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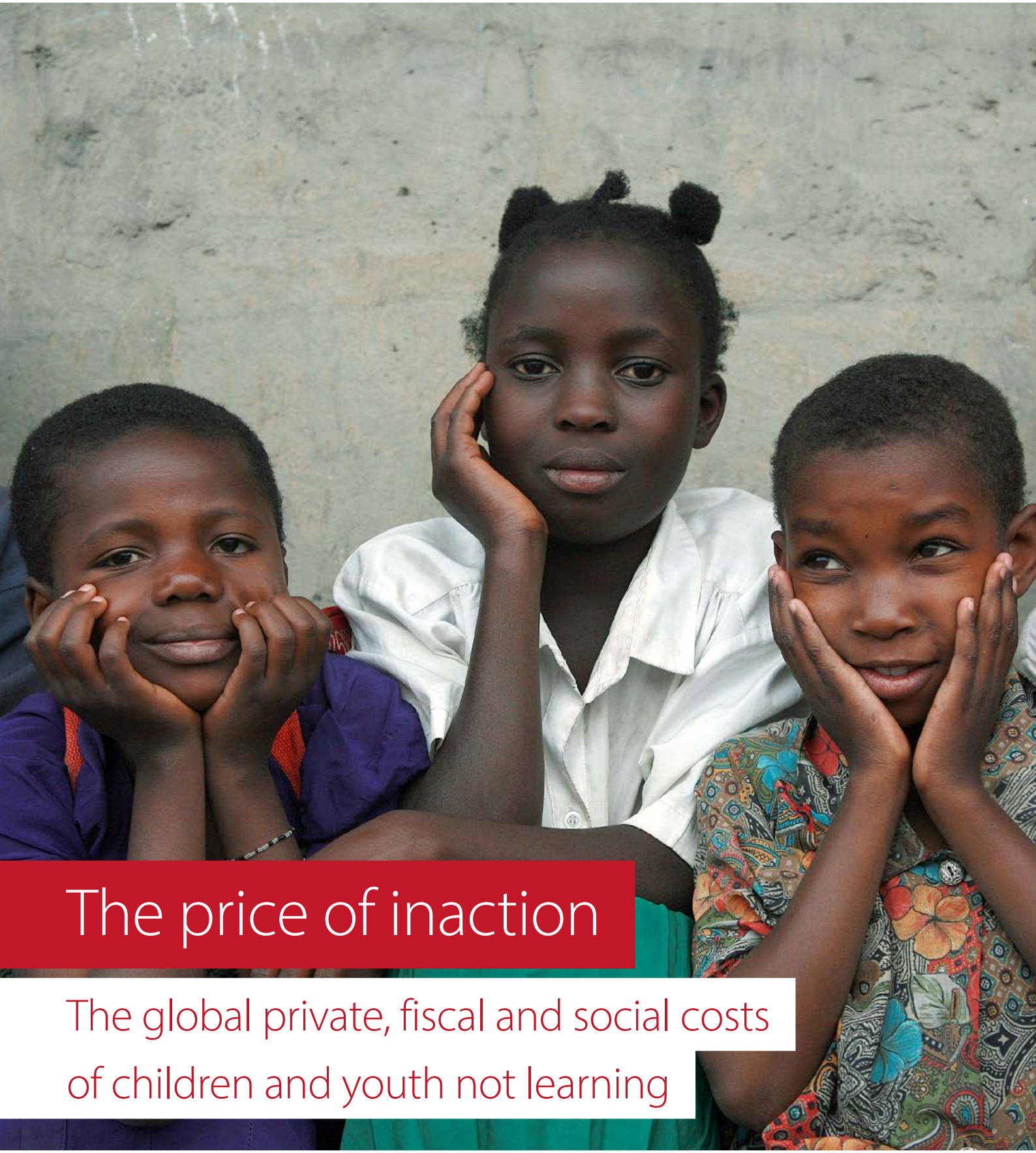

The price of inaction

The global private, fiscal and social costs of children and youth not learning

Education 2030

UNESCO – a global leader in education

Education is UNESCO's top priority because it is a basic human right and the foundation for peace and sustainable development. UNESCO is the United Nations' specialized agency for education, providing global and regional leadership to drive progress, strengthening the resilience and capacity of national systems to serve all learners. UNESCO also leads efforts to respond to contemporary global challenges through transformative learning, with special focus on gender equality and Africa across all actions.

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SHORT SUMMARY

What it costs globally when children and youth are not learning

Despite efforts by countries, the number of out-of-school children remains significant, with 128 million boys and 122 million girls excluded from schooling. Educational skills deficits are also immense – 57 per cent of the world's children have not gained basic skill levels.

UNESCO, OECD and the Commonwealth Secretariat have developed the first global report to illustrate the monetary costs to economies around the world of leaving children and youth behind in education.

Using available evidence, the report calculates the costs, globally and by region, of children and youth that are not in school or gaining basic skills. Calculations are also provided for twenty selected countries in which there are gender disparities in education at either girls' or boys' expense. If governments were to increase efforts so that every child was in school and achieving basic skills, the future world GDP would raise by more than US$6.5 trillion annually, not to mention eliminating the social costs of failure.

US$10 trillion is the annual global estimated cost of skills deficits

This publication offers the evidence and insights that show that for economic development to accelerate, so must prioritizations and investments in education and gender-transformative action.

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"Since wars begin in the minds of men and women, it is in the minds of men and women that the defences of peace must be constructed"

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The price of inaction

The global private, fiscal and social costs of children and youth not learning

Foreword

In 1948, education was declared a universal human right—a right inherent to every single human being, without distinction or discrimination. This right was reaffirmed in 2015, when quality education for all was made one of the Sustainable Development Goals for 2030.

These statements are not empty words. They are firm commitments, which should bind governments and engage the entire international community. Yet today 250 million children are out of school across the globe. An estimated 70 per cent of children in low- and middle-income countries cannot understand a simple written text by the age of 10.

Are we doing all we can to make education a reality for all? And what is the cost of failure? These are the questions asked by this report, at a time when education is an essential resource for rising to contemporary challenges, from poverty alleviation to climate disruption.

First of all, this report underlines the economic cost of underinvestment in quality education. And, in doing so, it highlights a particularly vicious circle. Less educated individuals have fewer skills; under-skilled workers earn lower incomes; lower-income earners pay fewer taxes—meaning that governments have fewer resources to invest in education systems that are accessible to all.

This comes at a vertiginous price: if countries continue on their current path of ongoing educational exclusions, the global economy will be held back by an estimated US$10 trillion annually—more than the annual GDPs of France and Japan combined. Inversely, the report finds that reducing the number of early school leavers and children with less than basic skills by 10 per cent increases annual GDP growth by 1 to 2 percentage points.

However, as always, financial considerations are only part of the story. Failing to uphold education commitments also comes at a social cost—for example, when it comes to advancing gender equality. Girls without basic skills are more likely to experience early pregnancies: each year of secondary schooling can reduce the risk of girls marrying and having a child before the age of 18.

The message is clear: not only is education for all a powerful lever for economic development, but it is also a strategic investment—one of the best investments there is for individuals, economies and society as a whole.

By taking action in this way the international community can uphold the commitment it made more than 75 years ago: to elevate education from a privilege to a prerogative for every human being across the globe.

Audrey Azoulay

Audrey Azoulay
Director-General of UNESCO

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Acronyms list

ESL	early school leaver
GDP	gross domestic product
€	Euros
ILO	International Labour Organization
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
LBS	less than basic (cognitive) skills
NEET	not in education, employment, or training
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
SDG	Sustainable Development Goal
SES	socio-emotional skills
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-UIS	UNESCO Institute for Statistics
UNICEF	United Nations Children's Fund
UNODC	United Nations Office for Drugs and Crime
US$	United States dollars

Executive summary

The 2030 Agenda for Sustainable Development makes the promise to leave no one behind. This promise hinges, among other things, on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (SDG 4) and achieving gender equality and empowering all women and girls (SDG 5). But over halfway through the implementation period, meeting this ambitious agenda by 2030 will be a challenge.

Despite efforts by countries and progress achieved, 128 million boys and 122 million girls remain out of school (UNESCO, 2023a). Even in high-income countries, a quarter of children have less than basic skills. Skill deficits reach 94 per cent in sub-Saharan Africa and 88 per cent in South and West Asia, 74 per cent in the Arab States and 64 per cent in Latin America and the Caribbean (Gust, Hanushek and Woessmann, 2024). Girls have more difficulty accessing education and are more likely than boys to be out of school at primary level. Meanwhile, boys are at greater risk of repeating grades, failing to progress and complete their education, and of not learning while in school (UNESCO, 2022a). Ensuring that all girls and boys are in school and learning requires increased investments in education and gender-transformative action.

Education is a fundamental human right for all and is crucial for the personal development and well-being of individuals, as well as for societies to achieve social justice and reduce poverty. The price of not fulfilling this right is extremely high. If the right to education is not realized, individuals earn, on average, less than better educated individuals. Societies with higher average education levels enjoy higher economic growth.

This report estimates the economic costs of early school leavers and children with less than basic skills or with low socio-emotional skills. Costs are defined at the global level, for world regions and for twenty countries. The economic costs are borne by individuals (*private costs*), the government (*fiscal costs*), and society (*social costs*), the latter of which includes costs to both individuals and the government. Although the focus is mainly on monetary costs, the report has been able to estimate some non-monetary costs, including early pregnancies, corruption, crime and tax morale.

Economic costs are estimated by comparing a **status quo scenario**, in which the share of early school leavers and children with less than basic skills or with low socio-emotional skills remains at its current level, with an **intervention scenario**, in which these shares are either set to zero or to their minimum value. The intervention scenario is one in which all children are in school and learning, a scenario in which the aspirations of SDG 4 are met, leaving no one behind.

For the first time, private, fiscal and social costs not only are categorized, but they are presented both for the total population and by sex and they are disaggregated into more elementary cost components, including the loss of labour income, the loss of fiscal revenues and variations on several private and government expenditures. Estimates by sex are based on an intervention scenario in which sex-specific shares are brought to zero while the share of the other sex remains at the current level, which corresponds to the situation in 2021.

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Key findings

This study finds that, by 2030, the private, fiscal and social costs of children leaving school early and not gaining basic skills are enormous, adding up to trillions of US dollars lost to economies around the world.

- By 2030, globally, the annual private costs (economic costs borne by individuals) of the current shares of early school leavers and children with less than basic skills will be US$6.3 trillion and US$9.2 trillion, or 11 and 17 per cent of global GDP, respectively. Estimating these private costs to a twenty-year horizon (to 2041) raises these values as much as 20 times higher.

- By 2030, globally, the annual fiscal costs (governments) of early school leavers and children with less than basic skills will amount to US$1.1 trillion and US$3.3 trillion, respectively.

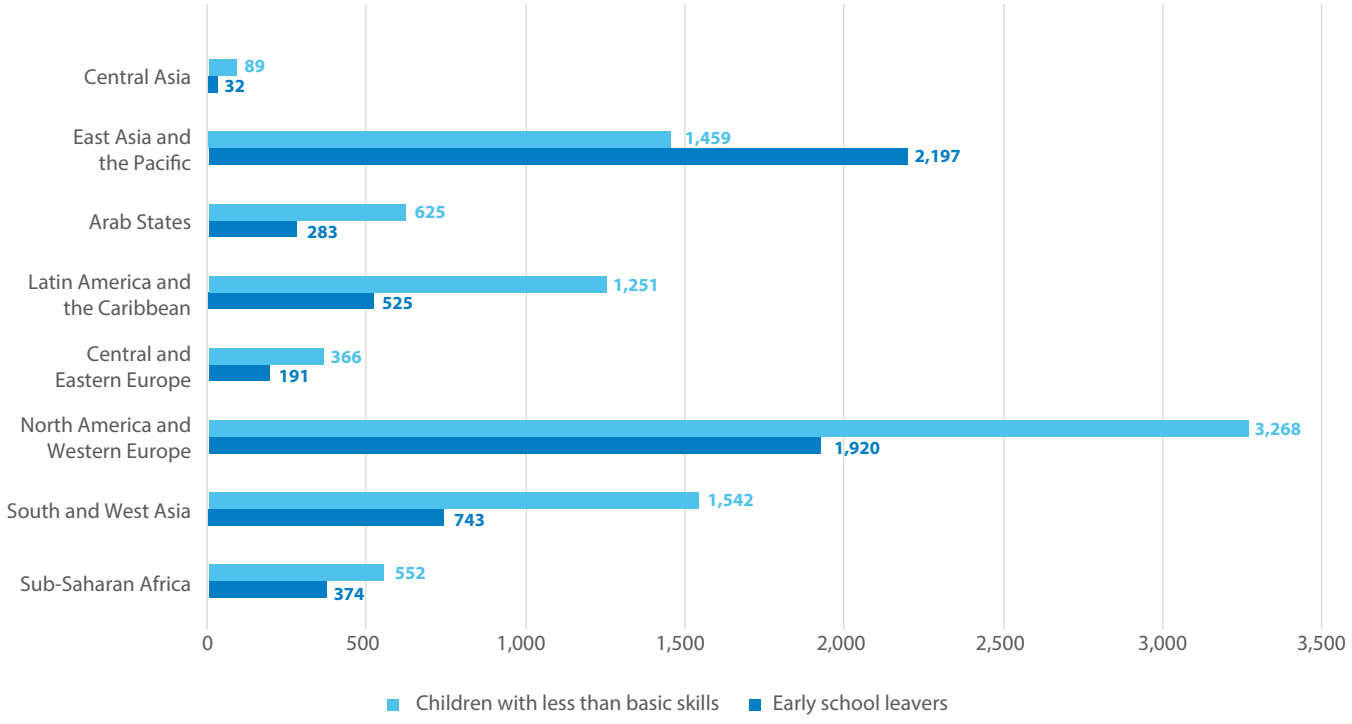
- By 2030, globally, the annual social costs (private and fiscal costs, minus the costs of raising taxes) of early school leavers will equal US$6 trillion. They will equal US$10 trillion due to children with less than basic skills. The latter corresponds to more than the combined annual gross domestic product (GDP) of France and Japan, in 2022 (OECD, 2023a).

- In the subset of countries for which data are available, the loss of GDP due to low levels of socio-emotional skills by 2030 will be as high as US$7.4 trillion (19 per cent of annual GDP).

Costs as a percentage of GDP vary depending on the region of the world. Private costs, which represent the bulk of economic costs of early school leavers and children with less than basic skills, are highest in sub-Saharan Africa, at 19 per cent of GDP for early school leavers and 26 per cent of GDP for children with less than basic skills (see **Figure 1**).

Costs as a percentage of GDP are also high in South and West Asia, Latin America and the Caribbean and the Arab States. Unsurprisingly, they are lowest in high-income North America and Western Europe. However, these latter regions, together with East Asia and the Pacific, bear the highest absolute costs because of their higher per capita GDP.

Figure 1: The annual private costs (in billion) of early school leavers and children with less than basic skills in 2030



Source: Compilation by the authors using the data listed in **Table 1**: Data summary.

Since the share of early school leavers and children with less than basic skills are on average higher for boys than for girls, the private costs associated with boys (US$3.5 trillion and US$5.2 trillion, respectively) are higher than those associated with girls (US$3 trillion and US$4.6 trillion, respectively). For sub-Saharan Africa, however, the private costs due to girls and boys leaving school early are higher for girls, equal to around US$190 billion and US$210 billion, respectively.

Regarding the 20 selected countries analysed, large gaps exist in the share of early school leavers and the share of children with less than basic skills between higher income and lower income countries. In the selected countries where there are gender disparities at girls' expense, Chad bears the highest social costs (in terms of percentage of GDP) with The Netherlands having the lowest costs. In Afghanistan, if the suspension of girls' and young women's access to secondary education remains in place, the absolute private costs of girls leaving school early are estimated at US$1.5 billion.

In the ten selected countries where there are gender disparities at boys' expense, Burundi followed by Senegal bear the highest social costs (in terms of percentage of GDP). By comparison, the social costs are lowest in Belgium and Finland.

Box 1

Assumptions of the empirical model used

The empirical model associating the shares of early school leavers and children with less than basic skills with per capita GDP growth is linear. The assumption of linearity facilitates causal estimates in a setting in which the sample size, given by the number of countries, is relatively small. However, it implies that the relationship between the shares and the growth rate of per capita GDP is the same across countries, and that average rather than country-specific effects are estimated.

This implication is likely to hold when countries are sufficiently similar but may fail when they are significantly different. Consider, for instance, countries in which the participation of women in the labour market is low. In these countries, a reduction in the share of female early school leavers is likely to have a smaller effect on GDP growth than in countries where female participation in the labour market is not discouraged, because additional female education cannot be productively employed.

The assumption that the share of early school leavers and children with less than basic skills have the same effect on GDP growth across countries is likely to produce higher estimates of the cost of these shares in countries where the access of women to the labour market is restricted, and lower estimates in countries where this access is not hampered.

The assumption of common effects does not mean, however, that the empirical model forces GDP growth rates to be the same across countries. The estimated rates of GDP growth vary by country and reflect underlying structural differences, the most important of which is the level of economic development achieved by 2021. In addition, these rates are applied to very diverse levels of per capita GDP in the baseline year (2021) and produce forecasts of per capita GDP in 2030 which account for differences in both GDP levels and growth rates.

Conclusions and recommendations

The report concludes that investing in quality education is a cost-effective strategy for economic development. If governments do not invest in education, they have fewer economic resources. In turn, they have less to spend on reducing early school leaving and the share of children with less than basic skills, therefore trapping their economies in a status of low education and low productivity.

Previous research has shown that improving student cognitive test scores by 50 points in the Programme for International Student Assessment (PISA) scale permanently increases annual economic growth by 1 percentage point (OECD, 2015). This report finds that reducing the shares of early school leavers and children with less than basic skills by 10 per cent increases annual GDP growth by 1-2 percentage points, a similar effect as improving cognitive test scores.

Numerous policies have been pursued around the world to reduce early school leaving and improve learning outcomes. Debates over which policies are more effective than others are ongoing among both academics and policy-makers.

Based on an extensive literature review, the report makes several key policy recommendations that are found to be successful in reducing the share of early school leavers and children with less than basic cognitive skills and low socio-emotional skills. The recommendations below would need to be tailored to the specific contexts of the communities, countries and regions in which they are implemented.

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Recommendations

1	In line with SDG 4, provide 12 years of free, publicly-funded, inclusive, equitable and quality education without discrimination by making school affordable and reducing the direct and opportunity costs of schooling and ensuring that education systems are responsive to gender-specific needs. It is recommended that governments allocate at least 4 to 6 per cent of their GDP to education.
2	Create gender-transformative, inclusive and empowering learning environments that challenge unequal power dynamics, gender bias and stereotypes, including through curricular and pedagogical approaches that respect difference and promote equality.
3	Intervene early by investing in early childhood education for girls and boys to lay a foundation for learning and harness its potential to tackle gender inequities and harmful gender norms from an early age.
4	Avoid early tracking, provide academic support and second chance options for girls and boys who missed out on education or whose education was interrupted.
5	Improve school infrastructure, including providing single-sex water and sanitation facilities, reducing class sizes, especially in disadvantaged areas, and ensuring shorter distances to school.
6	Improve the quality of education by hiring a qualified, motivated and diverse teacher workforce and ensure that they attend school, are fair and engage all students equally. Support teachers' continuous professional development so they can unlock all learners' potential.
7	Raise awareness among local communities and parents of the importance of girls' and boys' completion of a full cycle of basic education and engage the community and parents in school activities and management.
8	Address girls' and boys' health and mental well-being, including through preventing and responding to all forms of school-related gender-based violence, comprehensive sexuality education and socio-emotional skills development.
9	Provide compelling interventions connecting learners to the world of work , including through vocational education and training that meets labour market needs and addresses gender barriers to participation.
10	Conduct rigorous evaluations and research to identify what works to retain or get girls and boys back to school and learning, with a focus on girls and boys at high risk of learning poverty and dropout. Collect more data on socio-emotional skills.

Chapter 1

Introduction

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Background and rationale

The 2030 Agenda for Sustainable Development makes the promise to leave no one behind. This promise includes ensuring inclusive and equitable quality education and lifelong learning opportunities available for all – Sustainable Development Goal (SDG) 4 – and achieving gender equality and empowering all women and girls – SDG 5. But halfway through the implementation period, meeting this ambitious agenda by 2030 will be a challenge. Globally, 128 million boys and 122 million girls remain out of school (UNESCO, 2023a). 42 per cent of young adults aged 19 are early school leavers, and 57 per cent of children aged 15 have less than basic skills (UNESCO-UIS, 2023a; Gust, Hanushek and Woessmann, 2024). Countries spent on average 3.7 per cent of GDP on education in 2022 (UNESCO-UIS, 2023a). It is recommended that governments allocate at least 4 to 6 per cent of their GDP to education. Not meeting the promise of leaving no one behind can have a massive cost.

The positive relationship between long-term growth and educational achievement has been well established for many decades. Economic models, beginning from Becker (1964), suggest that individuals increase their investment in skill acquisition if the benefits from the investment are higher than the costs, and keep investing until the additional benefit of the investment is equal to the additional cost.

The countries with the lowest levels of educational achievement and the highest levels of early school leaving tend to be the poorest, with a geographical concentration in sub-Saharan Africa and South Asia. Early school leaving and a lack of basic cognitive (verbal and analytic) and non-cognitive (socio-emotional) skills often originate from a variety of constraints that can be economic, social, technological and organizational. Social norms and values, such as those related to gender and culture, act as additional barriers to investment.

In some cases, even when individuals are willing to invest, the school system may fail to provide the skills demanded by the labour market. These constraints can result in low levels of education and skills, which not only reduce the ability to produce and generate income but can also affect non-monetary outcomes such as life satisfaction and tax morale. They also can have significant social implications, including an increased likelihood of early pregnancies, poor health and lower life expectancy (Oreopoulos and Salvanes, 2011).

While estimates show that achieving global universal basic skills would raise future world Gross Domestic Product (GDP) by US$700 trillion over the remainder of the century (OECD, 2015), less is known about the immediate, medium- and long-term costs of early school leaving and failing to acquire sufficient socio-emotional skills.

Ample evidence also shows that the quality of socio-emotional learning affects school performance, the acquisition of cognitive skills and ultimately the decision whether or not to drop out of school (see for instance Heckman, Sixtrud and Urzua, 2006). Although cognitive skills, such as verbal and numerical proficiency, remain the most important predictor of academic performance, school achievement is also dependent on several non-cognitive skills, such as perseverance, motivation, self-control, responsibility, curiosity and emotional stability (Cipriano et al., 2023).

Objectives and research questions

This report estimates the economic private, fiscal and social costs of early school leaving and failing to attain basic cognitive skills, or adequate levels of socio-emotional skills, globally and for twenty selected countries. Estimates of these costs have not, to date, been available with this level of detail. Economic costs that are reviewed include lower incomes, productivity losses, lower tax payments, public and private savings of education expenditure, additional public expenditures on law and order, negative effects on health, increased costs of support programmes and transfer payments, and the costs of raising taxes. Although the focus is on economic costs, consideration is also given to non-monetary costs, including early pregnancy, corruption, crime and tax morale.

These costs are presented at the global level, by region and for a selected sample of twenty countries where there are gender disparities at boys' or girls' expense. The region divisions are as follows: Arab States, Central Asia, Central and Eastern Europe, East Asia and the Pacific, Latin America and the Caribbean, North America and Western Europe, South and West Asia and sub-Saharan Africa.

The report addresses the following research questions:

- What are the economic, fiscal and social costs of girls and boys leaving school early or failing to attain basic cognitive and socio-emotional skills?
- What policies and programmes are used to reduce early school leaving and the share of children with less than basic skills and low socio-emotional skills?

