The relevance of Lifelong Learning (LL) in the Economics of Education: establishing a research program[1]

Jordi Suriñach

AQR-IREA Research Group. University of Barcelona

Jorge Calero

GIPE Research Group. University of Barcelona

1. INTRODUCTION

The aim of this paper, as an introduction to a monographic issue of *Estudios de Economía Aplicada*, is twofold. On the one hand, it is intended to provide a general framework for a research program on Lifelong Learning, with a special reference to its relevance and impact on European economies. On the other hand, the last section of the paper is devoted to a brief presentation of the different articles which have been selected in this monograph, providing a diversity of perspectives on the field of the Economics of Education.

The topic of Lifelong Learning (LL) has assumed great importance in the policies and practices of a number of international agencies, national governments and institutions of learning in recent years. European economies are currently affected by important economic and social changes, such as globalisation, technological change, the shift to a knowledge-based society and population ageing, which have a strong impact on increasing skill requirements and return to education. On the other hand, educational inequalities increased as the low-skilled face higher income and unemployment risk. To respond to these challenges, an increasing number of governments, policy makers and decision-makers in the European Union have proposed and put forward a lifelong approach to learning. Continuing education helps workers keep their skills up-to-date and reduces the likelihood of labour market exclusion, helping to reach a smart, sustainable and more inclusive growth. The need for improved skills development and LL participation of the European adult population, expressed in numerous European Council decisions[2], especially in connection with the Lisbon strategy, and later on in the Education and Training 2020 strategy[3], is at the base of many European agencies working in the monitoring of policies on employment or education and training concerning either the total population or specific groups like workers, youth, etc.

[1] This paper is based on a research proposal presented by a EU consortia to Horizon 2020 programme. We would like to thank all IMPAKT-L2 partners for their ideas and suggestions preparing the proposal.

[2] e.g. Council Conclusions of 22 May 2008 on adult learning (2008/C 140/09)

[3] Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020') (2009/C 119/02)

Even though large amounts of money have been invested through numerous initiatives about LL along Europe, their impacts have been uneven and adult education is probably inadequate in some European countries. It is clear that there are policies and approaches to implementation of LL initiatives that are more effective than others, and that can achieve higher impacts with the same resources.

However, policy makers, firms and other stakeholders are often left with little guidance, when it comes to choosing sensible policies and strategies for training and re-training, and which LL programmes are worth investment. Because of this, there is still a need to systemizing the existing evidence on the effectiveness of LL programmes, and to provide it in forms which are accessible to a wide audience, not necessarily just economic experts, but by the people who are regularly involved in policy making. In particular, to avoid opinion-based policy, i.e. policies just based on the opinions of individuals and lobbies, there is a need to capitalize on the existing knowledge base and to move towards more systematic evidence-based decision making (European Commission, 2013).

Although there are numerous studies and works in the field of LL along Europe, there is also a high heterogeneity in research outputs, and therefore it is difficult to conduct a comparative analysis to extract valid conclusions. Thus, a review of the existing evidence on the effectiveness of the different policies and forms of LL (formal, non-formal, informal) is lacking. This review should go beyond the simple consideration of the participation into training programmes and give a greater emphasis to the detailed features of the many types of LL policies and programmes in which workers may be involved and a full account of the heterogeneous experiences of a wide set of very different countries. Moreover, while some types of adult education may be optimally provided by private institutions, public resources need to address problems of budgetary constraints and imperfect information, which are especially relevant for the most disadvantaged young adults. Continuous technological change requires a continuous update of worker's knowledge and skills, and can result in growing inequalities. In fact, the most vulnerable groups – the low skilled, the unemployed, older and young workers, immigrants, ethnic minorities, persons with disabilities – have less access to education and training opportunities and face larger risks of labour market exclusion and poverty. In the aftermath of the economic crisis that strongly affected most European countries leading to large public deficits, it is of utmost importance to ensure that public investments are directed to the most effective LL policies and to those that are directed to those vulnerable groups that are not able to privately invest in continuous education. Further research is needed as the effectiveness of different types of LL in some of these groups has not been sufficiently investigated.

Thus, first, it is needed a deeply analysis to determine the common principles of effective practices in Europe and to facilitate their adoption in other regions and circumstances. And second, it is needed new empirical evidence on the effects of LL on the labour market position and earnings of young adults and vulnerable groups with the aim of bettering their circumstances and opportunities, as these groups are normally less involved in adult education.

