.3.3 Italian Sample Survey of Occupations: aims, objectives and research design

On behalf of the Ministry of Labour, ISFOL, in collaboration with ISTAT, is involved in developing research and insights into the classification of job holder characteristics in Italy. The first step in the collaboration between ISFOL and ISTAT was launched in 2004 and was focused on the implementation of the NUP. Through the implementation of the NUP several goals were achieved, including:

- The preparation of a manual for classifying occupations;
- The construction of a system for cataloguing and describing occupations.

The survey is one of several initiatives to implement and increase the ‘Occupations, employment, labour market needs’ system. The aim of the survey is the representation of the characteristics of occupational units related to workers, jobs and the working environment. The set of descriptions of occupational units provides a panorama of the world of work in Italy. The conceptual model of reference for the survey and questionnaires is based on *Occupational Information Network* O\*Net ([online.onetcenter.org](http://online.onetcenter.org)). The Italian version uses the tools from the O\*Net Survey, harmonising it from a linguistic point of view (see Appendix 5).

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<sup>6</sup> The Italian National Institute of Statistics is a public research organisation. It has been present in Italy since 1926, and is the main producer of official statistics in the service of citizens and policy-makers. It operates in complete independence and continuous interaction with the academic and scientific communities. Since 1989 Istat has been performing the role of directing, coordinating, and providing technical assistance and training within the National Statistical System (Sistan). The System was established under Legislative Decree 322/89 in order to rationalise the production and publication of information and to optimise resources allocated to official statistics (<http://www.istat.it>).

The first edition of the survey was completed in 2007. The second edition (2012) has been finalised, and is in close continuity with the previous one in order to reach the following objectives:

- Update the information and data collected from the first edition of the survey;
- Increase the descriptive content of each NUP;
- Describe new Occupational Units (those provided by the CP-2011 in the wake of Isco-08).

The survey questionnaire, structured in 10 sections, was conducted with a sample of 20 workers for each of the 800 units, for a total of approximately 16.000 interviews. The survey provides a mixed strategy for the selection of the sample. The procedures for selecting the names of the workers to be interviewed, in fact, vary depending on the work context. In particular, three different types can be identified:

- Enterprises (occupations/workers in enterprises);
- Institutions (occupations/workers in institutions);
- Self-employed.

The research was carried out in order to identify information concerning occupations:

- Skill level;
- Skill specialization;
- Attitudes to work;
- Work values and work styles;
- Generalised work activities;
- Work context and specific/detailed work activities.

### **3.3.4 Methodology and sample design of Isfol-Istat survey**

The interviews were conducted using the face-to-face methodology (CAPI technique). The construction of the sample follows a mixed strategy. The extraction procedures of the names of the workers to interviews vary in function of the context in which the several occupations are carried out. Based on the U.S. O\*Net Survey methodological model, it aimed to measure the importance and complexity of variables necessary to perform each occupation/job.

The results of last edition are available on <http://professionioccupazione.isfol.it/>.

## 3.4 ISFOL

In addition to the Sample Survey of Occupations, ISFOL manages other studies and research. The main initiatives realised by ISFOL are presented in the following paragraphs.

### 3.4.1 Permanent audit of occupational needs

The Permanent audit of occupational needs research has been designed as an annual survey. The first was conducted in 2012. The sample includes 35.000 enterprises selected by size, sector and geographic area. The survey aims to collect information about the workforce's skills and knowledge needs.

### 3.4.2 Medium-term forecast studies

ISFOL carries out the following studies concerning employment projections (see Appendix 7):

- *Employment by occupation and medium-term forecasts at the national and regional level* [Occupazione per professioni e previsioni di medio termine a livello nazionale e regionale]

Quantitative forecast studies of mid-term recruitment needs (5 years) are conducted at both national and regional level using a model based on the E3ME Model (Energy-Environment-Economy Model of Europe). The projections are developed through the use of econometric techniques (multi-sector models derived from E3ME for economic development and employment) and mathematical projections with fixed coefficients and variables, in order to study the performance and trends of the occupations.

- *Forecasting trends on economical and sectoral occupation of next years* [Previsioni sugli andamenti dell'economia e dell'occupazione settoriale nei prossimi anni]

Studies and research are conducted in order to anticipate medium-term sector skills needs using scenario-based methodologies.

The qualitative results are referred to the Occupational Units prefiguring:

- New and renewed tasks;
- Competencies relevant in the future;
- Trends on a five year horizon concerning knowledge and 10 most important skills for performing the occupation/job as gathered from the survey;
- Suggestions for the educational systems (Cedefop, 2008b).

A first foresight exercise was undertaken in the Tourism sector (2009-2010). A second foresight concerned textiles, garments and footwear.

## 3.5 ISTAT

ISTAT provides two kinds of information for the system:

- The first involves the logic process through which occupations are organised in the system, and the position of each Occupational Unit (UP) in the Classification of Occupations 2011 (CP-2011);
- The second includes quantitative cross sectional data and the characteristics of the employers related to each UP who they belong: the data is collected by the Labour Force Survey<sup>7</sup>.

