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Measuring human capital

Towards human capital satellite accounting

Note by Istat, Italy

Summary

The paper discusses the measurement of human capital in Italy: the growing demand for this information, the different aspects relevant for human capital measurement and the strategic approach of Istat, the national statistical office of Italy. The strategy is intended to be internationally harmonised. Measuring stocks of human capital and advancing towards the construction of a human capital satellite account are part of the strategy.

I. Introduction

1. A growing demand for information about knowledge and learning has recently developed in Italy, mostly under the impulse of Italian academic researchers and international organizations (Organisation for Economic Co-operation and Development (OECD), United Nations Economic Commission for Europe (UNECE)). Istat's participation in international projects focused on education and the quality of learning – e.g. the OECD-Programme for International Student Assessment (PISA) and the International Adult Literacy Survey (IALS) – is an example of interest in the measurement of education and human capital (HC) within official statistics.

2. The scientific literature has long pointed out the importance of cultural and social aspects for understanding both economic growth and non-monetary aspects of social development (Becker, 1964; Coleman, 1988; Putnam *et al.* 1993). Unfortunately however, a sometimes harsh theoretical debate has not succeeded, so far, in producing appropriate follow up in terms of measures and indicators, as also recognized by the Stiglitz-Sen-Fitoussi report and earlier by the Report of the Joint UNECE/OECD/Eurostat Working Group on Statistics for Sustainable Development.

3. The necessary consensus, indeed, has been proved to be not easy to reach, internationally and even at national level, thus delaying work within official statistics on conceptual frameworks and indicators production. Lack of information has then heavily limited the ability of individuals to make informed choices on their education and training paths no less than that of policy makers to guide collective choices on important issues like fertility, education, health, social participation or the organisation of workplaces.

4. Today, however, this challenge is definitely in the agenda of official statisticians, and an important commitment is shared internationally to overcome together the most relevant difficulties.

II. Concept and approaches

5. Very different aspects are relevant for the definition and measurement of HC: e.g. fertility or migration, on one side, and education or training on the other side. For the latter – regarded as intangible HC as opposed to tangible HC – public expenditure and market production are at the core of measurement, which is not the case for the former. Only a harmonised measurement of all relevant aspects, however, can provide effective support to the various users for their choices, being them individual or collective.

6. The relevance of HC in economic theory has stimulated the search for indicators to measure country-wide aggregate stocks. Apart from the World Bank approach, which is residual-type (2006), main approaches include: 1) “cost-based”, including tangible, intangible and opportunity costs for education in an individual's perspective; 2) “income-based”, with the discounted life time income as a measure of investments in human capital; 3) “education-based”, focused on input and output indicators on education expenditure; 4) the approach based on students' cognitive capabilities measured by the international survey on learning of fifteens. The “cost-based”, “income-based” and “education-based” indicators are not independent of each other, the input needed for producing the HC – in the first case – and two different outcomes of the same HC being at issue. While based on solid theoretical ground, none of these methods is free from defects. Two types of errors may affect more or less each of them: 1) the measure fails to adequately assess the key elements of human capital, 2) the data used for the measurement are of poor quality. The specificities

of the various experiences of implementation are crucial in order to understand the solutions adopted to overcome these problems (Le, Gibson, Oxley, 2005).

7. In the latest years there has been a flowering of studies related to the application of the income-based method according the Jorgenson-Fraumeni approach (Jorgenson, Fraumeni, 1992). In particular, this approach is followed in the OECD Human Capital Project (OECD, 2009; Mira, Liu, 2010), aimed at the production of harmonized measures of human capital. According to a review on this topic (Righi, Baldassarini, 2011), out of 13 recent papers 10 follow the income-based approach, 2 both the income-based and the cost-based approach and only in the Netherlands a hypothesis of a satellite account is followed (Bos, 2009).

8. The System of National Accounts 1993 and its 2008 update do not consider HC as an economic resource, one main reason for this being that HC is not subject to property rights. National accounting can be extended to the measurement of HC, however, through satellite accounts on education and other relevant aspects. Satellite accounting, in fact, is an excellent opportunity to experiment new approaches based on the same fundamental concepts and classifications of the core system of national accounts.

9. The starting point is an in-depth conceptual work on the stocks of HC, as it has been the case e.g. with satellite environmental accounts. Also, there seem to be the conditions for important measurement efforts concerning HC stocks. This seems to be a general orientation, a comprehensive system of integrated social and economic accounting being envisaged as a following step.