Conceptual framework

The economic costs of young individuals leaving school early, or of children failing to attain basic cognitive and

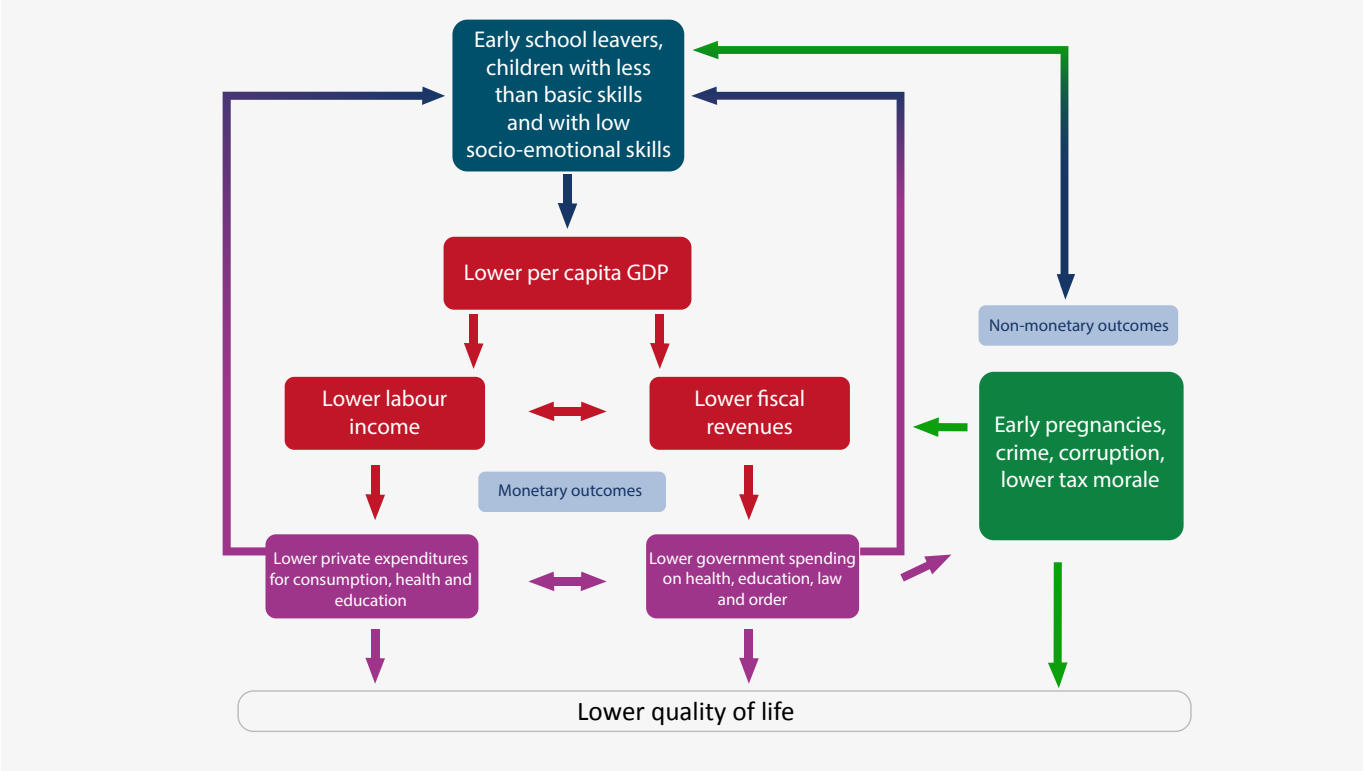
non-cognitive skills, are divided into three categories: those borne by individuals (*private costs*); those borne by the government (*fiscal costs*), and those borne by society at large, which encompasses both individuals and the government (*social costs*).

Some costs, known as negative externalities, are not directly borne by individuals or the government. For instance, early school leaving and lack of basic cognitive and non-cognitive skills can hamper the productivity of a team. This effect is an external cost not necessarily considered to be borne by the individual, yet it accrues to society.

Social costs are the aggregate of private and fiscal costs, minus the productivity losses from a less educated workforce (Belfield et al., 2012). While this definition of social costs is standard in economics, it might lead to confusion as the term 'social costs' often refers to non-monetary costs, such as the loss of life satisfaction or human suffering.

While this report primarily focuses on monetary private, fiscal and social costs and gives limited attention to non-monetary costs, it recognizes that these latter costs are significant and that costs interplay (**Figure 2**).

Figure 2: The interaction between the share of children leaving school early, failing to attain basic skills or with low socio-emotional skills and private, fiscal, social and non-monetary costs



Source: Authors.

In countries in which early school leaving and failure to deliver basic cognitive and non-cognitive skills is high, a decrease in average GDP per capita is expected, which in turn means lower average labour income and lower fiscal revenues. Lower labour income leads to reduced private expenditures on consumption, health and education. Lower fiscal revenues results in decreased government expenditure for health, education, law enforcement and government transfers. Non-monetary outcomes are also affected, including an increase in early pregnancies, crime and corruption, as well as a decrease in tax morale. Higher economic and non-monetary costs collectively reduce the average quality of life in a country.

Importantly, fewer economic resources imply that governments have less to spend on reducing early school leaving and the share of children with less than basic skills, therefore trapping the economy in a status of low education and low productivity.

The study focuses on macroeconomic data, such as per capita GDP and the shares of labour income, government spending and tax revenues on GDP. The report's major strength is that it relies on harmonized international data, available for many countries, which is the best available approach to compute global costs.

It is worth noting that the digital and green transition asks many countries to modernize their education provision in a competitive and challenging environment—failure to do so will only increase the costs set out in this report.

Concepts

The share of early school leavers

In modern economies, an upper secondary qualification (ISCED 3) is often considered to be the minimum requirement for successful participation in the labour market. Using the latest available data from UNESCO-UIS covering 216 countries and territories, the share of early school leavers is calculated as 100 minus the completion rate, or the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. Since the modal intended age for completing high school is either 18 or 19, and the duration of schooling until completion is 12 years of education, the relevant group for this measure is aged 21/22 to 23/24.

A concept closely related to the early school leaving rate is the out-of-school rate for upper secondary education, or SDG4 thematic indicator 4.1.4, defined as the proportion of young people in the official age range not enrolled in upper secondary education. This variable is compiled by the UNESCO Institute of Statistics using both administrative and survey data (UNESCO-UIS, 2023a). Since the correlation is high between the share of early school leavers and the share of young individuals out-of-school over the years 2001-2021 and across the 216 countries and territories for which there are data, this report focuses on the former measure.

The share of children with less than basic skills

One potential drawback of using the share of early school leavers as an indicator of average education and skills is that more time spent in school does not necessarily mean higher learning, largely due to varying school quality (see, for instance, Hanushek and Woessmann, 2012). It is possible for students to complete primary or secondary education yet emerge with poor skills. Since the quality of learning is not captured by the share of early school leavers, this report separately considers the share of children with less than basic skills.

This measure, estimated by Gust, Hanushek and Woessmann (2024) for 159 countries, encompasses both children who are still in school and those who are not, offering a more comprehensive assessment of educational outcomes. Gust, Hanushek and Woessmann (2024), harmonize the scores from many national and international standardized tests around the world using the OECD's PISA scale, which has a mean equal to 500 points and standard deviation equal to 100 points.

Basic skills correspond to the PISA Level 1 skills (fully attained), the lowest of the six performance levels defined on the PISA scale. This definition of basic skills corresponds to a modern understanding of functional literacy. Functional literacy "refers to the capacity of a person to engage in all those activities in which literacy is required for effective function of his or her group and community and also for enabling him or her to continue to use reading, writing and calculation for his or her own and the community's development" (UNESCO-UIS, 2023a). The threshold between Levels 1 and 2 is marked on the PISA scale by a score of 420 points in mathematics and 410 points in science.

Since the share of children with less than basic skills is not available by sex, it is estimated by using available sex-specific information.

Socio-emotional skills

Socio-emotional skills are defined in this report as the competencies, skills and/or attitudes to recognize and manage emotions, develop caring and concern for others, establish positive relationships, make responsible decisions and handle challenging situations. Socio-emotional skills can be acquired in school and beyond, including within families and communities.

Ready-to-use data on socio-emotional skills that cover a significant number of countries and are comparable across countries are not available. An increasingly popular way of describing socio-emotional learning and the associated skills refers to the "Big Five" personality traits: openness, conscientiousness, extraversion, agreeableness and neuroticism (see, for instance, OECD, 2021 and Danner et al., 2021).

This report constructs a novel index of socio-emotional skills using data from the 2018 OECD PISA, which contains several questions on personality traits.[1] In these questions, 15-year-old students are asked to say whether they strongly agree, agree, disagree or strongly disagree with a statement. The report uses the answers to these questions to compute, by sex, measures of the five personality traits and an overall index.

1 The 2018 version of PISA was available when this report was drafted. In early December 2023, the OECD made available the results of PISA 2022. Since the index does not use information on test scores, it is unlikely that it changes substantially with the new data.

The information contained in each measure is summarized in a single index using principal component analysis, a technique which selects the linear combination of indicators which accounts for the largest share of the total variance. The resulting Big Five index, available for 57 countries, is standardized to range between 0 and 100. The index increases when the share of individuals with low extraversion, agreeableness, conscientiousness and openness decrease and high neuroticism increases.

Taxonomy of the economic costs of early school leavers and of children with less than basic skills

Belfield et al. (2012), provide a useful taxonomy of the economic costs associated with insufficient levels of education and skills. These costs are categorized into private costs borne by households, fiscal costs borne by the government, and social costs which include both households and the government. To compute these costs, the current situation (or status quo scenario) in each country is compared with an idealized (or intervention) scenario in which the share of early school leavers or children with less than basic skills is equal to zero.

Private costs

Private costs consist of:

- **disposable income** (defined as income minus taxes plus transfers) in the intervention scenario minus disposable income in the status quo scenario;
- **private health and education expenditures** in the intervention scenario minus health and education expenditures in the status quo scenario; and
- **the victim cost of crime** in the intervention scenario, minus the victim cost of crime in the status quo scenario.

Fiscal costs

From the private sector's perspective, a higher share of early school leavers or children with less than basic skills leads to lower taxes and higher welfare transfers, mitigating the losses generated by lower aggregate incomes. However, these adjustments—lower taxes and increased transfers—result in higher fiscal costs for the government.

These fiscal costs can be broken down into the below four main categories.

1. **Difference in tax revenues**: The tax revenue generated in the intervention scenario minus the tax revenue in the status quo scenario.
2. **Change in welfare transfers**: The amount of welfare transfers in the intervention scenario minus the transfers in the status quo scenario.
3. **Public health and education expenditure**: The expenditure on public health and education in the intervention scenario minus the expenditure in the status quo scenario.
4. **Law and order expenditure**: The spending on law and order in the intervention scenario compared to the status quo scenario.

Social costs

Social costs include both private and fiscal costs. They encompass not only the productivity loss associated with a less skilled labour force but also the additional economic burden due to taxation for funding public services. These costs arise because the impact of taxation extends beyond the direct financial outlay. When the government collects one US dollar in taxes, the corresponding loss to the private sector exceeds one US dollar. This is due to the distortive effects of taxation, which can lead to inefficiencies in the market, preventing the optimal allocation of resources.

The terminology 'social costs' within this economic framework are to be distinguished from the term 'non-monetary costs.'

The economic costs of children with low socio-emotional skills

The OECD's Survey on Social and Emotional Skills (OECD, 2021) demonstrates that students' social and emotional skills are significant predictors of school grades across age cohorts and subjects. Low levels of socio-emotional skills can adversely affect the acquisition of cognitive skills and increase school dropout rates. This, in turn, raises the proportion of youth who leave school early or fail to attain basic cognitive skills. The impact of poor socio-emotional skills encompasses a reduction in GDP per capita, which subsequently lowers labour incomes, fiscal transfers and both private and public expenditures in areas like education, health and crime prevention.

While this report comprehensively calculates the private, fiscal and social costs of early school leavers and children failing to acquire basic cognitive skills, it estimates the economic costs of low socio-emotional skills solely in terms of their impact on lower GDP per capita, a key factor determining these costs.

Gender-transformative action

Gender-transformative means addressing the underlying causes of gender inequalities. It includes policies and initiatives that not only address the different needs, aspirations, capacities and contributions of girls, boys, women and men, but also challenge existing and discriminatory policies and practices, creating radical change (UNESCO, 2018). A gender-transformative approach to education is one that encompasses policy, programming and interventions to create opportunities to actively challenge gender norms and wider inequalities. This includes engaging with gender equality through curricular and teaching reforms (UNESCO, 2022a).

Gender disparities in education at girls' or boys' expense

Disadvantage and discrimination in education can manifest itself in many forms. In this report gender disparities in education at girls' or boys' expense are used in contexts in which gender disparities exist in gross enrolment ratios in primary, lower secondary or upper secondary education, cross-checked with completion rates.

Methodology

The empirical methodology employed to obtain the estimates of private, fiscal and social costs consists of several steps and uses data from different sources. It relies on assumptions and has limitations. This section provides an outline of the key elements. Further details can be found in the **Appendix**.

The costs are calculated for each country whenever data are available. The number of countries included in the analysis is 159, covering about 99 per cent of world's population. The approach is bottom up and starts with the single items of private, fiscal and social costs, which include for instance labour income and fiscal revenues and private and public expenditures. The estimated costs are aggregated to obtain country-specific private, fiscal and social costs. These country-specific costs are further aggregated to provide estimates of regional and global costs.

In the first step, forty countries were identified using the gender parity index of the gross enrolment ratios in primary, lower secondary and upper secondary education, cross-checked with evidence on gender disparities in completion rates. Initially, four countries with gender disparities were selected per region for geographical variety. Within the overall selection, efforts were made to ensure all income groups and all world regions were represented. This geographic and economic variety does mean that the gender disparities must be seen in the specific and different contexts of these countries. These disparities may differ significantly by country in order of magnitude.

In the second step, based on data availability, ten countries were selected in which there are gender disparities at girls' expense. They are Afghanistan, Chad, Guatemala, Luxembourg, The Netherlands, Morocco, Pakistan, Peru, Tajikistan and Yemen. Ten countries were selected in which there are gender disparities in education at boys' expense. They are Bangladesh, Belgium, Burundi, Croatia, Finland, Honduras, Mexico, Senegal, Sweden and Tunisia.

Data sources and quality

The data, covering 159 countries from 2001 to 2021, are of high quality, harmonized and comparable across countries (**Table 1**). All following tables are based on data in **Table 1**.

Table 1: Data summary

Variable	Source
GDP per capita (constant 2015 prices)	World Bank – World Development Indicators, 2023a
GDP growth rate 2023–2027 forecasts	International Monetary Fund (IMF), 2023a
Gross labour income	International Labour Organization (ILO), 2023
Private Health Expenditures	World Bank – World Development Indicators, 2023a
Government health expenditures	World Bank – World Development Indicators, 2023a
Private education expenditures	UNESCO Institute for Statistics (UNESCO–UIS), 2023
Government education expenditures	UNESCO – UIS, 2023
Fiscal revenues	World Bank – World Development Indicators, 2023a
Total government spending	World Bank – World Development Indicators, 2023a
Social transfers	Organisation for Economic Co-operation and Development (OECD) 2023b and World Bank - Aspire, 2023b
Government expenditures on law and order	IMF, 2023b
Tax morale index	Derived from the World Values Survey Database, World Values Survey, 2023; Haerpfer et al. 2022
Corruption perception index	Transparency International, 2023
International property rights index	Property Rights Alliance, 2023
Homicides per 100,000 inhabitants	United Nations Office for Drugs and Crime (UNODC), 2023
Robberies per 100,000 inhabitants	UNODC, 2023
Physical violence per 100,000 inhabitants	UNODC, 2023
Sexual violence per 100,000 inhabitants	UNODC, 2023
Adolescent birth rate (number of live births to adolescent girls per 1,000 adolescent girls aged 15 to 19)	United Nations Children's Fund (UNICEF), 2023
Share of youth aged 15 to 24 not in employment, education or training (NEET)	World Bank – World Development Indicators, 2023a
Share of early school leavers	UNESCO - UIS, 2023b
Share of children with less than basic skills	Gust, Hanushek and Woessmann, 2024
Big 5 Index	Derived from OECD, 2018a
Harmonized Learning Outcome (learning scores by gender)	Angrist et al., 2021

Approaches and definitions

Economic costs: The costs of early school leavers and children with less than basic skills or low socio-emotional skills obtained by comparing levels of any cost item (for instance, labour income) in the intervention scenario with levels in the status quo scenario. The differences between levels are attributed to the presence of early school leavers or children with less than basic skills and are interpreted as their costs.

Intervention scenario: An ideal situation in which early school leaving is absent, no child lacks basic cognitive skills and children have the maximum attainable level of socio-emotional skills.

Status quo scenario: A scenario that assumes that the shares of early school leavers and children with less than basic cognitive skills or low socio-emotional skills are equal to the actual shares in the reference year.

Reference year: The year 2021 is chosen as the reference year for the status quo scenario due to data availability. This choice is important to ensure a consistent and comprehensive analysis.

Macroeconomic approach: The costs in the two scenarios are estimated using a macro-economic approach that relies on country-level data. This approach extends the analysis by Hanushek and Woessmann (2012) and OECD (2015) and offers, for the first time, a breakdown of economic costs into private, fiscal and social costs. It relies on a two-factor model and provides both global and country estimates.

Two-factor model: Each cost item is expressed as a product of two factors: a) the ratio between the item and GDP; and b) the level of per capita GDP. Both factors are influenced by the shares of early school leavers and children with less than basic skills.

Estimation of the two-factor model: The relationship between the share of early school leavers or children with less than basic skills *and* the ratio of each cost item to GDP, estimated using cross-country data from 2001 to 2021 and regression analysis.

The relationship between the share of either early school leavers or children with less than basic skills and GDP per capita is estimated in two steps. First, the effect of the share of either early school leavers or of children with less than basic skills on the long-run growth rate of per capita GDP is estimated. The technique used for this estimate is Instrumental Variables. Second, this estimate is used to forecast the levels of per capita GDP in the years between 2022 and 2041.

Instrumental variables technique: This technique is used to provide causal estimates of the effect of the shares of early school leavers and of children with less than basic skills on the annual growth rate of per capita GDP.

Forecasting cost items: All cost items are forecasted between 2022 and 2041 under the status quo scenario and the intervention scenario, using the estimates of the two-factor model.

Annual cost calculation: The annual cost for each item is the difference between forecasted levels in the status quo and intervention scenarios in 2030.

Lifetime cost calculation: The lifetime cost for each item is the present discounted value of all the differences between forecasted levels in the status quo and intervention scenarios from 2022 to 2041. This cost is roughly 20 times the annual cost.

Costs of low socio-emotional skills: A simplified version of the macro-economic approach is used to estimate the cost of low socio-emotional skills. Due to data limitations, this cost is expressed only in terms of lost GDP. The cost is estimated by assuming that socio-emotional skills influence GDP only by affecting either the share of early school leavers or the share of children with less than basic skills. The cost is obtained by comparing the level of per capita GDP in the intervention scenario with the level in the status quo scenario in 2030 and is available for the 57 countries and territories that participated in PISA 2018.

Sex-specific costs: Estimates of annual costs due to girls and boys leaving school early or having less than basic cognitive skills or low socio-emotional skills. These costs are obtained by comparing the status quo scenario with an intervention scenario in which the shares of early school leavers or children with less than basic skills and low socio-economic skills are set at the intervention level for one sex and at the status quo level for the other sex.

Ethical review

Given that this is a desk-based study, which principally used and analysed already published material and data for the literature review and cost calculations, there were limited ethical considerations. These included ensuring that: the information was retrieved and cited appropriately in the report; documents were publicly available and had no restrictions in terms of their use for this study; and secondary data was reported and used accurately.

Limitations

The macroeconomic approach used in this report has several limitations. First, the empirical model associating the shares of early school leavers and children with less than basic skills with per capita GDP growth is linear. The assumption of linearity facilitates causal estimates in a setting in which the sample size, given by the number of countries, is relatively small. However, it implies that the relationship between the shares and the growth rate of per capita GDP is the same across countries, and that average rather than country-specific effects are estimated.

This implication is likely to hold when countries are sufficiently similar but may fail when they are significantly different. Consider, for instance, countries in which the participation of women in the labour market is low. In these countries, a reduction in the share of female early school leavers is likely to have a smaller effect on GDP growth than in countries where female participation in the labour market is not discouraged, because additional female education cannot be productively employed.

The assumption that the share of early school leavers and children with less than basic skills have the same effect on GDP growth across countries is likely to produce higher estimates of the cost of these shares in countries where the access of women to the labour market is restricted, and lower estimates in countries where this access is not hampered.

The assumption of common effects does not mean, however, that the empirical model forces GDP growth rates to be the same across countries. The estimated rates of GDP growth vary by country and reflect underlying structural differences, the most important of which is the level of economic development achieved by 2021. In addition, these rates are applied to very diverse levels of per capita GDP in the baseline year (2021) and produce forecasts of per capita GDP in 2030 which account for differences in both GDP levels and growth rates.

Second, the macroeconomic approach uses aggregate data, such as private expenditures on health and education, fiscal revenues and the corruption index. These outcomes are only defined by country and do not have a sex-disaggregation.

Third, it is impossible to separately estimate the effects on per capita GDP growth of the shares of girls and boys leaving school early or with less than basic skills, because these sex-specific shares are highly correlated across countries. As a consequence, the gendered estimates of the economic cost of early school leaving and lack of basic skills provided in this report reflect mainly differences in the sex-specific shares of early school leavers and children with less than basic skills and, to a lesser extent, differences in the shares of girls and boys in the population.

Fourth, although the model of per capita GDP growth is linear, the ultimate relationship between the shares of early school leavers and children with less than basic skills and each cost item is nonlinear, which explains why the sum of sex-specific costs does not necessarily add up to total costs. In most cases, however, the discrepancy is small.

Fifth, several factors, such as location, poverty, disability, ethnicity, indigeneity, language, religion, migration or displacement status, beliefs and attitudes can affect early school leaving and learning outcomes. A detailed analysis of these factors was beyond the scope of this study. Data is also lacking. This is a data and research gap to be addressed.

Sixth, the costs of early school leavers and children with less than basic skills can be monetary or non-monetary. While the former are naturally expressed in monetary units, for the latter the monetary conversion is often difficult, because a widely accepted conversion rate is unavailable. For instance, the cost of an early pregnancy to the mother and the child is hard to estimate and the debate in the literature is still open (Aizer et al., 2022). For non-monetary outcomes, this report expresses the costs of early school leavers and children with less than basic skills as per cent differences in these outcomes between the status quo and the intervention scenario.

Seventh, this report uses the year 2021 as the reference year for all computations because of data availability. In the country profiles, however, the most recent data and estimations are used whenever available (UNESCO, 2024). In these profiles, the Harmonized Learning Outcome scores (Angrist et al., 2021) are used, which are available only for some years in the period 2001-2017, depending on the country.

Eighth, some cost items associated with early school leavers and children with less than basic skills are missing. Since spending for food and shelter does not vary much with disposable income, this cost item is left out of the analysis although it represents a sizeable proportion of total expenditures, especially for poor people. In addition, early school leaving and lack of basic skills have a negative impact on health. Although the costs of poor health in terms of lower labour income are accounted for, other non-monetary costs are not included.

Structure of the report

Chapter 2 of the report presents estimates of the private, fiscal and social costs of early school leavers and children with lack of basic skills.

Chapter 3 discusses the non-monetary costs of early school leaving and children with less than basic skills, which are substantial, and include child marriage, early and unintended pregnancies, youth disengagement and increases in the incidence of crime.

The costs of low socio-emotional skills, which are significant predictors of academic achievement, are discussed in **Chapter 4**. The chapter show attaining socio-emotional skills could lower the share of children with less than basic skills and help avoid significant losses in GDP.

Chapter 5 presents the private, fiscal and social costs of children with less than basic skills for ten selected countries with gender disparities in education at girls' expense and then ten selected countries with gender disparities in education at boys' expense. In the country profiles, which are published in a separate report (UNESCO, 2024), for each country, the current situation concerning the share of early school leavers and children with less than basic skills is briefly summarized, with special attention paid to sex differences. The estimates of private, fiscal and economic costs are then presented.

Finally, recommendations to reduce early school leaving and improve learning outcomes for girls and boys are proposed.

Chapter 2

Global and regional estimates of private, fiscal and social costs of early school leaving and children with less than basic skills

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Key messages

- The costs of not getting every girl and boy into school and learning are massive. By 2030, the annual social costs of the basic skills deficit represent more than US$10 trillion globally, more than the entire combined GDP of France and Japan.
- Getting every child in school would raise future world GDP by more than US$6.5 trillion annually, while at the same time eliminating the social costs of failing to achieve SDG 4.
- By 2030, the annual private costs of the current shares of early school leavers and children with less than basic skills represent over US$6.2 trillion and US$9.1 trillion, or 11 and 17 per cent of global GDP, respectively. The lifetime private costs, estimated over a 20-year horizon (to 2041), are about 20 times these values.
- Sub-Saharan Africa currently bears the highest cost, as a percentage of GDP, of early school leavers and children with less than basic skills. In this region, the annual private cost is estimated at 19 and 26 per cent of GDP in 2030, respectively. It also represents the region with the greatest potential to reap economic benefits from advances in quality education, because of the relatively low starting values.
- The global costs of early school leavers and children with less than basic skills are slightly higher for boys than for girls. This is mainly because more boys than girls are out of school globally and the share of boys with less than basic skills is higher.
- However, in sub-Saharan Africa the cost of early school leavers is higher for girls than for boys (about US$210 billion vs US$190 billion).
- Investing in quality education is a cost-effective strategy for economic development. A ten per cent reduction in the shares of early school leavers and children with less than basic skills increases annual GDP by 1-2 percentage points.
- Reducing the number of early school leavers and children with less than basic skills by one percentage point, would translate to an annual global gain in labour income of US$470 billion and over US$650 billion, respectively.
- The projected loss of fiscal revenues due to early school leavers and children with less than basic skills is 14 per cent and 24 per cent of 2030 global GDP, respectively. Each percentage point of early school leavers and children with less than basic skills is estimated to reduce fiscal revenues by US$430 billion and US$560 billion, respectively. This loss is largest in sub-Saharan Africa and in the Arab States.
- Fewer economic resources suggest that governments have less to spend to reduce early school leaving or the share of children with less than basic skills, therefore trapping the economy in a status of low education and low productivity.

The effects of early school leavers and children with less than basic skills on GDP is significant

Too many countries around the world are struggling with the negative effects on their economies of early school leavers (ESL) and children with less than basic skills (LBS). Estimates of the costs of these situations find that both are detrimental to per capita GDP and to per capita GDP growth.

