Understanding equity in work through job quality: A comparative analysis between disabled and not disabled graduates by means of a new composite indicator

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Abstract In this paper we compare the job quality of disabled and not disabled graduates. Equity in work is given not only by having a job, but also by having a good job. Indeed, thanks to the Italian law in favour of disabled persons, often disabled have a job, but the job quality could be scarce. We measure job quality by means of a composite indicator (CI), that comprises three dimensions: economic, professional and work-life balance. The proposal of the CI structure is original, because the variables composing the indicator can be quantitative, ordinal or dichotomous. Results show that the job quality of disabled and not disabled is equal, but the most important dimensions of the CI are different in the two groups: economic for disabled and professional for not disabled. Disabled have the guarantee of a stable contract, but their job is not coherent with their studies.

1 Job Quality and Equity in Work

A respectable job, that meets worker's competencies and expectations, is a fundamental means for the person's realization and dignity. The individual realization in the work field covers two steps: the first is having a job, the second is having a good job.

Aim of this paper is to analyze the job quality of graduates at Padua University three years after graduation. We are interested in the comparison of job quality between disabled and not disabled graduates.

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Why do we concentrate our analysis on job quality and not on having a job? Firstly, the study refers to graduates three years after graduating: only 4% of them are still looking for a job. As regards disabled persons, in Italy regulations aimed at improving the employment of disabled are detailed: Law 68/1999 regulated the labour rights of the disabled, both as employees in social cooperatives and companies, and as self-employed. Moreover, public competitions reserve a part of the available positions for disabled persons or, *ceteris paribus*, assign priority to disabled. Unfortunately, law can promote the employment of disabled persons, but not the quality of the achieved job.

Finally, we concentrate our research on graduates; they spent more time in formation and consequently have more expectations from their job.

What is Job Quality? There are three general approaches to measuring it [7]. The first strategy ("pure" subjective approach) focuses on the well-being of the worker. Generally, job satisfaction is considered as a proxy for the individual well-being. The second strategy ("mixed" subjective approach) considers job quality as a multifaceted construct, introducing objective measures of job quality together with their subjective evaluations: the workers are required to rank the job attributes they consider important when defining what is an "ideal" good job. The third strategy (objective approach) defines the job quality as a sum of objective dimensions (such as contractual length, pay, health and safety at work) derived from the existing literature about the impact of job attributes on workers' well-being.

In this work we consider the job quality as a multifaceted concept, based on a limited number of dimensions that can be described by objective and subjective indicators. If subjective, they do not comprise the satisfaction, that depends on the expectations of the worker and not only from the job condition.

2 Data

The study was conducted on a sample of Italian graduates in 2007 and 2008. The data belong to the Agorà longitudinal survey on the career outcomes of graduates from University of Padua [5]. Respondents were interviewed after 6, 12 and 36 months from graduation, using a CATI (Computer Assisted Telephone Interview) technique. Workers were required to give a wide range of information about their current job, the job search activities, the perception of skill and educational mismatch, and the evaluation of their educational program.

The total number of people who were interviewed 36 months after graduation amounted to 2,885. Among them, only the employed (2,436) were considered in our research.

In addition, we implemented a survey, in which we collected the same data of the Agorà survey from all disabled graduates in 2004-08. There are 307 disabled graduates in this period, but many of them have enrolled to a master degree or have moved. We reached 108 disabled, 74 of them were employed [2]. The disabled persons were interviewed from six months to five years after graduating, but most of them were interviewed two or three years after graduating.

The following analyses have significance only when disabled graduates are compared with not-disabled ones. These two groups show different structure, especially as regards age and major, so that comparisons are not appropriate from a

methodological point of view. In order to make the two groups comparable, each disabled person was matched with one or two[1] not-disabled ones of the same gender, age (5-year classes), disciplinary area (humanities, socio-economic, technical-scientific, life sciences) and type of degree (bachelor, other). The not-disabled sample, was composed of 130 graduates selected from the whole sample of Agora-survey graduates interviewed 36 months after graduating.

3 The Job Quality Indicator

Job Quality is a multidimensional concept, that we try to summarize by means of a composite indicator (CI).

The CI we propose is composed by three dimensions [1]: economic, professional and work-life balance. The economic dimension concerns the aspects that are related to the economic exchange between the worker and the employer, and that are generally included in the formal employment contract. The professional dimension is related with the characteristics of the job which influences the workers' human capital accumulation by enhancing their employability. The work-life balance dimension involves the aspects that affect the workers' personal life and the aspect of work relationships.