In order to apply this needed new knowledge, we suggest using an Intelligent Decision Support System (IDSS), as an easy-to-use tool so that they could be fruitfully employed by non-academic users including policy makers and stakeholders.

2. TAKING ADVANTAGE OF EXISTING KNOWLEDGE

There are many interesting studies and much literature in the field of LL, both academic work published in scientific journals, and non-academic work, such as reports from institutions involved in LL (namely public or private training centres or firms, labour unions, employers' associations, etc.).

Despite the common wisdom that LL is an all-purpose solution to individual employability problems and firms' lack of competitiveness, the evidence on the causal effect of LL policies and programmes is far from being well understood. Less is known about the desirable features an effective LL programme.

For instance, some heterogeneity of results emerges from the estimates of the returns to workplace provided training, on which evidence is much more scant. In their survey, Cohn and Addison (1998) report, for instance, returns ranging between 0 and 13% in the US. Moreover, the existing evidence generally refers to the return of participation into training (i.e. the coefficient of a simple dichotomous indicator for having been provided training by the employer), with little or no indication of the characteristics of the training received or its length. Similarly, many training programmes show weak and insignificant effects after one year, but are positive and significant during the second year. This clearly opens room for considerations as to the time horizon that should be used to assess the effectiveness of LL. As programmes that are meant to improve the lifelong chances of individuals, they should probably be assessed on a life-cycle basis, but this can rarely be done owing to the lack of longitudinal data.

In general, it has been observed elsewhere that in spite of the centrality of LL in promoting worker employability and economic growth, sound evidence on the effectiveness in terms of employment outcomes and of LL policies' implementation and delivery is in short supply (Davies 2004; European Commission 2013). In particular, to avoid opinion-based policy, there is a need for moving towards a system of evidence-based decision making (European Commission, 2013).

Because of this, there is a need to systematize the existing evidence on the effectiveness of LL programmes, and to provide it in forms which are accessible to a wide audience, not necessarily made of economic experts, but by the people who are involved in policy making on a daily basis.

Additionally to the published literature, in table 1 we present some background about research projects that have analysed LL.

PROJECTS	DESCRIPTION
LLLight'in'Europe – LifeLong, Learning, Innovation, Growth and	LLLight'in'Europe project investigates the following questions:

Human Capital, Tracks in Europe (www.lllightineurope.com)	1. How do successful enterprises actively employ LL for their competitive advantage? 2. Which public policy environments facilitate LL for such enterprises and entrepreneurs? 3. How does LL interact with and promote innovativeness on the enterprise level? 4. How much of which skills do European adults actually have? 5. What are the actual learning mechanisms in adult life that lead to these skills? 6. What are the causal effects of these skills on growth, competitiveness and social cohesion?
Lifelong learning 2010 (LLL2010) – Toward a lifelong learning society in Europe: the contribution of the education system	The objectives of the project are: - to provide an analysis of the role played by education systems in the enhancing LL and dependency of this role on relevant institutions at micro, meso and macro levels - to provide an empirically-based analysis of the adequacy of LL policies in Europe and their implications for different social groups, especially for socially excluded groups - to develop relevant policy proposals for LL strategies to decrease social exclusion.
YOUNEX – Youth, unemployment, and exclusion in Europe: A multidimensional approach to understanding the conditions and prospects for social and political integration of young unemployed" (http://www.younex.unige.ch)	Three main objectives: (1) to generate a new body of data on young unemployed (in particular, young long-term unemployed), but also precarious youth; (2) to advance theory and extend knowledge on the social and political exclusion of young unemployed; and (3) to provide practical insights into the potential paths for the social and political integration of young unemployed.
BeLL–project (2011-2014, www.bell-project.eu)	The Benefits of Lifelong Learning (BeLL) study investigated the benefits to learners of participation in organised non-formal, non-vocational, voluntary adult education (hereafter "liberal adult education") in Europe. The main purpose of the BeLL study was to investigate the individual and social benefits perceived by adult learners who participated in liberal adult education courses.
Relevant recent EIESP research.	This study maps and analyses how learning outcomes approaches are influencing European education and training policies and