The causal estimates presented in this study indicate how, on the flip side, making improvements in these two situations can have the opposite effect, and can lead to GDP growth. According to this report's findings, a 10-percentage point reduction in ESL and LBS produces 1.1 and 1.6 percentage point, respectively, increases in annual GDP growth. These estimates are conservative.

As a reference, these effects are larger than those of the NextGenerationEU plan, implemented by the European Union after the COVID-19 pandemic, which is estimated by Varga et al. (2021), to be around 1 percentage point in annual GDP growth. They are large enough to note a difference for economic development and poverty reduction, especially in countries with slow economic growth.

Consider for instance Chad, a low-income country which experienced only moderate growth between 2001 and 2021. Reducing LBS by 10 percentage points from the current 99 per cent, and thus boosting per capita GDP growth by 1.6 percentage points, would increase per capita GDP in 2030 from about US$640 to US$710, a more than 10 per cent increase. A similar reduction of LBS in high-income Sweden, where the share of LBS is only 19 per cent, would increase per capita GDP in 2030 from US$47,700 to US$54,000, an over 13 per cent increase.

Globally, the gain in per capita GDP from reducing LBS by 10 percentage points is slightly above 11 per cent. This amount equals over two-thirds of the economy of the United States of America in 2023.

These numbers reveal that policies that reduce ESL and LBS are likely to be effective development policies. As such policies would target mainly disadvantaged households and their offspring, they would be equity enhancing as well.

The scope for reduction is larger in countries with higher percentages of ESL and LBS, such as Chad. In these countries, sizeable reductions of ESL and LBS may be easier to attain than in countries with low ESL and LBS.

The global estimates of private, fiscal and social costs of children and youth not learning are massive

The global and regional costs of the current share of early school leavers are massive (**Table 2**). Global private costs are about 11 percentage points of GDP in 2030. Reducing ESL by 1 percentage point in all countries yields a US$250 billion reduction of private costs, globally, a sizeable amount. If governments were able to completely eradicate early school leaving, the expected reduction in the costs borne by households in 2030 would be over US$6 trillion, an impressive figure reflecting the fact that ESL is a widespread phenomenon that affects a large proportion of global youth (42 per cent).

Reducing ESL has permanent positive effects on an economy and its citizens. Reducing ESL by 1 percentage point corresponds to about US$230 billion in social costs. If ESL is reduced by 1 percentage point, the global lifetime private benefit is about US$5 trillion, the global lifetime fiscal benefit is over US$800 billion and the global lifetime social benefit is about US$4.6 trillion.

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Table 2: The global costs of early school leavers

Region	Type of cost	Share of ESL	Share of girls' ESL	Share of boys' ESL	Annual cost of ESL % GDP	Annual cost of girls' ESL % GDP	Annual cost of boys' ESL % GDP	Annual cost of 1pp ESL bln US$	Annual cost of 1pp girls' ESL bln US$	Annual cost of 1pp boys' ESL bln US$
Arab States	Private	0.51	0.49	0.53	-13.75	-6.99	-7.38	-7.62	-3.96	-3.86
Arab States	Fiscal	0.51	0.49	0.53	-2.21	-0.65	-0.79	-0.62	-0.15	-0.18
Arab States	Social	0.51	0.49	0.53	-13.14	-6.47	-6.86	-6.72	-3.41	-3.35
Central Asia	Private	0.12	0.12	0.11	-4.75	-2.26	-2.54	-4.76	-2.34	-2.43
Central Asia	Fiscal	0.12	0.12	0.11	-0.29	-0.13	-0.09	0.11	0.07	0.07
Central Asia	Social	0.12	0.12	0.11	-4.15	-1.98	-2.18	-3.89	-1.91	-1.98
Central and Eastern Europe	Private	0.14	0.14	0.15	-4.13	-1.79	-2.41	-12.94	-6.04	-7.10
Central and Eastern Europe	Fiscal	0.14	0.14	0.15	-0.44	-0.16	-0.22	-1.71	-0.68	-0.83
Central and Eastern Europe	Social	0.14	0.14	0.15	-3.54	-1.52	-2.05	-11.09	-5.15	-6.05
East Asia and the Pacific	Private	0.40	0.35	0.45	-7.57	-3.27	-4.64	-65.81	-31.72	-36.53
East Asia and the Pacific	Fiscal	0.40	0.35	0.45	-1.87	-0.63	-0.97	-13.82	-5.30	-6.55
East Asia and the Pacific	Social	0.40	0.35	0.45	-7.88	-3.32	-4.76	-63.75	-30.30	-34.95
Latin America and the Caribbean	Private	0.36	0.35	0.38	-8.74	-4.29	-4.82	-15.61	-7.90	-8.31
Latin America and the Caribbean	Fiscal	0.36	0.35	0.38	-1.68	-0.64	-0.73	-2.64	-1.02	-1.11
Latin America and the Caribbean	Social	0.36	0.35	0.38	-8.49	-4.10	-4.61	-14.65	-7.31	-7.69
North America and Western Europe	Private	0.16	0.16	0.16	-4.86	-2.31	-2.60	-118.95	-56.48	-63.62
North America and Western Europe	Fiscal	0.16	0.16	0.16	-0.69	-0.29	-0.32	-19.07	-8.08	-9.16
North America and Western Europe	Social	0.16	0.16	0.16	-4.15	-1.96	-2.20	-103.19	-48.68	-54.81
South and West Asia	Private	0.46	0.48	0.45	-13.71	-7.35	-7.07	-18.24	-9.17	-9.86
South and West Asia	Fiscal	0.46	0.48	0.45	-2.34	-0.92	-0.87	-2.86	-1.08	-1.16
South and West Asia	Social	0.46	0.48	0.45	-13.82	-7.27	-6.97	-18.28	-9.03	-9.71
Sub-Saharan Africa	Private	0.70	0.72	0.68	-18.87	-10.20	-9.64	-6.52	-3.44	-3.37
Sub-Saharan Africa	Fiscal	0.70	0.72	0.68	-4.30	-1.51	-1.40	-1.18	-0.41	-0.39
Sub-Saharan Africa	Social	0.70	0.72	0.68	-19.74	-10.26	-9.66	-6.51	-3.33	-3.26
World	Private	0.42	0.41	0.43	-10.69	-5.40	-5.78	-250.45	-121.06	-135.07
World	Fiscal	0.42	0.41	0.43	-2.12	-0.77	-0.86	-41.79	-16.64	-19.30
World	Social	0.42	0.41	0.43	-10.77	-5.30	-5.69	-228.09	-109.12	-121.79

Notes: bln: billion; pp: percentage point. The share of ESL (either overall or sex-specific) is defined as (1 – completion rate). Completion rates are provided by UNESCO-UIS (2023b) and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. Private costs are the costs borne by households, computed as the difference between the changes in private incomes and the changes in private expenditures induced by ESL. Private incomes include labour income and social transfers. Private expenditures include income taxes, private health and education expenditures and the costs of crime victimization. Fiscal costs are the costs borne by the public sector, computed as the difference between the changes in fiscal revenues and the changes in government expenditures induced by ESL. Social costs are the sum of private costs, fiscal costs and the shadow costs of public funds, which is set at 15 percentage of fiscal revenues, as in Ballard and Fullerton (1992). Global and regional costs are obtained by aggregating country costs. For each country, the values of incomes and cost items are forecasted between 2021 and 2041, under a status quo scenario (ESL is set at the level recorded in 2021) and an intervention scenario (ELS is set at 0). Annual costs are computed as the discounted (in 2021) gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 per cent. The annual costs of female/male ESL are obtained by comparing status quo and intervention scenarios in which the female/male ESL is set at 0 while the male/female ESL is kept at its 2021 value. Annual costs are expressed as percentage of discounted GDP in 2030, as forecasted by IMF (2023). The annual costs of 1pp ESL are expressed in 2015 US dollars.

The global and regional costs of the current share of children with less than basic skills are even higher (**Table 3**). The private costs of LBS exceed those of ESL because LBS has a larger effect on GDP growth. This is coherent with the fact that LBS measures both the quantity and the quality of education, while ESL captures only the quantity.

The global private costs of LBS in 2030 are 17 per cent of GDP. If LBS were reduced by 1 percentage point, the global reduction in private costs would be equal to US$320 billion in 2030.

If governments were able to completely eradicate LBS, the reduction in the costs borne by households would be equal to more than US$9 trillion in 2030. A permanent reduction of LBS by 1 percentage point would imply instead a global lifetime benefit to households of about US$6.4 trillion over the period 2021-2041.

The fiscal and social costs of LBS are also larger than the costs associated with ESL. The annual fiscal and social costs of LBS are around 7 percentage points and about 21 percentage points, respectively, of global GDP in 2030. A 1 percentage point reduction in LBS would reduce global fiscal and social costs by US$110 billion and US$340 billion, respectively. The global lifetime fiscal and social benefits of reducing LBS by 1 percentage point are about US$2.2 trillion and US$6.8 trillion, respectively.

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Table 3: The global costs of children with less than basic skills

Region	Type of cost	Share of LBS	Share of girls' LBS	Share of boys' LBS	Annual cost of LBS % GDP	Annual cost of girls' LBS % GDP	Annual cost of boys' LBS % GDP	Annual cost of 1pp LBS bln US$	Annual cost of 1pp girls' LBS bln US$	Annual cost of 1pp boys' LBS bln US$
Arab States	Private	0.74	0.72	0.77	-24.66	-13.61	-14.27	-9.52	-5.13	-5.01
Arab States	Fiscal	0.74	0.72	0.77	-9.53	-2.62	-2.89	-2.21	-0.38	-0.49
Arab States	Social	0.74	0.72	0.77	-28.40	-14.02	-14.77	-9.80	-4.76	-4.72
Central Asia	Private	0.62	0.62	0.63	-11.71	-6.48	-6.93	-1.53	-0.77	-0.79
Central Asia	Fiscal	0.62	0.62	0.63	-6.27	-2.16	-2.39	-0.70	-0.21	-0.23
Central Asia	Social	0.62	0.62	0.63	-14.58	-7.27	-7.81	-1.81	-0.82	-0.85
Central and Eastern Europe	Private	0.30	0.32	0.35	-8.45	-4.47	-5.54	-13.08	-4.36	-4.91
Central and Eastern Europe	Fiscal	0.30	0.32	0.35	-4.43	-1.71	-2.35	-6.20	-1.44	-1.72
Central and Eastern Europe	Social	0.30	0.32	0.35	-9.90	-4.82	-6.08	-14.65	-4.44	-5.03
East Asia and the Pacific	Private	0.24	0.23	0.25	-7.00	-3.51	-4.17	-110.27	-52.18	-60.91
East Asia and the Pacific	Fiscal	0.24	0.23	0.25	-3.25	-1.10	-1.38	-39.96	-16.93	-20.17
East Asia and the Pacific	Social	0.24	0.23	0.25	-8.60	-3.99	-4.79	-125.65	-58.33	-68.20
Latin America and the Caribbean	Private	0.64	0.64	0.65	-19.57	-10.80	-11.54	-19.97	-11.15	-11.63
Latin America and the Caribbean	Fiscal	0.64	0.64	0.65	-7.84	-2.54	-2.81	-7.28	-2.34	-2.57
Latin America and the Caribbean	Social	0.64	0.64	0.65	-22.68	-11.46	-12.30	-22.46	-11.55	-12.12
North America and Western Europe	Private	0.23	0.23	0.24	-8.17	-3.97	-4.59	-139.75	-69.24	-77.43
North America and Western Europe	Fiscal	0.23	0.23	0.24	-2.34	-0.89	-1.07	-41.96	-16.32	-18.88
North America and Western Europe	Social	0.23	0.23	0.24	-8.01	-3.77	-4.37	-138.17	-66.23	-74.33
South and West Asia	Private	0.88	0.86	0.89	-26.87	-14.84	-15.93	-17.92	-9.90	-10.56
South and West Asia	Fiscal	0.88	0.86	0.89	-9.76	-2.79	-3.13	-6.55	-1.89	-2.19
South and West Asia	Social	0.88	0.86	0.89	-32.10	-16.01	-17.28	-21.43	-10.70	-11.52
Sub-Saharan Africa	Private	0.94	0.94	0.93	-26.34	-15.32	-15.26	-6.01	-3.52	-3.46
Sub-Saharan Africa	Fiscal	0.94	0.94	0.93	-15.72	-5.19	-5.19	-3.19	-1.00	-0.98
Sub-Saharan Africa	Social	0.94	0.94	0.93	-35.73	-18.14	-18.10	-7.73	-3.97	-3.90
World	Private	0.57	0.57	0.58	-17.08	-9.46	-10.14	-318.05	-156.26	-174.69
World	Fiscal	0.57	0.57	0.58	-7.41	-2.35	-2.60	-108.05	-40.51	-47.22
World	Social	0.57	0.57	0.58	-20.78	-10.40	-11.19	-341.69	-160.80	-180.67

Notes: bln: billion; pp: percentage point. The share of LBS is from Gust, Hanushek and Woessmann (2024), and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. Sex-specific LBS are imputed by using data from Gust, Hanushek and Woessmann (2024), the sex-specific harmonized test scores produced by Angrist (2021), gender specific ESL and sex-specific share of adolescents aged 15-18 who are not in education. Private costs are the costs borne by households, computed as the difference between the changes in private incomes and the changes in private expenditures induced by LBS. Private incomes include labour income and social transfers. Private expenditures include income taxes, private health and education expenditures and the costs of crime victimization. Fiscal costs are the costs borne by the public sector, computed as the difference between the changes in fiscal revenues and the changes in government expenditures induced by LBS. Social costs are the sum of private costs, fiscal costs and the shadow costs of public funds, which is set at 15 percentage of fiscal revenues, as in Ballard and Fullerton (1992). Global and regional costs are obtained by aggregating country costs. For each country, the values of incomes and cost items are forecasted between 2021 and 2041, under a status quo scenario (LBS is set at the level recorded in 2021) and an intervention scenario (LBS is set at 0). Annual costs are computed as the discounted (in 2021) gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 per cent. The annual costs of female/male LBS are obtained by comparing status quo and intervention scenarios in which the female/male LBS is set at 0 while the male/female LBS is kept at its 2021 value. Annual costs are expressed as percentage of discounted GDP in 2030, as forecasted by IMF (2023). The annual costs of 1pp LBS are expressed in 2015 US dollars.

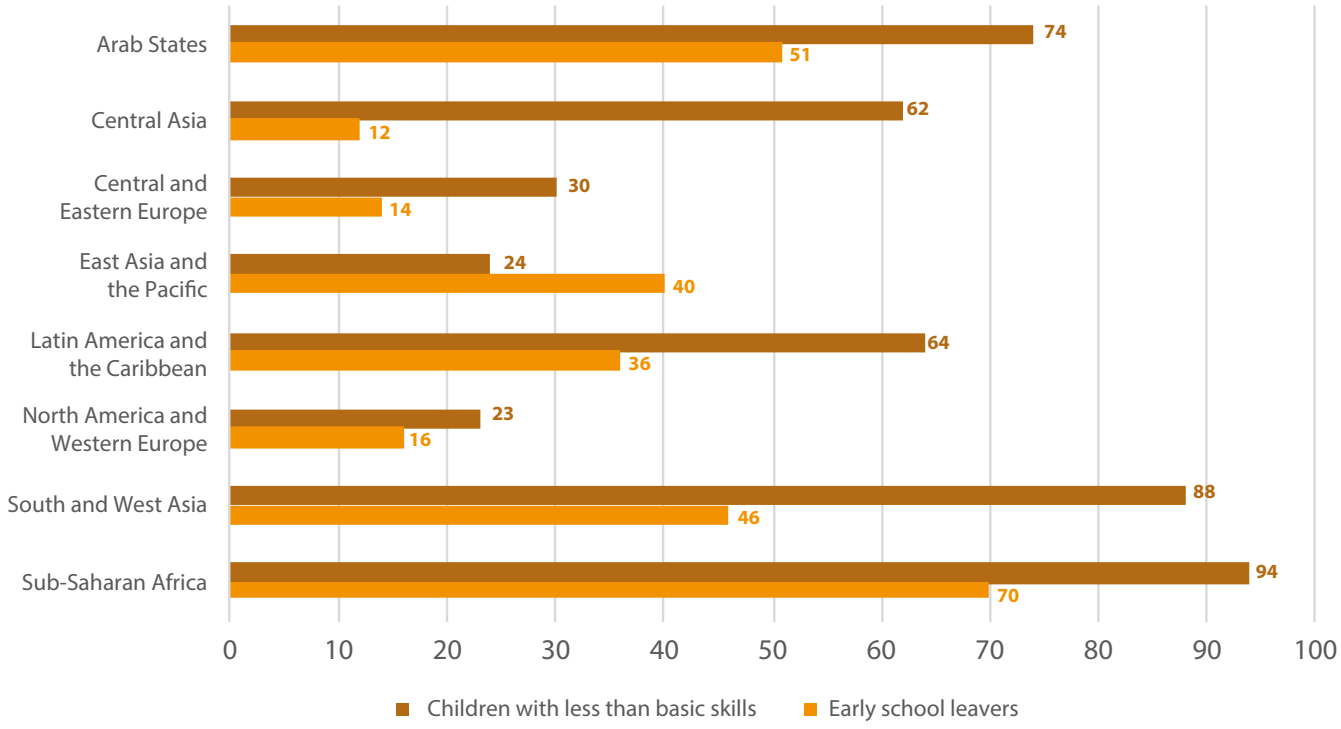
For both ESL and LBS, the social costs are smaller than the sum of private and fiscal costs because the cost of raising taxes declines with ESL and LBS. Reducing ESL and LBS allows governments to raise more resources, which can be used to fund public goods and services. However, taxes cause distortions in the economy, which partly offsets the combined private and fiscal benefits.

From a government's perspective, reducing ESL and LBS leads to net financial resource increases (it creates a non-negligible fiscal dividend) because the additional fiscal revenues are larger than the public expenditures required to support a more educated and advanced economy. The fiscal surplus is permanent and can fund further investments in education, which can improve living standards, reduce government debt or reduce taxation. On the other hand, policies that reduce public spending are likely to increase ESL and LBS and be myopic, because the savings could be more than offset by lower fiscal revenues.

The private, fiscal and social costs of early school leavers and the share of children with less than basic skills are highest in sub-Saharan Africa

As was seen in **Tables 2** and **3**, the private, fiscal and social costs of ESL and LBS vary by world region. The share of children with LBS is highest in sub-Saharan Africa and lowest in North America and Western Europe (**Figure 3).** The region with the highest costs of ESL and LBS as a percentage of GDP is sub-Saharan Africa; this is also where improving ESL and LSB has the greatest potential for economic growth because of the relatively low starting values. In this region, the annual private costs of ESL and LBS are estimated at 19 and 26 percentage points of GDP in 2030, respectively.

Figure 3: Per cent of children leaving school early and per cent of children with less than basic skills, by region



Data source: Gust, Hanushek and Woessmann (2024).

The costs of ESL and LBS as a percentage of GDP are also high in South and West Asia, Latin America and the Caribbean and the Arab States. Unsurprisingly, these costs are lowest as share of GDP in high-income North America and Western Europe, which however bear, together with East Asia and the Pacific, the highest absolute costs of ESL and LBS, because of their higher per capita GDP.

The global private, fiscal and social costs are slightly higher for boys than for girls

Both in absolute and relative terms, the global costs of boys' ESL and LBS exceed those of girls' ESL and LBS. The global annual private costs of boys' ESL and LBS are 5.8 per cent and 10 per cent of 2030 GDP, respectively. The global annual private costs of girls' ESL and LBS are 5.4 per cent and 9.5 per cent of 2030 GDP, respectively.

Differences by sex in the costs of ESL and LBS depend on several factors. First, at a global level, the shares of ESL and LBS are higher for boys than for girls: globally 43 per cent of boys prematurely abandon education compared to 41 per cent of girls, and 58 per cent of boys do not attain basic skills compared to 57 per cent of girls. Second, the average share of boys (51 per cent) is slightly higher than the average share of girls (49 per cent) in the young adult population, although differences exist across countries. Third, the estimation procedure, which relies on a non-linear relationship between each cost item and ESL or LBS, tends to slightly underestimate sex differences.

Cost differences by sex vary across regions. In East Asia and the Pacific, boys' ESL exceeds girls' ESL by 10 percentage points. In this region, the annual private costs of boys' and girls' ESL are 4.6 per cent and 3.3 per cent of GDP, respectively. In sub-Saharan Africa, girls' ESL exceeds boys' ESL by 4 percentage points. In this region, the annual private costs of girls' and boys' ESL are 10 per cent and 9.6 per cent of GDP, respectively.

It should be noted that within the same region, the costs of girls' ESL can be larger than the cost of boys' ESL, while the costs of girls' LBS is lower than the cost of boys' LBS. This happens for instance in South and West Asia, because the share of girls' ESL is larger than the share of boys' ESL, while the opposite holds for the share of LBS.

The loss of labour income associated with early school leavers and children with less than basic skills is considerable

The estimated global loss of labour income due to ESL and LBS corresponds to 18 and 32 per cent of expected GDP in 2030 (**Tables 4** and **5**). The loss of labour income is the dominant component of the private costs of ESL and LBS. This is not surprising, because it is well known that low education hampers productivity and therefore wages.

If governments were able to eradicate ESL and LBS, labour income around the globe would increase by about US$11 trillion and USD$18 trillion, respectively. If all governments decreased ESL and LBS in their countries by only 1 percentage point, the annual global gain in labour income would still be sizeable and significant, reaching US$470 billion and US$660 billion, respectively.

Regional differences in the costs of loss of labour income are marked, with the highest losses in sub-Saharan Africa, South and West Asia and the Arab States. Globally, the loss of labour income, as a per cent of GDP, of girls' ESL is smaller than that of boys' ESL (8.6 per cent as compared to 9.3 per cent). The same holds true for differences in LBS, for which the loss due to girls' LBS is 15 per cent and the loss due to boys' LBS is 16 per cent. The estimated differences by sex are mainly due to sex differences in ESL and LBS.

Table 4: The global costs of early school leavers – lower labour income

Region	Share of ESL	Share of girls' ESL	Share of boys' ESL	Labour share – baseline value	Annual cost of ESL % GDP	Annual cost of girls' ESL % GDP	Annual cost of boys' ESL % GDP	Annual cost of 1pp ESL bln US$	Annual cost of 1pp girls' ESL bln US$	Annual cost of 1pp boys' ESL bln US$
Arab States	0.51	0.49	0.53	0.41	-23.27	-10.92	-11.74	-12.28	-6.09	-5.96
Central Asia	0.12	0.12	0.11	0.42	-7.65	-3.60	-4.00	-7.22	-3.53	-3.66
Central and Eastern Europe	0.14	0.14	0.15	0.53	-7.52	-3.17	-4.30	-25.19	-11.46	-13.58
East Asia and the Pacific	0.40	0.35	0.45	0.52	-13.45	-5.39	-7.84	-124.89	-56.58	-66.77
Latin America and the Caribbean	0.36	0.35	0.38	0.53	-15.63	-7.20	-8.18	-29.03	-13.89	-14.74
North America and Western Europe	0.16	0.16	0.16	0.60	-9.00	-4.20	-4.75	-229.86	-107.23	-121.19
South and West Asia	0.46	0.48	0.45	0.55	-23.12	-11.58	-11.11	-30.70	-14.56	-15.66
Sub-Saharan Africa	0.70	0.72	0.68	0.50	-30.56	-15.15	-14.31	-10.88	-5.37	-5.21
World	0.42	0.41	0.43	0.53	-18.23	-8.55	-9.29	-470.05	-218.69	-246.77

Notes: bln: billion; pp: percentage point. The share of ESL (either overall or sex-specific) is defined as (1 – completion rate). Completion rates are provided by UNESCO-UIS (2023b) and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. The "labour share – baseline value" is the ratio between labour income and GDP in 2021. Global and regional costs, in terms of lower labour income, are obtained by aggregating country costs. For each country, labour income is forecast between 2021 and 2041, under a status quo scenario (ESL is set at the level recorded in 2021) and an intervention scenario (ESL is set at 0). Annual costs are computed as the discounted (in 2021) gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 percent. The annual costs of female/male ESL are obtained by comparing status quo and intervention scenarios in which the female/male ESL is set at 0 while the male/female ESL is kept at its 2021 value. Annual costs are expressed as per cent of discounted GDP in 2030, as forecasted by IMF (2023). The annual costs of 1pp ESL are expressed in 2015 US dollars.