Each dimension is composed by several elementary indicators. Table 1 shows the original variables used for the construction of the elementary indicators.

Table 1: Variables used in the construction of the Composite Indicator of Job Quality.

Dimension	Variable	Type
Economic	hourly wage	quantitative
	contractual stability	ordinal
Professional	coherence degree-work	ordinal
	usefulness of the degree	ordinal
	enhancing skills	ordinal
	career perspectives	dichotomous
	team work	dichotomous
	supervision of team work	dichotomous
Work-life balance	working hours	quantitative
	workplace distance	ordinal

As we can see from Table 1, variables are of different nature: dichotomous, ordinal and quantitative. The issue of aggregating variables of different nature takes place. The solutions often adopted are either to convert all the variables to the same scale (such as dichotomous variables) or to attribute a numerical value to ordinal variables.

Our original proposal is to formulate a Composite Indicator as a distance from a minimum reference point. The concept of distance is usually referred to quantitative variables, while we would like to extend it also for qualitative variables, dealing with a distance based on mixed data. Thus, considering a distance for mixed data as the "new variable" from which building the CI, the problem of different units of measurement is

[1] Sometimes only one control could be found.

overcome. Moreover a new concept of CI is conceived: the CI is relative to a reference from which it is desirable to move away; this idea seems to particularly fit the field of CI as development measures of a subject, conceiving the worst possible subject as "a calamity to leave as far behind as possible" [9].

Moreover, in the formulation of the CI we consider the correlation among elementary indicators, in order to avoid the problem of "double counting" the same phenomenon: if two variables are highly correlated, the phenomenon they describe weighs too much in the CI.

The final formulation of the CI is an extension of the Gower's generalized distance [3, 6, 8]:

$$CI_c = \frac{\sum_j^J \frac{\lambda_j \, \mathrm{v_j}}{\mathrm{N_j}} \left(\sum_{i=1}^{N_j} \mathrm{l_i} \, w_i \, d_{cmi}\right)}{\sum_j^J \frac{\lambda_j \, \mathrm{v_j}}{\mathrm{N_j}} \left(\sum_{i=1}^{N_j} \mathrm{l_i} \, w_i\right)} \tag{1}$$

where j is the index for the dimensions and i is the index for the elementary indicators composing each dimension; N_j is the number of indicators forming the j-th dimension; λ_j and v_j are, respectively, the importance and correlation weights of the upper level of the structural hierarchy, that is the importance and correlation of each dimension; l_i and w_i are, respectively, the importance and correlation weights at the lower level, for the elementary indicators; d_{cmi} is the dissimilarity measure of subject c from the minimum m with respect to the variable i. Correlation or cograduation measures have been used for the computation of correlation weights, depending of the nature of the variables.

The definition of importance weights (calculated only for dimensions, equal weights are used for elementary indicators) is based on a hybrid approach [4], where the opinions of a representative group of individuals are elaborated with statistical methods. The weight assigned to each dimension of job quality is calculated assuming that a poor job quality may be a reason to job dissatisfaction. Respondents were required to express their level of job satisfaction (on a range between 1 and 10) for the job as a whole and referring to a set of job characteristics. Weights are the regression coefficients obtained via a ordinal logistic regression model, where the dependent variable is the level of overall job satisfaction and the explanatory variables are the satisfaction for the job attributes included in the dimensions. Dimensions are weighted using the arithmetic mean of the regression coefficients which refer to job attributes related to each dimension.

Weights are 0.241, 0.602 and 0.158 respectively for Economic, Professional and Work-life Balance dimensions.

4 The Job Quality in Disabled and not Disabled Graduates

In Table 2 we show the values of Composite Indicator, dimensions and elementary indicators (calculated as distances between 0 and 1) referred to not-disabled and disabled graduates.

The most important result is that the CI is equal for disabled and not-disabled, but this result comes from different dynamics. Economic dimension is significantly higher

for disabled graduates (0.55 vs. 0.44, p=0.0001), probably because of more favourable contracts, thanks to the Italian law. Fifty-nine percent of disabled graduates work in the public sector (versus 10.8% of not-disabled), and 45.8% of disabled passed a public competition, versus 17.6% of not disabled [2].

