

The relationship between individual and public spending on education and the quantitative and qualitative outcomes of education processes and systems

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Abstract: *The rate of return to schooling (returns to investment in education) equates the value of an individual's lifetime earnings to the present value of educational costs. For an investment to be economically justified, the rate of return should be positive and should be higher than the alternative rate of return. For the individual, weighing the costs and benefits means that they should invest if the rate of return exceeds the private discount rate (the cost of borrowing and an allowance for risk). The costs incurred by an individual are the earnings deferred while studying, plus any tuition fees or incidental expenses incurred. Private benefits amount to how much an educated person earns (after taxes) compared to a less educated person. More or less, in this case refers to adjacent education levels - for example, university graduates compared to high school graduates.*

Keywords: education system, spending on education, outcomes of education processes

JEL Classification: H52, I22, I26

1. Introduction

Research on the rate of return on investment in education has its roots in the writings of classical economists (Adam Smith, 1776; Marshall, 1890), but the link between education and earnings has only recently emerged and formal modeling has only occurred much more recently (Schultz, 1960, 1961; Becker, 1964; Mincer, 1974; Chiswick, 2003). The concept of the rate of return on investment in education is very similar to that of any other investment. It is a summary of the costs and benefits of the investment incurred at different points in time and is expressed in an annual (percentage) return, as for savings accounts or government bonds. The popularity of estimating returns to education stems from the resulting efficiency, equity and financing implications. The ranking order of returns by level or type of education and a comparison with alternative investment returns can help education policy makers make informed investment decisions. In terms of resource efficiency, spending on human capital is a good investment. For example, in the United States, the average return on long-term stocks and bonds from 1966 through 2015 was 2.4 percent compared to 10.5 percent total private returns on education investments (Psacharopoulos and Patrinos, 2018).

The earnings premium associated with educational attainment suggests that productivity increases as people acquire additional qualifications. An alternative view is that earnings increase with education due to credentialing effects. This refers to the idea that higher levels of education are associated with higher earnings, not because they directly increase productivity, but because they certify that the worker is capable of being productive. In this sense, education merely makes workers choosier in terms of their unobserved attributes; it does not necessarily increase their intrinsic productivity (Psacharopoulos and Patrinos, 2018).

In the case of tertiary education, individual performance varies significantly across fields of study, institutions, and individuals. This variation often results from a combination of students' lower level of basic skills when entering tertiary education, insufficient quality and quality assurance in the context of a sustained expansion of supply, and a lack of mechanisms to link with employers and provide regular information on labor market requirements and the returns to different study programs. As a result, while returns to the average level of education can be considered relatively high, because of these problems, tertiary education cannot bring high returns for everyone. When higher education institutions and vocational training institutions design their program offerings, and students choose programs and study institutions without clear information about program quality and labor market prospects, the results can vary significantly and, in some circumstances, can even be negative. Investments in higher education must therefore focus on quality assurance and take into account current outcome objectives (Jula et. al., 1999), but also be attuned to the changing needs of a dynamic environment in terms of skill demands, occupational profiles and types of tertiary institutions, and the ways in which the knowledge and skills required are delivered through study programs (Arnhold and Bassett, 2021).

2. Literature review

Private returns to investment in education have been estimated for the countries of the world for different dimensions of education and training policies (Table 1). They tend to follow a

U-shaped curve as a function of the level of education: they decrease for secondary compared to primary education, but increase again for tertiary education. The estimates revealed some important findings (Psacharopoulos, 2006; Gunderson and Oreopoulos, 2010):