Cedefop "The application of learning outcomes approaches across Europe: A comparative perspective" (2014 – 2015)	practices in so far as they are seen as a key lever for change and reform. The report tracked reforms across all education subsystems and for recognition of non-formal and informal learning in 33 European countries.
Cedefop "Return to work: Work-based learning and the reintegration of unemployed adults into the labour market" (2013)	This study investigates how work-based learning (WBL) programmes, focusing on the acquisition of key competences, can contribute to getting low-qualified unemployed adults back into the labour market. It is based on research across 15 European Union (EU) Member States.
LLAKES: Quality of Work and Employment in Europe (2011-2012)	Four domains of job quality were identified and indicators devised using the European Working Conditions Survey (EWCS) from 1990 to 2010. Recent trends and inequalities are identified.
LLAKES: Training in Britain (2011-2015)	Trends in training participation and volume were analysed across the UK. A surprisingly large fall in training volume was discovered between 1995 and 2012. Explanations for and implications of this fall are discussed.
INCLUD- ED project Strategies for inclusion and social cohesion in Europe from education (Priority 7, 6th Framework Programme of the European Commission).	This project aimed at explaining educational actions that can influence school failure or success at the level of compulsory education, focusing on social groups that are vulnerable to be socially excluded (youth, migrant, cultural groups e.g. Roma, women and people with disabilities).
Reflex / Hegesco (ROA)	Large-scale European survey on school to work transition among higher education graduates
Lifelong Learning Survey (ROA)	Monitors since 2004 post-initial learning, informal learning and knowledge development in the Netherlands.
GINI – Growing Inequalities' IMpacts http://www.gini-research.org/articles/home	The GINI Project studied the economic and educational drivers and the social, cultural and political impacts of increasing inequality with novel contributions on the measurement of income, wealth and education inequality.

The results of the literature review reveal the lack of data and scientific evidence in certain areas (blind spots), and uncertain results regarding the impact of certain initiatives depending for instance on the country or target groups they address (mixed results).

Some of these deficiencies are well-known. Specially, efforts might be focused on obtaining new evidence on the impact of LL on vulnerable groups of young people. Following, we suggest some topics to be considered:

- LL in the workplace: impact on low educated workers, analysing the effectiveness of LL on workers depending on personal and job-related factors in relation to features of training programs, and the relevance of transmission of skills and knowledge between workers (peer learning) and learning by doing (informal learning) on vulnerable youth.

  In spite of the emphasis often given to LL, evidence on the economic returns to (informal and non-formal) LL is surprisingly thin when compared to that on the returns to schooling. Moreover, most of it comes from the U.S. and the U.K. (Bassanini et al., 2005, Cohn and Addison, 1998).

  Additionally, as some skills are more efficiently learned in the workplace, post-initial learning is becoming more important. This holds not only for participation in formal training but even more for informal learning in the workplace. Borghans et al. (2014) show that in the Netherlands 96% of the time full-time employees spend on learning activities refer to informal learning. In that study, learning-by-doing by performing new tasks, and knowledge spill-overs when working together with more experienced colleagues have been identified as two major sources of informal learning. Literature suggests that learning from peers has a significantly positive causal effect on employee performance (De Grip and Sauermann, 2011). For the vulnerable youth and other disadvantaged groups (Bartel et al. 1985), informal learning and peer learning could play an even more crucial role in human capital formation compared to other workers as they might learn better in practice than in a classroom setting. There is indeed evidence, for example, that low-educated workers participate in training courses less often, and that this is related to their exam-anxiety (Fouarge et al. 2013). For those workers, alternative assessment methods with lower stakes and/or informal learning are likely substitutes. However, causal evidence on the effect of informal learning on performance is thin.

- Effectiveness of formal qualifications after entering the labour market.

  The reasons behind early school leaving have been intensively investigated (Lyche 2010). The returns to tertiary education overall have also received attention (see e.g. Harmon et al. 2003 or Hanushek et al. 2015 for an overview). However, the existing evidence on the determinants and benefits of pursuing a higher education after entering the labour market is limited. Most evidence is available for Sweden (Stenberg, 2011; Hällsten, 2013) and the UK (Silles, 2007). In the context of changing skills demand in the information-based economy as well as the increasing age of the working population, the returns to investing in tertiary education have increased in most European countries, but it should be improved.