## 3.6 Excelsior

As we will observe in the next chapter, Excelsior, led by Unioncamere, carries out an enterprises and recruitment forecast survey. The results of the survey are directly linked to the website <http://professioni-occupazione.isfol.it/>.

## 3.7 INAIL

The National Institute for Insurance against Accidents at Work collects data, on an administrative basis, on accidents and occupational diseases. This is organised by occupational class and then encoded according to the Classification of Occupations CP-2011 and the subsequent Nomenclature of Occupational Units including different variables such as territorial distributions, age and gender.

## 3.8 Ministry of Labour and Social Policies

The Ministry of Labour and Social Policies matches the results of the job research procedures between workers and companies that are on the public web portal <http://www.cliclavoro.it>.<sup>8</sup> In the Ministry of Labour system, occupations available for labour supply are not identified through the

<sup>7</sup> The Italian Labour Force Survey (Lfs) is a continuous survey which is carried out in every week of a year. Each quarter, the Lfs collects information on almost 70.000 households in 1.246 Italian municipalities for a total of 175.000 individuals (representing 1.2% of the overall Italian population). The reference population of the Lfs consists of all the household members who are officially resident in Italy, even if they are temporarily abroad. Members of households who are registered as being resident in Italy but who habitually live abroad and are permanent members of collective facilities (hospices, children's homes, religious institutions, barracks, etc.) are excluded. The Lfs provides quarterly estimates of the main aggregates of the labour market (employment status, type of work, work experience, job search, etc.), disaggregated by gender, age and territory (up to regional detail).

<sup>8</sup> Cliclavoro webportal is a meeting place for the general public, companies and operators (public and private) where they can interact, talk and find out about everything that's happening in their area of work. It is a proper network for job seeking and the world of employment where users log in to a database of information and services for work available in Italy, aiming to highlight employment opportunities, in order to facilitate a clear match between labour and the demand for simplified bureaucracy and legislation. Cliclavoro in fact collates job opportunities on the web, with a series of certified websites concerning recruiting of human resources. Jobs are directly posted by users on the portal (after registration).

Occupational Unit but using common language to identify the occupation.

The aim of the portal is to:

- Ensure the flow of information between all institutions and individuals involved in the ‘work system’;
- Provide effective management and integrated services that are not the sole responsibility of regional level;
- Promote real mobility of workers across the country;
- Offer integrated services to workers and employers (Mereu, Scarnera, 2011).

### **3.9 Professional associations and administrative sources of information of occupations**

The aim is to gather information related to occupations that belong to professional associations (which correspond to approximately 70 Occupational Units). The data is available through administrative databases, professional association databases or specific sectors of public administration.

### **3.10 Ministry of Education, University and Research**

A collaboration has been carried with the Ministry of Education, University and Research, with concrete results in terms of identifying the career opportunities of university courses of first and second levels, and system pathways of upper secondary education. In particular have been connected the curricula of individual paths to both Occupational Units referred to labour market and general information on school curricula identified through Sample Survey of Occupations.

### **3.11 Regional experiences**

The Region Basilicata is the first region that took part in the system: in turn, it gives information about training and occupational development through analytical cards on scheduled courses related to vocational training. Other regional governments are joining the system (e.g. Region Liguria), or are considering this opportunity.

### 3.12 Similarities and differences between the Italian Integrated System of Occupations and O\*Net Model

As has been shown in the preceding paragraphs, the Italian Occupational System – the only example in Europe – is based on the U.S. O\*Net Model. One critical issue that characterizes the U.S. O\*Net Model is its high non-response rate (60%), which has a major impact on the reliability of the data collected as a consequence of the fact that the questionnaire is sent via mail or via the web. To cope with this critical problem, the Italian survey of occupations is specifically provided for the administration of the questionnaire by trained interviewers. For this reason it was decided to ask the employer to conduct the interview during working hours. The ISFOL-ISTAT survey involved conducting interviews through the Capi method (Gallo, Lorè, 2006).

The Italian research design also differs from U.S. research design in another way. In the United States survey information is collected using a two-stage design in which:

- a statistically random sample of businesses expected to employ workers in the targeted occupations will be identified; and
- a random sample of workers in those occupations within those businesses will be selected. New data will be collected by surveying job incumbents using standardized questionnaires (<http://www.onet-center.org/dataCollection.html>).

Thus the U.S. questionnaires content models are not administered in their entirety to all workers sampled for a given occupation. In fact, U.S. workers have several different components of the information provided with respect to their given occupations. The ISTAT-ISFOL survey was instead given a questionnaire and including a contents model for all the workers in different occupations.

### 3.13 Strengths, weaknesses and research perspectives of the Integrated System of Occupations

As has been previously explained, the National system was adopted in the late nineties when the Ministry of Labour, the regional Authorities and Social Partners signed an agreement which provided for the construction of a permanent and upgradeable structured system. The main aim was to build a system to support the national policies of reconciliation between the systems of work and educational campaigns and the results of the first national survey of occupational needs conducted by the *National Bilateral Body for Training* (OBNF), consisting of the Confindustria<sup>9</sup> and CGIL-CISL-UIL<sup>10</sup>, and by the *National Bilateral Body of*

<sup>9</sup> **Confindustria** is the main Italian employers' federation.