Table 5: The global costs of children with less than basic skills – lower labour income

Region	Share of LBS	Share of girls' LBS	Share of boys' LBS	Labour share – baseline value	Annual cost of LBS % GDP	Annual cost of girls' LBS % GDP	Annual cost of boys' LBS % GDP	Annual cost of 1pp LBS bln US$	Annual cost of 1pp girls' LBS bln US$	Annual cost of 1pp boys' LBS bln US$
Arab States	0.74	0.72	0.77	0.41	-46.70	-21.43	-22.77	-16.32	-7.61	-7.55
Central Asia	0.62	0.62	0.63	0.42	-24.21	-11.23	-12.19	-3.08	-1.33	-1.38
Central and Eastern Europe	0.30	0.32	0.35	0.53	-20.00	-9.40	-12.25	-31.49	-9.46	-10.98
East Asia and the Pacific	0.24	0.23	0.25	0.52	-13.39	-5.82	-7.08	-219.14	-99.53	-117.74
Latin America and the Caribbean	0.64	0.64	0.65	0.53	-37.96	-17.42	-18.92	-38.43	-17.87	-19.02
North America and Western Europe	0.23	0.23	0.24	0.60	-17.06	-7.74	-9.08	-303.60	-140.38	-158.82
South and West Asia	0.88	0.86	0.89	0.55	-48.08	-21.88	-23.70	-32.02	-14.57	-15.85
Sub-Saharan Africa	0.94	0.94	0.93	0.50	-50.73	-23.69	-23.56	-11.85	-5.57	-5.41
World	0.57	0.57	0.58	0.53	-32.26	-14.82	-16.10	-655.93	-296.31	-336.75

Notes: bln: billion; pp: percentage point. The share of LBS is from Gust, Hanushek and Woessmann (2024), and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. Sex-specific LBS are imputed using data from Gust, Hanushek and Woessmann (2024), the sex-specific harmonized test scores produced by Angrist, 2021, gender specific ESL and sex-specific share of adolescents aged 15-18 who are not in education. The "labour share – baseline value" is the ratio between labour income and GDP in 2021. Global and regional costs, in terms of lower labour income, are obtained by aggregating country costs. For each country, we forecast labour income between 2021 and 2041, under a status quo scenario (LBS is set at the level recorded in 2021) and an intervention scenario (LBS is set at 0). Annual costs are computed as the discounted (in 2021) gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 percent. The annual costs of female/male LBS are obtained by comparing status quo and intervention scenarios in which the female/male LBS is set at 0 while the male/female LBS is kept at its 2021 value. Annual costs are expressed as per cent of discounted GDP in 2030, as forecasted by IMF (2023). The annual costs of 1pp LBS are expressed in 2015 US dollars.

If children are out-of-school and not learning, fiscal revenues decline

Because ESL and LBS keep GDP growth below its potential, the resources that the government can collect from the economy are lower (**Tables 6** and **7**). The loss of fiscal revenues reflects a loss of labour income, as the latter constitutes the largest component of the fiscal base. Higher values of ESL and LBS correspond to reductions in the income of households and governments. As a consequence, both households and governments can spend less on goods and services, including education and health.

Higher values of ESL and LBS correspond to lower shares of government spending on education and health and higher shares of spending on law and order. Despite variations in relative shares, in absolute terms all expenditures decline because fiscal resources are fewer.

The loss of fiscal revenues is 14 per cent of 2030 global GDP for ESL and 24 per cent for LBS. Each additional percentage point of ESL and LBS reduces fiscal revenues by US$430 billion and US$560 billion, respectively. Fiscal revenue loss is largest in sub-Saharan Africa and the Arab States.

Table 6: The global costs of early school leavers – lower fiscal revenues

World Region	Share of ESL	Share of girls' ESL	Share of boys' ESL	Income tax – baseline value	Annual cost of ESL % GDP	Annual cost of girls' ESL % GDP	Annual cost of boys' ESL % GDP	Annual cost of 1pp ESL bln US$	Annual cost of 1pp girls' ESL bln US$	Annual cost of 1pp boys' ESL bln US$
Arab States	0.51	0.49	0.53	0.13	-18.80	-7.77	-8.66	-10.13	-4.61	-4.60
Central Asia	0.12	0.12	0.11	0.25	-5.91	-2.74	-2.99	-5.02	-2.41	-2.51
Central and Eastern Europe	0.14	0.14	0.15	0.37	-6.89	-2.84	-3.82	-23.75	-10.51	-12.51
East Asia and the Pacific	0.40	0.35	0.45	0.24	-10.43	-3.85	-5.68	-105.83	-44.81	-54.21
Latin America and the Caribbean	0.36	0.35	0.38	0.29	-12.90	-5.50	-6.33	-24.02	-10.74	-11.52
North America and Western Europe	0.16	0.16	0.16	0.39	-9.28	-4.23	-4.79	-232.16	-105.86	-119.75
South and West Asia	0.46	0.48	0.45	0.11	-14.85	-6.67	-6.41	-18.79	-8.11	-8.78
Sub-Saharan Africa	0.70	0.72	0.68	0.16	-22.89	-9.70	-9.15	-7.99	-3.52	-3.36
World	0.42	0.41	0.43	0.22	-13.63	-5.72	-6.35	-427.68	-190.57	-217.23

Notes: bln: billion; pp: percentage point. The share of ESL (either overall or sex-specific) is defined as (1 – completion rate). Completion rates are provided by UNESCO-UIS (2023b) and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. The "income tax – baseline value" is the ratio between income taxes and GDP in 2021. Income taxes are a transfer from households to the government and reduce household disposable income. Global and regional costs, in terms of lower income taxes, are obtained by aggregating country costs. For each country, the values of income taxes are forecasted between 2021 and 2041, under a status quo scenario (ESL is set at the level recorded in 2021) and an intervention scenario (ELS is set at 0). Annual costs are computed as the discounted (in 2021) gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 percent. The annual costs of female/male ESL are obtained by comparing status quo and intervention scenarios in which the female/male ESL is set at zero while the male/female ESL is kept at its 2021 value. Annual costs are expressed as per cent of discounted GDP in 2030, as forecasted by IMF (2023). The annual costs of 1pp ESL are expressed in US dollars.

Table 7: The global costs of children with less than basic skills – lower fiscal revenues

Region	Share of LBS	Share of girls' LBS	Share of boys' LBS	Income tax – baseline value	Annual cost of LBS % GDP	Annual cost of girls' LBS % GDP	Annual cost of boys' LBS % GDP	Annual cost of 1pp LBS bln US$	Annual cost of 1pp girls' LBS bln US$	Annual cost of 1pp boys' LBS bln US$
Arab States	0.74	0.72	0.77	0.13	-38.57	-14.69	-15.93	-12.85	-5.02	-5.14
Central Asia	0.62	0.62	0.63	0.25	-22.64	-9.14	-10.06	-2.78	-1.05	-1.10
Central and Eastern Europe	0.30	0.32	0.35	0.37	-19.90	-9.02	-12.00	-30.86	-9.08	-10.70
East Asia and the Pacific	0.24	0.23	0.25	0.24	-10.94	-4.18	-5.15	-163.89	-71.88	-85.87
Latin America and the Caribbean	0.64	0.64	0.65	0.29	-31.53	-12.44	-13.68	-31.94	-12.90	-13.89
North America and Western Europe	0.23	0.23	0.24	0.39	-16.67	-7.24	-8.57	-290.33	-128.89	-146.45
South and West Asia	0.88	0.86	0.89	0.11	-30.20	-10.80	-11.84	-20.30	-7.28	-8.19
Sub-Saharan Africa	0.94	0.94	0.93	0.16	-42.23	-15.77	-15.67	-9.80	-3.72	-3.59
World	0.57	0.57	0.58	0.22	-24.71	-9.40	-10.37	-562.75	-239.82	-274.94

Notes: bln: billion; pp: percentage point. The share of LBS is from Gust, Hanushek and Woessmann (2024), and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. Sex-specific LBS are imputed using data from Gust, Hanushek and Woessmann (2024), the sex-specific harmonized test scores produced by Angrist, 2021, gender specific ESL and sex-specific share of adolescents aged 15-18 who are not in education. The "income tax – baseline value" is the ratio between income taxes and GDP in 2021. Income taxes are a transfer from households to the government and reduce household disposable income. Global and regional costs, in terms of lower income taxes, are obtained by aggregating country costs. For each country, the values of income taxes are forecasted between 2021 and 2041, under a status quo scenario (LBS is set at the level recorded in 2021) and an intervention scenario (LBS is set at 0). Annual costs are computed as the discounted (in 2021) gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 percent. The annual costs of female/male LBS are obtained by comparing status quo and intervention scenarios in which the female/male LBS is set at 0 while the male/female LBS is kept at its 2021 value. Annual costs are expressed as per cent of discounted GDP in 2030, as forecasted by IMF (2023). The annual costs of 1pp LBS are expressed in US dollars.

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Chapter 3

Non-monetary costs of early school leaving and children with less than basic skills

Andrzej Lisowski Travel/Shutterstock.com*

Key messages

- Each year of secondary schooling can significantly reduce the risk of girls marrying and having a child before age 18.
- Female early school leavers and girls with less than basic skills are associated globally with 59 per cent and 69 per cent increase in early pregnancies, respectively. The effect is highest in sub-Saharan Africa (81 per cent and 94 percent), South and West Asia (67 per cent and 92 percent) and the Arab States (67 per cent and 88 per cent).
- The global incidence of homicides is 8.7 per cent higher due to early school leavers and 57 per cent higher due to children having less than basic skills.
- If children have less than basic skills, the incidence of robberies and physical assaults is 39 per cent and 37 per cent higher, respectively, and the incidence of sexual violence is 27 per cent higher.
- Higher levels of early school leavers and children with less than basic skills are associated with a higher incidence of young adults not in employment, education or training (NEET). Globally, NEET is 38 per cent higher because of children with less than basic skills.
- Lack of schooling and cognitive skills are more likely to keep girls inactive than boys. The prevalence of girls' NEET is 28 per cent and 42 per cent higher, respectively, compared to 24 and 34 per cent for boys.

This chapter illustrates the relationship between ESL and LBS and several key non-monetary outcomes, such as early marriage, early pregnancies and crime. ESL and LBS capture the average quantity and quality of education, which affects also non-monetary outcomes, such as fertility decisions, economic and social engagement and following of social rules and conventions.

Unfortunately, computing the monetary costs of the individual non-monetary outcomes is difficult because these outcomes typically do not have observable prices.

Keeping girls in school contributes to ending child marriage and reducing early and unintended pregnancies

Each additional year of secondary education can reduce the risk for girls of marrying as a child and having a child before 18. Across 13 African countries, for example, each additional year of secondary education could reduce the likelihood of marrying as a child by 8 per cent on average. Across 25 African countries, each additional year of secondary school could reduce the risk of early childbearing by 6.6 percentage points (Wodon et al., 2024). Early pregnancy can be a consequence of early school leaving, and it is also one of its causes. Keeping girls in schools can contribute to reducing both child marriage and adolescent pregnancy, but there is not a single causal pathway between them (UNESCO, 2020).

The consequences of early pregnancies accrue to both the mother and the child (Shasha et al., 2023). They can also affect the father, who can be required in some contexts to marry the mother and drop out of school to cover the financial costs of fatherhood. Adolescent mothers are more likely to miss days of school and abandon education before attaining a degree. They might be discriminated against both at school and in the labour market, with negative consequences for their abilities and the economic resources available to them and their babies. Girls who become pregnant before the age of 18 are more likely to experience violence within a marriage or partnership (UNFPA, 2013). In low- and middle-income countries, complications from pregnancy and childbirth are a leading cause of death among girls aged 15–19 (WHO, 2016). Babies born to mothers under 20 years of age face higher risks of low birth weight, preterm delivery and severe neonatal conditions (Ganchimeg et al., 2014).

Sullentrop (2010) estimates that in the United States of America the fiscal cost of early childbearing is close to US$9 billion per year. While there is no monetary evaluation of the private costs of early pregnancies, the literature warns that simple comparisons of the educational and labour market outcomes of younger and older mothers are plagued by severe selection bias (Aizer et al., 2022; Ashcraft et al., 2013; Hoffman, 1998; Hotz et al., 2005).

In high-income countries, early pregnancies often happen outside of formal unions and predominantly affect girls from disadvantaged socio-economic backgrounds. This contrasts with many low-income countries, especially in sub-Saharan Africa, where the incidence of early pregnancies is high and most early pregnancies occur within formal unions, often forced, as highlighted in the study by Molitoris et al. (2023). Wodon et al. (2017) point out that in Uganda most early pregnancies result from early marriages, which are very common especially among the poor, and conclude that delaying marriages, and therefore pregnancies, could reduce the overall population growth rate and yield a consistent demographic dividend.

There is a notable gap in research regarding the economic costs of early childbearing in low-income countries, making it challenging to fully assess its broader impact on these societies. Given this lack of evidence, this report does not provide a monetary cost of early pregnancies and estimates instead the effect of female ESL and LBS on the incidence of early pregnancies.[2] Female ESL and LBS are associated globally with 59 and 69 per cent increase in early pregnancies, respectively. The world regions where ESL and LBS, respectively, have the largest effect on early pregnancies are sub-Saharan Africa (81 per cent and 94 per cent), South and West Asia (67 per cent and 92 per cent) and the Arab States (67 per cent and 88 per cent) (**Tables 8** and **9**).


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2 For early pregnancies, the education level of both partners matters; however, it is challenging to distinguish the effect of education levels of adolescent girls from that of adolescent boys as they tend to be highly correlated. This difficulty is further exacerbated when using aggregated data.

Table 8: The global non-monetary costs of early school leavers – early pregnancies

Region	Share of girls' ESL	Early pregnancies – baseline value	Variation in early pregnancies % due to girls' ESL
Arab States	0.49	42.51	67.38
Central Asia	0.12	27.03	23.85
Central and Eastern Europe	0.14	16.11	27.06
East Asia and the Pacific	0.35	13.67	56.28
Latin America and the Caribbean	0.35	55.19	56.23
North America and Western Europe	0.16	10.73	32.81
South and West Asia	0.48	24.87	67.19
Sub-Saharan Africa	0.72	107.54	81.20
World	0.41	34.75	58.87

Notes: The share of ESL (either overall or sex-specific) is defined as (1 – completion rate). Completion rates are provided by UNESCO- UIS, (2023b), and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. "Early pregnancies – baseline value" is the regional or global average birth rate among adolescent girls aged between 15 and 19 years (out of 1000 adolescent girls) (UNICEF, 2023). Global and regional changes are obtained by aggregating country changes. For each country these changes are computed by comparing the estimated incidence of early pregnancies in the status quo scenario (ESL set at the value recorded in 2021) and in the intervention scenario (female ESL is set at 0).

Table 9: The global non-monetary costs of children with less than basic skills – early pregnancies

Region	Share of girls' LBS	Early pregnancies – baseline value	Variation in early pregnancies % due to girls' LBS
Arab States	0.72	42.02	87.70
Central Asia	0.62	27.03	83.68
Central and Eastern Europe	0.32	16.11	59.82
East Asia and the Pacific	0.23	13.67	36.26
Latin America and the Caribbean	0.64	55.19	84.23
North America and Western Europe	0.23	10.73	49.55
South and West Asia	0.86	24.87	92.17
Sub-Saharan Africa	0.94	107.54	93.86
World	0.57	34.73	68.78

Notes: The share of LBS is from Gust, Hanushek and Woessmann (2024) and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. "Early pregnancies – baseline value" is the regional or global average birth rate among adolescent girls aged between 15 and 19 years (out of 1000 adolescent girls) (UNICEF, 2023). Global and regional changes are obtained by aggregating country changes. For each country these changes are computed by comparing the estimated incidence of early pregnancies in the status quo scenario (LBS set at the value recorded in 2021) and in the intervention scenario (female LBS is set at 0).

The incidence of crime increases when children leave school early or have less than basic skills

Evaluating the overall monetary cost of crime due to ESL and LBS is difficult because this cost combines the cost of crime victimization, the cost of crime containment and prevention, the cost borne by the offenders when punished, the distortions caused to the economy and the damages to property. The overall cost is likely to be large. Anderson (2021) for instance, estimates that for the United States of America, the overall cost of crime is comparable to the cost of healthcare or the cost of food and shelter (about 14-19 per cent of GDP).

This report considers four types of offences – homicides, robberies, physical assaults and sexual violence – and estimates the effect of ESL and LBS on their incidence. In 2021, the global incidence per 100,000 population was for homicides 5.8, robberies 68, physical assaults 71 and sexual violence 19 (UNODC, 2023).

The global incidence of homicides is 8.7 per cent higher due to ESL (**Table 10**). The corresponding effect of ESL on robberies and physical assaults is about half as large (4.7 per cent and 4.4 per cent, respectively) and the effect of ESL on sexual violence is 2.9 percent.

The four offences are much more responsive to LBS than ESL. The incidence of homicides is 57 per cent higher because of LBS. The incidence of robberies and physical assaults are 39 and 37 per cent higher, respectively, and the incidence of sexual violence is 27 per cent higher (**Table 11**). Sub-Saharan Africa, the Arab States and South and West Asia are the regions where the influence of ESL and LBS on crime is highest.

Table 10: The global non-monetary costs of early school leavers – crime

Region	Share of ESL	Variation in homicides due to ESL %	Variation in robberies due to ESL %	Variation in assaults due to ESL %	Variation in sexual violence due to ESL %
Arab States	0.51	10.58	5.74	5.38	3.50
Central Asia	0.12	2.56	1.36	1.27	0.82
Central and Eastern Europe	0.14	3.16	1.68	1.57	1.02
East Asia and the Pacific	0.40	8.63	4.64	4.36	2.83
Latin America and the Caribbean	0.36	6.83	3.66	3.43	2.22
North America and Western Europe	0.16	3.63	1.93	1.81	1.17
South and West Asia	0.46	9.53	5.15	4.83	3.14
Sub-Saharan Africa	0.70	14.18	7.75	7.28	4.75
World	0.42	8.73	4.72	4.43	2.88

Notes: The share of ESL is defined as (1 – completion rate). Completion rates are provided by UNESCO-UIS (2023b) and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. The last four columns report the predicted per cent change in homicides, robberies, physical assaults and sexual violence associated with ESL. Global and regional changes are obtained by aggregating country changes. For each country these changes are computed by comparing the estimated crime prevalence in the status quo scenario (ELS set at the level recorded in 2021) and in the intervention scenario (ESL set at 0).

Table 11: The global non-monetary costs of children with less than basic skills – crime

Region	Share of LBS	Variation in homicides due to LBS %	Variation in robberies due to LBS %	Variation in assaults due to LBS %	Variation in sexual violence due to LBS %
Arab States	0.74	74.40	51.05	49.23	35.19
Central Asia	0.62	68.29	45.19	43.48	30.57
Central and Eastern Europe	0.30	42.22	25.16	24.05	16.19
East Asia and the Pacific	0.24	28.88	18.14	17.41	12.03
Latin America and the Caribbean	0.64	65.93	43.16	41.50	29.04
North America and Western Europe	0.23	35.47	20.45	19.51	12.95
South and West Asia	0.88	79.41	56.22	54.33	39.39
Sub-Saharan Africa	0.94	82.06	59.24	57.32	41.96
World	0.57	56.74	38.50	37.12	26.48

Notes: The share of LBS is from Gust, Hanushek and Woessmann (2024) and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. The last four columns report the predicted per cent changes in homicides, robberies, physical assaults and sexual violence associated with LBS. Global and regional changes are obtained by aggregating country changes. For each country these changes are computed by comparing the estimated crime prevalence in the status quo scenario (LBS set at the level recorded in 2021) and in the intervention scenario (LBS set at 0).

The economic costs of youth disengagement are sizeable

Worldwide, 22 per cent of youth are not in employment, education or training (NEET). This figure is higher for girls' (24 per cent) than for boys (19 per cent).

Assessing the economic cost of youth disengagement requires the evaluation of the opportunity cost of inactivity for the economy as a whole, which is not available in most countries. Eurofound (2012) estimated the economic costs of NEET in the European Union by taking into account both lost earnings and additional welfare benefit payments. It found that the loss to the economies of Member States was almost €120 billion in 2008, corresponding to around 1 per cent of the European Union's GDP, and about €150 billion in 2011, or more than 1.2 per cent of the European Union's GDP. While there is no similar analysis for the regions of the Global South, these figures reveal that the economic costs of youth disengagement are sizeable.

Higher levels of ESL and LBS are associated with a higher incidence of NEET. Globally, NEET is close to 26 per cent and 38 per cent higher because of ESL and LBS (**Tables 12** and **13**). Sex-specific estimates suggest that lack of schooling and cognitive skills are more likely to keep girls inactive than boys. Indeed, the prevalence of girls' NEET is 28 per cent higher because of girls' ESL and 42 per cent higher because of girls' LBS. Similarly, the prevalence of boys' NEET is 24 per cent higher because of boys' ESL and 34 per cent higher because of boys' LBS.

Table 12: The global non-monetary costs of early school leavers – NEET

Region	Share of ESL	Share of girls' ESL	Share of boys' ESL	Share of NEET	Share of female NEET	Share of male NEET	Variation in NEET % due to ESL	Variation in female NEET % due to girls' ESL	Variation in male NEET % due to boys' ESL
Arab States	0.51	0.49	0.53	0.30	0.36	0.24	30.97	33.15	28.29
Central Asia	0.12	0.12	0.11	0.20	0.21	0.20	8.24	9.50	7.01
Central and Eastern Europe	0.14	0.14	0.15	0.18	0.21	0.15	9.96	10.76	9.00
East Asia and the Pacific	0.40	0.35	0.45	0.19	0.20	0.18	25.69	25.21	25.04
Latin America and the Caribbean	0.36	0.35	0.38	0.23	0.29	0.18	23.50	25.34	21.43
North America and Western Europe	0.16	0.16	0.16	0.13	0.13	0.13	11.33	12.83	9.84
South and West Asia	0.46	0.48	0.45	0.25	0.28	0.22	28.76	32.76	24.75
Sub-Saharan Africa	0.70	0.72	0.68	0.24	0.26	0.21	40.09	45.03	35.03
World	0.42	0.41	0.43	0.22	0.24	0.19	26.11	28.18	23.64

Notes: The share of ESL (either overall or sex-specific) is defined as (1 – completion rate). Completion rates are provided by UNESCO-UIS (2023b) and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. The overall and sex-specific share of NEET are from ILO (2023). Global and regional changes are obtained by aggregating country changes. For each country these changes are computed by comparing the estimated prevalence of NEET in the status quo scenario (ESL set the at value recorded in 2021) and in the intervention scenario (ESL is set at zero). Changes in female/male NEET due to female/male ESL are obtained by comparing the status quo scenario with an intervention scenario in which the female/male ESL is brought to zero while the male/female rate remains at its 2021 level.

Table 13: The global non-monetary costs of children with less than basic skills – NEET

Region	Share of LBS	Share of girls' LBS	Share of boys' LBS	Share of NEET	Share of female NEET	Share of male NEET	Variation in NEET % due to LBS	Variation in female NEET % due to girls' LBS	Variation in male NEET % due to boys' LBS
Arab States	0.74	0.72	0.77	0.30	0.36	0.24	49.63	54.49	44.71
Central Asia	0.62	0.62	0.63	0.20	0.21	0.20	43.71	49.30	38.60
Central and Eastern Europe	0.30	0.32	0.35	0.18	0.21	0.15	24.02	29.44	23.26
East Asia and the Pacific	0.24	0.23	0.25	0.19	0.20	0.18	17.59	19.01	15.98
Latin America and the Caribbean	0.64	0.64	0.65	0.23	0.29	0.18	44.87	50.17	39.59
North America and Western Europe	0.23	0.23	0.24	0.13	0.13	0.13	19.50	22.46	16.73
South and West Asia	0.88	0.86	0.89	0.25	0.28	0.22	55.70	61.39	49.80
Sub-Saharan Africa	0.94	0.94	0.93	0.24	0.26	0.21	58.21	64.62	51.65
World	0.57	0.57	0.58	0.22	0.24	0.19	37.95	42.30	34.11

Notes: The share of LBS is from Gust, Hanushek and Woessmann (2024) and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. The overall and sex-specific share of NEET are from ILO, 2023. Global and regional changes are obtained by aggregating country changes. For each country these changes are computed by comparing the estimated prevalence of NEET in the status quo scenario (LBS set the at value recorded in 2021) and in the intervention scenario (LBS is set at 0). Changes in female/male NEET due to female/male LBS are obtained by comparing the status quo scenario with an intervention scenario in which the female/male LBS is brought to 0 while the male/female rate remains at its 2021 level.

Chapter 4

Costs of low socio-emotional skills

Key messages

- Students' socio-emotional skills are significant predictors of academic achievement.
- Across 57 countries with data, the percentage of girls and boys with low agreeableness, conscientiousness, openness, extraversion and high neuroticism is always higher for boys than for girls, with the notable exception of neuroticism.
- The global costs of having socio-emotional skills below the highest attainable levels are high, representing over US$7.4 trillion or 19 per cent of annual GDP.
- If all children had the highest attainable level of social and emotional skills in the Dominican Republic, as one example, early school leaving could decline from 43 to 29 per cent.
- If all children had the highest attainable level of social and emotional skills in Panama, as another example, the share of children not attaining basic skills could fall from 82 to 35 per cent and would avoid a loss of 31 per cent of the country's GDP.
- Reducing the percentage of girls and boys with low socio-emotional skills, thereby reducing the share of early school leavers and the share of children with less than basic skills, significantly improve per capita GDP.