  Additionally, in the context of the increasing demand for qualified workers in the information-based economy, and the increasing number of years of employment before retirement, achieving a higher educational degree yields a significant positive return in most countries of the EU (Boarini and Strauss, 2010). Most students start higher education directly after ending secondary education. However, an

increasing number of persons return to vocational or general higher education several years after finishing secondary education. It should also be assessed the returns to acquiring advanced vocational training and tertiary educational degrees after entering the labour market.

- Vulnerability depending on personal characteristics: young people with disabilities; gender-digital divide; Roma people, among others.
    - People with disabilities represent one of the most important groups that should be addressed by this topic, both in terms of vulnerability and in terms of number. They have on average lower educational qualifications than the general population and struggle with the transition into and maintenance of employment. This situation translates into a high risk of non-participation in the labour market, poor job quality, poverty and social exclusion (DWS 2014, Ibarrarán, et al, 2012). Some indicators (ANED, 2013) referred to the EU-27 provide clear evidence: 19% of young people with disabilities are early school leavers, compared to 11% of non-disabled young persons. 57% of persons with disabilities aged 20-64 participate in the labour market (employed or unemployed) compared to 80% of persons without disabilities. The unemployment rate of the 20-64 year-old population with disabilities is 17%: this rate, for the population without disabilities, is 10%. Additionally, 31% of people with disabilities aged 16 and over live in households that are at risk of poverty or social exclusion, compared to 21% of persons without a disability in the same age group. In any case, few studies on the effectiveness of LL on this specific group exist.

    - Gender aspects may influence the effectiveness of LL initiatives. While policies aimed at improved gender equality have moved forward in recent years, there is little research as to whether there is a gender gap coinciding with the digital divide between those who use and benefit from ICT and those who do not. Technological changes, particularly the increasing presence of information and communication technologies in all areas of life, have led to a growing demand for higher-level cognitive skills that involve understanding, interpreting, analysing and communicating complex information. In this context, there has been an extensive discussion about the digital divide –that is, the divide between people who have access to technology, computers and the Internet and those that do not. Closing the gap by increasing ICT usage is considered as a critical factor in reducing social and economic inequalities. In fact, according to the OECD Survey of Adult Skills (PIAAC), significant shares of young adults still have trouble using digital technology and communication tools and although the gender gap in ICT usage at home is closing, big differences still exist in ICT usage at work in most countries. Research about gender inequalities is required at the national and European level.

    - According to the rough estimates of the European commission, the size of the Roma population in Europe is about 10-12 million, of which around 6 million are EU citizens. In the context of the population ageing and shrinking populations in CEE (Central and Eastern Europe), the

integration of Roma people is in line with the Inclusive Growth priority of the EU 2020 strategy. Especially in the CEE countries Roma suffer spatial and educational segregation, labour market and healthcare discrimination and usually these are listed as one of the main push factors for the "East to West" migration within EU. Although there is growing research and policy interest towards the Roma population in Europe (Pamporov, A. (2010); World Bank (2012); FRA (2014); Belton B. (2005,a,b); Bancroft A. (2005); Kyuchukov (2000)), existing studies on the Roma labour market transitions to the first job and possible impact of the LL are limited in number, usually with respect to one home country or one host country. There is certain gap in the research on the "learning jump" of the migrant Roma compared to the huge educational drop outs in their home countries.

- Vulnerable working status: risk of social exclusion for economic reasons: Effects of LL on young unemployed individuals, and effectiveness of unpaid internship programs especially for disadvantaged youth (centred in young people of ethnic minority, from lower socio-economic backgrounds and those not in paid employment or education).

Assessing the role of formal and informal training is crucial when considering specific vulnerable groups. Unemployed young adults might be especially sensitive to LL in terms of potential improvements of their labour market performance. This would be even more relevant in the light of the Great Recession, the employment effects of which have been especially detrimental for youth with low levels of formal education. Formal and informal training activities might indeed represent a way to escape from long-term unemployment and social exclusion among this target group.

In the current economic climate, with high youth unemployment, unpaid internships have become an increasingly common way used by young people to gain experience and access to work. The Sutton Trust in the UK estimated that the cost attached to doing unpaid internships can be up to £800-£1000 per month. These high living costs imply that unpaid internships are only affordable by young people coming from wealthy families. Currently, there is not even an overarching definition of 'internship'. A report in the UK (IPPR, 2010) highlights how internships can vary by length, content, intensity and quality (IPPR, 2010). Interns tend to be young graduates, between 20-35 years old and living in urban areas. Often they are able to rely on their families for housing and other forms of financial support.