<sup>10</sup> Italian Trade Unions Confederation: it is composed by the three main trade unions.

*Crafts* (EBNA) consisting of the CGIL-CISL-UIL and Unioncamere<sup>11</sup> confederations.

The strength of the National Occupational System is mainly represented by the variety of information sources it uses and by the key role of the different institutions in providing reliable information flows.

The analyses carried out into occupational needs at a national level in the course of the nineties, generally revealed a number of weaknesses:

- The lack of homogeneity of the objectives and methodological approaches adopted in the research conducted at both the local and national level;
- A certain incoherence in the qualitative data relating employment needs to the classification of occupations (with regard to the necessity of collecting and sorting the information involved in quantitative estimates);
- The partiality of the economic sectors involved in research and the limited impact of the surveys on the same training policies;
- The weak predictive ability shown by the companies, which tended to express the occupational needs only when they had already been revealed (open vacancies) showing difficulties to anticipate their needs (Marcaletti, 2006).

In many of the experiences in the more recent past, the analysis of occupational needs was limited to examining the changes or contingent needs of the labour market, rather than forming a response to medium-term objectives. A recurring feature of the results of most surveys of employment needs conducted over the past twenty years has revealed the need to match the description of a job profile with a wide range of repertoires of occupations. This did not give a true indication of occupational needs (Mereu, Franceschetti, 2013).

In order to overcome these shortcomings and weaknesses, surveys were used that gathered qualitative data concerning occupations by taking various different aspects into account including the job holders' characteristics. The Italian Integrated System of Occupations thus sought to develop surveys of anticipatory employment requirements which should have offered unprecedented opportunities for identifying guidelines and providing information necessary to the actors involved in the regulation of the labour market.

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11 At the end of the nineties national surveys were funded by seven bilateral organisations:  
Agriform (Agriculture): representatives of the farming sector, covering seven traditional farming sectors;  
Ebnt (Tourism): representatives of tourism companies;  
Mastermedia (Ict): representatives of the information and communication industries;  
Chirone 2000 (Transportation): representatives of the transportation and related services;  
Enfea (Medium and small enterprises): representatives of small and medium enterprises, covering five manufacturing sectors;  
Enbicredito (Banks): representatives of banks;  
Coop-Form (Food chains and distributions and social services) representatives of the cooperatives, covering three cooperative sectors.

This represents a recently built employment system organised in a structured and systemic way, which places some emphasis on predicting and anticipating the changes in the labour market, both from a quantitative point of view (the statistics of occupations) and the qualitative point of view (for example, the knowledge and skills of occupations).



## 4 Forecasting of labour market demand needs: the Excelsior survey

### 4.1 Introduction

The Excelsior survey is conducted by the Italian Union of the Chambers of Commerce (Unioncamere) and is funded by the Ministry of Labour (through the European Social Fund). This survey is part of the official statistics which are produced on an annual basis for the Italian National Statistical System (SISTAN)<sup>12</sup> and is considered to be one of its most extensive surveys.

### 4.2 The survey

This survey represents the most exhaustive source of information available in Italy concerning the professional and training needs of companies. Excelsior is an Information System that provides forecasts for labour market trends and the needs of enterprises with regard to the characteristics of labour demand in the country.

Every year (since 1997), the survey has investigated the number of employees that the enterprises plan to recruit during the year (Annual survey) and over the next three months. During the quarterly surveys Excelsior investigates the corresponding results for the following quarter. The survey covers a sample of over 100.000 private enterprises operating in Italy (180.000 private enterprises for quarterly survey) providing detailed information.

The data collected (updated annually) are available to users and contain a range of information on labour demand in Italy and on the main characteristics (such as age, educational level, type of contract, work experience, difficulty in recruiting specific profiles, need for further training, etc..) of the occupational needs required.

### 4.3 Aims and objectives of the survey

The basic goal of the consolidated Excelsior project was to build up a system to gather information in

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12 **Sistan** is made up of Istat, central and branch statistical departments of Public Administrations, of local and regional bodies, Chambers of Commerce, other public bodies and administrations providing statistical information ([www.sistan.it](http://www.sistan.it)).

order to support companies, institutional decision-makers in the field of education and training policies. From this perspective the Sistema Informativo Excelsior can quantify occupational needs in the short and medium-term in 105 Italian provinces. The data are disaggregated by the size and economic activity of each enterprise.

## 4.4 The methodological approach and the observation field of the sample design

The questionnaire is administered to the companies with the goal of detailing the characteristics of the occupational and educational needs concerning the multiple dimensions which are descriptive of professional profiles.

The survey uses two different methods:

- the first, for enterprises with up to 250 employees, is based on telephone interviews (following the CATI - Computer Assisted Telephone Interview - methodology);
- the second, for enterprises with more than 250 employees, is based on direct interviews or filling in questionnaires (aided by the statistical offices of the Chambers of Commerce). This method is used to interview the entire population of enterprises of this size operating in Italy.