III. Istat's strategic approach

10. During the last decade, Istat's efforts concerning HC have been focused both on improving the measurement capability of surveys/specific databases and on progressing with conceptual work. Main activities include: a joint project, involving a number of public and private research institutions, aimed at the definition of a theoretical framework for HC indicators; participation in the OECD Consortium on Human Capital to implement the Jorgensen-Fraumeni approach; participation in the European Union (EU) level analysis of capital (K), labour (L), energy (E), materials (M) and service (S) inputs (EU KLEMS) Project, which will lead, among other things, to new detailed information on labour input; a study for the construction of a satellite account on education (SAE) (Di Veroli, Tartamella, 2010).

11. Recently, Istat has set up an overall strategy for the measurement of HC, intended to be internationally harmonized. Measuring capital stocks of HC and advancing towards the construction of a HC satellite account are part of the strategy. The stocks measurement follows the life-time labour income approach (J-F) limited to the working population (15-64 years), with breakdowns by sex, level of education (3 or 4), employees/self-employed and economic activity. At this stage, only the System of National Accounts (SNA) economic activities are taken into account.

12. A satellite account specific for education (and possibly for training) is deemed to be necessary in order to integrate the inputs of the various learning processes and the economic outcomes of HC; in particular, it would have to include the financing of various producers and their outlays by kind of activity.

13. A further step ahead will be the extension of the HC measures to non-market household production: a new accounting approach is on the way. All the information collected at earlier stages will feed the satellite account for HC. This step requires

considerable methodological development, given the still existing limitations of the SNA (Bos, 2009).

14. Finally, a set of fairly broad HC indicators coming from different theoretical approaches will be selected and made available for users, including e.g. HC measured not only through educational attainment but also through competencies. The aim is to satisfy a wider audience of stakeholders and policy makers.

IV. How to overcome data limitations

15. HC indicators require very detailed basic information and long time series of primary data. All this is not yet available in many national statistical offices, which causes two main adverse effects, in terms of being forced: 1) to bend, in general, the methodology (e.g. the J-F approach) to data availability, 2) to make too simplistic hypotheses when facing specific lack of data. In this situation, the descriptive capacity of analyses based on HC indicators is an issue.

16. On the demographic side things are relatively easier, because the information derives from census/ administrative sources or from large surveys, like the Labour Force Survey. More difficult is the case of income data, which generally comes from surveys with smaller sample size.

17. Integration of databases may help to a great extent. In the Italian case, the use of population series starting with 1977, by gender, single year of age and education level, activity or inactivity (with specifications concerning the economic activity), can help to overcome many limitations of the information available (Di Laurea *et al.*, 2007). Actually, this is deemed to be important for Istat's contribution to the OECD Project.

18. Improved information on income (average labour income, including income from self-employment) is expected from refinements in estimates of the OECD/Centre for Educational Research and Innovation (CERI) Educational Indicators (INES) Project. Furthermore, Istat is considering the option of using data from the EU-Statistics on Income and Living Conditions (SILC) survey, while a significant contribution in terms of earnings estimates will come from the completion of estimations on labour input in the EU KLEMS database (Righi, Baldassarini, 2011).

19. As concerns education and training – fields in which national statistical offices have insufficient data concerning input costs – Istat has developed partnerships with various agencies belonging to the National Statistical System and involved in these matters.

V. Relationships between human and social capital

20. Coleman (1988) looks at human capital as an intangible concept and states that the relevant stocks are “created by changes in persons that bring about skills and capabilities that make them able to act in new ways”. This is in line with Becker's views, recalling the importance of social capital. The continuous interaction between human and social capital is quite evident. The development of human capital is stimulated by the surrounding social environment and by the networks that contribute to its improvement. Network membership provides access to important information and ideas, with informal relationships facilitating the transfer of implicit knowledge, thus improving learning. Networks, norms, institutions and a highly-skilled labour force facilitate social cooperation, underpinning higher levels of investment in physical capital, while enhancing the potential for strategies related to the natural capital as well.

21. Both the World Bank and the OECD have supported the idea of a “clear complementarity link” between human capital and social capital: the development of the former should *per se* foster the development of the latter, in a relationship of virtuous reciprocity. But not everybody agrees: for example, Schuller (2001) believes that social capital is a conceptual paradigm opposed to that of human capital, in so far as it gives importance to the collective dimension, rather than the simple attainment of individual self-interest.

22. According to the Relational goods concept, the social connections among HC holders can transform HC into social capital (Brunetta, Tronti, 1995). In this perspective, not strictly economic output of these virtuous interactions would have to be measured: among others, at an individual level, better health conditions, culture, connections; at a social level, civic, political and social participation, entrepreneurship, low criminality. What we would need is a new measurement framework that takes into account both social and human capital aspects, one that allows to determine HC returns by considering both earnings and other social benefits.

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