- ▶ Private returns to investment in education are localized in the range of 6-15% (Gunderson and Oreopoulos, 2010) and are higher the lower the level of a country's per capita national income, reflecting the relative scarcity of human capital in poorer countries (10.9% for low, 10.7% for medium, 7.4% for high and 9.7% world average - see also Fasih et al., 2012);
- ▶ Vocational secondary education shows lower returns compared to general secondary education because the former involves higher expenditure.
- ▶ Investments in female education have higher returns because the lower opportunity cost of educating females leads to higher total returns.
- ▶ Private sector workers enjoy higher returns on private investment in their own education than public sector workers because more competitive private sector employers recognize the higher productivity of more highly educated workers (Psacharopoulos, 1994).
- ▶ Returns to private investment in education are subject to diminishing returns, tending to decline when human capital becomes more abundant.
- ▶ Investment in tertiary education has shown increasing trends in the most dynamic economies (including developing countries), reflecting rising demand for highly educated workers able to cope with technological advances (consistent with the hypothesis of complementarity between education investment and technological advancement - see, for example, de la Fuente and Ciccone, 2002; London Economics, 2005; Montenegro and Patrinos, 2014; Montenegro and Patrinos, 2014; Fink and Peet, 2014; Aslam, 2009; Aslam, 2009; Montenegro, 2001; Mitra, 2019).
- ▶ Returns tend to be higher for professional fields such as engineering, medicine, business and the sciences and lower in fields such as the social sciences and humanities (particularly in the arts - Gunderson and Oreopoulos, 2010).

Table1. Returns to private investment in education by selected dimensions of education and training policies

<i>Dimension of education and training policies</i>	<i>Private return on investment in education and training (%)</i>
Level of development	
High income countries	
Low income countries	10.9
Type of curriculum	
General	11,7
Vocational	10,5
Gender	

Male	8,7
Female	9,8
Sector of employment	
Private sector employees	11.2
Public sector employees	9.0
Change over time, 15 years	
Primary education	-2.0 percentage points
Ter tertiary education	+1.7 percentage points

Source: Taken from Psacharopoulos (2006).

More recent global estimates (Psacharopoulos and Patrinos, 2018) show that private returns to investment in education for an additional year of schooling averaged 8.8%, one percentage point lower than previous estimates (Psacharopoulos and Patrinos 2004), which can be interpreted as an argument in favor of the so-called education-technology race; the demand for skills outstripping the supply of adequate skills (Goldin and Katz, 2008; Acemoglu and Autor, 2012).

When the education system “keeps pace” with the increased demand for skills driven by the advancement of technology, average income levels rise and social inequality decreases. Thus, a higher level of inequality is largely determined by a much higher level of wages offered for high-level skills (which is documented to have happened globally after the 1970s - Burgess, 2016). The return on private investment in education has, however, increased since the 2000s and is estimated to be around 9.1%, but education still seems poised to lose the race with the advance of technology, even in the context of increasing educational provision (see also Gunderson and Oreopoulos, 2010).

However, the previous trend of higher returns to private investment in education in lower (9.3%) and middle (9.2%) income countries compared to high-income countries (8.3%) is maintained. The previous trends of higher returns for women than for men and higher returns for private than public sector employees are also maintained (Psacharopoulos and Patrinos, 2018).

3. Direct and indirect effects of education on the wider economy and the growth process

A related issue of individual returns to investment in tertiary education is the case of students who engage in the labor market while still studying and how much they earn in paid jobs and how important this income is for their total budget. On average, half of the income of all working students (both during and/or outside the course period) consists of earnings from paid jobs. For example, the median amount that students earn (expressed in PPS: standard purchasing power parity) differs from country to country, with a median of 557 PPS across the European countries participating in the Eurostudent VII survey. Earnings from work are relatively important for the total income of students in Poland, Malta, Iceland, Iceland, Lithuania, Estonia, Portugal and Romania. In these countries, earnings from work account for at least two-thirds of their total income (Hauschildt et al., 2021). Thus, in the Netherlands, Sweden and France, earnings from work are less important for a student’s budget; in these countries, this income accounts for a third or less of the total student income. In Estonia, Malta and Romania, the median income

of working students is the highest (over 800 PPS) compared to the other countries surveyed, while in Ireland, Georgia, the Netherlands, Sweden, the Netherlands and Turkey, the median income is relatively low (less than 400 PPS).

The importance of labor market employment while still at university in terms of student budgets can be demonstrated by combining the proportion of students with a paid job during the course and the income generated by that job as a percentage of total student income. The higher the position in the top right-hand corner of this matrix, the more hours students work during their courses and the more they depend on their income from that job.