- Other specific groups that are also relevant in terms of number and/or vulnerability, such as immigrants, ethnic minorities, NEETS (Eurofound 2012; Alegre et al. 2015) or low-skilled (Fouarge et al. 2013; Hidalgo et al 2014; Mohr et al 2015). Some of those groups are already covered by different works and studies[4].

[4] See, for example, the SIRIUS network (European Policy Network on the education of children and young people with a
migrant background) and Eurofound's recent report on Neets
http://www.eurofound.europa.eu/emcc/labourmarket/youth).

The topics that should be considered related with LL are: (a) the main vulnerable group/s targeted by a specific LL intervention (the low skilled, the unemployed, older or young workers, immigrants, persons with disabilities); (b) the main content of the LL intervention (technical skills, life skills…); (c) the systems and procedures supporting participants' learning processes, or course type (class learning, distance learning, seminar-conferences-fairs, informal learning through senior colleagues, recognition of non-formal and informal learning, other), course duration; (d) the cost of the intervention, whether the course was totally or partially funded by the final user or not; (e) whether the intervention had a positive effect or not, and its magnitude (outcomes considered could be employment, wage, innovation, and other individual and social benefits); (f) evaluation of the main reasons why an intervention worked or did not work, with special attention to the institutional context in which it was implemented. Obviously, it's also interesting to know the features of the different studies and analyses, such as source, methodology used for impact evaluation (e.g. regression analysis, matching estimator, along with the nature of evaluation, i.e. correlation vs. causation); type of data (administrative, survey, etc.); and the year and region/country of the intervention[5].

All this information could be added into the IDSS tool, based on a homogeneous criteria to consider it. The IDSS would allow policy makers, firms and other stakeholders to use the IDSS to receive important updated feedback and recommendations that will help them decide the most adequate initiatives or strategies to be implemented according to their specific characteristics and objectives. And even more important, the recommendations would be evidence-based, so that the decisions would count on a scientific support. This would facilitate the adoption in other regions of innovative and effective policies, thus maximizing the use of resources.

Another issue to consider is the international comparability of databases. They have gained growing importance in education statistics, also for adult education and training. Unfortunately, lack of data has been a serious deficiency for comparative research until recently. However, in many countries, available statistics do not provide an adequate picture of lifelong learning's contribution to the development of skills. One reason is the frequent undue focus on participation data neglecting the large variation in the volume and quality of training (e.g. EC 2014). Cross-country comparisons are more difficult and may also be affected by the use of different methodologies, varying understanding of what constitutes training, the use of different criteria when defining indicators, country-specific institutional settings, cultural patterns of learning behaviour, and language-specific terminology. The combination of multiple international and national datasets with comparable, high-quality data on training is required and would be a novel contribution to the research on LL. It will help to inform policy makers on the state of LL beyond the existing sources.

Taking into account that, it is needed a general analysis on datasets that are available at the EU level (LFS, AES, PIAAC, EWCS, and CVTS), but there is also a need to supplement the evidence base with

[5] We are in debt with Massimiliano Bratti, which give us the original idea of this summary of topics.

relevant national sources from a few selected, high-quality national surveys from different EU countries, with a view to seeing what lessons can be drawn (e.g., the Understanding Society Study in the UK, National Educational Panel Study and BIBB/BAuA Employment Survey in Germany; ROA Lifelong Learning Survey and SCP Labour Supply panel in the Netherlands). The starting point could be some earlier work going back to Bassanini et al (2005) and more recent research by Eurostat (2012) and CRELL (2012, 2014). Key objectives should be to evaluate quality of the available training data and to identify good and bad practices.

3. IDENTIFICATION OF BEST PRACTICES AND TRANSFERABILITY

Always with a special focus on young people and vulnerable groups, the analysis of all this information would enable to identify and summarize “common principles of effective practices”, i.e. the common features of LL interventions that were particularly effective, from selected countries and institutions.

Over and above the existence of significant positive effects of the different forms of LL, it is important to identify the magnitude of these effects on the different outcomes, in order to identify the LL interventions giving the best “value for money”, as well as the main factors that explain their success. This would allow to assess or recommend as to which LL strategy is the most suitable to achieve certain impact.

