9 ISFOL PLUS SURVEY*

The ISFOL PLUS (Participation Labor Unemployment Survey) is a national sample survey on labor supply. The survey is in the National Statistical Plan since 2006. ISFOL is in the National Statistical System (SISTAN) and it is part of the official statistics network, at the moment 5 waves are available and the maximum length of the panel is 2005-2011. The survey ISFOL PLUS has two reference planes: the parameters Eurostat-ILO in relation to the main aggregates of the labour force (employed, part-time, and unemployed) and the perceived (subjective) of the condition. The possibility of observing the same person in both aggregates allows multiple readings depending on the context in which making the analysis more extensive, effective and explanatory. This volume shows some exercises to estimate, various econometric analyzes, readings marked contamination of more discipline and, finally, the trends with respect to individual propensities, territorial levels, consumption and saving options and choices for participation or withdrawal from work. In fact, the objective is not to simplify reality complex and multifaceted in a arid synthesis arid but to offer multiple points of view, letting the data return the most appropriate suggestion.

9.1 Introduction

ISFOL[1] PLUS is mainly a deeper understanding of specific aspects, such as the distribution of contracts (employee, self-employment, informal, etc.), job search, labor market

* Gianni Corsetti and Emiliano Mandrone are the authors of this chapter; however, it incorporates some previous publications about the methodology, sampling and survey definition by Corsetti (2012) Giammatteo (2009 and 2012), and Mandrone (2006). Emiliano Mandrone is the scientific coordinator of the survey since 2005.

1. The Italian Institute for the Development of Vocational Training for Workers. A Public Research Institute implementing and promoting studies, research, trials, documentation and evaluation activities as well as information, advice and technical assistance actions in the area of vocational training, social and labor policies. The Institute's activities mainly contribute to improving human resources standards and increasing labor placement rate and social inclusion. Current Isfol Statute (established on 19 March 2003 by Decree of the Presidency of the Council of Ministers issued in the O.J. no.139, 18 June 2003) has extended the Institute's field of competence in the area of training policies and stated its powers also in the area of labor and social policies. Isfol operates to implement the

participation by women, youth and people over 50, choices for retirement, education and training, intergenerational dynamics.
The survey was designed to analyze the current labor market, characterized by an increasingly rapid transformation of the mode of research and development of the work (remained virtually unchanged over the past decades) in new and diverse forms, where the concepts of employment and unemployment go beyond the traditional categories which we had been accustomed.
To address the epistemological challenges described above, the survey PLUS differs from the usual family-based investigations for the absence of proxy respondents (proxy free) and the ability to integrate different aspects of the labor market, often analyzed in a disconnected manner. By connecting the dynamics of employment and income with reality and family PLUS reconstructs a picture of ties and relations invisible to mono-thematic analysis. In this perspective, the study draws the actual appearance of the labor market as perceived by those directly involved, with special reference to the problems of youth, women and over50. This makes possible the administration of very detailed questions about the nature and characteristics of employment, education, familial status, allowing - through dedicated modules - to provide reliable estimates for very small aggregates or specific themes.
This design allows the survey, in fact, to produce statistically significant estimates of aggregates also relatively rare (little numerous) in the population (70,000 to 100,000 individuals), representing approximately 0.5% of employment, with a 95% probability that the 'range of ± 15% of the estimated value includes the value corresponding to true.
Indeed the primary objective of the survey is to provide statistically reliable estimates of rare phenomena or only marginally explored by further observations on the Italian labor market (LFS, ISTAT, INPS archives). The dynamic view of these phenomena is guaranteed by the design panel consisting of a share of the same subjects repeated interviews that trace the trajectory accurately in the world of work over time.
The effort of researchers who have designed the Survey ISFOL PLUS has always been guided by the comparison of the methodologies, broad participation in the drafting of the questionnaire, the multi-disciplinarily, transparency in the early stages of administration and processing of data, the disclosure of results and dissemination of micro data[2].
Moments of discussions were numerous and continuous and many publications were presented on the PLUS survey, both on the methodological aspects related to both the sampling design of the survey, than related to the results of the analyzes conducted on the data. The dissemination of results and distribution of micro-data was been

national Operational Program under the Ministry of Labor, Health and Social Policies as the Managing Authority and co-financed by 2000-2006 programming Structural Funds.
2. The data Isfol PLUS is made available to the scientific community within 12 months from detection by signing the Protocol Data Communication Institute. To request data plus@isfol.it

wade with continuous feedback which have improved the investigation and made it shared (and thus more authoritative) definitional and methodological choices of the team for the survey.
Before exploring in detail the aspects of the sampling scheme, below we highlight the main features PLUS survey, showing the potential and the conceptual and methodological rigor that characterize it.

