FALLING FURTHER BEHIND: THE COST OF COVID-19 SCHOOL CLOSURES BY GENDER AND WEALTH

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Falling further behind: The cost of COVID-19 school closures by gender and wealth

School closures during the COVID-19 pandemic led to losses equivalent to over half a year's worth of learning. This foregone learning will hamper students' productivity and ability to earn income in the future. Children from low-income households have less access to quality remote education, more exposure to economic hardship during COVID-19, and a greater tendency to drop out of school in response to the pandemic. Because of this, learning losses for students from the poorest quintile are 33% more than those for students from the richest quintile. These will translate into losses in expected earnings that are 47% more for the poorest students, exacerbating income inequalities. Estimated gender gaps in foregone learning are small but translate into earning losses that are 28% higher for girls than for boys because of the higher return on girls' education. While supply-side improvements in the quality of remote education reduce aggregate losses from school closures, inequality will grow if improvements largely benefit those who have more access to educational resources. Investments are necessary to ensure improvements benefit all students, including poor children and girls.

COVID-19 disrupted education in most of the world

Almost all economies implemented nonpharmaceutical interventions in 2020 to curb the spread of COVID-19.[1] These included community quarantines, curfews, travel restrictions, and school closures. Most empirical evidence points to these interventions having the intended proximate effect on social contact and viral transmission (Wang et al. 2021), albeit with substantial variation between and within economies and waning effectiveness over time. Nonpharmaceutical interventions have had knock-on environmental and economic effects (Mandel and Veetil 2020), some of which will propagate long after the pandemic ends (Pujol 2020).

The height of school closures was from March to May 2020, when about 70% of economies worldwide took the emergency measure of closing all schools to prevent COVID-19 infections. Over 60% of economies had kept schools closed, whether in part or in full, by June 2020. Since then, most economies started reopening schools for in-person classes, yet all schools remained closed in as many as 21% of economies and some schools stayed closed in as many as 50% of economies from June 2020 to October 2021 (Figure 1.3.1).

Setbacks in the early stages of life can have lasting effects. Foundational skills are the building blocks of other skills that schoolchildren can acquire as they grow older. If they miss the opportunity to learn these vital skills early in life, they will have to spend precious time catching up instead of progressing to next levels. Indeed, past episodes of school closures due to war or natural disaster had long-term impacts on student learning and lifetime earnings.[2]

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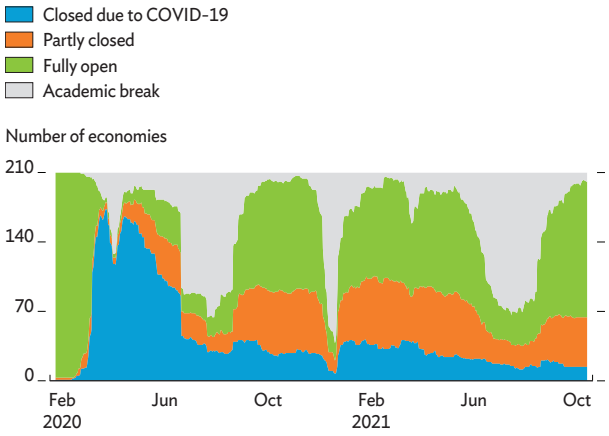
1 Oxford COVID-19 Government Response Tracker (accessed 31 October 2021).

2 See, for example, Ichino and Winter-Ebmer (2004).

Figure 1.3.1 Status of schools, February 2020 to October 2021

Most economies closed schools in Q2 2020 and some kept them closed through 2021.



COVID-19 = Coronavirus Disease 2019, Q = quarter.

Source: Authors based on data from *UNESCO Global Monitoring of School Closures* (accessed 17 November 2021).

The cost of school closures is borne unevenly. Students who have better access to alternative modes of education and adult supervision are in a better position to keep learning than those who have not. A wealth of evidence already shows that students from disadvantaged backgrounds have less access to remote learning opportunities (Azubuike, Adegboye, and Quadri 2021) and worse learning outcomes during the COVID-19 pandemic.[3]

This analysis of the cost of COVID-19 school closures by gender and wealth estimates the magnitude of inequality in learning and earning losses. While it is not surprising that disadvantaged groups are expected to suffer more from school closures, quantifying the inequality highlights the need for more concerted action to support innovative solutions and extend assistance where it is needed the most.

Measuring the losses in learning and earnings

To project the foregone learning that came with school closures, this analysis applies the framework in Azevedo et al. (2021) and uses data from UNESCO's Global Monitoring of School Closures to estimate the reduction in learning-adjusted years of schooling (LAYS)—a measure of learning that accounts for both the quantity and quality of education.