According to these criteria, a first group includes six countries: Malta, Estonia, Iceland, the Czech Republic, Estonia, Slovenia, the Czech Republic, Switzerland and Iceland, where the percentage of working students is high and the share of income they earn from work is a significant part of their income. Austria, Norway, Germany and the Netherlands are another group of countries where the percentage of working students is high, but the importance of work for their total budget is considerably lower. These are countries where students typically work relatively few hours per week. The other group of countries is Luxembourg, Sweden and France, where the number of working students is low and the proportion of income from earnings from employment is low compared to other countries. Finally, in countries such as Finland, Poland, Hungary, Lithuania, Croatia, Georgia, Turkey, Portugal and Romania, relatively small numbers of students work, but their wages make up a significant part of their income. Ireland scores average: the share of students in work and the share of earnings from work in total income correspond closely to the average of the EUROSTUDENT VII survey (Hauschildt et al., 2021).

The social rate of return (social return) includes society's expenditure on education - for example, money spent on renting buildings and paying teachers' salaries. The social attribute of the estimated social rate of return refers to the inclusion of the total resource cost of the investment - the direct costs borne by the government and the deferred earnings of students as they invest in their education (Jula and Jula, 2019). Ideally, the social benefits should include non-monetary benefits of education, such as the number of lives saved because of improved sanitation conditions a woman pursued because she received more education. Given the little empirical evidence on the social benefits of education, the social rate of return is usually based on the directly observable monetary costs and benefits of education. Since costs are higher when calculating the social rate of return relative to the private rate of return, social returns are usually lower than a private rate of return. The difference between private and social rates of return reflects the degree of public subsidization of education - as virtually the only difference is the addition of social costs (Psacharopoulos and Patrinos, 2018).

The social returns to investment in education have been estimated by various methods since the mid-20th century (see, for example, Schultz, 1961b; Becker, 1964; Becker and Chiswick, 1966; Duflo, 2001). Early results have shown that they tend to decrease with increasing educational attainment, following the pattern of diminishing returns (Psacharopoulos, 1981; Deny, Harmon and Lydon, 2002), as they take into account the full resource cost of education. For example, globally, average social returns to investment in primary education amounted to 18.9% at the turn of the millennium, 13.1% for secondary education and 10.8% for tertiary education (Psacharopoulos and Patrinos, 2004). However, a number of OECD (2005) estimates (Psacharopoulos, 2006) show positive differences in the social returns to secondary versus tertiary education ranging from 4 percentage points (Switzerland) to 18 percentage points (Sweden). On the other hand, extended

estimates have shown that the social returns to investment in tertiary education can substantially exceed the returns to other types of investment (Cohn and Hughes, 1994; Psacharopoulos, 2006). More recent studies have also shown in some cases the presence of a U-shaped curve also for the social returns to investment in education (see e.g. Patrinos et al., 2019 for Turkey).

The same more recent global estimates (Psacharopoulos and Patrinos, 2018) show that the trends from the pre-2000s periods of declining trends with increasing per capita income and educational attainment also hold for the social returns to investment in education. On the other hand, the level of social returns to investment in tertiary education are still high both in developed countries (10.6% compared to 10.2% for returns to investment in secondary education), but especially in developing countries (16.4% compared to 10.2%), where the shortage of human resources with high and adequate levels of qualification remains significant (Psacharopoulos and Patrinos, 2018).

The UK Commission on Growth and Development (2008) concluded that the social returns are likely to outweigh the private returns to higher education through the wider contribution of educated individuals to society (Grant, 2017). However, returns that focus solely on private and public financial rewards fail to capture the wider benefits of higher education manifested through entrepreneurship, job creation and good economic and political governance, together with the positive impact of research on economies. Tilak (2003) has also shown that the proportion of the adult population with tertiary education (a measure of the stock of human capital) is an important indicator of the level of development. This “stock” indicator represents a country’s cumulative efforts in higher education development over the years. The higher the stock of adult population with higher levels of education, the higher the potential for economic growth (Grant, 2017).