9.2 Features of the Survey

To reduce both the "statistical burden" to increase and "the uniformity of the issues", the questionnaire is organized in sections specially designed for specific target population (employed, unemployed, youth, women, etc.). Moreover, since its second year (2006[3]) a substantial proportion of interviews longitudinal (panel), made the same individuals[4] in consecutive years, is included in the sample and it includes about 60% of interviews for each year.
The schedule of interviews to be made was made on the basis of a stratified quota sampling with definition of partially overlapping domains of study. The choice of quota sampling was motivated by the need to greatly reduce the sample size needed to produce statistically significant estimates for small subpopulations of interest. As an alternative we could have chosen to use strategies of classical two-stage sampling (e.g., municipalities and households) but, in addition to requiring fieldwork much more costly, would involve the surrender of a survey of the main features PLUS, one of no proxy respondents.
The sample is divided into nine key target (domain of interest), comprising:

1. Young workers, aged between 18 and 29 years;
2. Young students, aged between 18 and 29 years;
3. Young other condition (student or inactive women), aged between 18 and 29 years;
4. Active women, aged between 18 and 39 years;
5. Inactive women, aged between 18 and 39 years;
6. Active Seniors, aged between 50 and 64 years;
7. Inactive Seniors (retired from work), aged between 50 and 64 years;
8. Unemployed (expanded definition) aged between 15 and 64 years;
9. Employed aged between 15 and 64 years.

3. In 2005 and 2006 respondents were aged between 15 and 64 years.
4. The presence of panel interviews help to "soften" the questionnaire further, by not asking questions about phenomena not change in the persons interviewed in the previous year (example: the first year of commencement of employment, year of award and title of the characteristics educational qualifications - if unchanged from the previous interview - etc.).

In order to be able to provide reliable estimates for the subgroup of these 9 domains (for example, limited to each of the Italian regions) has proceeded to the planning of a stratified sampling, where the layers - defined by the intersection of variables listed in Table 9.1 - constitute a partition of the sample and (for subsets of layers) of the same domains of study.

Table 9.1 - Sample stratification variables, PLUS 2008

Variables	Mode
Region (19)	Piemonte e Valle d'Aosta, Lombardia, Trentino A.A., Veneto, Friuli V.G., Liguria, Emilia Romagna, Toscana, Umbria, Marche, Lazio, Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna
Type of municipality (2)	Comune metropolitano, Comune non Metropolitano
Sex (2)	Males, Females
Age (5)	18-24, 25-29, 30-39, 40-49, 50-64
Employment status (5)	employees, unemployed, student, retired from work, other inactive women (housewife)

The PLUS' criteria for the classification of employment are different from those of the LFS. While the LFS (ISTAT) follows a path that identifies the condition according to certain parameters ILO/Eurostat, the PLUS survey defines as employed and unemployed people who define themselves like that.
However, PLUS also records the parameters ILO/Eurostat, so it is possible to reconstruct the "objective" condition (ILO/ Eurostat) and the "self-perceived" condition (by the respondents). It is very important because there are "weak employment status", typical of some phases (transitions from school to work or return to work after a maternity) in which the conditions are overlapping.
This means that even the distinction between unemployed and inactive is different between LFS and PLUS. In particular:

a. are considered seekers (unemployed), and thus active, some types of individuals which for the ISTAT are to be considered inactive;
b. are not considered employees of those persons who perform a work activity is not, in economic terms and according to his perception, such as to justify their inclusion in that category (students, pensioners and housewives work - workers / gold spot), considering them busy is not prevalent.