Students' socio-emotional skills are significant predictors of academic achievement (OECD, 2021). Average socio-emotional skills in a country have been measured in this report using the Big Five Index, which considers the level of five personality traits (agreeableness, conscientiousness, extraversion, neuroticism and openness) among 15-year-old students. Since this index is available only for 57 countries and territories, a full-fledged analysis of the costs of low socio-emotional skills, both monetary and non-monetary, is not included in this report, which only evaluates the cost of low socio-emotional skills in terms of the loss of per capita GDP relative to its potential.

The percentage of girls and boys with low agreeableness, conscientiousness, openness, extraversion and high neuroticism is always higher for boys than for girls, with the notable exception of neuroticism (**Table 14**). It is important to note, however, that these findings could be influenced by various factors, such as cultural norms, socialization processes and differences in how girls and boys might respond to personality assessments.

Table 14: Percentage of 15-year-old girls and boys with low agreeableness, conscientiousness, openness, extraversion and high neuroticism in PISA 2018 participating countries

	Low agreeableness	Low conscientiousness	Low openness	Low extraversion	High neuroticism
Girls	0.408	0.142	0.293	0.239	0.277
Boys	0.458	0.183	0.385	0.255	0.206

Source: Authors. Computations based on OECD PISA 2018.

A reduction in low socio-emotional skills affects per capita GDP by reducing the share of early school leavers (**Table 15**). Likewise, a reduction in the share of children with low socio-emotional skills would result in fewer children with less than basic skills (**Table 16)**.

The current value of the Big Five index ranges from 37 for the Dominican Republic to 79 for the Republic of Korea. The distance from the intervention scenario (100) for the Dominican Republic is highest, as is the associated reduction in ESL (14 percentage points). In other words, if the Big Five index could be set at 100 rather than at the current value, ESL in the Dominican Republic would fall from 43 to 29 per cent. The implied annual costs in terms of lower GDP are about 9 per cent of 2030 GDP. For the Republic of Korea, the increase of ESL associated with a shift from the status quo to the intervention scenario is much lower (5 percentage points), and so are the costs, at about five per cent of 2030 GDP.


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Table 15: The loss of GDP due to low social emotional skills and high early school leaving

Country	Big Five Index	Share of ESL	Change in ESL (status quo – intervention)	Annual cost of SES % lost GDP	Annual cost of 1pp SES in lost GDP bln US$
Albania	77.92	0.21	0.05	-3.81	-0.03
Argentina	62.80	0.25	0.09	-6.74	-1.19
Australia	64.71	0.20	0.08	-8.06	-3.20
Austria	67.41	0.17	0.08	-6.93	-0.85
Azerbaijan	50.32	0.20	0.11	-7.59	-0.11
Belarus	72.05	0.19	0.06	-5.35	-0.13
Bosnia and Herzegovina	69.26	0.24	0.07	-5.56	-0.04
Brazil	58.55	0.32	0.10	-6.40	-3.87
Bulgaria	56.15	0.27	0.10	-6.75	-0.12
Canada	69.69	0.16	0.07	-6.56	-3.55
Chile	61.93	0.21	0.09	-7.28	-0.58
Colombia	62.41	0.30	0.09	-7.59	-0.69
Costa Rica	68.90	0.24	0.07	-5.19	-0.14
Croatia	71.39	0.18	0.07	-4.88	-0.13
Dominican Republic	37.20	0.43	0.14	-8.78	-0.20
Estonia	70.48	0.18	0.07	-4.46	-0.06
France	66.96	0.15	0.08	-7.59	-5.40
Germany	52.22	0.19	0.11	-10.37	-7.45
Greece	69.78	0.16	0.07	-5.68	-0.42
Hong Kong SAR, China	69.58	0.19	0.07	-5.76	-0.69
Hungary	66.48	0.22	0.08	-6.61	-0.32
Indonesia	75.88	0.50	0.06	-3.57	-2.23
Ireland	74.52	0.13	0.06	-4.53	-0.94
Italy	63.44	0.17	0.08	-8.06	-3.92
Jordan	72.67	0.56	0.06	-4.66	-0.09
Kazakhstan	65.71	0.19	0.08	-5.61	-0.45
Korea, Rep.	78.90	0.24	0.05	-4.55	-3.55
Latvia	66.33	0.16	0.08	-5.15	-0.07
Lithuania	65.48	0.14	0.08	-5.08	-0.11
Malaysia	74.70	0.65	0.06	-3.89	-0.74
Malta	70.47	0.18	0.07	-5.47	-0.03
Mexico	55.13	0.40	0.10	-7.34	-2.53
Republic of Moldova	76.93	0.22	0.05	-3.03	-0.02
Montenegro	67.25	0.20	0.08	-5.07	-0.01
Morocco	48.85	0.47	0.12	-10.89	-0.26
New Zealand	72.23	0.19	0.06	-6.19	-0.44

Panama	40.79	0.58	0.14	-9.61	-0.13
Peru	50.83	0.23	0.11	-8.72	-0.46
Philippines	75.05	0.37	0.06	-4.03	-0.79
Poland	72.76	0.16	0.06	-4.42	-1.25
Portugal	72.48	0.13	0.06	-5.46	-0.45
Romania	75.47	0.31	0.06	-3.33	-0.47
Russian Federation	66.22	0.06	0.06	-5.37	-2.49
Saudi Arabia	70.67	0.24	0.07	-5.86	-1.48
Serbia	62.25	0.22	0.09	-4.96	-0.10
Singapore	78.72	0.22	0.05	-3.66	-0.77
Slovakia	63.17	0.20	0.08	-6.58	-0.21
Slovenia	72.26	0.15	0.06	-4.81	-0.11
Spain	70.75	0.17	0.07	-6.21	-2.60
Switzerland	62.16	0.23	0.09	-7.19	-1.59
Thailand	69.51	0.34	0.07	-4.91	-0.92
Türkiye	75.14	0.23	0.06	-3.97	-2.37
Ukraine	71.74	0.21	0.07	-9.53	-0.23
United Arab Emirates	70.00	0.27	0.07	-5.49	-0.84
United Kingdom of Great Britain and Northern Ireland	47.60	0.16	0.12	-9.91	-6.37
Uruguay	56.39	0.24	0.10	-6.72	-0.12
Viet Nam	72.85	0.38	0.06	-3.44	-0.70
Average total	66.20	0.29	0.08	-6.01	-69.00

Notes: bln: billion; pp: percentage point. The share of ESL is defined as (1 – completion rate). Completion rates are provided by UNESCO-UIS (2023b). and are computed as the percentage of a cohort of individuals aged 3-5 years above the intended age for the last grade of high school who have completed that grade. The Big Five Index is the first principal component derived from five indices capturing openness, conscientiousness, extraversion, agreeableness, and neuroticism. The Big Five index ranges between 0 and 100. The column titled "Change in ESL" reports how much ESL changes in percentage points if the Big Five Index is increased to 100. For each country, the values of GDP per capita are forecasted between 2021 and 2041, under a status quo scenario (ESL is set at the level recorded in 2021) and an intervention scenario (LBS is set at the level that it would attain if the Big Five Index is set to 100). Annual costs are computed as the discounted gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 per cent. Annual costs are expressed in US dollars and as per cent of discounted GDP in 2030, as forecasted by IMF (2023). Annual costs are also expressed in billion US dollars corresponding to one point of the Big Five Index.

Overall, the loss of GDP due to low socio-emotional skills is about 6 per cent on average in the sub-set of countries and territories included in the analysis, and each point of the Big Five index corresponds to US$69 billion per year.

The loss of GDP due to low socio-emotional skills is larger when modifying LBS than when modifying ESL. As shown by **Table 16**, if the Dominican Republic could manage to increase the Big Five Index to 100, LBS would fall by 38 percentage points and per capita GDP in 2030 would increase by as much as 28 per cent. The Republic of Korea would also benefit if the Big Five Index were set to 100 and would see a 13 percentage points fall in LBS and a 15 per cent increase in per capita GDP. On average, the cost of low socio-emotional skills corresponds to 19 per cent of GDP in 2030, or US$210 billion for each point of the Big Five Index.

Table 16: The loss of GDP due to low socio-emotional skills and high lower than basic skills

Country	Big Five Index	Share of LBS	Change in LBS (status quo – intervention)	Annual cost of SES % lost GDP	Annual cost of 1 point SES in lost GDP bln US$
Albania	77.92	0.48	0.13	-12.37	-0.09
Argentina	62.80	0.63	0.22	-21.88	-3.87
Australia	64.71	0.23	0.21	-26.15	-10.37
Austria	67.41	0.25	0.19	-22.49	-2.76
Azerbaijan	50.32	0.60	0.30	-24.64	-0.37
Belarus	72.05	0.28	0.17	-17.37	-0.41
Bosnia and Herzegovina	69.26	0.60	0.18	-18.05	-0.13
Brazil	58.55	0.66	0.25	-20.77	-12.57
Bulgaria	56.15	0.48	0.26	-21.90	-0.40
Canada	69.69	0.15	0.15	-17.52	-9.47
Chile	61.93	0.47	0.23	-23.61	-1.87
Colombia	62.41	0.63	0.22	-24.61	-2.25
Costa Rica	68.90	0.58	0.19	-16.84	-0.45
Croatia	71.39	0.30	0.17	-15.83	-0.41
Dominican Republic	37.20	0.91	0.38	-28.49	-0.64
Estonia	70.48	0.11	0.10	-8.61	-0.12
France	66.96	0.22	0.20	-24.62	-17.54
Germany	52.22	0.24	0.24	-28.07	-20.17
Greece	69.78	0.36	0.18	-18.43	-1.37
Hong Kong SAR, China	69.58	0.11	0.11	-11.30	-1.36
Hungary	66.48	0.28	0.20	-21.44	-1.03
Indonesia	75.88	0.70	0.14	-11.59	-7.25
Ireland	74.52	0.17	0.15	-14.69	-3.05
Italy	63.44	0.26	0.22	-26.14	-12.71
Jordan	72.67	0.59	0.16	-15.11	-0.29
Kazakhstan	65.71	0.55	0.20	-18.20	-1.46
Korea, Rep.	78.90	0.15	0.13	-14.77	-11.52
Kosovo[3]	73.80	0.80	0.16	-16.59	-0.05
Latvia	66.33	0.19	0.19	-16.10	-0.21
Lithuania	65.48	0.24	0.21	-16.47	-0.35
Malaysia	74.70	0.46	0.15	-12.62	-2.42
Malta	70.47	0.34	0.18	-17.75	-0.10

3 References to Kosovo shall be understood to be in the context of Security Council resolution 1244 (1999)

Mexico	55.13	0.56	0.27	-23.81	-8.21
Republic of Moldova	76.93	0.52	0.14	-9.83	-0.07
Montenegro	67.25	0.50	0.20	-16.44	-0.03
Morocco	48.85	0.79	0.31	-35.33	-0.83
New Zealand	72.23	0.21	0.17	-20.07	-1.44
Panama	40.79	0.82	0.35	-31.18	-0.42
Peru	50.83	0.60	0.29	-28.29	-1.48
Philippines	75.05	0.84	0.15	-13.09	-2.58
Poland	72.76	0.16	0.16	-13.66	-3.88
Portugal	72.48	0.23	0.16	-17.71	-1.46
Romania	75.47	0.50	0.15	-10.82	-1.51
Russian Federation	66.22	0.24	0.20	-21.67	-10.05
Saudi Arabia	70.67	0.68	0.18	-19.00	-4.80
Serbia	62.25	0.41	0.23	-16.09	-0.33
Singapore	78.72	0.08	0.08	-7.57	-1.59
Slovakia	63.17	0.31	0.22	-21.34	-0.69
Slovenia	72.26	0.16	0.16	-15.45	-0.35
Spain	70.75	0.24	0.17	-20.16	-8.43
Switzerland	62.16	0.22	0.22	-22.60	-5.01
Thailand	69.51	0.54	0.18	-15.94	-2.98
Türkiye	75.14	0.34	0.15	-12.87	-7.69
Ukraine	71.74	0.41	0.17	-30.92	-0.73
United Arab Emirates	70.00	0.46	0.18	-17.80	-2.71
United Kingdom of Great Britain and Northern Ireland	47.60	0.19	0.19	-19.53	-12.55
Uruguay	56.39	0.51	0.26	-21.80	-0.40
Viet Nam	72.85	0.21	0.16	-11.18	-2.26
Average total	66.21	0.47	0.19	-19.04	-209.50

Notes: Bln: billion; pp: percentage point. The share of LBS is from Gust, Hanushek and Woessmann (2024) and is defined as the percentage of children under 15 years of age, both at school and out of school, who have not attained basic skills, i.e. a score of 420 in the international PISA test in mathematics. The Big Five Index is the first principal component derived from five indices capturing openness, conscientiousness, extraversion, agreeableness, and neuroticism. The Big Five index ranges between 0 and 100. The column titled "Change in LBS" reports how much LBS changes in percentage points if the Big Five Index is increased to 100. For each country, the values of GDP per capita are forecasted between 2021 and 2041, under a status quo scenario (LBS is set at the level recorded in 2021) and an intervention scenario (LBS is set at the level that it would attain if the Big Five Index is set to 100). Annual costs are computed as the discounted gap between status quo and intervention values predicted for 2030. The discount rate is set at 3 per cent. Annual costs are expressed in 2015 US dollars and as per cent of discounted GDP in 2030, as forecasted by IMF, (2023). Annual costs are also expressed in billion US dollars corresponding to one point of the Big Five Index.

Chapter 5

The costs of early school leavers and of children failing to attain basic skills in selected countries with gender disparities in education at either girls' or boys' expense

Key messages

- In the selected countries with gender disparities in education at girls' expense, social costs are highest for girls attaining less than basic skills in Chad (29 per cent of GDP) and lowest in The Netherlands (3.2 per cent of GDP).
- These results reflect a large gap between these countries in the share of children with less than basic skills, which is higher than 90 per cent in Chad and close to 20 per cent in The Netherlands. A similar pattern emerges for early school leavers.
- For Afghanistan, if the suspension of girls' and young women's access to secondary education remains in place, the private costs of girls leaving school early are US$1.5 billion.
- In the selected countries with gender disparities in education at boys' expense, social costs are highest for boys attaining less than basic skills in Burundi (21 per cent of GDP) and Senegal (20 per cent of GDP) and lowest in Finland (2.9 per cent) and Belgium (4.1 per cent).
- These results reflect a large gap between these countries in the share of children with less than basic skills, which is higher than 90 per cent in Burundi and Senegal and close to 20 per cent or lower in Belgium and Finland. A similar pattern emerges for early school leavers.

The research analysed ten selected countries with gender disparities in education at girls' expense (Afghanistan, Chad, Guatemala, Luxembourg, Morocco, The Netherlands, Pakistan, Peru, Tajikistan and Yemen) and ten countries with gender disparities in education at boys' expense (Bangladesh, Belgium, Burundi, Croatia, Finland, Honduras, Mexico, Senegal, Sweden and Tunisia).

The countries were selected using the gender parity index of the gross enrolment ratios in primary, lower secondary and upper secondary education, cross-checked with evidence on gender disparities in completion rates. Within the overall selection, efforts were made to ensure all income groups and all world regions were represented. This geographic and economic variety does mean that the gender disparities must be seen in the specific and different contexts of these countries. These disparities may differ significantly by country in order of magnitude.

The private, fiscal and social costs to GDP of early school leavers and children with less than basic skills are reported. For the two countries for which data exists, the costs to GDP of socio-emotional skills are calculated. The full calculations are presented in the country profiles, which are published in a separate report (UNESCO, 2024). The assumptions of the model used for the cost calculations are discussed in the executive summary of the report (**Box 1**).

Countries with gender disparities in education at girls' expense

Of this subset of ten countries, the social costs of LBS are highest in Chad (29 per cent of GDP due to girls' LBS and 28 per cent of GDP due to boys' LBS) and lowest in The Netherlands, (3.2 per cent of GDP due to girls' LBS and 3.2 per cent of GDP due to boys' LBS). This reflects a large gap between these two countries in the share of children with less than basic skills; the gap is higher than 90 per cent in Chad and close to 20 per cent in The Netherlands. A similar pattern emerges for ESL.

In general, in these ten sample countries, the itemized costs are larger due to girls than those due to boys. However, several exceptions occur either because the share of boys leaving school early or with less than basic skills is higher than the share of girls or because of a higher share of boys in the population.

The costs to annual GDP of early school leaving and children with less than basic skills in countries with gender disparities in education at girls' expense are summarized in **Tables 17** and **18**.

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Table 17: The cost of early school leaving in ten selected countries with gender disparities in education at girls' expense

Country	Cost	Share of ESL	Share of girls' ESL	Share of boys' ESL	Annual cost of ESL % GDP	Annual cost of girls' ESL % GDP	Annual cost of boys' ESL % GDP	Annual cost of 1pp ESL mln US$	Annual cost of 1pp girls' ESL mln US$	Annual cost of 1pp boys' ESL mln US$
Afghanistan	Private	0.82	1.00	0.63	-12.30	-8.32	-5.22	-32	-18	-18
Afghanistan	Fiscal	0.82	1.00	0.63	-5.99	-3.12	-1.77	-16	-7	-6
Afghanistan	Social	0.82	1.00	0.63	-14.25	-9.26	-5.73	-37	-20	-20
Chad	Private	0.89	0.93	0.84	-28.69	-15.66	-14.08	-29	-15	-15
Chad	Fiscal	0.89	0.93	0.84	-8.52	-3.18	-2.71	-9	-3	-3
Chad	Social	0.89	0.93	0.84	-33.01	-17.11	-15.29	-34	-17	-16
Guatemala	Private	0.62	0.62	0.62	-19.06	-10.13	-9.84	-290	-154	-150
Guatemala	Fiscal	0.62	0.62	0.62	-2.39	-0.67	-0.64	-37	-10	-10
Guatemala	Social	0.62	0.62	0.62	-18.46	-9.52	-9.24	-281	-144	-141
Luxembourg	Private	0.22	0.21	0.24	-15.26	-6.83	-8.14	-400	-193	-200
Luxembourg	Fiscal	0.22	0.21	0.24	-2.51	-1.07	-1.28	-68	-31	-33
Luxembourg	Social	0.22	0.21	0.24	-15.40	-6.86	-8.18	-404	-193	-201
Morocco	Private	0.71	0.71	0.71	-12.40	-6.25	-7.31	-196	-99	-116
Morocco	Fiscal	0.71	0.71	0.71	-3.76	-1.22	-1.54	-64	-21	-26
Morocco	Social	0.71	0.71	0.71	-11.97	-5.84	-6.87	-188	-92	-108
The Netherlands	Private	0.14	0.14	0.14	-4.37	-2.19	-2.19	-2564	-1288	-1285
The Netherlands	Fiscal	0.14	0.14	0.14	-0.59	-0.27	-0.27	-374	-170	-170
The Netherlands	Social	0.14	0.14	0.14	-3.61	-1.80	-1.80	-2086	-1041	-1038
Pakistan	Private	0.72	0.70	0.74	-17.48	-9.26	-9.67	-978	-535	-526
Pakistan	Fiscal	0.72	0.70	0.74	-3.10	-0.85	-0.93	-177	-50	-51
Pakistan	Social	0.72	0.70	0.74	-16.72	-8.56	-8.95	-935	-494	-486
Peru	Private	0.18	0.17	0.18	-6.04	-2.97	-3.19	-827	-417	-427
Peru	Fiscal	0.18	0.17	0.18	-1.07	-0.46	-0.50	-153	-68	-70
Peru	Social	0.18	0.17	0.18	-5.80	-2.83	-3.04	-792	-396	-405
Tajikistan	Private	0.28	0.39	0.19	-4.19	-2.83	-1.49	-30	-15	-16
Tajikistan	Fiscal	0.28	0.39	0.19	-1.44	-0.89	-0.43	-11	-5	-5
Tajikistan	Social	0.28	0.39	0.19	-4.50	-3.00	-1.56	-32	-16	-17
Yemen, Rep.	Private	0.51	0.51	0.50	-11.07	-6.09	-5.57	-103	-56	-52
Yemen, Rep.	Fiscal	0.51	0.51	0.50	-3.16	-1.32	-1.17	-30	-13	-11
Yemen, Rep.	Social	0.51	0.51	0.50	-11.75	-6.27	-5.71	-109	-58	-54

Notes: mln: million; pp: percentage point. ESL: share of early school leavers, from UNESCO-UIS (2023b). Incomes and cost items are forecasted in 2030. Annual costs are expressed as per cent of GDP and computed as differences between the status quo scenario (ESL is set at the level recorded in 2021) and the intervention scenario (respectively: ESL set to 0, female ESL set to 0, male ESL set to 0). Annual costs of one pp ESL are the US dollars lost by increasing ESL by one percentage point.

Table 18: The costs of children with less than basic skills in ten selected countries with gender disparities in education at girls' expense

Country	Cost	Share of LBS	Share of girls' LBS	Share of boys' LBS	Annual cost of LBS % GDP	Annual cost of girls' LBS % GDP	Annual cost of boys' LBS % GDP	Annual cost of 1pp LBS mln US$	Annual cost of 1pp girls' LBS mln US$	Annual cost of 1pp boys' LBS mln US$
Afghanistan	Private	0.91	0.93	0.88	-17.04	-11.43	-10.72	-40	-26	-26
Afghanistan	Fiscal	0.91	0.93	0.88	-16.47	-6.28	-5.63	-41	-15	-14
Afghanistan	Social	0.91	0.93	0.88	-26.58	-14.89	-13.80	-63	-35	-34
Chad	Private	0.99	1.00	0.98	-38.23	-21.80	-21.31	-35	-20	-19
Chad	Fiscal	0.99	1.00	0.98	-26.72	-9.54	-9.22	-25	-9	-9
Chad	Social	0.99	1.00	0.98	-57.47	-28.64	-27.92	-52	-26	-26
Guatemala	Private	0.90	0.90	0.90	-26.61	-15.52	-15.27	-290	-171	-168
Guatemala	Fiscal	0.90	0.90	0.90	-11.24	-3.36	-3.25	-120	-36	-35
Guatemala	Social	0.90	0.90	0.90	-32.28	-16.77	-16.47	-350	-184	-180
Luxembourg	Private	0.31	0.30	0.32	-21.15	-10.22	-11.35	-390	-196	-202
Luxembourg	Fiscal	0.31	0.30	0.32	-6.11	-2.48	-2.81	-118	-50	-52
Luxembourg	Social	0.31	0.30	0.32	-23.13	-10.88	-12.11	-428	-209	-216
Morocco	Private	0.79	0.79	0.79	-24.93	-13.50	-15.72	-365	-200	-232
Morocco	Fiscal	0.79	0.79	0.79	-9.86	-2.21	-3.06	-150	-34	-47
Morocco	Social	0.79	0.79	0.79	-27.24	-13.02	-15.45	-401	-193	-228
The Netherlands	Private	0.19	0.19	0.20	-6.65	-3.44	-3.48	-2699	-1412	-1409
The Netherlands	Fiscal	0.19	0.19	0.20	-1.98	-0.85	-0.86	-886	-383	-383
The Netherlands	Social	0.19	0.19	0.20	-6.29	-3.17	-3.21	-2536	-1290	-1287
Pakistan	Private	0.95	0.95	0.96	-24.60	-15.09	-15.03	-1061	-660	-651
Pakistan	Fiscal	0.95	0.95	0.96	-11.67	-3.12	-3.09	-507	-136	-134
Pakistan	Social	0.95	0.95	0.96	-29.43	-15.65	-15.58	-1271	-685	-675
Peru	Private	0.60	0.61	0.59	-18.16	-10.42	-10.45	-753	-431	-441
Peru	Fiscal	0.60	0.61	0.59	-9.25	-3.50	-3.52	-396	-149	-152
Peru	Social	0.60	0.61	0.59	-22.42	-11.80	-11.84	-935	-490	-501
Tajikistan	Private	0.69	0.72	0.65	-11.07	-6.51	-6.45	-33	-19	-20
Tajikistan	Fiscal	0.69	0.72	0.65	-8.36	-3.20	-3.16	-26	-10	-10
Tajikistan	Social	0.69	0.72	0.65	-15.83	-8.23	-8.14	-48	-24	-26
Yemen, Rep.	Private	0.67	0.67	0.67	-11.14	-7.07	-6.57	-75	-48	-45
Yemen, Rep.	Fiscal	0.67	0.67	0.67	-11.38	-4.81	-4.31	-82	-35	-31
Yemen, Rep.	Social	0.67	0.67	0.67	-18.06	-9.94	-9.13	-124	-68	-63

Notes: mln: million; pp: percentage point. LBS: share of children with less than basic skills, from Gust, Hanushek and Woessmann (2024). Incomes and cost items are forecasted in 2030. Annual costs are expressed as % of GDP and computed as differences between the status quo scenario (LBS is set at the level recorded in 2021) and the intervention scenario (respectively: LBS set to 0, female LBS set to 0, male LBS set to 0). Annual costs of one pp LBS are the US dollars lost by increasing LBS by one percentage point.

Countries with gender disparities in education at boys' expense

Of this subset of ten countries, the social costs of LBS are highest in Burundi (20 per cent of GDP due to girls' LBS and 21 per cent due to boys' LBS) and Senegal (19 per cent of GDP due to girls' LBS and 20 per cent due to boys' LBS) and the costs are lowest in Finland (2.3 per cent of GDP due to girls' LBS and 2.9 per cent due to boys' LBS) and Belgium (3.4 per cent of GDP due to girls' LBS and 4.1 per cent due to boys' LBS). This reflects a large gap between these countries in the share of LBS, which is more than 90 per cent in Burundi and Senegal and around 20 per cent or below in Belgium and Finland. A similar pattern emerges for ESL.