The rationale for state intervention in education financing derives from both market failures and issues of redistribution/equality of opportunity (Canton et al., 2018). Regarding the former, two forms of market imperfections have been emphasized in the literature on the economics of education: human capital disseminations (which are generally associated with knowledge production and human capital accumulation) and capital market imperfections. Human capital spillovers imply that the benefits of education accrue not only to the individuals who make the investment, but also to others. Therefore, human capital spillovers create a trade-off between private and social returns to education, which may lead to underinvestment in education because the individuals making the expenditure cannot approach the full returns. State intervention can address this market failure through the public provision of education and/or by subsidizing education systems or parts of them (mainly in the form of direct funding of education institutions). For example, students may find it difficult to finance their education through the private capital market because of its imperfections. Investment in education can be costly, and financing such expenditure through the private capital market tends to be difficult mainly because of the asymmetry between the cost of education and the cost of financing it. Moreover, capital market imperfections tend to create unequal access to education, thus limiting vertical social mobility (e.g. children from economically disadvantaged families would have difficulties accessing higher education). The standard remedy to address these capital market imperfections is the provision of state-backed student loans. Often such loan schemes also have an element of subsidization, as the loans are typically provided on quite attractive terms (e.g. interest rates below market rates) (Canton et al., 2018).

Another objective of public education is to provide equal access to education (as a matter of social fairness). Parental resources differ and, even when banks are willing to provide loans for education, children from less advantaged families may be discouraged from going to school. In most countries, primary and secondary education is the responsibility of the central or regional government and aims to provide equitable access for all. Issues of redistribution therefore provide an additional rationale for public/state intervention (Canton et al., 2018).

4. Quantitative and qualitative outcomes of education processes and systems

Three main areas of research can be identified in studies on the relationship between educational resources and educational outcomes: one that focuses on school inputs (teacher experience, class size, number of schools, etc.), one that focuses on financial inputs, and one that focuses on institutions and institutional quality. In all three cases, the international evidence is rather mixed (Hanushek and Woessmann, 2007). In terms of the efficiency of public spending on education, there are two main groups of studies in the literature (see Canton et al, 2018, for literature review): studies that typically consider public spending on education as an input into the education production function, often focusing on the efficiency of public spending and distinguishing between different government functions such as health and/or education, and studies that often postulate an education production function with a broader range of inputs, including both monetary and non-monetary inputs. In terms of education policy objectives, these can be grouped into three groups of measurable outcomes (Canton et al., 2018): those related to quantity (e.g. tertiary attainment), quality (cognitive skills, proxied by PISA scores or other international tests) and inclusion (e.g. represented by NEET rates or inclusion indices).

There is some evidence of a positive relationship between spending per pupil and average student performance. As spending on educational institutions per pupil increases, so does a country's average performance; but the rate of increase declines rapidly. However, while education needs to be adequately resourced and is often under-resourced in developing countries, high levels of per-pupil spending are not necessarily necessary to achieve excellence in education (OECD, 2019a). Some studies suggest that such a relationship is non-linear. In countries with cumulative spending per pupil for ages 6-15 below USD 50,000, higher spending on education is strongly associated with higher PISA test scores on science study. Above this threshold, the relationship is difficult to assess, suggesting that improving education outcomes requires more than money (OECD, 2016a, Smidova, 2019).

On the other hand, there is also negative evidence on the relationship between (public) education spending and student performance. For instance, Hanushek and Woessmann (2007, 2011) showed that, on average, countries with high levels of education spending performed at the same level on international student tests (PISA) as countries with low levels of education spending. This picture shows that spending alone is not associated with student performance and can also be found for other international student tests such as TIMSS. An in-depth study of changes over time in education spending and student performance has shown that education spending per pupil increased substantially in real terms in OECD countries between the early 1970s and the mid-1990s, but comparisons of test scores in 1970 with those in 1994/95 suggest that there were no significant improvements in average performance for students in these countries (Hanushek and Woessmann, 2007). In most cases, the lack of a significant positive cross-country association

between expenditure per pupil and educational attainment holds when numerous other determinants, such as family background and school characteristics (including instructional time) are accounted for in a regression framework (Hanushek and Woessmann, 2011). In sum, the general pattern of cross-border analyses suggests that quantitative measures of school inputs, such as expenditure and class size, cannot explain cross-border variation in educational attainment. In contrast, several studies tend to find positive associations between student achievement and the quality of instructional materials or teacher quality (Hanushek and Woessmann, 2011).