Since the goal of PLUS to verify the quality of the occupation was necessary to refer to the status perceived by the interviewee. Instead, using a scheme similar to ISTAT or following the instructions of Eurostat regulations, it ran the risk of including those with busy condition prevalent among the inactive and the unemployed who are not covered by Eurostat classification. But these subsets are precisely the areas of most interest to the study and the set-up policies for the activation of marginal subjects. PLUS you can of course be employed in reconstructing the ISTAT-Eurostat definitions having been given the questions necessary for their identification. For this purpose, we decided to tie the data PLUS some official source LFS aggregates, indicating that the busy is not prevalent and the inactive who say they are seeking in conditions which were considered to be attributed individually. The first consequence is that the employment characteristics are net of the work force does not prevail (ie individuals considered employed according to the ISTAT definition of an economically but not enough to count them among the employed tout court) and the gross certain categories of unemployed (or looking for work) that you do not fall within the definition LFS-ISTAT (inactive job seekers).
It is recalled that the comparison between the reference population is only possible by taking into consideration the subpopulation ISTAT-LFS defined by domains of study ISFOL PLUS. Table 9.2 shows a comparison between the LFS estimates and PLUS (2008). Let's assume that the second- ISTAT-LFS classifications are for employees only pure team, that although those who are not self-employed professionals and exert their activity mainly through forms of co-ordinated and continuous work or project.

Table 9.2 - Confronto tra le stime ISTAT-RCFL e ISFOL PLUS

LFS-ISTAT		PLUS-ISFOL	
Definition	**Absolute number**		**Definition**
Permanent employees (indefinitely)	15,038,430	14,693,754	Permanent employees
		329,662	"Other" Employee*
Digita il testo o l'indirizzo di un sito web oppure traduci un documento. Fixed Term Contract (temporary employees)	2,295,215	1,241,182	Fixed Term Contract
		1,069,047	"Other" Fixed Term Contract
Total Employees	**17,333,646**	**17,333,646**	**Total Employees**
Staff and consultants	442,422	925,707	"Fake" Staff and consultants
		380,051	"True" staff and consultants
Self-Employees	5,193,835	3,765,908	Self-Employees
		276,192	"Fake" partite IVA
		288,400	"Other" Self-Employees**
Total Self-Employees	5,636,258	5,636,258	Total Self-Employees
Total	**22,969,904**	**22,969,904**	**Total**

* Contratto Formazione Lavoro, Apprendistato, Contratto d'inserimento, Lavoro interinale o a somministrazione, Job sharing o lavoro ripartito, Lavoro intermittente o a chiamata, Alternanza scuola-lavoro, Stage, Pratica professionale, Tirocinio.
** The "reluctant", "informal contract" and "do not know or do not remember".
Source: ISTAT-LFS and ISFOL PLUS 2008

The survey also identifies the false self-employment (defined quasi-employees), or those with forms of self-employed who work in a manner typical of the employee. A separate item was scheduled for fake matches VAT and occasional collaborations, which are found to be highly conditional forms of work, although formally independent.

9.3 The sample

The number of interviews to be carried out for each of the layers was determined to provide reliable estimates for the entire reference population and for particular subsets of interest, through the implementation of a procedure for multi-domain allocation, based on resolution a constrained minimization problem. More precisely, they were fixed a priori levels of minimum variance for the domains of interest listed above and their territorial breakdowns by region and type of municipality (urban, non-metropolitan). Formally, we can represent the population size in each domain (or subdomain) as the sum of sub-layer,

$$N_d = \sum_h N_h I_{h,d}$$

where $I_{h,d}$ is an indicator variable that takes value 1 (0) if the layer is h (not) included in the domain d. P_d indicating the general estimate of the proportion $P_d = N_d / N$ population in the domain d, the procedure is summarized by the following constrained minimization problem,

$$\sum_h n_h = \min \text{ s.t. } V(p_d) \leq V_d^* \ \forall d$$

where the limit V_d varies appropriately for different sub-domains. The critical characteristic of samples per share, represented by not a priori knowledge of the inclusion probabilities of units of measurement (N_h), has been considering as the reference population exceeded the estimates obtained by the ISTAT survey LFS.
The next step, is related to the choice of weighting estimator constrained to be adopted for the calculation of the coefficient to the universe. In particular, it has resorted to the implementation of methods based on the use of the estimator of generalized regression (GREG estimator). It ensures that the estimates of the absolute frequencies of the auxiliary variables used as repressors are coincident with the known observed in the total population and imposed as calibration constraints. First, this implies that the demographic composition of the actual population and employment reference is, by construction, reproduced in the analysis. Furthermore, it allows you to correct any distortions caused by factors not fully controlled in the design phase of the investigation and related instead to the detection phase, as the self-selection of the sample due to the higher average propensity to answering certain categories of persons.
Consider a generic variable of interest Y and define its total P as the reference population,