In general, in these ten sample countries, the costs due to boys are larger than those due to girls. However, exceptions occur in the selected countries in Bangladesh and Sweden. These exceptions occur for two reasons. First, a larger share of girls in the population compensates for the lower share of girls with less than basic skills, which reduces the costs relative to boys. Second, both Bangladesh and Sweden have a higher share of ESL for girls than for boys.

The costs to annual GDP of early school leaving and children with less than basic skills in countries with gender disparities in education at boys' expense are summarized in **Tables 19** and **20**.

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Table 19: The costs of early school leaving in ten selected countries with gender disparities in education at boys' expense

Country	Cost	Share of ESL	Share of girls' ESL	Share of boys' ESL	Annual cost of ESL % GDP	Annual cost of girls' ESL % GDP	Annual cost of boys' ESL % GDP	Annual cost of 1pp ESL mln US$	Annual cost of 1pp girls' ESL mln US$	Annual cost of 1pp boys' ESL mln US$
Bangladesh	Private	0.71	0.72	0.71	-9.14	-5.17	-4.90	-502	-284	-273
Bangladesh	Fiscal	0.71	0.72	0.71	-5.00	-2.21	-2.07	-293	-129	-122
Bangladesh	Social	0.71	0.72	0.71	-11.26	-6.11	-5.78	-627	-339	-324
Belgium	Private	0.14	0.14	0.14	-4.43	-2.08	-2.38	-1411	-663	-758
Belgium	Fiscal	0.14	0.14	0.14	-0.70	-0.30	-0.34	-240	-102	-118
Belgium	Social	0.14	0.14	0.14	-3.72	-1.73	-1.98	-1165	-543	-622
Burundi	Private	0.90	0.91	0.90	-23.44	-12.01	-12.34	-9	-5	-5
Burundi	Fiscal	0.90	0.91	0.90	-5.51	-1.66	-1.74	-2	-1	-1
Burundi	Social	0.90	0.91	0.90	-25.62	-12.42	-12.78	-10	-5	-5
Croatia	Private	0.19	0.17	0.20	-4.18	-1.86	-2.40	-155	-75	-83
Croatia	Fiscal	0.19	0.17	0.20	-0.39	-0.13	-0.18	-15	-6	-7
Croatia	Social	0.19	0.17	0.20	-3.41	-1.50	-1.94	-125	-60	-67
Finland	Private	0.15	0.15	0.15	-5.34	-2.59	-2.76	-824	-399	-425
Finland	Fiscal	0.15	0.15	0.15	-0.36	-0.14	-0.15	-59	-23	-25
Finland	Social	0.15	0.15	0.15	-4.22	-2.03	-2.16	-640	-308	-328
Honduras	Private	0.54	0.49	0.58	-18.86	-8.90	-10.87	-105	-55	-56
Honduras	Fiscal	0.54	0.49	0.58	-3.21	-0.96	-1.29	-18	-6	-7
Honduras	Social	0.54	0.49	0.58	-18.62	-8.54	-10.48	-104	-52	-53
Mexico	Private	0.42	0.39	0.45	-10.00	-4.92	-5.51	-3568	-1878	-1847
Mexico	Fiscal	0.42	0.39	0.45	-1.70	-0.61	-0.71	-626	-240	-246
Mexico	Social	0.42	0.39	0.45	-9.69	-4.68	-5.25	-3453	-1783	-1758
Senegal	Private	0.91	0.92	0.91	-22.44	-11.80	-12.25	-63	-33	-35
Senegal	Fiscal	0.91	0.92	0.91	-5.44	-1.62	-1.73	-16	-5	-5
Senegal	Social	0.91	0.92	0.91	-23.09	-11.57	-12.04	-65	-33	-34
Sweden	Private	0.14	0.14	0.13	-5.64	-3.03	-2.63	-1754	-907	-851
Sweden	Fiscal	0.14	0.14	0.13	-0.91	-0.45	-0.39	-302	-145	-134
Sweden	Social	0.14	0.14	0.13	-4.86	-2.59	-2.25	-1494	-767	-720
Tunisia	Private	0.50	0.39	0.58	-15.16	-5.45	-10.49	-136	-63	-80
Tunisia	Fiscal	0.50	0.39	0.58	-1.59	-0.18	-0.71	-15	-2	-6
Tunisia	Social	0.50	0.39	0.58	-12.73	-4.47	-8.71	-113	-51	-66

Notes: mln: million; pp: percentage point. ESL: share of early school leavers, from UNESCO-UIS (2023b). Incomes and cost items are forecasted in 2030. Annual costs are expressed as per cent of GDP and computed as differences between the status quo scenario (ESL is set at the level recorded in 2021) and the intervention scenario (respectively: ESL set to 0, female ESL set to 0, male LBS set to 0). Annual costs of one pp ESL are the US dollars lost by increasing ESL by one percentage point.

Table 20: The cost of children with less than basic skills in ten selected countries with gender disparities in education at boys' expense

Country	Cost	Share of LBS	Share of girls' LBS	Share of boys' LBS	Annual cost of LBS % GDP	Annual cost of girls' LBS % GDP	Annual cost of boys' LBS % GDP	Annual cost of 1pp LBS mln US$	Annual cost of 1pp girls' LBS mln US$	Annual cost of 1pp boys' LBS mln US$
Bangladesh	Private	0.85	0.84	0.85	-17.21	-10.71	-10.38	-812	-514	-494
Bangladesh	Fiscal	0.85	0.84	0.85	-14.27	-5.48	-5.22	-705	-272	-256
Bangladesh	Social	0.85	0.84	0.85	-25.73	-13.87	-13.38	-1233	-671	-641
Belgium	Private	0.21	0.20	0.22	-7.48	-3.56	-4.27	-1521	-749	-849
Belgium	Fiscal	0.21	0.20	0.22	-2.55	-0.98	-1.23	-573	-228	-269
Belgium	Social	0.21	0.20	0.22	-7.37	-3.39	-4.09	-1495	-711	-811
Burundi	Private	0.93	0.93	0.93	-29.41	-16.23	-16.71	-11	-6	-7
Burundi	Fiscal	0.93	0.93	0.93	-18.23	-6.13	-6.42	-7	-2	-3
Burundi	Social	0.93	0.93	0.93	-41.90	-20.32	-20.99	-16	-8	-8
Croatia	Private	0.30	0.29	0.32	-7.91	-3.79	-4.69	-176	-90	-100
Croatia	Fiscal	0.30	0.29	0.32	-2.87	-1.01	-1.33	-70	-26	-31
Croatia	Social	0.30	0.29	0.32	-8.09	-3.70	-4.61	-180	-88	-98
Finland	Private	0.15	0.13	0.16	-5.67	-2.59	-3.23	-847	-424	-449
Finland	Fiscal	0.15	0.13	0.16	-1.44	-0.55	-0.72	-237	-100	-110
Finland	Social	0.15	0.13	0.16	-5.20	-2.32	-2.92	-769	-376	-400
Honduras	Private	0.88	0.86	0.89	-25.20	-14.80	-15.48	-87	-53	-53
Honduras	Fiscal	0.88	0.86	0.89	-14.37	-4.70	-5.08	-50	-17	-17
Honduras	Social	0.88	0.86	0.89	-33.00	-17.05	-17.93	-115	-60	-62
Mexico	Private	0.56	0.55	0.58	-17.42	-9.49	-9.90	-4743	-2680	-2635
Mexico	Fiscal	0.56	0.55	0.58	-6.70	-2.37	-2.53	-1846	-673	-677
Mexico	Social	0.56	0.55	0.58	-20.26	-10.26	-10.75	-5524	-2900	-2861
Senegal	Private	0.97	0.97	0.97	-28.87	-16.70	-17.46	-77	-44	-47
Senegal	Fiscal	0.97	0.97	0.97	-17.18	-5.21	-5.64	-47	-14	-15
Senegal	Social	0.97	0.97	0.97	-38.15	-19.07	-20.07	-102	-51	-54
Sweden	Private	0.19	0.19	0.20	-8.22	-4.27	-4.28	-1770	-954	-895
Sweden	Fiscal	0.19	0.19	0.20	-2.89	-1.27	-1.28	-689	-314	-295
Sweden	Social	0.19	0.19	0.20	-8.15	-4.12	-4.13	-1752	-917	-860
Tunisia	Private	0.74	0.69	0.78	-22.37	-11.08	-15.66	-135	-73	-90
Tunisia	Fiscal	0.74	0.69	0.78	-9.25	-1.74	-3.60	-58	-12	-21
Tunisia	Social	0.74	0.69	0.78	-23.86	-10.37	-15.26	-144	-68	-88

Notes: mln: million; pp: percentage point. LBS: share of children with less than basic skills, from Gust, Hanushek and Woessmann (2024). Incomes and cost items are forecasted in 2030. Annual costs are expressed as per cent of GDP and computed as differences between the status quo scenario (LBS is set at the level recorded in 2021) and the intervention scenario (respectively: LBS set to 0, female LBS set to 0, male LBS set to 0). Annual costs of one pp LBS are the US dollars lost by increasing LBS by one percentage point.

Chapter 6

Conclusions and recommendations

Conclusions

Children and youth leaving school early and having less than basic skills are having huge cost implications for all economies around the world.

In this study, for the first time, the private, fiscal and social costs of early school leavers and children with less than basic skills have not only been categorized, but they have been presented both for the total population and by sex and are disaggregated into elementary cost components, including the loss of labour income, the loss of fiscal revenues and the variations on several private and government expenditures.

The study has also estimated the costs of low socio-emotional skills. Thanks to international tests of cognitive skills, information on the cognitive skills of students and adults is not lacking. However, less data is available on socio-emotional skills, both because these skills are more difficult to measure and because international awareness of the importance of these skills is more recent.

As this study has shown, the social cost of early school leavers and children with less than basic skills is US$10 trillion globally and the loss of GDP stemming from low socio-emotional skills is US$7.4 trillion globally. These are massive losses that the world cannot afford. Investments are urgently required in education and gender-transformative action to ensure that the right to quality education is realized for all. This is beneficial for society and economies.

Recent research has shown that girls remain globally less likely than boys to enter school in the first place and still face the worst forms of exclusion. Yet, in many countries boys are at higher risk of failing to progress and complete their education (UNESCO, 2022a).

Early school leaving and poor educational outcomes are the result of multiple, interrelated factors, which include poor early school experiences, low perceived labour market returns on education, heavy discounting of future benefits, poor social environments and peer influence. These factors can be classified as individual, social, school and systemic (OECD, 2012).

From an individual and social point of view, low school grades and certain types of student behaviours, such as absenteeism, lack of motivation and delinquency, are solid predictors of dropout. These behaviours are connected to student backgrounds, be it past experiences in education (including participation in pre-primary education), family background or gender norms. School-related factors that affect both ESL and LBS include the supply of schools in an area, distance to schools, class size and the quality of teaching. Systemic factors include compulsory school rules and the organization of school curricula into separate tracks (OECD, 2012).

Policy recommendations

Countries around the world have made efforts to reduce early school leaving and improve learning outcomes via a wide range of policies, approaches and interventions. The impact of the COVID-19 pandemic and growing concerns about learning poverty have attracted additional attention to this matter.

Some policies are aimed at students at-risk or are targeted at disadvantaged children and youth, while others affect the entire school system with actions involving all. Policies can be ostensibly gender-neutral or explicitly target girls or boys (Glick, 2008).

Based on a review of these policies and considering the massive losses of ELS and LBS to global and national GDP, in addition to the non-monetary costs to societies, a set of ten main recommendations to reduce the share of children and youth leaving school early or failing to learn basic skills and improve socio-emotional skills are presented below. A summary of the ten recommendations are found at the end of this chapter.

The recommendations only consider policies for which there is empirical evidence of success. Also provided in this chapter, in the boxes, are short descriptions of several promising and good practices and one unsuccessful practice (**Box 4**).

1. In line with SDG 4, provide 12 years of free, publicly-funded, inclusive, equitable and quality education without discrimination by making school affordable and reducing the direct and opportunity costs of schooling, paying attention to gender-specific needs. It is recommended that governments allocate at least 4 to 6 per cent of their GDP to education.

Reduce the direct costs of schooling by eliminating fees for compulsory education.

Direct costs refer to tuition or school fees paid each term or annually. As of 2023, 31 per cent of countries legally guarantee compulsory primary and secondary education

for at least nine years and free education for at least 12 years. Five per cent of countries do not guarantee either compulsory or free primary and secondary education (UNESCO, 2023b). In many of these countries, including Bangladesh, Burundi, Croatia, the Gambia, Haiti, Jamaica, Lesotho, Myanmar and Samoa, fees are charged for secondary education.

Making school truly free and compulsory, together with careful planning to handle increased enrolment, is critical for achieving universal education for girls and boys, but especially for girls, because costs are a greater barrier to girls' than to boys' education (World Bank, 2009; Sperling, Winthrop and Kwauk, 2016).

Reduce the indirect and opportunity costs of schooling.

Though crucial, gains from eliminating fees are not always enough for all children and youth, especially those from poor households (Lincove, 2009). Even if the direct cost of schooling has been removed, indirect and opportunity costs may still figure in parents' decisions to keep children at home. Indirect costs include the price of uniforms, school supplies, transportation, parent–teacher association fees and the like. Opportunity costs are the 'services' lost by a family when their child attends school. These costs may include factors such as the child's potential contribution to labour, the need for childcare for younger siblings or perhaps the time that an adult must invest in accompanying a girl to school because of security concerns (Sperling, Winthrop and Kwauk, 2016).

The analysis of low and lower- middle income countries where fee-free secondary education has recently been introduced, including Rwanda and the United Republic of Tanzania, indicates that the share of the poorest, most disadvantaged children and youth progressing into and completing secondary school is still extremely small.

Targeting government resources to provide additional financial support for the most disadvantaged – beyond the removal of school fees – can support their completion of a full cycle of primary and secondary education (UNESCO, 2022a).

Provide cash transfers to offset the costs of schooling.

One method for offsetting the direct, indirect and opportunity costs of schooling is to provide cash transfers for poor households. Cash transfers have been shown to bring both short- and long-term gains in school participation and learning.

Cash transfer schemes were first introduced in Brazil and Mexico and have since spread around the world. They alleviate current poverty and reduce future poverty by fostering the education and skills of children and youth from poor families, thus increasing their lifetime earnings potential.

In Mexico, the *Progresa/Oportunidades* programme, launched in 1997, incentivized poor rural communities to increase school enrolment by giving education and food grants to mothers, conditional on their children attending primary school and being brought in for regular medical checkups. Several evaluations showed a positive impact on school enrolment rates, years of schooling, nutritional status and health (CONEVAL, 2016; Fernard et al., 2009; Secretaria de Desarollo Social, 2008). One study found that boys gained nearly ten months of additional schooling, and girls nearly eight months on average (World Bank, 2014).

Estimates of the impact of conditional cash transfers on school attendance have shown both differences and similarities in gains for girls and boys. Schultz (2004) reports that estimates indicate that the impact of conditional cash transfers on overall enrolment is larger for girls than for boys, with girls' enrolment increasing by between 3.4 to 3.7 percentage points, depending on the sample and method, compared with boys' enrolment increasing 2.5 to 2.8 percentage points, with larger differences for secondary enrolment. Conditional cash transfer programmes in Latin America, including in Brazil, Ecuador and Nicaragua, showed similar gains for girls and boys (Glick, 2008).

Although the evidence is mixed, a few conditional cash transfer programmes have been associated with improved test scores and, in some instances, long-term advantages. For example, in Nicaragua, boys who benefited from five years of a conditional cash transfer programme had higher test scores in home language and mathematics ten years after the start of the programme compared with boys who had only been in the programme for two years (Damon et al., 2016).

The positive impacts of these programmes have led to both a large scaling up within Mexico and to their spreading around the world. Many governments were persuaded by the idea of simultaneously reducing current poverty and inhibiting its intergenerational transmission. Conditional cash transfer programmes have now been implemented in over 60 countries in five continents, ranging from low-income countries, such as Malawi, to high-income countries, including England and the United States of America (Parker and Todd, 2017).

Many programmes have targeted girls. For example, Bangladesh's school stipend programme, launched in 1982, subsidized household expenditures for girls' secondary education. In the first five years of the programme, girls'

secondary enrolment rates in programme areas rose from 27 per cent to 44 per cent, more than twice the increase observed nationally. Given this apparent success, the programme was expanded in 1994. Later evaluations of the programme showed that an additional year of availability of the stipend programme increased girls' enrolment rate by 12 percentage points, while having no significant effect on boys' (Glick, 2008; Jui et al., 2023).

Another example is rural Kenya, where girls were offered merit-based scholarships if they scored above a certain percentile in standardized examinations (Kremer, Miguel and Thornton, 2009). Girls who received the scholarships showed a significant increase in attendance and test scores compared to their counterparts, and there was also a notable improvement in teacher attendance. Although cash transfers are typically targeted at girls, the evidence suggests that these programmes generate positive spillover effects on the enrolment of boys (Hasan, 2010).

2. Create gender-transformative, inclusive and empowering learning environments that challenge unequal power dynamics, gender bias and stereotypes, including through curricular and pedagogical approaches that respect difference and promote equality.

Ensure that learning environments are gender-transformative, inclusive and empowering for all students.

Gendered norms and expectations impact on girls' and boys' retention in school, their motivation and desire to learn and consequently their learning achievements (UNESCO, 2022a).

Gender-transformative education can help keep girls and boys in school and learning. Gender-transformative means addressing the underlying causes of gender inequalities. It includes policies and initiatives that not only address the different needs, aspirations, capacities and contributions of girls, boys, women and men, but also challenge existing and discriminatory policies and practices, creating radical change (UNESCO, 2018). A gender-transformative approach to education is one that encompasses policy, programming and interventions that create opportunities to actively challenge gender norms and wider inequalities. This includes engaging with gender equality through curricular and teaching reforms (UNESCO, 2022a).

An example of a gender-transformative intervention is the *Becoming a Man* programme implemented by Youth Guidance in Chicago, USA. This programme guides young men through difficult circumstances that may lead to violence and builds the social and emotional skills they need to succeed. Counsellors meet with groups of young men at school during non-class periods. In the 2015-2016 academic year, 48 schools in Chicago hosted the programme, reaching more than 2,500 young men from grades 7 to 12 (Lansing and Rapoport, 2016). Two randomized control trials showed that the programme reduced violent crime arrests by 50 per cent and improved secondary school graduation rates for young men by 19 per cent (Heller et al., 2015).

Box 2 Enrolling more girls in school in Pakistan

In Pakistan, the Girls' Right to Education Programme, UNESCO's largest single-country intervention on girls' education, supports the government to improve girls' access to quality primary education in 19 isolated and marginalized districts of Pakistan. The programme has three integrated components: (a) improving girls' access through social mobilization and advocacy; (b) improving retention through improvement in school physical and learning environments; and (c) capacity building of education officials at district, provincial and national levels. As a result, 57,000 out-of-school primary girls have been enrolled in over 1,590 schools, in 19 target districts.

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Box 3

Preventing boys' school drop out in the United Arab Emirates

In 2014, in the United Arab Emirates, the Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research adapted the Hands-on-Learning programme for at-risk secondary school students in Ras Al Khaimah.

Originally developed in Australia, the programme re-engaged secondary school boys in education by taking them out of their usual class environment one day per week to help them improve behavioural skills, increase self-confidence, acquire new skills, implement hands-on projects and work together with peers and teachers. Students set behavioural goals for their class and prepared and ate meals together.

Beneficiaries of the programme reported that they enjoyed learning, developed self-confidence and understood the importance of cooperation. In a survey carried out in 2018, every participant reported concentrating fully in the classroom, compared to 60 per cent before the intervention, and 83 per cent of the boys believed that education is crucial for success compared to 33 per cent before the intervention (Rizvi, 2019).

While the programme was successful in re-engaging boys, challenges were identified, including recruiting qualified staff, convincing parents and teachers of the value of having boys participate one day per week and funding (Ridge et al., 2017).

A toolkit was developed to roll out the programme to more schools in the country (Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research, 2021).

Prevent early and unintended pregnancies and implement flexible learning programmes for young mothers and fathers.

Early and unintended pregnancy can be a consequence of early school leaving, and it is also one of its causes: Pregnant girls and young mothers are not always able to return to school to continue or complete their education, especially in poorer countries, but also in some rich ones (UNESCO, 2020). Early and unintended pregnancy has a major impact on the lives of adolescents, especially girls, in terms of their health, social, economic and education outcomes.

Comprehensive sexuality education can help prevent early and unintended pregnancies (see Recommendation 8 for more on this topic). Flexible learning programmes can help pregnant girls and adolescent parents return to school.

In 2008, Buenos Aires Province in Argentina introduced the programme *Salas maternales: madres, padres y hermanos/as mayores, todos en secundaria* (Nurseries: mothers, fathers and siblings, all in secondary school) in cooperation with UNICEF. Through this programme, nurseries are set up within schools or in nearby kindergartens. This allows adolescent parents to attend classes, while their children receive care in an environment that stimulates early learning. By 2017, there were 82 nurseries across the province. An evaluation found that school retention had increased, generating higher school completion without interruption. Furthermore, young parents' attitudes towards studying had changed, with school completion seen as allowing adolescents to be independent of their families, find a good job and begin university. The programme is unique in also targeting young fathers (UNICEF, 2017).

3. Intervene early by investing in early childhood education for girls and boys to lay a foundation for learning and harness its potential to tackle gender inequities and harmful gender norms from an early age.

Invest in early childhood education to lay a foundation for learning.

There is a growing consensus that preventive measures to reduce early school leaving should start at pre-primary level. Early childhood education and care has a positive effect on the long-term cognitive, social and emotional development of children. Cognitive and emotional skills interconnect and have been shown to reduce chances of early school leaving later (Heckman, Sixtrud and Urzua, 2006).

Policy options that can address children's low achievement, especially for those from disadvantaged backgrounds, include investing in pre-primary education to improve accessibility and supporting school readiness through the development of critical foundational skills. Good quality pre-primary education can also help reduce the likelihood of grade repetition in early grades (UNESCO, 2022a).

The Perry Preschool Program in the United States of America is one such programme that provides early childhood education and care to children from disadvantaged backgrounds, focusing on both cognitive and non-cognitive skills. Recognizing that students' lack of engagement in education may also stem from their family's

lack of involvement in their education, the programme includes weekly home visits during the school year. These visits try to involve parents in the educational process and help them provide educational support within the home (Heckman, Pinto and Savelyev, 2013).

Early childhood parenting interventions have also been conducted in low- and lower-middle income countries over the last few decades. One of the best known is *Care for Development*, which has been adopted in Colombia and promoted extensively by the World Health Organization (WHO) and UNICEF. An intervention somewhat similar in spirit is the *Jamaica Home Visits* programme, which was first implemented in the 1970s and is one of the few interventions that repeatedly followed up with participants to evaluate long-term impacts. Recent evaluations showed that labour market earnings for the participating group improved by 25 per cent by the time participants were 22 years old (Attanasio, Meghir and Schady, 2021).

Harness the potential of early childhood education to tackle gender inequities and harmful gender norms.

Children internalize gender norms early and it is then difficult to change attitudes and behaviour with age (ICRW, 2020). Interventions challenging gender norms in early childhood education could be particularly transformative and contribute to wider education opportunity for girls and boys.

4. Avoid early tracking, provide academic support and second chance options for girls and boys who missed out on education or whose education was interrupted.

Avoid early tracking of girls and boys in schools.

Tracking students into differentiated curricula may have contrasting effects on school leaving. Segregating low performers into a vocational track may induce some students to drop out from school too soon (Werblow and Duesbery, 2013). On the other hand, by providing a more flexible set of curricula and a vocational track that places less emphasis on academic abilities, those students who prefer practical trades to more academic education may stay in school longer (Brunello and De Paola, 2014).

The relevant policy decision may be not whether one should have differentiated vocational and academic pathways, but when this differentiation should start. A potential concern is that *early* tracking may have negative effects on test scores, leading to an increase in early school leaving (UNESCO, 2022a). Empirical evidence suggests that tracking students before age 15 increases the dispersion of test scores, and therefore inequality, without affecting mean performance in the tests (Hanushek and Wössmann, 2006).

Provide sufficient and, if needed, additional academic support.

When girls and boys are insufficiently supported academically, they can have difficulties in school performance and lack academic confidence (Psaki et al., 2022). This can lead to dropout from school (Soler-Hampejsek et al., 2018).

Interventions that can boost academic support might include group remedial education after school, individual tutoring or providing assistance that addresses issues related to school attendance.

A systematic review of interventions in China, India, Malawi, Pakistan and Zambia found that interventions with a focus on training and remedial support, often integrating technology, are effective for improving learning outcomes for girls (Psaki et al., 2022). A policy in Uganda that encouraged children to stay enrolled up to secondary school by providing remedial classes before and after school for academically weak students showed significant improvements in numeracy and literacy skills for both girls and boys (Okurut, 2015; 2018).

Offer second chance programmes.