The Excelsior Information System is based on data collected through an annual sample survey conducted on about 100.000 Italian enterprises, corresponding to about 8% of the total Italian enterprises having at least one employee. The interviews from last survey were carried out between 28 January and 23 May 2013.

The universe of the survey is derived from the Business Register and is supplemented by data from other sources (particularly INPS and ISTAT).

The observation field does not cover:

- Operative units in public administration;
- Public enterprises in the health sector;
- Public educational units in primary and secondary schools;
- Public university units;
- Other no-profit organizations.

On the contrary, the observation field listed the number of companies enrolled in the Business Register on 31.12.2010 as 860.000 operating in agriculture and 5.250.000 in industry and services. Although they are not required to be entered in the Register of Companies, these companies have also been considered for the survey with regard to the occupational work activities for which there is a requirement to register for professional bodies. These are considered if they have at least one employee.<sup>13</sup>

<sup>13</sup> For more information: <http://excelsior.unioncamere.net/en/>

## 4.5 Strengths, weaknesses and research perspectives of the Excelsior Survey

The questionnaire, which is proposed to be sent to various enterprises, is designed to collect a wide range of information, including data about enterprises' stock of employees at the end of the previous year, the changes expected during the year being referred to, the characteristics of the job profiles the enterprise expects to employ during the year and, for those enterprises that do not intend to recruit employees, the reasons for this behaviour. The strengths and weaknesses of the Excelsior survey concern, at the same time, the horizon and the goal that the survey aims to study. The forecast starts from the idea to a company that has a well-defined time: this idea is built into the provision itself.

Therefore, information on the members of specific occupations that companies plan to hire during the year can be estimated. The survey consequently focuses on the hiring intentions of enterprises, thereby exposing a number of limitations. This is a consequence of the existence of a logical gap between intention and action. In recent years, as a result of the economic crisis, the forecasting ability of enterprises has become increasingly limited. However, the Excelsior Information System remains a unique tool to make estimates from the point of view of quantity in the Italian context concerning labour demand.

The usual annual and quarterly findings are aimed at grasping employment trends in the short term. The Excelsior Information System combines a forecasting exercise with the goal of identifying trends in medium to long-term labour demand in Italy, both at the sectoral and the territorial levels. Excelsior is an enterprise survey, but can also be considered a skill survey (in part relating to its recognition of competences). In fact, those behind Excelsior intend, alongside its usual annual medium-term survey, to launch a projection exercise that will allow them to replicate the 'European methodology' (in the wake of the European skill survey of Cedefop) on a national scale, with a more significant level of detail and accuracy. Excelsior has also the goal of creating a model designed to predict the evolution of the labour demand in Italy from 2013 to 2017, focusing on economic sector, occupation, and levels as its main fields of study.

The field of observation of the first phase of the determination of the requirements of employment by economic sector (estimate of the stock of employment to 2017) includes elements of the private sector (with regard to its dependent and independent components). Elements of the public sector, including agriculture and fisheries, are excluded from the later stages model, although future developments are intended to encompass them.

As reported on the Excelsior website ([excelsior.unioncamere.net](http://excelsior.unioncamere.net)), the projections have been calculated with reference to the following steps:

- Estimation of various economic scenarios up to 2017 (based on forecasts made by the International Monetary Fund on July 2012).
- Estimation of the changes in employment, considering the number of employees and self-employed workers in each sector (expansion demand and out-flows of workers). The out-flows of workers considered are those that derive from retirement or death, which may entail a replacement demand
- Estimation of the total demand of workers in each sector: the in-flows correspond to the expansion demand plus the replacement demand. The replacement demand takes into account:
  - the replacement of workers due to retirement or death;
  - the turnover of workers across enterprises;
  - the renewal of fixed-term and seasonal contracts.

These estimates are based mainly on the time series of the Excelsior surveys.

- Breakdown of the total demand by occupation and level/field of education based on the time series of the Excelsior surveys.

## 5 Conclusions and research perspectives

In line with the objectives of the research, this working paper shows that the Italian context offers an array of methodologies that differ in approach and methods but also suggests that particular attention needs to be paid to understanding future labour market trends and occupational needs.

Tracing the history of occupational needs analysis systems adopted in Italy, Mereu and Franceschetti (2013) reveal some weaknesses that have specifically characterized the first phase, such as:

- the absence of a common reference for the description of the work that has led to significant difficulties in comparability of the observations;
- the impossibility of connection/comparison of the results obtained with quantitative data on the labour market and occupations reported by official statistics; and
- the reduced width of the field of view with respect to which research data and information concerns occupational needs.

In many of the experiences in the more recent past, the needs analyses were in fact limited to analysing the changes/contingent needs of the labour market, not necessarily responding to medium-term objectives (*ibidem*).

A recurring feature of the results of most surveys on employment needs conducted over the past twenty years has indeed marked the employment need to match the description of the job profile, mainly producing a wide range of occupation repertoires, but not a true indication with regard to occupational needs.