$$Y = \sum_{k \in P} y_k$$

where k is a generic unit belonging to P. Following a fully predictive approach, the estimator of Y is formally derivable through the sum of two simple components:

$$\hat{Y} = Y_S + Y_{\bar{S}} = \sum_{k \in S} y_k + \sum_{k \in \bar{S}} y_k$$

where YS is the part observed on the sample and $Y_{\bar{S}}$ is the sum of the predicted values y_k (whit $S \cup \bar{S} = P$). The key step is to consider the existence of a relationship (linear) between the generic study variable Y and a suitable set of explanatory variables x = (x1, ;;, xK) such that,

$$\tilde{y}_k = B' x_k + \varepsilon_k \quad (1)$$

where the error component e_k satisfies the standard assumptions of homoskedasticity

$$E(\varepsilon_k) = 0 \quad E(\varepsilon_k)^2 = V(\varepsilon_k) = \sigma^2$$

and x is defined as the vector of the auxiliary variables. As mentioned earlier, has been implemented an approach based on generalized regression estimator (GREG), in the particular case of models with instrumental variables. Given the likelihood of inclusion π_k for each unit k of the sample, the basis weights $d_k = 1/\pi_k$, and the resulting standard Horwitz-Thompson estimator $\hat{Y}_{HT} = \sum_s d_k y_k$, it was possible to define the following final estimator;

$$\hat{Y} = \sum_{k \in S} w_k y_k \quad (2)$$

$$\text{where, } w_k = d_k (1 + \gamma' z_k)$$

$$\gamma' = \left(\sum_{k \in U} x_k - \sum_{k \in S} d_k x_k \right)' \left(\sum_{k \in S} d_k z_k x_k' \right)^{-1} \qquad z_k = x_k$$

The use of the estimator (2) - ie, the correction factor γ - ensure respect for the fundamental equation of calibration

$$\sum_{k \in S} w_k x_k = \sum_{k \in U} x_k .$$

The above procedure will:

- ensure consistency between the estimates produced using data PLUS LFS, both in terms of more general distributions with respect to the major demographic indicators of the labor market (employed and self-employed, people seeking work

and rest), with a breakdown at the regional level and the main Italian metropolitan municipalities,
- improve the efficiency (or precision) of estimates; iii) help control the distortion of the data samples due to the well-known phenomenon of friction selection (mainly due to the sampling strategy for shares, the CATI method of conducting the interviews, as well as the presence of a substantial share in the panel sample).

Among the major prerequisites in order to obtain desirable GREG estimators with small variance, the following four aspects are taken into consideration in the design PLUS:
i. establishing a reliable and plausible regression model of Y on x;
ii. choice of auxiliary variables highly correlated with key study variables;
iii. inclusion of auxiliary variables existing between the stratification variables;
iv. high reliability (reputation) of the source data from which to derive the total known to be implemented in the regression.

On this last point, the RCFL ISTAT is the official source of derivation of all the main indicators of the labor market. It is based on a robust methodology that ensures high accuracy of the estimates on employment, unemployment and inactivity as well as distributions for key demographic (gender, age) nation-wide, regional and provincial level. Therefore, the total required in the procedure known PLUS were chosen to ensure consistency in two key areas:
i. socio-demographic composition of the Italian population (by region, sex, age and qualification);
ii. the distribution of individuals among the different conditions of employment (employed, active and inactive) and types of jobs (part-time, full-time employees, self).

Table 9.3 summarizes in a simple scheme categorical variables (and the corresponding mode) considered in the definition of total known

$$\sum_{k \in U} x_k .$$

The final vector of auxiliary information can be derived through the intersection of the variables in column I with those of column II. A total of 129 were taken into account known total, 16 of which are defined - panel units only - distribution by employment status, job type, age and sex observed in 2006.