School closures affect LAYS in three ways. First, in the absence of distance learning and remedial education, every year of school closure lowers the expected years of schooling completed (quantity), which has a linear effect on learning (Filmer et al. 2020). This loss can be mitigated by continued remote education while schools remain physically closed. Second, school disruptions, together with economic shocks, lead to more students dropping out of school, thus reducing the average expected years of schooling for an economy. And third, school closures reduce the quality of learning due to the inefficacy of remote education compared with in-person classes. The following adjustments were made in estimating the losses in learning and earnings.

Learning adjustment

The effectiveness of remote education depends on two independent factors: access to remote instruction and the efficacy of remote learning. Early evidence on learning outcomes during the COVID-19 pandemic confirms that students gained less from remote education than from classroom learning. With distance learning, primary school students gained less than half of their learning from in-person classes in Switzerland (Tomasik, Helbling, and Moser 2021). Standardized test scores are lower among the cohort of students who learned remotely in several developed economies, including Belgium, Germany, and the Netherlands, where standardized exams were administered.[4] Math and reading achievement declined among students in Mexico (Hevia et al. 2021). Less engagement in education activities was documented in Ethiopia (Habtewold 2021).

3 See, for example, Andrabi, Daniels, and Das (2021) and Ichino and Winter-Ebmer (2004).

4 Belgium: Maldonado and De Witte (2021); Germany: Schult et al. (2021); the Netherlands: Engzell, Frey, and Verhagen (2021).

Evidence based on test scores in 2020 and 2021 are consistent with evidence before COVID-19's outbreak on the limited efficacy of remote education. These studies find a wide range of learning losses. After only 9 weeks of closures, average scores of primary students in the Flemish region of Belgium were 0.19 standard deviations lower in math and 0.29 standard deviations lower in Dutch compared with the previous cohort of students who were unaffected by school closures (Maldonado and De Witte 2021). Learning assessments done in 2019 and 2021 in Campeche and Yucatan, Mexico, showed reductions of 3%–23% in reading comprehension scores and 2%–70% in math scores, increasing with the subject's level of complexity (Hevia et al. 2021).

Because of the wide range of estimated learning losses following COVID-19 school closures, this analysis considers a range of possibilities and explores three scenarios—high, medium, and low—for the efficacy of remote education. These scenarios are based on evidence from the literature on efficacy of remote learning (Technical Appendix 1). These scenarios were factored into this analysis in estimating how well distance learning substitutes for in-person classes.

Dropout adjustment

To project the loss of LAYS in each economy from dropouts caused by the COVID-19 pandemic, the increase in dropout rates when income declines is measured. This is estimated by using a panel data regression of economies' out-of-school rates on GDP per capita over pre-pandemic years.[5] From this regression and the income shocks of 2020 and 2021, the change in out-of-school rates is estimated.[6] The dropout rate is approximated by dividing the change in the out-of-school rate by the ratio of pre-pandemic enrollment and out-of-school rates. The estimates show that on average 0.36% of primary students and 0.70% of secondary students dropped out due to COVID-19 income shocks in 2020 and 2021. Nationally representative data measured dropout rates of about 0.7% in Uganda (Uwezo Uganda 2021), 1.6% in Senegal (Mbaye et al. 2021), 2% in Ghana (Abreh et al. 2021), and up to 6% in Pakistan (Idara-e-Taleem-o-Aagahi 2021) and South Africa (Spaull et al. 2021). It is assumed that each new dropout loses the average years of schooling in their economy net of schooling years attained before the pandemic.[7]

This calculation understates the effect of school closures on dropping out because closures affect this through channels other than reduced household income, such as student demotivation. Studies of lower-middle income economies showing double-digit dropout rates in some contexts—for example, Dessy et al. (2021) for Nigeria—suggest that non-income channels may have been critical throughout the pandemic, but few report the dropout rate before COVID-19, making it difficult to draw firm conclusions or incorporate non-income channels into the dropout adjustment (Moscoviz and Evans 2022).

Differences by gender

The analysis considers two channels by which school closures affect boys and girls differently. First, access to remote education differs by gender, and this can be represented by the difference in internet access during the pandemic (Figure 1.3.2). This is because internet access is necessary for students to be able to participate in online learning, which is generally perceived as the most effective mode of remote education during the pandemic (UNESCO, UNICEF, and World Bank 2020). Second, girls have a higher propensity to drop out of school. A 1% drop in per capita income is associated with a 0.57% increase in the likelihood of girls being out-of-school versus 0.52% for boys of primary school age. Dropout rates for girls of secondary-school age also respond to income shocks more than boys of the same age group. It is likely that other non-income, social, and cultural factors caused more girls to drop out of school during the pandemic in some economies. Because these factors are beyond the scope of this analysis, the estimates likely understate the full extent of gender differentials in dropout rates.