On that sense, the objective should be to summarise the policies and practices intended to enable young and vulnerable groups to gain access to and succeed through LL across the EU member states. Innovation policies should also be evaluated, identified “country-policy practices” and country-specific recommendations. Policies would be described in the context of the general system of education and training prevailing in the country. It should be focus on the origins, scope, objectives and relevant patterns of the policies. Also, European and national focus on “competences’ – particularly transversal competences such as critical thinking, constructive management of feelings, risk-taking, initiative, creativity and problem-solving would be very relevant to check.

However, it is possible that to adapt a best practice in a different region or a different context, optimal conditions are required, that may not always be possible due to certain potential barriers: lack of funding, different policy framework, lack of technical means, too much or insufficient demand, lack of investment in capacity building, leadership challenges, the need for time for the intervention to take effect, etc. For that reason, apart from the proper identification of factors, it is necessary to analyse which of these could hamper the success of a concrete initiative, that is, the main barriers that could affect their correct implementation.

4. DEVELOPMENT AND IMPLEMENTATION OF IDSS

All this work should be known by stakeholders in order to consider it in their future actions. We think that the development of an IDSS tool would help on that objective. The IDSS will be able to provide advice on different subjects. Policy makers and stakeholders may be interested in knowing the empirical regularities

on what type of LL interventions are more likely to work (i.e. to have a significant positive effect on the individual outcomes which may include standardized or self-reported evaluations of workers' skills and competences, employment probabilities, wages, job satisfaction, job-stability, etc.) –according to their content, the people they primarily target, and the contexts in which they are implemented, but also their cost-effectiveness.

For instance, a policy maker could use the IDSS in order to gauge (according to the existing evidence) the predicted effect of a list of LL strategies targeting prime age female adults with low levels of education, and mainly consisting in classroom training (four meta variables: age, gender, education level, content and teaching methods), and the system will return (i) a list of the existing studies on similar LL along with their main findings, and (ii) the expected average effect of policies with these characteristics computed on the basis of the meta-analysis.

The IDSS would be designed to be flexible enough such that it allows for the incorporation of new, not yet published national and international studies, in the future.

5. CONCLUSIONS

Summarising, we think LL might be deeply analysed, and we suggest the following steps:

1. First, the policies and practices across the EU member states related to LL will be summarized. A common terminology and taxonomy will be created.
2. Second, to review, collect and analyse previous academic and non-academic studies in the field of LL in order to draw upon most of the numerous existing works that are relevant to the topic of the project.
3. Third, to complete the results of the existing studies with additional research focusing the efforts in the impact and effectiveness of LL in different groups of young people and vulnerable groups.
4. Fourth, to structure and gather all the information and results in an IDSS so that they are accessible to non-academic users including policy makers and stakeholders.
5. Fifth, to extract the main conclusions of the gathered information, to provide recommendations for the correct transferability of results, to validate the IDSS with final end-users and to compile all the results and conclusions in policy guidelines to relevant stakeholders.

6. PRESENTATION OF THE SPECIAL ISSUE

Additional to this introductory paper, the Special Issue contains 5 interesting papers about different topics on Economics of Education.

The first one is presented by Karsten Albæk, titled "A test of the 'use it or lose it' hypothesis in labour markets around the world". As the author explains, the aim of the paper is to investigate skills and the use of skills at work in 21 OECD countries for people from 35 to 65 years old. The hypothesis is that "the

deterioration of skills with age might be more pronounced in occupations with a limited use of skills than in occupations with more intensive use of these skills". The author obtains that "high-skilled workers have higher measured skills than low-skilled workers and high-skilled workers use skills more at work than low-skilled workers. Measured skills decline from the age of 35 both for high- and low-skilled workers at about the same pace. The use of skills at work also declines from the age of 35 for both high-skilled workers and low-skilled workers at about the same pace, and at about the same rate as measured skills", independently of the use of cognitive skills at work. So, the evidence obtained does not support the 'use it or lose it' hypothesis.