Table 9.3 - Calibration variables cross-section, PLUS 2010

Column I	Column II	Number of constraints
Employment status (Full-time employees, part-time employees, self employment, Unemployed, Inactive)	Level of education (Elementary, Middle school, high school, university degree); Geographic Region (North-West, North-East, Central, South and Islands); Sex; Age (18-24, 25-29, 30-39, 40-49, 50-64 years)	75
Sex	Age, Geographic Region	18
Age	Geographic Region	20
Employment status in 2008 (only for panel respondents)	Sex Age in 2006 (18-39, 40-64 years)	16

9.4 The PANEL

The longitudinal structure of the Survey ISFOL PLUS allows for analysis of fluid flow between the different individual employment conditions in the labor market, allowing you to enrich the results of the sectional, illustrated above, with those from the dynamics of "work histories" individual. The analytical framework used follows the architecture of the "matrix of mobility", which in this case represents the transitions between employment status, which are the outcomes of being in a certain status of arrival at time t=1 given the status initial at starting time is t=0. Here are some properties of these tables. The marginal column of the transitions, diagram a) shows the distribution of the phenomenon under mobility at time t=0 while the marginal line shows the distribution of the phenomenon at the time of arrival t=1 or, in general, at the end of the observation period (panel width).

Diagram a) Transitions in the period

	t=1 (panel size)	TOTAL	
t=0	A	B	A+B
	C	D	C+D
TOT	A+C	B+D	A+B+C+D

Diagram b) Employment outcomes in the period (conditional probabilities)

	t=1 (panel size)	TOTAL	
t=0	A/(A+B)	B/(A+B)	(A+B)/(A+B)
	C/(C+D)	D/(C+D)	(C+D)/(C+D)
TOT	(A+B)/(A+B+C+D)	D+D/A+B+C+D	(A+B+C+D)/(A+B+C+D)

The conditional probabilities, in this case the employment outcomes (diagram b), are instead likely to be given the status in the present state of origin (if the panel is 2 notes) or if the nested table is for an interim period of observation represents the result of the combination of the initial states and intermediate (e.g. the status at time 2 given the status at time 1 and that at time 0). This option allows you to understand how analytic careers that cross certain specific locations (for example a period of "atypical employment") whether or not they better opportunities, in probabilistic terms, than those who, during the observation period, followed other paths.
In general, a longitudinal scheme enables the reconstruction of working life in relation to the moments, chronologically ordered, that determine the location of work on time and trajectory that followed individuals over time, with clear advantages in terms of understanding of the employment.

Diagram c) - Longitudinal Design (Panel)

PLUS 2005		PLUS 2006		PLUS 2008		PLUS 2010
15,765	out of sample					
24,621	panel 2005/2006	11,662	out of sample			
		12,959	panel 2006/2008	4,364	out of sample	
				8,595	panel 2008/2010	8,595
	new respondent 2006	6,262		4,152		4,152
				2,110	out of sample	
		6,630	out of sample			
			new respondent 2008	9,072		9,072
				5,637	out of sample	
					new respondent 2010	16,856
40,386		37,513		33,930		38,675

The statistical treatment implemented is based on the study of the underlying model of non-response panel and some flows between conditions of primary interest for the survey, such as that between unemployment and employment by employee "standard" to "non-standard", as part-time to full-time, etc; Through the use of nonparametric classification algorithms - Classification tree analysis (C&RT) - we identify homogeneous subsets with respect to certain individual characteristics, thanks to which we specify the constraints imposed in the longitudinal calibration. The weight of the final panel is obtained starting from the sectional weight corresponding to the year of beginning of the period t_0 and applying a calibration correction that simultaneously takes account the effects of friction and synthesizes much information useful for the production of main longitudinal estimates. Interestingly, for the period 2005-2010, the endogenous selection (a model) of variables relevant to the explanation of the failure to answer the panel has remained virtually unchanged. On the contrary, as regards the study of major transitions we preferred to untie classification algorithms from the previous results, ensuring the dynamical rather than a more stringent definition of stability in the sub-sample.

9.5 Quality of ISFOL PLUS survey

This chapter will discuss the treatments and the operational strategies used to minimize sampling errors and non sampling.