On the contrary, the professional dimension is higher among not disabled, and the difference is mostly due to the very low coherence between university studies and kind of work among disabled (0.18 among disabled vs. 0.58 among not-disabled, p<0.0001).

Even if the difference of the professional dimension between disabled and not-disabled is lower than the difference of the economic dimension, because of the higher weight of the professional dimension the CI results equal in the two groups.

Table 2: Value of Composite Indicator, Dimensions and Elementary Indicators in not Disabled and Disabled Graduates.

Indicator	Not disabled	Disabled	p-value
COMPOSITE INDICATOR	**0.54**	**0.54**	**0.934**
Economic Dimension	**0.44**	**0.55**	**0.000**
Elementary indicator of wage	0.26	0.25	0.760
Elementary indicator of contract	0.63	0.87	<0.0001
Professional Dimension	**0.56**	**0.51**	**0.091**
Elem. Ind. “Degree of specialization”	0.68	0.68	0.894
Elem. Ind. “Coherence degree-work”	0.58	0.18	<0.0001
Elem. Ind. supervision of team work	0.34	0.25	0.215
Elem. Ind. “Career perspectives”	0.41	0.44	0.693
Elem. Ind. “Being in a team work”	0.68	0.86	0.003
Elem. Ind. “Enhancing skills”	0.68	0.64	0.232
Work-Life Balance Dimension	**0.62**	**0.61**	**0.710**
Elem. Ind. “Distance home-work”	0.59	0.63	0.001
Elem. Ind. “Working hours”	0.65	0.58	0.167

5 Conclusions

Conclusions regard both the methodological approach and the obtained results.

From the methodological point of view, results emphasise the effect of compensability. Indeed, the equality of the CI in disabled and not-disabled is due to the “compensation” between professional and economic dimension. Such compensation is due to the structure of the CI. Is it admissible? It depends on the context: in this case, we think that compensability has to do with the professional choices. The worker accepts some negative aspects if they are compensated from some advantages. For instance, working away from home in exchange for a better salary, or having a low salary in exchange of an interesting and professionalising job.

With regard the obtained results, it is clear that the job quality of disabled and not disabled graduates originates from different job dimensions: in view of the contractual stability, disabled graduates suffer a very low coherence of their job with the university formation. Because in this study disabled and not-disabled are matched also with

respect the disciplinary area, the difference of coherence is not due to different specialization between the two groups.

The Italian legislation for study and labour rights of the disabled is one of the better in the world, but it can control objective aspects of the job, like the contract, and not the coherence, the use of competencies, the professionalism. These intangible aspects can not be imposed by a law; they should be reached by means of a culture pervading the whole society.

References

[1] Boccuzzo, G., Gianecchini, M.: The job quality of graduates: Proposal of a composite indicator. Poster, ISQOLS XI Conference "Discovering New Frontiers in Quality of Life Research", November 1-4, 2012, Venice (ITALY)

[2] Boccuzzo, G., Fabbris, L.: How do the disabled graduates achieve and spend their human capital gained at university? In: Fabbris, L. (ed) Indicators of University Education Effectiveness, pp. 105-118. McGraw-hill, Milano (2012)

[3] Cox, T., Cox, M.: A general weighted two-way dissimilarity coefficient. J Classif, {17}, 101--121 (2000).

[4] Decanq, K., Lugo, M.: Setting weights in multidimensional indices of well-being. OPHI-workshop on Weighting Dimensions. Oxford (2008).

[5] Fabbris, L.: Il progetto Agorà dell'Università di Padova. In: Fabbris, L. (ed.) Dal Bo' all'Agorà. Il capitale umano investito nel lavoro, pp. III-XLV. Cleup, Padova (2010).

[6] Gower, J.: A general coefficient of similarity and some of its properties. Biometrics, {27}, 857—871 (1971).

[7] Muñoz de Bustillo, R., Fernández-Macías, E., Antón, J., Esteve F.: Measuring More than Money. The Social Economics of Job Quality. Edward Elgar, Cheltenham (2011).

[8] Maron, L.: A Proposal for a New Composite Indicator Based on a Weighted Measure of Distance. Master degree thesis in Statistical Science, University of Padua (2012).

[9] UNESCO: Synchronic and diachronic approaches in the UNESCO project on Human Resources Indicators. Wroclaw Taxonomy and Bivariate Diachronic Analysis (1972). http://unesdoc.unesco.org/images/0000/000008/000801eb.pdf.