Early school leaving can be mitigated by offering second-chance programmes, or opportunities for young people who leave the education system without earning a diploma. Examples in the United States of America include both large national programmes and networks, like *Job Corps* (with over 100 sites nationwide) and *Youth Build* (more than 200 programmes), and small independent programmes run by churches and community-based organizations. These programmes typically provide some combination of education, training, employment, counselling and social services (Bloom, 2010).

In the United States of America, over the past four decades, early school leavers have been encouraged to obtain an alternative credential – a high school equivalency – by taking a General Educational Development test, administered by the American Council of Education (a non-profit organization). Over the years, however, the number of students doing so has risen to such a point that the credential's economic value has been put into question (Rumberger and Lamb, 2003).

5. Improve school infrastructure, including providing single-sex water and sanitation facilities, reducing class sizes, especially in disadvantaged areas, and ensuring shorter distances to school.

Improve school infrastructure, including providing single-sex water and sanitation facilities.

Evidence indicates that where schools are in short supply, or of poor quality, the construction of additional infrastructure designed to promote girls' education can also have positive spillover effects for boys (UNESCO, 2022a). An impact evaluation of the construction of 'girl-friendly' schools in Burkina Faso with facilities such as clean water and separate toilets for girls and boys, alongside other gender-sensitive initiatives, was shown to significantly increase enrolment ratios for both girls (22 percent) and boys (16 percent) (Kazianga, de Walque and Alderman, 2012). In India, the construction of toilets decreased girls' dropout rate by 12 percentage points and that of boys by 11 percentage points (Adukia, 2017). More on water and sanitation facilities is found under Recommendation 8.

Reduce class sizes, especially in disadvantaged areas.

Improving educational quality, especially in the crucial early grades, is an important policy intervention for reducing repetition and early school leaving and for improving literacy and learning levels. One measure of the resources invested in primary education is class size.

In middle-income countries, primary schools have on average class size of fewer than 25 students and in high-income countries there are fewer than 15 students per class (UNESCO-UIS, 2023b). In low-income countries, the average primary class size is considerably higher, at 39.8 students per teacher.

Cost effective measures to reduce class size should be considered. Urquiola and Verhoogen (2009) found that reductions in class size led to significantly positive impacts on both math and language test scores for children in grades K-8 in private schools in Chile.

It is important to be aware, however, that the existing evidence on the impact of reducing class size on school outcomes has produced controversial results. Duflo, Dupas and Kremer (2015) conducted a randomized control trial in Kenya that randomly assigned some schools an extra contract teacher. The trial found that although reduced class size (from about 80 to 40 students) led to higher test scores, this increase was not statistically significant. Glewwe et al. (2011), in their review of the literature for low- and middle-income countries, also concluded that while increases in class size usually have negative impacts on student learning, as one would expect, this is not always the case. They suggest that another interpretation is that the effect is negative but quite small, so that random variation in estimates often yield positive point estimates, which on occasion are significantly positive.

Reduce the distances girls and boys must travel to schools.

Building adequate schools near where girls and boys live helps to bring more children into school—at least at the primary level. This is particularly important where parents are economically disadvantaged or culture and norms restrict the activities of girls and women.

Small schools close to homes not only decrease the physical distances girls and boys must travel to school but help reduce the cultural barriers that boys and especially girls must negotiate when they leave their own community to enter a school community that may be unwelcoming (Lehman, 2013; Lavy, 1996). And because community-built and managed schools are typically designed based on a partnership between the school and its community, increased community and parental involvement help schools attract more students, especially girls (DeStefano et al., 2007).

6. Improve the quality of education by hiring a qualified, motivated and diverse teacher workforce and ensure that they attend school, are fair and engage all students equally; support teachers' continuous professional development so they can unlock all learners' potential.

Hire teachers who are qualified and motivated to attend school and engage students.

Teachers are key to improving the quality of education. In the United States of America, researchers found that having a good teacher is equivalent to 1.5 years of learning. Having a weak teacher, on the other hand, leads to learning less than half of the expected subject content (Hanushek and Rivkin, 2010).

A challenge in low-income countries is not only a shortage of teachers, but many teachers may lack qualifications. Also challenging in these countries is getting teachers to attend school regularly.

Ensure the teacher workforce is gender-balanced and diverse.

Measures that build a gender-balanced, ethnically diverse workforce of teachers can support boys' and girls' engagement, provide much-needed representation for minority groups and fulfil wider social justice and gender equality goals (UNESCO, 2022a).

Evidence from the United States of America indicates that African-American male students assigned to an African-American teacher at primary school not only performed better on standardized tests but were significantly less likely to drop out of high school and more likely to enrol in college compared with African-American peers assigned non-African-American teachers. These long-term outcomes are particularly pronounced for poorer students (Gershenson et al., 2022). There is also evidence that female students benefit from being taught by female teachers, especially when those teachers serve as counter-stereotypical role models (Card et al., 2022).

Box 4 Monitoring teachers and school-based management does not appear to be effective for increasing student attendance

Based on empirical evidence, two particular school governance interventions do not appear to increase the time students spend in school. These are monitoring of teachers and school-based management (Damon et al., 2016).

Both of these interventions have been looked at as potential remedies for a common problem in many schools in developing countries – teacher absences.

However, two studies in India (Duflo, Hanna and Ryan, 2012, and Banerjee et al., 2010) found no impact of teacher monitoring on student attendance. Also, according to Damon et al. (2016), several reforms based on school-based management approaches (decentralized school management) that were attempted in middle and low-income countries were found to be ineffective in increasing time in school.

Support teachers' continuous professional development so they can unlock all learners' potential.

Teacher professional development including gender-transformative components can help keep students connected to school (Wodon et al., 2024). An evaluation of the Good School Toolkit in Uganda shows that its use reduced the risk of teachers and school staff using physical violence by 42 percent. It has shown to improve students' connectedness, sense of safety and feeling of belonging with their school (DeVries et al., 2015). Training teachers on gender-responsive pedagogy has the potential to benefit all students (**Box 5**).

Box 5 Gender-responsive pedagogy has the potential to reduce school dropout

Gender-responsive pedagogy reflects an understanding of gender roles and biases, and in addressing these, encourages equitable participation and outcomes. It includes strategies to enhance inclusion by paying attention to classroom set-up and interactions, adopting inclusive language and tackling gender bias in lesson content and materials.

In Africa, the use of gender-responsive pedagogy has shown to reduce school dropout (Forum for African Women Educationalists, 2020).

7. Raise awareness among local communities and parents of the importance of girls' and boys' completion of a full cycle of basic education and engage the community and parents in school activities and management.

Raise awareness among local communities and engage the community and parents in school activities and management, including engaging with formal and informal networks.

Raising awareness among local communities and community participation are valuable tools for encouraging boys' and girls' education and gaining parental and community buy-in. Formal and informal networks can be engaged in local schooling, including religious and traditional leaders and institutions and civil society organizations. Such engagements can influence participation, progression and learning outcomes and help reduce violence.

Successful engagement approaches include explicit agreements within the community to educate girls as well as boys, community input into teacher recruitment and selection and genuine partnerships between communities and the federal government (Sperling, Winthrop and Kwauk, 2016).

In Indonesia, for instance, community engagement with schools improved student learning, especially for girls (Pradhan et al., 2014). Community approaches are also successful in preventing violence and promoting boys' learning (UNESCO, 2022a).

Implement mentoring programmes.

In primary schools, parental and adult involvement is important to support good conduct and strengthen pro-social bonds and school attachment. Pro-social bonds can also be developed through mentoring, which is a more selective intervention. The creation of a connection with an adult mentor can reduce problematic behaviour among at-risk primary and lower-secondary students. Empirical evaluations of mentoring programmes tend to find that these programmes have positive effects on educational attainment and economic performance. The size of these effects, however, is modest (DuBois et al., 2011).

An example of mentoring is the *Across Ages* programme in the United States of America. In this programme, older (age 55 and above) role models are paired with youth between the ages of 9 and 13 that live in communities with few possibilities of positive extra-curricular activities and few positive adult role models. In addition to mentoring, the programme offers classroom-based life skills, problem solving, substance abuse curricula and the involvement of the youth in community service (Hammond et al., 2007).

8. Address girls' and boys' health and mental well-being, including through preventing and responding to all forms of school-related gender-based violence, comprehensive sexuality education and socio-emotional skills development.

Implement programmes that improve girls' and boys' health and nutrition, including deworming, school feeding, water and sanitation and menstrual hygiene interventions.

Poor health may limit school participation for girls and boys alike (UNESCO, 2022b). Studies (Miguel and Kremer, 2004; Adukia, 2017) suggest that where many children suffer poor health and nutrition, deworming programmes and school feeding programmes may be a cost-effective way of increasing school participation.

School-feeding programmes, be it in the form of in-school lunches and take-home rations or conditional food provision based on school attendance or performance, can reduce the indirect costs of education and provide an incentive for parents to send children to school, particularly girls (Psaki et al., 2022). A systematic review of interventions from Bangladesh, Burkina Faso, Ghana, India, Lao PDR, Uganda and Zambia found that providing food is effective for improving school enrolment, attainment and attendance of girls (Psaki et al., 2022).

Clean water and functioning toilets and latrines are important health interventions in schools. Access to clean water and proper sanitation greatly reduce the incidence of pathogen-based diseases and illness related to dehydration, both serious concerns for many low-income communities.

Water and sanitation interventions in schools improve the school environment for all children but can be especially important for the well-being of adolescent girls. Education on menstrual hygiene is insufficient in schools, as are facilities, and many adolescent girls learn about menstruation and menstrual management only *after* the onset of their menses. At this sensitive time, girls are susceptible not only to physiological barriers and logistical hurdles, but also to negative psychological emotions and harassment by others that can have a significant impact on their ability to concentrate in school (Dolan et al., 2014; Connolly et al., 2013). Thus, safe access to water, sanitation and latrines are important for navigating this stage in girls' lives.

Implement programmes that protect girls and boys from school-related gender-based violence.

School-related gender-based violence, whether perpetrated by peers, school staff or other persons, has a profound impact on children's experiences of school, often with lasting negative consequences for education and health and well-being. School-related gender-based violence refers to acts or threats of sexual, physical or psychological violence occurring in and around schools. Such violence is generally perpetrated as a result of discriminatory social norms and gender stereotypes and enforced by unequal power dynamics and wider inequalities (UNESCO and UN Women, 2016). Vulnerabilities and experiences of violence often differ by gender, including one's perceived gender identity or expression, and can result in student absence, lower learning outcomes and even dropout (Ginestra, 2020).

Box 6 Helping teachers tackle school-related gender-based violence

Connect with Respect is a curriculum tool that helps teachers address and reduce school-related gender-based violence among early secondary school learners.

Using the *Connect with Respect* toolkit, teachers build their own knowledge and awareness on topics related to school-related gender-based violence. The toolkit includes more than 30 learning activities that teachers can use to increase the knowledge, positive attitudes and skills of students. Activities can be integrated into a range of subjects, including literacy, social studies, civics education, health, life skills and sexuality education.

Drawing from scientific literature on violence prevention, gender norms and the programmatic experience of school-based interventions (Cahill et al., 2016), the toolkit was developed by a team from the University of Melbourne for use in the Asia-Pacific region. The toolkit has since undergone regional adaptation for use in Eastern and Southern Africa (Cahill and Romei, 2019).

The results of a pilot study carried out in schools in Eswatini, Thailand, Timor-Leste, United Republic of Tanzania and Zambia show that the programme can have a positive impact on the relationship skills of both girls and boys. 77 per cent of students felt that their relationship skills improved. Girls were more likely than boys to demonstrate a positive change in help-seeking behaviours post-implementation, while there was also improvement for boys (Cahill et al., 2022).

Provide comprehensive sexuality education.

To prevent early and unintended pregnancies, delivering comprehensive sexuality education (CSE) for both girls and boys is critical. Such education should begin early and have strong gender and rights components and focus on skills-building. CSE increases girls' awareness of themselves, their bodies, their rights and capabilities, including preventing pregnancy and making fertility choices. It is also a crucial part of a quality education for boys, improving their understanding of sexual health, relationships and gender equality (UNESCO, 2017).

Implement programmes in schools that develop the socio-emotional skills of girls and boys.

An OECD survey on socio-emotional skills (2021) shows that students' socio-emotional skills are significant predictors of school grades across age cohorts and subjects. Education specialists and psychologists (see for instance Goleman, 2006) believe that if schools teach students to work well with others, regulate their emotions and be constructive in solving problems, students will be better equipped to deal with life's challenges, including academic ones.

The importance of non-cognitive skills (socio-emotional skills) for education is now widely recognized. Carneiro, Crawford and Goodman (2007), for instance, show that the effect of cognitive skills on the probability of staying in school beyond age 16 is quite low if non-cognitive skills are fixed at a low value, but very high if non-cognitive skills are fixed at a high value. These findings suggest that an individual with high cognitive skills, but poor non-cognitive skills is relatively unlikely to stay in school beyond age 16.

Programmes teaching socio-emotional skills have been developed around the world. Examples in high-income countries include the *Collaborative for Academic, Social and Emotional Learning* (CASEL) in the United States of America, which focuses on the development of self and social awareness, responsible decision-making, self-management and relationship skills (Frye et al., 2022). The *Children's Plan* in the United Kingdom of Great Britain and Northern Ireland is a government programme that develops greater resilience and preparedness for change, both in learning and socially (Duckworth et al., 2009). The *Character Education Promotion Act* introduced in the Republic of Korea in 2015 promotes social and emotional skills of students by encouraging students to adopt skills such as honesty, responsibility, respect, consideration and co-operation. These skills are associated with other work-oriented skills that are useful in students' daily lives, such as self-management, information processing, creative thinking, aesthetic sensibility and communication in daily life (OECD, 2021).

An example from a middle-income country is the *Active Urban School*, an innovative education programme led by a public-private and academic partnership in Manizales, Colombia. The programme was developed to address high dropout rates and low scores on national tests among students from urban public schools in Manizales. The programme uses a whole-school approach to help students develop twenty-first century competencies, based on the principle that children and adolescents need a balanced set of cognitive, social and emotional skills to succeed in modern life (OECD, 2021).

Some cost-benefit analyses of interventions promoting socio-emotional learning have been performed. Applied to a context in the state of Washington in the United States of America, Lee et al. (2012) calculated costs, benefits and net benefits of the *Seattle Social Development Project* and the *Life Skills Training* project. For the former, participant costs are US$3,030, while the benefits are valued at US$5,800. Therefore, the net benefits (US$2,770) are strongly positive. For the latter, the participant costs are US$30, and the value of the benefits are US$1,290, representing US$1,260 in net benefits.

Belfield et al. (2015) computed the costs and benefits of four selected SEL interventions in the United States of America (4Rs, Second Step, Life Skills Training and Responsive Classroom) and found that the benefits of these interventions substantially outweigh the costs.

Box 7

Having a positive impact on boys at risk through early social skills and self-control training

An intervention in Canada in the 1980s to improve the social skills and self-control of boys aged seven to nine at risk of later anti-social behaviour showed a positive impact both in adolescence and adulthood.

The two-year intervention included training the boys on social skills and self-control, as well as a teacher and parent training. The intervention increased self-control skills and pro-social skills, such as trust, but had no impact on other non-cognitive skills, such as self-esteem, altruism or friendliness.

In secondary school, the boys had improved grades, were 15 per cent less likely to repeat grades and received less special education class assignments, suggesting that the early learning intervention led to a positive impact on school performance.

The boys benefitting from the intervention were 14 percentage points more likely to receive a secondary school diploma than participants in the control group. They also reported more years spent full-time in school or work. The boys were also 16 per cent more likely to join a social group as young adults. They were arrested for one crime less per person compared to the boys in the control group. Moreover, the intervention increased average yearly employment income by about 20 per cent and decreased average yearly social transfers by almost 40 per cent (Algan et al., 2022).

9. Provide compelling interventions connecting learners to the world of work including through vocational education and training that meets labour market needs and addresses gender barriers to participation.

At the upper secondary level, ensuring completion is more difficult than at lower education levels because in most countries the upper secondary education level is past the compulsory schooling age. What seems crucial at this level is the provision of attractive alternatives involving a connection to the world of work.

While a variety of methods can be used by schools to connect students to the world of work, such as mentoring, internships and career days, this review found empirical evidence of success for vocational education and training interventions.

Offer vocational education and training.

Lamb (2008) shows that countries with separate vocational education and training pathways seem to have higher overall rates of graduation. Technical and Vocational Education and Training (TVET) can respond to several of the factors leading to early school leaving. It can increase the motivation to learn and can offer students more flexibility and a more appropriate pedagogy. It can also address the labour market aspirations of young people, particularly when it is combined with on-the-job training (European Commission, 2013).

Many more boys than girls participate in TVET fields in many contexts (UNESCO, 2020). Gender-transformative strategies will be required to increase the participation of girls in these fields.

10. Conduct rigorous evaluations and research to identify what works to retain and get girls and boys back to school and learning, with a focus on girls and boys at high risk of learning poverty and dropout. Collect more data on socio-emotional skills.

Policy evaluation requires credible identification strategies. As discussed by Damon et al. (2016) credible studies are those based on quantitative analyses, through which the causality between intervention and educational outcome has been established using one of the following methods: randomized control trials; instrumental variables; regression discontinuity design; and differences-in-differences. Unfortunately, these studies are relatively rare (UNESCO, 2022a).

Relatively rare also are evaluations that quantify the benefits obtained by individuals who have achieved the target qualification, relative to those accruing when the target is not reached. On top of this, it is often unclear if the benefits outweigh the programme costs. Unfortunately, the virtual absence of robust studies providing guidance for policy-makers can lead to an inefficient allocation of scarce public resources.

Thus, additional rigorous evaluations and research need to be conducted to identify what works to retain and get girls and boys back to school and learning. Such efforts should focus on girls and boys at high risk of learning poverty and dropout. Research and evaluation must also collect more data on socio-emotional skills.

Summary of recommendations

1. In line with SDG 4, provide 12 years of free, publicly-funded, inclusive, equitable and quality education without discrimination by making school affordable and reducing the direct and opportunity costs of schooling, paying attention to gender-specific needs. It is recommended that governments allocate at least 4 to 6 per cent of their GDP to education.
2. Create gender-transformative, inclusive and empowering learning environments that challenge unequal power dynamics, gender bias and stereotypes, including through curricular and pedagogical approaches that respect difference and promote equality.
3. Intervene early by investing in early childhood education for girls and boys to lay a foundation for learning and harness its potential to tackle gender inequities and harmful gender norms from an early age.
4. Avoid early tracking, provide academic support and second chance options for girls and boys who missed out on education or whose education was interrupted.
5. Improve school infrastructure, including providing single-sex water and sanitation facilities, reducing class sizes, especially in disadvantaged areas, and ensuring shorter distances to school.
6. Improve the quality of education by hiring a qualified, motivated and diverse teacher workforce and ensure that they attend school, are fair and engage all students equally; support teachers' continuous professional development so they can unlock all learners' potential.
7. Raise awareness among local communities and parents of the importance of girls' and boys' completion of a full cycle of basic education and engage the community and parents in school activities and management.
8. Address girls' and boys' health and mental well-being, including through preventing and responding to all forms of school-related gender-based violence, comprehensive sexuality education and socio-emotional skills development.
9. Provide compelling interventions connecting learners to the world of work including through vocational education and training that meets labour market needs and addresses gender barriers to participation.
10. Conduct rigorous evaluations and research to identify what works to retain or get girls and boys back to school and learning, with a focus on girls and boys at high risk of learning poverty and dropout. Collect more data on socio-emotional skills.

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Appendix: Methodology

This annex details the methodology used to estimate the global and country private, fiscal and social costs of early school leavers and children lacking basic cognitive and socio-emotional skills in this paper, *The price of inaction: The global private, fiscal and social costs of children and youth not learning*.

For convenience, the annex uses the acronyms ESL for "early school leavers," LBS for "children with less than basic skills" and SES for "socio-emotional skills." Section A discusses methodologies related to ESL and LBS, while Section B discussed methodologies for SES.

Other acronyms used in the annex on methodology are:

GDP	gross domestic product
IMF	International Monetary Fund
IV	instrumental variables
GLM	generalized linear models
OLS	ordinary least squares
PISA	Programme for International Student Assessment

A. The economic costs of early school leavers and children with less than basic skills

The costs of ESL and LBS in terms of a given outcome, for instance labour income, were obtained by comparing the current situation (or status quo scenario, characterized by the level of ESL or LBS recorded in 2021), the reference year, with a counterfactual situation or intervention scenario, where ESL or LBS is assumed to be absent, all other conditions being equal. The difference in the outcome levels between the two situations is attributed to the presence of ESL or LBS and is interpreted as the cost of ESL or LBS.

Generally, this idea is captured by the notation $\Delta X = X^1 - X^0$, where X is a generic outcome, and X^1 and X^0 are its values in the status quo and in the intervention scenarios.

For the remainder of this annex, when only ESL is used in the explanations, the understanding is that the same applies to LBS.

Definitions

The aggregate **private economic welfare** in each country is given by

$$U = (Y - T + W_f) - H_p - C_p - E_p \quad \text{(A.1)}$$

where $Y - T + W_f$ is income net of taxes T and transfers W_f (i.e., disposable income), H_p is private health expenditure, C_p is the private cost of crime victimization and E_p is the private expenditure for education.

The **private costs of ESL** are given by

$$\Delta U = \Delta(Y - T + W_f) - \Delta H_p - \Delta C_p - \Delta E_p \quad \text{(A.2).}$$

These private costs consist of changes in disposable income $\Delta (Y - T + W_f)$, private health expenditures ΔH_p, the victim costs of crime ΔC_p and private educational expenditures ΔE_p. Overall, ΔU is expected to be negative (a welfare loss).

The **government budget surplus** (or deficit) is defined as

$$B = T - G \quad \text{(A.3)}$$

where T are fiscal revenues and G is government spending, which includes welfare transfers W_f, public health expenditures H_f, public costs for law and order C_f and public education expenditures E_f.

The change in the budget surplus or deficit due to ESL is the fiscal cost of ESL and is given by

$$\Delta B = \Delta(T - G) = \Delta T - \Delta W_f - \Delta H_f - \Delta C_f - \Delta E_f \quad \text{(A.4).}$$

The **social costs of ESL** (ΔS) add up private (ΔU) and fiscal costs (ΔB), and also include the productivity loss associated with a less skilled labour force (ΔTFP) and the costs of raising taxes to pay for public services ($\lambda \Delta T$), which decline when ESL is higher than zero because of the reduction of tax revenues. Therefore, the social costs of ESL are

$$\Delta S = (\Delta U + \Delta B) + \Delta TFP - \lambda \Delta T \quad \text{(A.5).}$$

The macroeconomic approach

The macroeconomic approach adopted in the report is based on and extends the work of Barro and Lee (2013), Patrinos and Psacharopoulos (2011), Thomas and Burnett (2013) and Hanushek and Woessmann (2012, 2015).

Each cost item Q is expressed in terms of per capita GDP. For instance, average labour income can be written as Q=λ*GDP, where λ is the share of average labour income on per capita GDP (the *two-factor model*). The effect of ESL on Q is the combination of two effects: a) the effect of ESL on per capita GDP; and b) the effect of ESL on the share λ.

Quantities Q^1 and Q^0 are the costs when ESL is at its current level, denoted ESL^1, (the *status quo scenario*) and when ESL is set at zero (the *intervention scenario*). GDP^1 and GDP^0 are the values of per capita GDP when ESL is at its status quo and intervention level, respectively. The change in cost Q induced by increasing ESL from its intervention value (0) to its status quo value (the current value) is

$$\frac{\Delta Q}{\Delta ESL} = \frac{Q^1 - Q^0}{ESL^1} = \left[\frac{(\lambda^1 - \lambda^0)}{ESL^1} * GDP^1 + \frac{(GDP^1 - GDP^0)}{ESL^1} * \lambda^0\right] \quad \text{(A.6)}.$$

The estimate of (A.6) can be decomposed into the estimate of the effect of ESL on per capita GDP, that is $\frac{(GDP^1 - GDP^0)}{ESL^1}$, and the effect of ESL on the share λ, that is $\frac{(\lambda^1 - \lambda^0)}{ESL^1}$.

The effect of ESL on per capita GDP

To estimate the effect of ESL on (real) per capita GDP, Hanushek and Woessmann (2012) consider a long run growth regression model that related ESL to the annual growth rate of per capita GDP.

The average annual growth rate of per capita GDP between 2001 and T in country *i* and is $g_i = \frac{1}{T-2001}\frac{GDP_{iT} - GDP_{i2001}}{GDP_{i2001}}$ and ESL_{i2001} is the share of early school leavers in 2001 in country *i*.

Typically, T is the last year for which GDP data are available. The choice of 2001 as starting point is also mainly dictated by data availability.

The following linear model is estimated

$$g_i = \pi_0 + \pi_1 \ln(GDP_{i2001}) + \pi_2 ESL_{i2001} + \pi_3 X_i + \varepsilon_i \quad \text{(A.7)}$$

where *ln* is for logarithm, GDP_{i2001} is the start-of-period (2001) (log-) per capita GDP and X_i are country characteristics.