At the same time, the Italian system has presented some weaknesses, such as the lack of a strategic background, the absence of a 'strong' role in directing, the difficulty of establishing a connection between the qualitative observation of skills requirements and quantitative analysis, the lack of systematization and the sharing of different surveys that were conducted locally and nationally (Marcaletti, 2006).

In recent years stronger measures have been adopted in order to integrate regional and national analysis, but some difficulties have emerged in relation to attempts to create a heterogeneous system based on several initiatives. More efforts are required to strengthen their effectiveness in order to join national and regional strategies and programmes (Gasparre, 2012). This means that local initiative measures aim to be integrated with the central system of 'Occupations, employment, labour market needs'. The expectation is that the main institutions that manage the system at the national level (ISFOL with ISTAT and Unioncamere) will continue to maintain a relationship and dialogue with each other and also with the various programmes for

the analysis of employment needs at the local level, in order to implement and merge data and information as the system develops the opportunity to analyse data in a comparative way.

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## Appendix 1 – Nup and Up<sup>14</sup>

The Nomenclature of Occupational Units [NUP – Nomenclatura delle Unità Professionali] is the classification that allows navigation under the section “Jobs/Occupations” in the website <http://professionioccupazione.isfol.it> and it represents an advancement of the ISTAT Classification of occupations of 2001 through the introduction of a fifth level (fifth digit) in the classification tree. The most recent classification of occupations in Italy was introduced in 2011 and it is based on the international classification Isco-08.

The NUP forms the basis of reference used to detect occupations in the labour market and to describe its content. The NUP is therefore a general mode of work activities content. The NUP, in addition to increasing the depth of detail with the fifth digit, has introduced a descriptive component of the occupations for each level of the classification (thus starting from the first to the fifth digit).

The Occupational Units [UP – Unità Professionali] represent the highest level of detail of the classification (fifth level, the fifth digit). The Occupational Unit, in particular, is understood as a set of homogeneous occupations with respect to knowledge, skills, abilities, and work activities. The description of each Up provides a representation of the average structure of the occupations in Italy (source: Italian Sample Survey of Occupations). This representation, in addition, is also the tool with which to read the difference between what is available and what is lacking in terms of occupational skills in the Italian productive system (source: Permanent audit of occupational needs).

Each UP is described in the light of three main lines (peculiarities of the work, the features that the worker must possess in order to optimize the performance, the peculiarity of work contexts). The descriptive variables (numbering over 400) are the same for all the UPs and are significantly related to the following information sections: knowledge, skills, attitudes, values, work styles, generalized work activities, work conditions, tasks and activities. Each variable is measured by the level of importance in the performance of work covered, the level of complexity in which the same is used or the frequency of its use.

Each UP includes within it some occupational descriptions that do not constitute an exhaustive list of occupations in the Italian labour market, but they are reported to direct and facilitate the user in the early stages of consultation and research on the website <http://professionioccupazione.isfol.it>.

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<sup>14</sup> Source: <http://professionioccupazione.isfol.it>

## Appendix 2 – Italian classification of occupations (1)

At the beginning of 2011 the new release of the Italian classification of occupations – the national implementation of ISCO-08 – came into force. The ISTAT classification CP-2011 provides a tool to bring all existing occupations in the labour market in order to communicate, disseminate and exchange statistical and administrative data of occupations in a way that is internationally comparable.

‘Occupation’ is the subject of the classification: it is defined as a set of work activities actually carried out by individuals that refer to individual knowledge, skills, identity and its statutes. The logic used to aggregate different occupations within the same grouping is based on the concept of ‘skill’, with regard to its dual dimension of the level and the range of skills required for the practice of the occupation.

The level of ‘skill’ is defined in terms of complexity, the extension of the tasks performed and the level of responsibility and decision-making autonomy that characterizes the occupation. The skill field shows, however, differences in economic sectors; in the disciplines of knowledge applied, the equipment and materials used, in the type of goods produced or services provided within the occupation.

The new Italian classification (CP-2011) has five levels instead of four (CP-2001). Moreover, it has only nine major groups and a different number of categories for each level. The criteria ‘skill’ defines a classification system structured on 5 levels of aggregation hierarchy:

- The first level of maximum synthesis, 9 Major Groups [Grandi gruppi]: 1-digit
- The second level, including 37 Groups [Gruppi]: 2-digit
- The third level, 129 Classes [Classi]: 3-digit
- The fourth level consists of 511 Categories [Categorie]: 4-digit
- The fifth and final level of classification, with 800 Occupational Units [Unità Professionali]: 5-digit, which are linked to the existing occupations in the labour market.