The second paper that analyzes the returns of skills are the one presented by Vicente German-Soto, Edgar J. Sánchez Carrera and Leonardo D. Tenorio Martínez. The title is "On the Skill Premium Hypothesis in Mexico: An Analysis by Scientific Area". Using a GMM-Dynamic panel this work "estimates the short-run relationship between the ratio of number of college-educated workers and high-school educated workers with the ratio of their respective incomes. The analysis is by scientific area of the Mexican states along 2005-2010". As they explain, skilled labor is actually more abundant, so the skill premium is declining in most of the scientific areas, in accordance with the skill-biased technological change hypothesis. The results of the paper confirms for the period and the country analyzed that the skill premium hypothesis is fulfilled: increments in the relative supply of skills reduce the skill premium in the assessed scientific areas. This asymmetry of treatment between workers in the functioning of the Mexican labor market seems to be increasing. The low elasticity of substitution among skilled and unskilled workers reinforces the explanation of the persistence of low salaries. Anyway, the authors suggest the necessity to improve the model including some other determinants (as the technology). The economic policy recommendation claims by a major connection among human capital and labor market, by linking the high education and production systems through most direct stimulus.

The following two papers analyze different issues around acquisition of competencies in the education system. Thus, the paper written by Raul Ramos, Juan Carlos Duque and Sandra Nieto focus on the relevance of geographical location of the students in the subject areas of mathematics, science and reading. The paper is titled "Decomposing the rural-urban differential in student achievement in Colombia using PISA microdata". Using three PISA surveys waves for the period 2006-2012, in Colombia, the paper examines the differences in educational outcomes between students attending schools in rural areas and those enrolled in urban schools. The descriptive analysis of the data shows that "the educational outcomes of rural students are worse than those of urban students" but the estimated results coming from an estimated education production function concludes that most of the differential is attributable to family characteristics as opposed to those of the school. From a policy perspective, the evidence supports the need to complement measures of positive discrimination of rural schools with actions addressed at improving household conditions.

Finally, the last paper of this Special Issue, by Calero and Escardíbul, analyzes the determinants of the gap between the performance of native and immigrant students in Spain, using PISA-2012 data. The paper

is entitled ‘Educational process and native and immigrant students’ results. An analysis based on PISA-2012’. Specifically, the competences on mathematics are analyzed, by means of a series of multilevel regressions, in which special attention is paid to variables related to immigration. Results show that the differences between native and immigrant students are partially explained by the effect of variables related to schools and especially to the students themselves. The authors find significant differences in performance associated to the difference between first and second generation immigrants and no significant effect of the language spoken at home. Additionally, at the school level, results show a special sensitivity of immigrant students in front of variations in the average schooling years of the school parents and a negative effect of the proportion of immigrant students at the school, although such effect is only identified, for native students, starting from a high level of concentration (30%).

REFERENCES

ALEGRE, M. À., CASADO, D., SANZ, J., & TODESCHINI, F. A. (2015). “The impact of training-intensive labour market policies on labour and educational prospects of NEETs: evidence from Catalonia (Spain)”. *Educational Research*, (ahead-of-print), 1-17.

ANED – Academic Network of European Disability Experts (JUST/2011/PROG/PR/01/D3-30-CE-0450002/00-88). 2013 “Annual Activity Report. Human European Consultancy and Centre for Disability Studies” – Leeds University

BANCROFT, A. (2005). “Roma and Gypsy-Travellers in Europe England and US”. Ashgate.

BARTEL, A. P., and LICHTENBERG, F. R. (1985). “The comparative advantage of educated workers in implementing new technology: some empirical evidence”. NBER Working Paper Series. No 1718.

BASSANINI, A., BOOTH, A., BRUNELLO, G., DE PAOLA, M. and LEUVEN, E. (2005). “Workplace Training in Europe”, IZA Discussion Paper, 1640.

BELTON, B. (2005, a). “Gypsy and Traveller Ethnicity: The social generation of an Ethnicity”. London New York: Routledge.

BELTON, B. (2005, b). “Questioning Gypsy Identity: Ethnic Narratives in Britain and America”. AltaMira Press.

BOARINI, R. and STRAUSS, H. (2010). “What is the private return to tertiary education?: New evidence from 21 OECD countries”, *OECD Journal: Economic Studies*, Vol. 2010/1.

BORGHANS, L., FOUARGE, D., DE GRIP, A and VAN THOR, J. (2014). “Werken en leren in Nederland”. Maastricht: ROA-R-2014/3.