9.5.1 Non sampling errors

In terms of non-sampling error reduction, from 2010, was implemented an integrated system of monitoring of interviews with two aims: i) real time monitoring of the interviews, with the ultimate limit and, as far as possible, corrected during construction of the main sources of non-sampling errors, ii) make available all information relating to the call and attempts to systematize the same for the calculation of some important indicators on the quality of the survey.

The PLUS survey is characterized by a fundamental - and time consuming - interview process. In 2009 it involved, as a whole, the work of about 300 interviewers during four months. The questionnaire is articulated in various subsections properly designed in order to minimize the statistical burden for different types of respondents: employed, unemployed and inactive persons.

In order to reach high quality standards, the questionnaire submission accepts only self respondents (proxy interviews are not allowed). This permits the investigation of very detailed aspects of individual job, job-search activity or, more in general, labour market participation, contributing to restraint measurement errors. As already mentioned above, a substantial percentage of the annual sample consists of panel respondents. These

are recalled after one year at the beginning of the interview process by interviewers which preliminary assure them that much of the already collected information will be used in order to avoid redundant questions (those regarding time invariant conditions). This phase is characterized by fairly easy interviews (with very low refusal rate), mainly because of the panel loyalty and their familiarity with the survey themes.
Nevertheless, other important implications arise from this choice. As first, the relative share of panel units should be as more as possible "constant" among strata. This is a minimal condition for containing the risk connected to the progressive loss of sampling units due to refusal and unavailability. As known, the survey attrition can generate not measurable bias effect on the longitudinal estimations, due to progressive and not random losses of panel units. In fact, this process represents a serious problem especially if the panel respondents are significantly different from those excluded and if the new sample units do not properly match the right characteristics for their replacement. Moreover, a low percentage of total panel response could affect negatively the prefixed objective of sample numerousness in each strata, domains and total sample.
The second phase is devoted to the interview of the new sample units, which continues until the strata planned numerousness is achieved. The call procedure is based on the random selection of phone numbers from the telephone users directory. The first contact with the respondent is followed by an immediate verification of her/his eligibility on the basis of few socio-demographic information (e.g. the strata variables). This procedure is made difficult by the presence of a strong over-coverage of the contact frame, mainly due to the presence of households with members not belonging to the reference population (usually persons above aged 65 or more). This fact strongly affects the interview process efficiency, slowing significantly its normal course, and making not perfectly comparable some indicators with those of the panel phase or with other coming from external sources.
The interview duration is of about 15 minutes on average. Its variability strictly depends on the personal characteristics of the respondent, which can imply the skip of entire questionnaire modules. On the other hand, the role played by each interviewer in determining the quality of the collected information cannot be neglected. Their behavior, the way in which they actually execute the interview, their subjective empathy with the interviewed, and the "rigorous" execution of the assigned tasks can seriously affect the survey quality objectives and estimation purposes.
The interviewers performances are obviously connected to many factors (among others the selection criteria adopted, their work experience, the individual aptitude). Definitely, it strictly depends on the survey-specific training. Every interviewer attended eight hours of courses during three days, alternating theoretical and practical lessons on: the survey contents and objectives, techniques of questionnaire submission, operational method, communication and relationship strategies

to apply during the first contact and interviews. The implementation of the integrated monitoring system of the interviews was made possible thanks to the daily provision of all information requested by the Working PLUS and summarized in the following two types of files:

- first one contains information about attempts to contact (temporary or final outcome, duration, day and time, identification number of the interviewer briefing, ID - encrypted - the interviewer, the stratification variables);
- a second file containing the records of the final daily interviews successfully completed, together with the unique code with which to proceed to the interviewer direct connection with the previous file.

The basic methodological support is given by the development of an automatic analysis of surveyoutcome rates and relevant process parameters, synthesized by the following groups of instruments:

- a set of monitoring indicators, following AAPOR international standards;
- control charts on relevant process parameters;
- a multilevel-models technique for evaluate the interviewer-effect on the questionnaire main "logical flows" (with the twofold objective of *on course* control and *ex-post* evaluation of the overall survey quality);
- *ad hoc* training of interviewers during the telephone phase based on monitoring results.