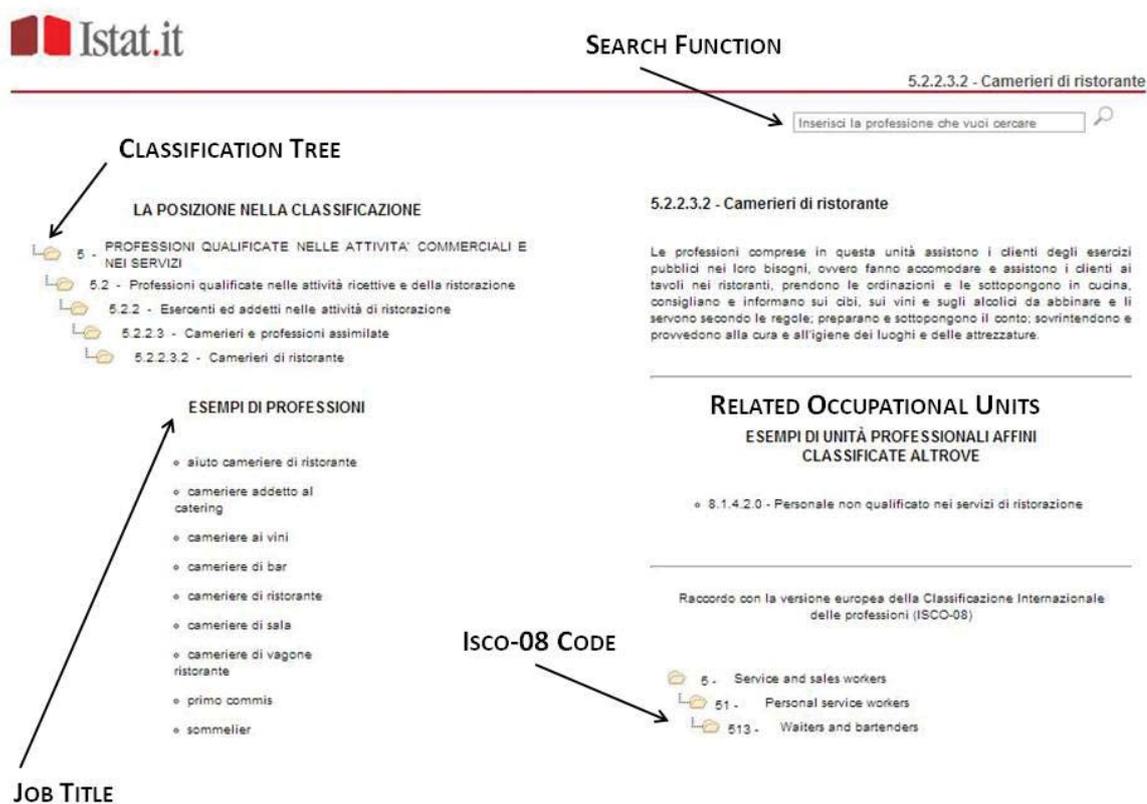


Fig. 1 - Italian classification of occupations

Source: Gallo F., Lorè B. (2012); <http://cp2011.istat.it/>

The classification of occupations in the detail of the category or occupational unit, in addition to having a denomination, is identified uniquely by a numerical code. For example, the occupational unit 'restaurant waiters' is identified by the 5-digit code 5.2.2.3.2, while the 4-digit code 5.2.2.3 identifies the category 'waiters and similar occupations'. The classification of each occupational unit proposes a list of occupational titles, which makes no claim to be exhaustive, but is shown to be an example to guide and facilitate consultation and research at the website <http://cp2011.istat.it/>.

The realization of the CP-2011 has been made possible through the support of a study committee consisting of an ISTAT research team, ISFOL experts and academics as well as the contribution of the main national institutions to the world of work.

## Appendix 3 – Italian classification of occupations (2)

Tab. 1 – Cp-2001 and Cp-2011 Classification structure

GRANDI GRUPPI PROFESSIONALI	Gruppo		Classe		Categoria		Unità professionale	
	CP2001	CP2011	CP2001	CP2011	CP2001	CP2011	CP2001	CP2011
1 - Legislatori, imprenditori e alta dirigenza	3	3	8	8	48	49	-	67
2 - Professioni intellettuali, scientifiche e di elevata specializzazione	6	6	17	16	69	78	-	175
3 - Professioni tecniche	4	4	17	20	92	98	-	160
4 - Professioni esecutive nel lavoro d'ufficio	2	4	6	8	37	30	-	30
5 - Professioni qualificate nelle attività commerciali e nei servizi	5	4	11	15	47	46	-	63
6 - Artigiani, operai specializzati e agricoltori	6	5	24	23	108	101	-	170
7 - Conduttori di impianti, operai di macchinari fissi e mobili e conducenti di veicoli	4	4	22	23	89	80	-	104
8 - Professioni non qualificate	6	4	15	13	28	26	-	28
9 - Forze armate	1	3	1	3	1	3	-	3
Total	37	37	121	129	519	511	-	800