Parameter is expected to be negative if countries with a lower initial per capita GDP grow faster (*convergence*). Parameter π_2 is also expected to be negative if higher ESL reduces economic growth and places a country on a path converging to a lower steady state value of GDP.

The estimated growth rate $\hat{g}_i$ is applied to the most recent available level of per capita GDP, ESL and *X* to forecast the *levels* of GDP between 2021 and 2041 in the status quo and in the intervention scenario in each country, assuming that the process of economic growth that prevailed between 2001 and 2021 continues between 2021 and 2041.

When predicting $\hat{g}_i$ for the period between 2021 and 2041 using Eq. (A.7), the levels of GDP, ESL and X specified in the equation are those observed in 2021.

The effect of ESL on the share λ

For a given cost item Q, the effect of ESL on the share λ is obtained from the following linear specification

$$\lambda_i = \beta_0 + \beta_1 ESL_i + \beta_2 W_i + \mu_i \quad \text{(A.8)}$$

where W_i are appropriate country-specific controls and the parameter β_1 is the effect of ESL on λ.

Determination of the cost item Q

Using the estimates of (A.7) and (A.8), the expected values of per capita GDP and the share λ from 2021 to 2041 are estimated for both scenarios. For each year between 2021 and 2041, each scenario and each country, the quantities $Q^j = \lambda^j GDP^j$, with *j=0,1*, are computed and the cost of ESL for each cost item Q is obtained as the difference $(Q^1 - Q^0)$.

The present discounted value (PDV), the sum of current and future differences, with future differences discounted using the interest rate of annual differences over the twenty-year period, is the *lifetime cost* of ESL. Since the pivotal year is 2021, this year is treated as the present, and costs accruing in later years are discounted accordingly.

The *annual cost* of ESL is the value of $(Q^1 - Q^0)$ in 2030, the mid-point of the period 2021-2041, discounted at the reference year 2021.

The predicted value of Q at time 2021+t, where t=0,…,20, under the status quo scenario is

$$Q^1_{2021+t} = \lambda^1_{\square}(1 + tg^1_{\square})GDP_{2021} \quad \text{(A.9)}$$

where and are the predicted annual rate of growth of per capita GDP and the predicted cost share under this scenario. The predicted value of Q under the intervention scenario is instead

$$Q^0_{2021+t} = \lambda^0_{\square}(1 + tg^0_{\square})GDP_{2021} \quad \text{(A.10)}$$

where $\hat{g}^0$ and λ^0 and are the predicted annual rate of growth of per capita GDP and the predicted cost share under this scenario.

The estimated lifetime cost *LQ* is given by

$$LQ = \sum_{t=0}^{20}(Q_{2021+t}^{1} - Q_{2021+t}^{0})\frac{1}{1+rt} \quad \text{(A.11).}$$

Where $\frac{1}{1+rt}$ is the discount factor and r is the real rate of interest. The annual cost AQ, measured in 2030 and discounted in 2021, is

$$AQ = \frac{Q_{2030}^{1} - Q_{2030}^{0}}{1+9r} \quad \text{(A.12).}$$

The lifetime cost, relative to lifetime GDP forecasted by the IMF (2023) is

$$RLQ = \frac{\sum_{t=0}^{20}(Q_{2021+t}^{1} - Q_{2021+t}^{0})\frac{1}{1+rt}}{\sum_{t=0}^{20} GDP_{2021+t}^{IMF}\frac{1}{1+rt}} \quad \text{(A.13)}$$

and the average annual cost, relative to 2030 GDP, is

$$RAQ = \frac{Q_{2030}^{1} - Q_{2030}^{0}}{GDP_{2030}^{IMF}} \quad \text{(A.14).}$$

Estimates by gender

By adapting of the procedure illustrated above, it is possible to estimate the economic costs accruing to the entire population that are due to girls' and boys' ESL.

To evaluate the private, fiscal and social costs of girls' and boys' ESL, the gender specific intervention scenarios are defined as: a) girls' ESL is at its 2021 value while boys' ESL is equal to zero ; and b) girls' ESL is equal to zero while boys' ESL is at its 2021 value. Since ESL is given by

$$ESL = s_m ESL_m + (1-s_m)ESL_f \quad \text{(A.15)}$$

where the subscript *m* is for boys and s_m is the share of boys in the relevant population, the predicted growth rate of per capita GDP when boys' ESL is set at zero is

$$\hat{g}_M^0 = \hat{\pi}_0 + \hat{\pi}_1 \log(GDP_{2001}) + \hat{\pi}_2(1-s_m)ESL_f + \hat{\pi}_3 X_{\square} \quad \text{(A.16).}$$

For girls we have instead

$$\hat{g}_F^0 = \hat{\pi}_0 + \hat{\pi}_1 \log(GDP_{2021}) + \hat{\pi}_2 s_m ESL_m + \hat{\pi}_3 X_{\square} \quad \text{(A.17).}$$

Similarly, the predicted values of λ in the intervention scenario are

$$\hat{\lambda}_M^0 = \hat{\beta}_0 + \hat{\beta}_1(1-s_m)ESL_f + \hat{\beta}_2 W_i \quad \text{(A.18)}$$

and

$$\hat{\lambda}_F^0 = \hat{\beta}_0 + \hat{\beta}_1 s_m ESL_m + \hat{\beta}_2 W_i \quad \text{(A.19).}$$

The predicted value of Q by gender in the status quo at time 2021+t, where t=0,…,20, is given by (A.9). The predicted value of Q under the intervention is

$$Q_{2021+t}^{0d} = \hat{\lambda}_d^0(1 + t\hat{g}_d^0)GDP_{2021} \quad \text{(A.20).}$$
where $d = M, F$

The sex-specific estimated lifetime cost by gender is given by

$$LQ_d = \sum_{t=0}^{20}(Q_{2021+t}^{1} - Q_{2021+t}^{0d})\frac{1}{1+rt} \quad \text{(A.22).}$$

Where is the discount factor and *r* is the real rate of interest. The sex-specific average annual cost, measured in 2030, is

$$AQ_d = Q_{2030}^{1d} - Q_{2030}^{0d} \quad \text{(A.23).}$$

The sum $LQ_M + LQ_F$ is only approximately equal to *LQ*. The same holds for average annual costs. The approximation is due the non-linear relationship between ESL and each cost. Intuitively, this means that the effect of simultaneously removing ESL for both genders may be larger than the one obtained by removing separately girls' and boys' ESL.

In most cases, the gap between the sum of the gendered costs and the overall costs of ESL is moderate. However, a notable exception is observed in fiscal costs, where a significant gap exists due to the more pronounced non-linearity in this cost.

Note: In 2021, the Afghan government enacted a policy that suspended girls' access to secondary education and in 2022 another policy suspended access to higher education. Since there are no indication that these suspensions will be removed in the future, for Afghanistan the status quo scenario is defined assuming that girls' ESL remains at 100 per cent for the entire forecasting period.

Global costs

Annual and lifetime cost items are aggregated to obtain country-specific private, fiscal and social costs. The global private, fiscal and social costs are obtained by further aggregating country-specific costs, using each country's share of total population as weight. When weighting by population, the calculation of global costs gives more prominence to low-income but densely populated countries, such as China, India or Nigeria.

Alternatively, using the country's share of global GDP as the weighting factor would have resulted in high-income countries, such as the United States of America, playing a more prominent role in determining global costs.

Estimation: Technical details

This section explains the details regarding the estimation of equations (A.7) and (A.8).

Causal inference

The key explanatory variable in Eq. (A.7) is ESL_{i2001} and the parameter of interest is π_2. Estimating the causal effect of ESL is complicated because ESL_{i2001} is correlated with unobservable country characteristics omitted from (A.7). In addition, ESL_{i2001} could be affected by measurement errors. Finally, ESL_{i2001} could suffer from reverse causation (for instance, expectations of sustained economic growth and expanding employment opportunities could decrease the opportunity cost of early school living and increase ESL).

These issues are addressed using two complementary approaches. Initially, Equation (A.7) is estimated using Ordinary Least Squares (OLS), and the potential effects of un-observables are evaluated using the Oster test (Oster, 2019). This procedure sets bounds on the true value of the essential parameter under two contrasting scenarios.

In the first scenario, which assumes the absence of un-observables, the OLS estimate, indicated by $\widehat{\pi_2}$, is consistent. The estimated R-squared in this case is referred to as $\hat{R}$. In the alternative scenario, where unobservables are present and are assumed to have an equal impact on the outcome as observables (delta equals 1, according to Oster's terminology), the R-squared is set, following Oster's suggestion, at Rmax = min (1.3$\hat{R}$; 1). These assumptions yield an alternate estimate of π_2, labeled $\widetilde{\pi_2}$. If the interval defined by $[\widehat{\pi_2}, \widetilde{\pi_2}]$ does not include zero, factoring in unobservables does not modify the direction of the OLS estimates.

Next, identification challenges are approached by using instrumental variables (IV), or variables which correlate with ESL but not with the growth rate, conditional on ESL—the so-called exclusion restriction. The chosen instrument is the pupil-teacher ratio in upper secondary schools, obtained from the UNESCO statistical database. The expectation is that a reduced pupil-teacher ratio enhances student learning and decreases ESL.

However, a concern is that the selected instrument fails to satisfy the exclusion restriction if it affects growth independently of ESL. To address this concern, partial identification methods proposed by Conley (2012) are applied, which assess the resilience of IV estimates to minor deviations from the exclusion restriction, that is, when the instrument has a minor direct impact on the outcome.

Following Conley (2012), this study calculates the highest direct effect that still allows a statistically significant influence of ESL on the outcome to be observed. The procedure suggested by Nevo and Rosen (2012) is also implemented to establish bounds for π_2, under the assumptions that: a) the direction of the correlation between the endogenous variable ESL_{i2020} and the error term ε is the same as the one between the selected instrument and ε; and b) the error term is less associated with the instrument than ESL.

The effect of ESL and LBS on GDP growth: Estimates and tests

The vector of controls X in (A.7) includes: the log of population aged 15 plus (average 2000-2021); the ratio of government consumption to GDP (average 2000-2021); the ratio of the capital stock to GDP (average 2000-2021); the degree of openness, measures at the sum of the ratios of imports and exports to GDP; the log of the international property rights index, which measures the degree of protection of these rights (Property Rights Alliance, 2023); a binary variable indicating whether a country has never been colonized by a foreign power; and a binary variable measuring whether the share of land in tropical or sub-tropical areas is above the sample median. The summary statistics of these variables are shown in **Table 1**.

Table 1: Summary statistics of the variables in Eq. (A.7)

	Number of observations	Mean	Standard deviation	Minimum	Maximum
GDP per capita growth	159	0.032	0.034	-0.026	0.186
Share of children with less than basic skills	159	0.616	0.290	0.065	0.993
Share of early school leavers	156	0.572	0.291	0.077	0.980
Share of out of school children	154	0.399	0.262	0.000	0.955
Share of students with less than basic skills	159	0.577	0.280	0.032	0.976
Degree of economic openness	159	0.878	0.547	0.211	3.631
Log (International property rights index)	159	1.506	0.453	-1.890	2.601
Timing of independence: old	159	0.314	0.466	0.000	1.000
Log capital / GDP ratio	159	3.154	0.272	2.305	3.954
Log government consumption / GDP ratio	159	-1.885	0.369	-2.922	-0.192
Log population	159	15.794	1.594	12.506	20.800
Higher than median share of land in tropics	159	0.478	0.501	0.000	1.000

Source: Computation by the authors using the data listed in the body of the report in **Table 1**: Data summary.

Table 2 shows the estimated effects of ESL and LBS on GDP growth as well as the sensitivity tests. The first two rows in the table present the ordinary least squares (OLS) estimates, both with and without the covariates included in vector X, showing that both ESL and LBS reduce annual GDP growth. The Oster, 2019, test suggests that these estimates have limited sensitivity to the omission of unobservable variables, as the bounding set defined by the test never includes zero.

The second part of the table shows the IV estimates. As mentioned above, ESL and LBS are instrumented by the pupil-teacher ratio in upper secondary education. The instrument is not weak, as the F-statistic in the first stage regression is always above 10. IV estimates, which identify causal effects if the exclusion restriction holds, indicate that ESL and LBS have a negative and statistically significant effect on annual GDP growth. The size of these effects is much larger than the OLS estimates, and ranges between 0.128 and 0.161 (with covariates included).

The test by Oster (2019), implies that the correlation between the metrics of poor education and the error term in equation (A.7) is negative. The inclusion of controls makes IV estimates more negative, suggesting that the correlation between the instrument and the error term is positive. Hence, the condition required by Nevo and Rosen (2012) on the concordance of the signs of the relevant correlations is not met. Therefore, it is not possible to bound the true effect of the share of early school leavers or of children with less than basic skills.

However, since the exogeneity condition is more likely to be satisfied when controls are added, and IV estimates become more negative as controls are included, it can be argued that, if anything, the findings in the table underestimate the true effects of ESL and LBS (in absolute value). In other words, the IV estimates shown in the table are likely to be conservative.

Finally, the Conley (2012) test verifies whether the estimated sign of the effect of poor education is robust to small violations of the exclusion restriction. These violations are defined in terms of the reduced form effect of the instrument, which compounds two components: 1) the instrument's effect on GDP growth mediated by ESL and LBS; and 2) a possible direct (i.e., unmediated) effect.

The reduced form effect is -0.0014. The IV estimates remain negative and statistically significant even if a direct effect of the instrument exists and is relatively large. For LBS, the largest deviation from the exclusion restriction compatible with a statistically significant negative effect of poor education on GDP growth is 26.9 per cent of the reduced form effect. The corresponding value for ESL is 27.9 per cent.

Table 2: The effect of early school leavers and children with less than basic skills on annual GDP growth

	Children with less than basic skills	Early school leavers
Ordinary least squares		
Without controls	-0.0900***	-0.0689***
	(0.016)	(0.012)
With controls	-0.0864***	-0.0681***
	(0.014)	(0.013)
Oster (2019) beta	-0.0804	-0.0672
Instrumental variables		
Without controls	-0.1532***	-0.1081***
	(0.048)	(0.034)
With controls	-0.1607***	-0.1282***
	(0.047)	(0.038)
Reduced form effect of the instrument	-0.0014	
Conley (2012) deviation (%)	26.9	27.9
F stat. first stage	10.77	13.96
Obs.	159	156

Notes. One, two and three stars are for statistical significance at the 10, 5 and 1 per cent level of confidence, respectively. All specifications include the log of 2001 per capita GDP in USD. The specification "With controls" includes the average in the period between 2001 and 2021 of the log of population aged 15 plus; the ratio of government consumption to GDP; the ratio of the capital stock to GDP; the degree of openness (measured as the sum of the ratios of imports and exports to GDP); the log of the international property rights index, which measures the degree of protection of these rights (Property Rights Alliance, 2022); a binary variable indicating whether a country has never been colonized by a foreign power; and a binary variable measuring whether the share of land in tropical or sub-tropical areas is above the sample median.

Source: Computation by the authors.

The effect of ESL and LBS on estimates of monetary and non-monetary outcomes (as shares of GDP)

This sub-section describes the estimates of the effect of ESL and LBS on the following monetary and non-monetary outcomes: the labour share on GDP; the ratio of income taxes to GDP; the share of the government surplus or deficit on GDP; social transfers on GDP; public and private health expenditure on GDP; public and private education expenditure on GDP; public expenditure on law and order on GDP; the rate of homicides, robberies, sexual and other assaults per 1,000 inhabitants; the corruption index; tax morale; the share of NEET (in logs); and early pregnancies (in logs).

Monetary outcomes are expressed as shares of GDP ($\boldsymbol{\lambda}$). When these shares are close to zero, which happens in all cases except the labour income share, the estimates of the effects of ESL and LBS on $\boldsymbol{\lambda}$ are obtained using generalized linear models (GLM) rather than ordinary least squares (OLS). In these regressions, the covariates are those used in Eq. (A.7), with the addition of current per capita GDP. Results are shown in **Table 3**.

The effects of ESL or LBS on non-monetary outcomes (lower panel of **Table 3**) are estimated using the IV strategy discussed above, which consists of instrumenting ESL or LBS with the pupil-teacher ratio in upper secondary education. Since this approach produces very unsatisfactory results for the rate of homicides per 1,000 inhabitants, for this variable, OLS estimates are used. For the rates of sexual violence, physical assaults and robberies per 1,000 inhabitants, expressed as shares of the rate of homicides, OLS are also used. **Table 3** reports the estimates of parameter β_1 in Eq. (A.8) both for ESL and for LBS.

Table 3: The effects of ESL and LBS on shares λ and on non-monetary outcomes

	Early school leavers	Children with less than basic skills	Type of estimate
Labour share of GDP	-0.051	-0.084**	ordinary least squares
	(0.034)	(0.042)	
Income taxes on GDP	-0.158***	-0.197***	generalized linear models
	(0.042)	(0.058)	
Government surplus or deficit (share of GDP)	-0.064*	-0.129**	ordinary least squares
	(0.033)	(0.050)	
Social transfers on GDP	-0.025**	-0.009	generalized linear models
	(0.009)	(0.012)	
Public health expenditures on GDP	-0.021**	-0.017	generalized linear models
	(0.008)	(0.013)	
Public education expenditures on GDP	-0.002	-0.007**	generalized linear models
	(0.002)	(0.003)	
Public expenditures on law and order on GDP	0.007*	0.005	generalized linear models
	-0.004	-0.006	
Private health expenditures on GDP	-0.008*	-0.013*	generalized linear models
	(0.004)	(0.007)	
Private expenditure in education	-0.002***	0.0003	generalized linear models
	(0.0006)	-0.0007	
Homicides (per 1,000 inhabitants)	0.231	1.913***	ordinary least squares
	(0.493)	(0.630)	
Corruption index	9.701**	10.240**	instrumental variables
	(4.295)	(4.619)	
Tax morale	-0.073	-0.077	instrumental variables
	(0.702)	(0.771)	
Log (NEET)	0.746***	0.933***	instrumental variables
	(0.272)	(0.318)	
Log (early pregnancies)	2.458***	2.993***	instrumental variables
	(0.500)	(0.533)	

Notes. For early pregnancies, female ESL and LBS are used. One, two and three stars are used to represent statistical significance at 10, 5 and 1 per cent level of confidence, respectively.

Source: Computation by the authors.

This report computes the monetary costs of crime victimization by using previous research by McCollister et al. (2010) and Viscusi et al. (2017) who estimate the Value of Statistical Life by country. While crime victimization does not coincide with the full economic cost of crime, it nonetheless represents its largest share (Anderson, 2021).

B. The effect of socio-emotional skills on per capita GDP

In principle, SES can affect per capita GDP both directly, conditional upon other measures of education such as ESL and LBS, and indirectly, by affecting either ESL or LBS.

How SES is measured

The measure of SES is the Big Five Index, derived from students' answers to the PISA 2018 questionnaire and normalized to range between 0 and 100 points. The Big Five Index corresponds to the principal component derived from the shares of student surveyed in PISA 2018 with low conscientiousness, low extraversion, high neuroticism, low openness and low agreeableness.

The first measure is the country-specific share of students with low conscientiousness. This is defined as the percentage who disagree or strongly disagree with at least half of the following questions: 1) "Once I start a task, I persist until it is finished;" 2) "I find satisfaction in working as hard as I can;" 3) "Part of the enjoyment I get from doing things is when I improve on my past performance;" 4) "If I am not good at something, I would rather keep struggling to master it than move on to something I may be good at."

The second measure is the share of pupils with low extraversion, or the percentage who disagree or strongly disagree with at least half of the statements: 1) "I make friends easily at school;" 2) "I feel like I belong at school;" and 3) "Other students seem to like me," and the percentage who agree or strongly agree with the statement: 4) "I feel lonely at school."

The share of students with high neuroticism is computed, by sex, as the percentage who agree or strongly agree with at least half of the following statements: 1) "When I am failing, I worry about what others think of me;" 2) When I am failing, I am afraid that I might not have enough talent;" and 3) When I am failing, this makes me doubt my plans for the future," plus the percentage who disagree or strongly disagree with at least 50 per cent of the statements: 4) "I usually manage one way or another;" 5) "I feel that I can handle many things at a time;" and 6) "When I am in a difficult situation, I can usually find my way out of it."

The share of students with low openness is the percentage who does not answer "very much like me" or "mostly like me" in at least half of the following statements: 1) "I want to learn how people live in different countries;" 2) "I want to learn more about the religions of the world;" 3) I am interested in how people from various cultures see the world;" 4) "I respect people from other cultures as equal human beings;" 5) "I treat all people with respect regardless of their cultural background;" 6) "I give space to people from different cultures;" and 7) "I value the opinions of people from different cultures."

Finally, the share of students with low agreeableness is the percentage who do not answer "very much like me" or "mostly like me" in at least half of the following statements: 1) "I try to look at everybody's side of a disagreement before I make a decision;" 2) "I believe that there are two sides to every question and try to look at them both;" 3) "I sometimes try to understand my friends better by imagining how things look from their perspective;" 4) "Before criticizing somebody, I try to imagine how I would feel if I were in their place;" 5) "When I am upset at someone, I try to take the perspective of that person for a while;" 6) "I can change my behaviour to meet the need of new situations;" 7) "I can adapt to different situations even when under stress or pressure;" 8) "I can adapt easily to a new culture;" 9) "When encountering difficult situations with other people, I can think of a way to resolve the situation;" and 10) "I am capable of overcoming my difficulties in interacting with people from other cultures."

The upper bound of the index (1) is attained when the shares of student with low conscientiousness, extraversion, openness and agreeableness, and the share of students with high neuroticism are all equal to zero. Symmetrically, the lower bound (0) is attained when these shares are all equal to 1.

The effect of SES on GDP growth

Cross-country data are utilized to estimate both indirect and direct effects of SES on GDP. Unlike the previous analysis which focuses on causal effects, the approach here relies on associations due to the difficult task of identifying an exogenous source of variation for SES. Consequently, the interpretation of these results should be approached with care.

Whether SES has a direct effect on GDP growth is investigated by regressing GDP growth on SES, controlling for ESL or LBS. The estimates in **Table 4** show no direct influence of SES on growth, suggesting that if any effect exists it is mediated by ESL and LBS.

Table 4: The direct effect of socio-emotional skills on GDP growth

	(1) Annual GDP growth rate	(2) Annual GDP growth rate
Big Five Index x 1000	-0.484	-0.621
	(0.449)	(0.461)
ESL	-0.079*	
	(0.041)	
LBS		-0.047**
		(0.018)
Controls	Yes	Yes
Observations	57	58
R-squared	0.598	0.576

Notes. Robust standard errors are within parentheses. Each regression includes a constant, real GDP per capita in 2001, the average degree of openness, the logarithm of average population aged 15+, the log of average capital to GDP ratio, the log of the average ratio between government consumption and GDP, the log of the international property rights index and binary variables for locations with a higher than median percentage of land in tropical and sub-tropical areas and for countries that have not become independent only recently.

Source: Computation by the authors.

To assess whether SES has an indirect impact on GDP growth, both ESL and LBS are regressed on the Big Five Index and the usual set of controls. **Table 5** presents the estimates of the Big Five index effects on ESL (column 1) and LBS (columns 2).

The table shows that the Big Five Index is negatively correlated with ESL and LBS. This correlation is, however, statistically significant only for LBS. The estimates suggest that a 10 percentage points increase in the index is associated with a 2.3 percentage points reduction in ESL and an almost 6 percentage points reduction in LBS. The robustness of these findings to the presence of un-observables is evaluated using the Oster test discussed above. As indicated in the **Table 5**, the estimates are robust to the presence of un-observables.

Table 5: The indirect effect of socio-emotional skills on early school leavers and children with less than basic skills

	(1) Early school leavers	(2) Children with less than basic skills
Big Five Index x100	-0.231	-0.597***
	(0.171)	(0.171)
Controls	Yes	Yes
Observations	58	59
R-squared	0.559	0.678
Oster's estimate x 100	-0.220	-0.460

Notes. Robust standard errors are within parentheses. Each regression includes a constant, real GDP per capita in 2001, the average degree of openness, the log of average population aged 15+, the log of average capital to GDP ratio, the log of the average ratio between government consumption and GDP, the log of the international property rights index and binary variables for locations with a higher than median percentage of land in tropical and sub-tropical areas and for countries that have become independent only recently.

Source: Computation by the authors.

GDP loss due to low SES

The GDP loss associated with low SES is estimated by calculating the levels of ESL and LBS corresponding to the current level of the Big Five Index (status quo scenario) and to the maximum attainable level of the Big Five Index (intervention scenario).

Next these values are plugged into equation (A.7) to compute the impacts on GDP growth in the two scenarios. The GDP loss due to the lack of SES is the difference between GDP in the status quo and the intervention scenario.

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BETTER POLICIES FOR BETTER LIVES

The Commonwealth

The price of inaction

The global private, fiscal and social costs of children and youth not learning

Education is a fundamental human right for all. The United Nations Sustainable Development Goal (SDG) 4 on education has received considerable attention since its adoption in 2015. But more than halfway through the implementation period, achieving the ambitious agenda of inclusive and equitable quality education for all by 2030 remains a significant challenge for countries around the globe. As this report shows, the US$10 trillion social cost of failing to educate all the world's children is just too high.

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Sustainable Development Goals