In the case of the EU27 Member States, these claims are also empirically supported by a number of data; thus, countries that do not have very high levels of per pupil expenditure but have good reading scores can be identified, and conversely, countries that have high levels of per pupil expenditure but reading performance does not show a strong positive correlation with it (Table 2). Among the EU27 Member States, the former includes countries such as Poland, Estonia and Ireland and the latter countries such as Luxembourg, Austria, the Netherlands and Germany. Moreover, if we also consider the objective of inclusive education, capable of alleviating inequalities, we can observe that the high level of investment in education in some countries is not only not reflected in the level of pupils' performance (in reading in this case), but also in the narrowing of the gaps between socially advantaged and socially disadvantaged pupils (Luxembourg, Belgium, Germany, Austria, France, Germany, Belgium, Austria, Portugal) or in the improvement of the latter's performance (Luxembourg, Belgium). On the contrary, countries that have invested smaller amounts (but in a more efficient way in terms of results) have also achieved better results both in terms of reducing the achievement gap between advantaged and disadvantaged pupils and in improving the performance of disadvantaged pupils (Ireland, Slovenia, Estonia, Latvia, Slovenia, Croatia, Estonia). However, there is also evidence that low levels of investment in education in EU Member States not only do not lead to improved performance, but also do not lead to a reduction in inequalities in outcomes or to improved performance of disadvantaged pupils (Hungary, Romania, Bulgaria). The relationship between the level of investment in education and the quality of outcomes of educational processes is thus very complex and highly country-specific in the EU27 Member States, but also in other countries.

Table 2. Relationship between average expenditure per pupil between the ages of 6 and 15 and average reading literacy performance on PISA tests (thousands of US dollars, in PISAs)

<i>Countries</i>	<i>Average expenditure per pupil aged 6-15 (thou. of USD, at PPP)</i>	<i>Country Average reading scores</i>	<i>Average reading literacy gap between</i>	<i>Percentage of disadvantaged pupils who are top performers in reading (%)</i>
Qatar	326	407	93	9
Luxembourg	209	470	122	8
Macao (China)	149	525	31	20
Austria	140	484	93	10
Norway	136	499	73	12
USA	122	505	99	10

Brunei Darussalam	119	408	103	9
Iceland	117	474	72	13
Sweden	114	506	89	11
Belgium	113	493	109	9
South Korea	113	514	75	13
Finland	111	520	79	13
United Kingdom	110	504	80	14
Singapore	109	549	104	10
Australia	107	503	89	13
Cyprus	104	424	69	13
Netherlands	102	485	88	13
Taiwan	101	503	89	12
Germany	99	498	113	10
Japan	98	504	72	12
Canada	96	520	68	14
France	92	493	107	10
Hong Kong (China)	91	524	59	16
Ireland	90	518	75	13
Slovenia	88	495	80	12
Italy	88	476	75	12
New Zealand	85	506	96	12
Malta	83	448	85	13
Portugal	82	492	95	10
Israel	80	470	121	8
Czech Republic	69	490	105	9
Poland	68	512	90	11
Slovakia	66	458	106	9
Latvia	66	479	65	12
Estonia	64	523	61	16
Greece	63	457	84	12
Malaysia	61	415	89	10
Lithuania	53	476	89	11
Hungary	53	476	113	8
Croatia	52	479	63	15