9.5.2 Sampling errors

Since each estimate is combined with a relative sampling error, to allow a correct use of information produced by the survey would be published for each estimate also the corresponding relative sampling error. Due to constraints of time and processing costs, and because of the disseminated tables would be not user-friendly, we cannot publish all of the sampling errors of estimates.
To allow an assessment of the variability of all estimates of interest, we resort to a summary of errors based on regression models, based on the determination of a mathematical function that links each estimate by its sampling error.
The model used for estimation of absolute frequencies, is of the following type:

$$\hat{\varepsilon}(\hat{\mathrm{Y}}\mathrm{d}) = \sqrt{\mathrm{a} + b\log\left(\hat{\mathrm{Y}}\mathrm{d}\right)}$$

ε where the parameters *Yd* is the interest estimate, ε is the sample error, and *a* and *b* are estimated using the method of least squares.
The Table 9.4 shows the values of the coefficients *a* and *b* and the index of determination R^2 of the model used for the interpolation of the sampling errors of estimates of absolute frequencies for planned domains relative to survey wave conducted in 2010.

Table 9.4 - The sampling errors of estimates

PLANNED DOMAIN	a	b	R^2
Reference Plus Population	10.6046	-1.2434	83.6
Employed	11.9984	-1.3121	87.9
Unemployed	9.1985	-1.2118	91.9
Retired from work	9.5999	-1.3049	91.0
Housewife/Inactive	8.6563	-1.1842	89.3
Student	9.0395	-1.2889	89.6
18 - 29 ages - Employed	10.3729	-1.3368	92.0
18 - 29 ages - Students	9.4330	-1.3202	90.1
18 - 29 ages - Unemployed	8.2952	-1.2156	91.5
Women - 18 - 39 ages - Employed or Unemployed	10.6782	-1.3114	89.2
Women - 18 -39 ages - Housewife, Inactive or Student	8.7092	-1.2060	91.8
50+ ages - Employed or Unemployed	10.4489	-1.2101	86.7

9.6 Next PLUS's structure

At the present/For the moment, next wave will start in the first quarter of 2013. Some new features.

Sample characteristics:

- 55,000 interviews;
- covering the population 18-75 years, with inactive (also for woman age 40-50);
- a subsample (3,000 individuals) of the survey re-call individuals surveyed by PIAAC[5] Italy, in order to analyze the competencies and skills experienced by theoretical framework PIAAC/OECD;
- a module of ISFOL PLUS is dedicated to MAcAD[6] model (capability approach model).

5. PIAAC (Programme for the International Assessment of Adult Competencies) is an important and comprehensive international survey on adult skills. It assess the level and distribution of adult skills in a coherent and consistent way across countries. It is focused on the key cognitive and workplace skills which are required for successful participation in the economy and society of the 21st century. PIAAC aims to collect information on adults'literacy and numeracy skills and on their ability to solve problems in technology-rich environments. In addition, PIAAC will collect information from respondents concerning their use of key work skills in their jobs.

6. The research was aimed at the development and testing of a model of multidimensional analysis of poverty and a specific measurement index that takes into account a broad set of life domains(house, environment, health,

Structure characteristic:

- individual data;
- status: employed, unemployed, students, inactive (new!);
- education level and school performance (PIAAC's indicators);
- background (education level and job);
- earnings;
- household income, consumption and savings;
- target 1: young;
- target 2: Women;
- target 3: age 50-64;
- target 4: age 65-75 (new!);
- relatives and child care, health (disability);
- well-being, resilience, MAcAD's questions (new!);
- local public services (including PES[7]);
- training activity - life long learning.

This survey is meant to be an array of models and experiments devoted to assessing the consistency of the phenomena but also the perceptions and the relief it wants to give to these phenomena. The system of weights becomes important so as to represent a system of values - political, economic, cultural - and therefore represent the political component in the interpretation of the models, which must be distinguished from the technical component (model, estimates, etc.).