COHN, E. and ADDISON, J. (1998). "The Economic Returns to Lifelong Learning in OECD Countries". *Education Economics*, *6 (3),* pages 253-307. Taylor & Francis Journals.

CRELL (2012, 2014). Centre for Research on Education and Lifelong Learning. https://crell.jrc.ec.europa.eu/?q=publications/year

DAVIES, P.H. (2004). “Is Evidence-Based Government Possible?”. Jerry Lee Lecture 2004, 4th Annual Campbell Collaboration Colloquium Washington DC, 19 February 2004.

DE GRIP, A. and SAUERMANN, J. (2011). “The Effects of Training on Own and Co-Worker Productivity: Evidence from a Field Experiment”, *The Economic Journal*, *122,* 376-399.

DWS (2014). “Annual Report 2014”.

EUROFOUND (2012). “NEETs Young people not in employment, education or training: Characteristics, costs and policy response in Europe”.

EUROPEAN COMMISSION (2013). “Adult and Continuing Education in Europe. Using Public Policy to Secure a Growth in Skills”. European Commission, Directore-General for Research and Innovation, Directorate B --- European Research Area, Unit B.5 – Social Sciences and Humanities.

EUROPEAN COMMISSION (2014). “Education and Training Monitor 2014”, 3rd Edition.

EUROSTAT (2012). “PROS and CONS of Different Reference Periods for Data on Participation in Education and Training”.

FOUARGE, D., SCHILS, T. and DE GRIP, A. (2013). “Why Do Low-Educated Workers Invest Less in Further Training?” *Applied Economics*, *45(18),* 2587-2601.

FRA EUROPEAN UNION AGENCY FOR FUNDAMENTAL RIGHTS (2014) Luxembourg.

HÄLLSTEN, M. (2012). "Is it ever too late to study? The economic returns on late tertiary degrees in Sweden". *Economics of Education* Review*, 31(1),* 179-194. Elsevier.

HANUSHEK E., SCHWERDT G., WIEDERHOLD S. and WOESSMANN, L. (2015). "Returns to skills around the world: Evidence from PIAAC," *European Economic Review, 73.*

HARMON C., OOSTERBEEK H,, WALKER I. (2003). “Returns to Education: Microeconomics”. *Journal of Economic Surveys, 17 (2).*

HIDALGO, D., OOSTERBEEK, H., and WEBBINK, D. (2014). “The impact of training vouchers on low-skilled workers”. *Labour Economics, 31,* 117-128.

IPPR, (2010). “Why interns need a fair wage. Institute for Public Policy Research”. http://www.ippr.org/files/images/media/files/publication/2011/05/Why%20interns%20need%20a%20fair%20wage_1788.pdf?noredirect=1

KYUCHUKOV, H. (2000). “Transformative education for Roma (Gypsy) children: An insider's view”. *Intercultural Education*, *11, 3*, 273-280

IBARRARÁN, P. and. SHADY, D. (2012). “Evaluating the impact of job training in Latin America: evidence from IDB funds programmes”. *Journal of Development Effectiveness, 1 (2)*, 195-216.

LYCHE, C. (2010). “Taking on the Completion Challenge: A Literature Review on Policies to Prevent Dropout and Early School Leaving”. OECD Working Paper; Foley K., G. Gallipoli and D. Green (2014). Ability, Parental Valuation of Education, and the High School Dropout Decision. JHR 49(4).

MOHR, S., TROLTSCH, K., and GERHARDS, C. (2015). “Job tasks and the participation of low-skilled employees in employer-provided continuing training in Germany”. *Journal of Education and Work, (ahead-of-print), 1-22.*

PAMPOROV, A. (2010). “The Employment of Roma, Turks And Bulgarians. A comparative report based on the outcome of the Multipurpose Household Survey 2007”. In: Multi-Disciplinary Approaches To Romany Studies, (Eds.) Michael Stewart & Merton Rovid. Budapest: CEU press, pp.131-154.

SILLES, M. A. (2007). “Adult education and earnings: Evidence from Britain”. *Bulletin of Economics Research, 59(4),* 313–326.

STENBERG, A. (2011). "Using longitudinal data to evaluate publicly provided formal education for low skilled". *Economics of Education Review, 30(6),* 1262-1280. Elsevier.

WORLD BANK, (2012). “Towards an equal start: Closing the learning early gap for Roma children in Eastern Europe”.