Chile	50	452	87	11
Belarus	47	474	102	9
Argentina	44	402	102	8
Russian Federation	44	479	67	13
Uruguay	43	427	99	9
Brazil	38	413	97	10
Turkey	38	466	76	15
Bulgaria	31	420	106	6
North Macedonia	30	393	80	13
Colombia	30	412	86	10
Mexico	29	420	81	11
Bosnia and Herzegovina	28	403	58	13
Peru	27	401	110	6
Thailand	27	393	69	13
Ukraine	27	466	90	12
Dominican Republic	26	342	65	12
Kazakhstan	25	387	40	16
Romania	25	428	109	9
Serbia	24	439	73	13
Montenegro	22	421	55	14
Moldova	21	424	102	8
Panama	20	37	95	9
Jordan	19	419	64	12
Indonesia	15	371	52	14
Philippines	8	340	88	8

Source: taken from OECD (2019a), based on data from the PISA 2018 Database.

While there are undoubtedly sufficient reasons to invest in human capital and also an economic argument for comprehensive public intervention in education, the fact that Europe lags behind other world regions in education raises the question of whether there is simply too little investment in education or whether this is rather due to inefficiencies in the corresponding spending on education (Canton et al., 2018). Clements (2002) was among the first to systematically assess the efficiency of public spending on education in Europe. He defined public spending on primary and secondary education as input variables and levels of educational attainment

and performance on international examinations as outcome variables. The results of his study showed that 25% of education spending at EU Member State level is wasteful and concludes that improving the efficiency of education spending in Europe is more important than increasing the level of education spending. Considering public spending on tertiary education, St Aubyn et al. (2009) and the European Commission (2010a) conclude that autonomy is an important factor in the efficiency of tertiary education in Europe. The authors' analysis is based on a cost function that relates tertiary education-relevant inputs to the number of graduates and academic publications (Canton et al., 2018).

Based on an efficiency frontier approach, Canton et al. (2018) show that in EU and other European countries, public spending on education is nevertheless positively correlated with the quantity and quality of educational outcomes. In general, the empirical results indicate that some countries perform well compared to a common efficiency frontier, but might do even better, as shown by comparing them to their specific frontier, while for other countries the opposite is true, i.e. they perform well compared to their own frontier but seem to lag behind in cross-country comparisons. In this case, the results suggest that further improving the efficiency of these countries in terms of spending on education in the context of already existing education systems is reaching a limit and efficiency improvements could only be achieved through structural changes in education systems (i.e. moving their individual frontier outwards and thus re-approaching the common efficiency frontier for all Member States).

Some EU27 countries manage to achieve high efficiency in the "quantity", "quality" and "inclusion" dimensions of education, such as the Netherlands, other countries achieve a favorable balance in two of the three dimensions, such as Germany or Sweden. In contrast, for example, Bulgaria, Italy and Romania perform relatively poorly on most of the three dimensions of education, while Cyprus and Lithuania are interesting cases in that they perform quite well in producing high levels of tertiary education, but much less well in producing high levels of cognitive skills and inclusion. In terms of tertiary attainment rates, Ireland and Lithuania set the frontier in 2015, as these countries had among the highest tertiary attainment rates at the time, while spending relatively moderate amounts on tertiary education. Italy, Malta and Romania all have relatively low tertiary attainment rates, but differ in terms of efficiency levels: while in Malta and expenditure is relatively high, in Romania it is relatively low. In terms of quality (PISA scores), no country reached the efficiency frontier in 2015. Estonia and Finland were closest to the border, while Cyprus and Romania with very low levels of PISA scores - but high levels of spending in the case of Cyprus - were furthest away. In terms of inclusion (NEET rates), Germany, the Netherlands and Sweden were closest to the efficiency frontier in 2015, while Greece and Italy with very high NEET rates (i.e. low non-NEET rates) were relatively far from it. The latter indicates that NEET rates, beyond the efficiency of education spending, are also driven by a number of other factors (e.g. NEET rates driven by the economic and financial crisis). However, in the medium to long term, the empirical relationship between education spending and NEET rates appears to be quite robust (Canton et al., 2018).