Source: <http://unstats.un.org/unsd/cr/cryreg/crydetail.asp?id=1143>

## Appendix 4 – Italian classification of occupations (3)

Tab. 2 – Isco-08 and Cp-2011 Classification structure

MAJOR GROUPS – ISCO08	Major groups CP2011	Sub-major group		Minor group		Unit group		Occupational Units	
		CP2011	Isco08	CP2011	Isco08	CP2011	Isco08	CP2011	Isco08
I- Managers	(I)	3	4	8	11	49	31	67	-
II- Professionals	(II)	6	6	16	27	78	92	175	-
III- Technicians and associate professionals	(III)	4	5	20	20	98	84	160	-
IV- Clerical support workers	(IV)	4	4	8	8	30	29	30	-
V- Service and sales workers	(V)	4	4	15	13	46	40	63	-
VI- Skilled agricultural, forestry and fishery workers			3		9		18		-
VII- Craft and related trades workers	(VI)	5	5	23	14	101	66	170	-
VIII- Plant and machine operators and assemblers	(VII)	4	3	23	14	80	40	104	-
IX- Elementary occupations	(VIII)	4	6	13	11	26	33	28	-
X- Armed forces occupations	(IX)	3	3	3	3	3	3	3	-
<b>Total</b>		37	43	129	130	511	436	800	-

Source: <http://unstats.un.org/unsd/cr/ctryreg/ctrydetail.asp?id=1143>

# Appendix 5 – Istat-Istat Italian sample survey of occupations: the questionnaire

Thematic Area of Reference	Section of Questionnaire	Objective
Worker requirements	A) Introduction	Acquire information about the employee (on his level of education and training) and his occupation.
	B) Information on knowledge required for workers' performance	Acquire information on 33 areas of knowledge. Knowledge includes all the structured set of facts, information, principles, practices and theories necessary to the proper conduct of the occupation and acquired during formal education or experience.
	C) Information on skills required for workers' performance	Acquire information on 35 skills. Skills include all procedures and the cognitive processes that determine the ability to perform well the tasks associated with the profession. These are processes learned over time and that transfer to work effectively along with knowledge.
Worker's characteristics that affect worker occupational performance	D) Attitudes related to work activities	Acquire information on 52 attitudes, on the cognitive, physical, sensory and perceptual aspects of the individual, which may be of help in the performance of the occupation and in the execution of tasks and connected work activities.
	E) Work values	Acquire information about 21 values that affect the occupation.
	F) Information on styles of work required for workers' performance	Acquire information about 16 work styles that characterise each occupation, namely personal characteristics used in the work that may have an impact on how well it is carried out.

<b>Thematic Area of Reference</b>	<b>Section of Questionnaire</b>	<b>Objective</b>
Occupation's characteristics and working conditions	G) Generalised work activities	Acquire information on 41 generalised work activities, such as practices and behaviours that are common in varying degrees in most occupations and can be variously found in the exercise of very different occupation.
	H) Working conditions	Acquire information about 57 working conditions for the specific employment that affect the environment, the physical conditions, the ways in which the employee is to perform his job.
Specific occupational characteristics	I) Detailed work activities	Acquire information about the frequency of specific activities of employment by the employee mentioned in section A. Detect whether there are aspects of the occupation that the respondent believes have not been adequately addressed in the questionnaire.
	J) End of interview	Acquire information about the interview process, the conditions in which it was given and the reliability of the answers according to the interviewer.

## Appendix 6 - Excelsior Survey

Excelsior uses the following classifications:

- economic activities – ATECO 2007, which is the Italian version of NACE;
- occupations – ISTAT CP-2011 (Italian classification) and Isco-08;
- education – ISTAT 2003 (Italian classification), which is comparable to the ISCED; and
- territories – ISTAT, which fully corresponds to the NUTS.

With regards to the classification of occupations, Excelsior has developed a dynamic nomenclature ('dictionary of occupations'), which includes approximately 4.000 work activities updated annually on the basis of emerging reported occupations. These are provided directly by the companies or from specific sources related to different economic sectors. Of these, around 1.800 were actually required by businesses at least once in the last five surveys.

In relation to the purposes of the survey, Excelsior has developed a nomenclature of occupations in order to:

- provide interviewed entrepreneurs/companies/employers with the opportunity to better understand the language and terms related to occupations; and
- to constantly upgrade the evolution of work activities.

This nomenclature is also comparable with other sources/official classifications, and is associated with the descriptions proposed by cross-referencing the following four variables:

- the economic activity sector;
- the business area in which the figure is inserted by the company;
- the level and the area of formation which characterizes the figure; and
- the classification level.

Since last year, elementary occupations were classified according to the ISTAT classification of occupations in 2011. This was in accordance with European classifications, and afforded a connection between the national classification ISTAT (CP-2011) and the international classification ISCO-08, with the aim of assigning a unique meaning to the descriptions of the occupations.

Despite the correlation between the work activities of Excelsior Dictionary and Istat classification in 2012, a revision of the occupations was made in the Excelsior Dictionary.

- The questionnaire addressed to companies through telephone and face-to-face interviews was divided into seven sections:
- Section 1: The current situation of company employees and forecasts for 2013.
- Section 2: The characteristics of labour demand: Labour force entry.
- Section 3a: The reasons for not hiring (for companies that did not include employees' income in 2012).
- Section 3b: Recruitment strategies.
- Section 4: 'Atypical' form contracts planned for 2013.
- Section 5: Vocational training which took place in 2012.
- Section 6: Employment situation and expected labour force flows in 2012 for each provincial unit (limited to enterprises with multiple locations with over 100 employees).
- Section 7: Other features of the enterprise.