Comments, criticisms, suggestions and experiences are welcome, please contact us and send an email to: Emiliano Mandrone e.mandrone@isfol.it or plus@isfol.it

9.7 Annex

In this research project we have proposed several themes within the discipline of economics, with a brief excursus into adjacent disciplines (such as labor law). However there are many researchers who can effectively use this survey.
The survey, in fact, lends itself to multiple readings, both thematic and disciplinary. In fact, compared to the economy, we can define typical areas as labor economics, quality of work, income, consumption and savings, the analysis of welfare, welfare, job

emotions, knowledge, income). Such model, called MACaD (Multidimensional Analysis of Capability Deprivation) was developed within the theoretical framework of the Capability Approach and is focused on the measurement of the degree of individual achieved functioning in each life domain with respect to the possession of tangible and intangible goods.

7. Pubblic Employment Service.

search, health economics, etc. from the slope of the disciplines that may find interest in these data, we include sociology (the connections between fertility and labor stability, between economic performance and employment and family background, social mobility, etc;), law (in particular labor law can putting together the quantitative and qualitative aspects of the regulatory options), psychology (risk aversion, wealth, etc;), the economic geography (the level of local services, the level indicator on the target areas) and many other that perhaps not even imagine.
Clearly the opportunity for longitudinal readings further amplifies the possibilities of analysis, many of which are true "social experiments".
Finally do not forget the methodology, with the significant progress that has been implemented in time use surveys "to share" through interviews CATI (Computer Assisted Telephone Interviewing) with non-standard sampling plans (complex survey) and relevant sample sizes. This contributes to the possibility of methodologies for the empirical analysis, for the construction of estimators better and more efficient, for estimates dedicated for the "small areas" or for "minor domains". This opportunity allows many applied statistical and econometric refinements.

PLUS main publications:

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Job search	4. La ricerca del lavoro in Italia: l'intermediazione pubblica, privata e informale, E Mandrone - Politica economica, Il mulino, 2011
	5. The informal recruitment channel and the quality of job-worker matches: an analysis on Italian survey data, V Meliciani and D. Radicchia, Industrial and Corporate Change, Oxford Univ Press, 2011
Child care and gender	6. Job mobility and the gender wage gap in Italy, E. Del Bono and D. Vuri, Labour Economics, 2011
	7. Cognitive and non cognitive children's outcomes, family and childcare, Del Boca D. e Pasqua S., Education Programme FGA W.P. n. 36/2012

Sociology	8. Differenze di genere: dalle condizioni lavorative ai vissuti, Bergamante F., in Flessibilità senza sicurezza. Mobilità sociale, rapporti familiari e differenze di genere a Roma, Cavarra R. Rella P. (a cura di), Milano, Franco Angeli, 200
Wage and Income	9. Gender and work, Income and payment systems, M. Giaccone, In European Working Conditions Observatory (EWCO), *Eurofound*, 2007
Training and Education	10. Disentangling factors behind training participation in Italy, G Croce, M Tancioni Social Science Research Network, 2007 11. Overeducation and spatial flexibility in Italian local labour markets. Working Paper. G. Croce and E.Ghignoni, 2011, CNR Uniroma1 12. Delayed Graduation and Overeducation: A Test of the Human Capital Model versus the Screening Hypothesis, F. Pastore, C. Aina IZA discussion paper, n. 6413 13. Esiti scolastici e comportamentali, D. Del Boca and S. Pasqua, Programma Education FGA, WORKING PAPER, N. 36, 2010.
Social mobility and Human capital	14. Percorsi scolastici e origini sociali nella scuola italiana, D. Checchi, Politica economica, Il Mulino, 2010 15. Educational mismatch e qualità del lavoro: un quadro d'insieme e alcune specificità del caso italiano, M. Curtarelli e V. Gualtieri "Economia & Lavoro, 3/2011, 2012 16. Incentivi ad accumulare capitale umano e background familiare: l'evidenza italiana, di S. Gabriele e M. Raitano, Società Italiana di Economia Pubblica, 2007
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Inequality

22. La riproduzione intergenerazionale delle diseguaglianze in Italia: istruzione, occupazione e retribuzioni, M. Raitano, Politica Economica, 3/2011
23. Nuovi indicatori per il mercato del lavoro (job satisfation, well-being, BMI, civism, risk aversion, A. Laudadio, E. Mandrone, S. Tenaglia, V. Perotti, in Indagine PLUS - Il mondo del lavoro tra forma e sostanza (terza annualità), a cura di E. Mandrone e D. Radicchia, I libri del FSE, 2012.