Public spending on education in EU Member States has become increasingly efficient in recent years, particularly in terms of increasing the number of people with tertiary education (also an EU and national target linked to the Europe 2020 Strategy). In terms of tertiary education rates, efficiency improvements have been tremendous between 2002 and 2015, while spending has remained comparably stable. For example, in Malta, the tertiary education level increased

from 9% to 31%, while expenditure remained at around 5%; similar figures apply to Romania. Conversely, in France efficiency improvements have not been as large because tertiary attainment was already relatively high at the 2002 level. All countries were very close to their individual borders in 2015, which means that further significant improvements can only be made by changing the education system, thus shifting country-specific borders outwards (changing the boundaries of the established national education system). Therefore, to improve further (i.e. increase tertiary graduation rates), a country-specific frontier would have to be shifted outward by changing the production technology, i.e. changing national education systems and/or introducing new education techniques (Canton et al., 2018).

In turn, the empirical results of the efficiency reviews suggest that there remains room for further improvements in quality and inclusion. There is no common trend across all EU Member States in terms of PISA scores or NEET rates. In terms of quality (PISA scores), around one third of countries have low efficiency scores over time, which is alarmingly low. The empirical results suggest that all countries have room to improve efficiency compared to their own frontier. Looking at NEET rates - i.e. looking at inclusion - the evidence suggests that around two thirds of Member States have low efficiency scores over time, i.e. this trend is also going in the wrong direction. The empirical results suggest that Cyprus and Greece seem to have room to improve their efficiency scores even when considering structural features as given, while Romania and Sweden are close to their own borders, but Sweden performs relatively well in terms of inclusion (since it is also the country closest to the common border in terms of NEET rates), while for Romania the corresponding finding suggests that there is room for further improvement, given the best performing European countries. However, the empirical results suggest that further improvement in inclusion in Romania (to the extent that it is driven by spending on education) cannot be achieved together with the current framework of the national education system (inter alia, also driven by removing inefficiencies in the system) (Canton et al., 2018).

Conclusion

In view of the above-mentioned problems, an answer to the question of where to place greater emphasis in the education policy mix (quantity, quality and/or inclusiveness) needs to be country-specific, taking into account examples of good practice observed in other EU Member States. Depending on the reason that prevents further improvements - i.e. either waste in education spending (remaining inefficiencies) or operating close to the boundaries of the country-specific education system (capacity constraints) - the policy and implementation response will be different. Undoubtedly, there is no blueprint for an ideal education policy mix, as national education systems all possess quite specific characteristics, with strong not only socio-economic but also historical roots (and whose possible reorientation and change is not easily addressed in the short term); in other words, there is no single 'European or EU' solution for education policy-making (Canton et al, 2018). Policy recommendations can then be derived from comparing individual solutions and learning about best practices in education policy and education system design in countries that appear to be similar. This could be particularly relevant for educational issues that pose new challenges to Europe's existing education systems in terms of new learning needs and methods triggered e.g. by globalization, climate change impacts, disruptive technological progress (including digitization), resource depletion and increased intra- and inter-state

insecurity. In this context, in order to foster both efficiency and equity, public spending policies need to be appropriately designed for each stage of the life cycle (from early education to children's education to adult learning), which should be combined with a regulatory framework that ensures accountability and sufficient funding. In such a context, adult learning is an important complementary piece, including both private and public provision as well as various forms (formal, non-formal and informal) of learning, each of which requires specific policies and cost-sharing arrangements between government, business and individuals, while continuous updating and possibly adjustment of curricula is another important component. How to spend wisely and efficiently on training and upgrading human capital will in any case be country-specific. Important for assessing and improving the country-specific policy mix could be comprehensive reviews of education sector spending (proven to be an appropriate tool for identifying and eliminating inefficiencies and/or realizing savings). Learning from countries/regions that are seen as similar - i.e. comparing individual solutions against the best practices of other countries/regions - also seems vital. Closing the gap with the best-performing countries (within the EU and for the EU, worldwide) should be the ambitious goal of education policy at EU level (Canton et al., 2018).

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