# Abbreviations and Acronyms

- ATECO = ITALIAN CLASSIFICATION OF ECONOMIC ACTIVITIES [CLASSIFICAZIONE DELLE ATTIVITÀ ECONOMICHE]
- CAPI = COMPUTER ASSISTED PERSONAL INTERVIEWING
- CATI = COMPUTER ASSISTED TELEPHONE INTERVIEWING
- CEDEFOP = EUROPEAN CENTRE FOR THE DEVELOPMENT OF VOCATIONAL TRAINING
- CGIL = ITALIAN GENERAL CONFEDERATION OF LABOUR [CONFEDERAZIONE GENERALE ITALIANA DEL LAVORO]
- CISL = ITALIAN CONFEDERATION OF WORKERS' TRADE UNIONS [CONFEDERAZIONE ITALIANA SINDACATI DEI LAVORATORI]
- CONFINDUSTRIA = ITALIAN EMPLOYERS' FEDERATION
- CP-2001 = ITALIAN CLASSIFICATION OF OCCUPATIONS (2001)
- CP-2011 = ITALIAN CLASSIFICATION OF OCCUPATIONS (2011)
- EBNA = ITALIAN BILATERAL BODY OF CRAFTS [ENTE BILATERALE NAZIONALE DELL'ARTIGIANATO]
- INAIL = NATIONAL INSTITUTE FOR INSURANCE AGAINST ACCIDENTS AT WORK [ISTITUTO NAZIONALE PER L'ASSICURAZIONE CONTRO GLI INFORTUNI SUL LAVORO]
- INPS = NATIONAL INSTITUTE OF SOCIAL INSURANCE [ISTITUTO NAZIONALE DELLA PREVIDENZA SOCIALE]
- ISCED = INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION
- ISCO-08 = INTERNATIONAL STANDARD CLASSIFICATION OF OCCUPATIONS (2008)
- ISFOL = INSTITUTE FOR DEVELOPMENT AND VOCATIONAL TRAINING OF WORKERS [ISTITUTO PER LO SVILUPPO DELLA FORMAZIONE PROFESSIONALE DEI LAVORATORI]
- ISTAT = ITALIAN NATIONAL INSTITUTE OF STATISTICS [ISTITUTO NAZIONALE DI STATISTICA]
- LFS = LABOUR FORCE SURVEY
- LMII = LABOUR MARKET INTELLIGENCE INFORMATION
- NACE = STATISTICAL CLASSIFICATION OF ECONOMIC ACTIVITIES IN THE EUROPEAN COMMUNITY
- NUP = NOMENCLATURE OF OCCUPATIONAL UNITS [NOMENCLATURA DELLE UNITÀ PROFESSIONALI]
- NUTS = Nomenclature of Territorial Units for Statistics
- OBNF = National bilateral body for Training [Organismo Bilaterale Nazionale per la Formazione]
- OECD = Organisation for Economic Co-operation and Development

- SISTAN = Italian National Statistical System [Sistema statistico nazionale]
- UIL = Italian Labour Union [Unione Italiana del Lavoro]
- UNIONCAMERE = Italian Union of the Chambers of Commerce
- UP = Occupational Units [Unità Professionali]

## Appendix 7 - Methodologies used for prediction of employment and sectoral trends

The employment forecast model follows a modular approach in three steps:

**Step 1** - A ‘multi-sectoral macro-econometric model’ [Modello macroeconomico multi-settoriale] that produces forecasts for the whole economy and employment forecasts by sector by using forecast scenarios for the economic and labour market. The projections are carried out by considering the official programming documents provided by Italian government and other international institutions.

**Step 2** - Employment forecasts and estimates of total labour demand by occupation (2 modules)

Step 2 - Module 1 :

‘Additional labour demand model’ [Modello domanda aggiuntiva] using the sectoral employment forecasts of Step1 through the use of special ‘occupational matrices’ which describe:

- the expected composition of employment in different economic sectors
- the estimated occupational level over the year for each occupation.

Step 2 - Module 2

‘Substitute labour demand model’ [Modello domanda sostitutiva] produces an estimate of the labour demand that the economic system should provide to replace the outgoing flows that are likely to occur in each occupation

Module 1 + Module 2: The sum of the primary products of the two modules provides an estimate of the total labour demand for each occupation (occupational needs).

**Step 3** - Medium-term forecast for demand and supply in education:

- Education/training curricula
- Estimation of the eventual mismatch

The ‘Model of education demand’ [Modello di domanda di istruzione] estimates future demand in education by referring to the kind of education required in the labour market.

The ‘Model of education supply’ [Modello di offerta di istruzione] estimates the labour supply with reference to education.

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## Amsterdam Institute for Advanced labour Studies

University of Amsterdam

Postal address: PO Box 94025 • 1090 GA Amsterdam • The Netherlands

Visiting address: Nieuwe Prinsengracht 130 • 1018 VZ Amsterdam • The Netherlands

Tel +31 20 525 4199 • Fax +31 20 525 4301

aias@uva.nl • www.uva-aias.net