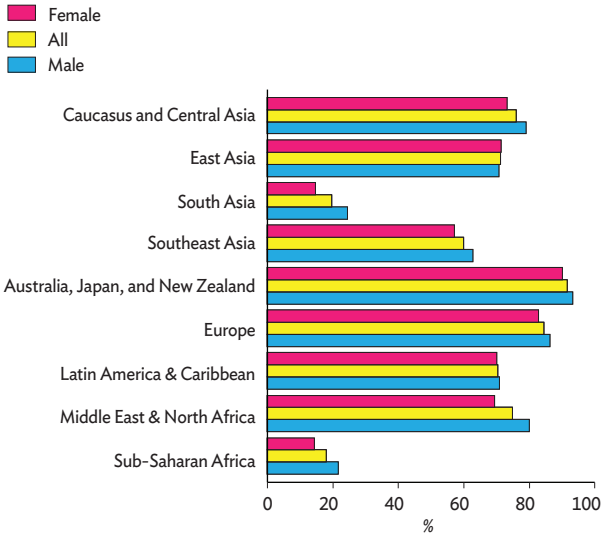
5 A log-log regression is used to estimate the elasticity of out-of-school rates with respect to GDP per capita.

6 International Monetary Fund. *World Economic Outlook Database*. October 2021.

7 Because the median age of students covered in this analysis is 10 years, the median years of schooling attained before the COVID-19 pandemic is assumed to be 5 years.

Figure 1.3.2 Internet users by region and gender, %

In most regions, girls have slightly lower internet access than boys.

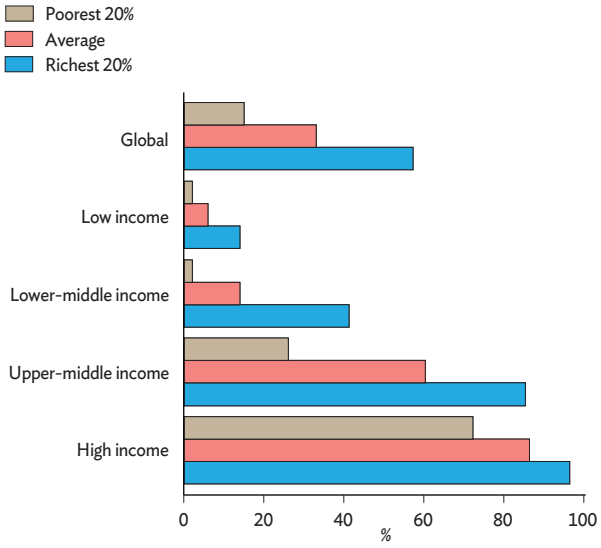


Note: Data on internet use by gender are not available for North America and the Pacific.

Source: International Telecommunications Union. *World Telecommunication/ICT Indicators Database* (accessed 22 October 2021).

Figure 1.3.3 School-age children with internet access at home, by wealth quintile

Poor children are about four times less likely than rich children to have internet access at home.



Source: UNICEF and International Telecommunication Union 2020.

Differences by wealth

Access to remote education is one channel through which school closures affect rich and poor students differently. UNICEF and International Telecommunications Union data show internet access at home is about four times higher for school-age children from the richest 20% of households than for children from the poorest 20%. The difference is most pronounced in middle-income economies (Figure 1.3.3).

While internet access at home is not the same as access to distance learning, it is a requirement for access to online learning via computer, tablet, or mobile phone. Lack of access means students need to resort to other modes of remote learning, such as paper-based modules, radio, or television. But under these alternatives, teachers cannot observe students or respond to their questions right away and students cannot immediately respond to teachers' questions or communicate their progress. Data on access to distance learning from the Asian Development Bank Institute's 2020 Households Survey are 70% correlated with internet access at home.

Poor students are also more likely to drop out during the COVID-19 pandemic because they are more sensitive to income shocks and these shocks are bigger than those affecting richer students. This higher sensitivity is accounted for by using data on out-of-school rates for the poorest and richest wealth quintiles and estimating their sensitivity to changes in GDP per capita. In addition, Furceri et al. (2021) showed that in response to previous pandemics, the richest quintile's share of income rises and the poorest quintile's share falls. Thus, poor students are much more likely to drop out in response to school closures not only because they are more sensitive to shocks but also because their shocks are bigger.

Earnings adjustment

Losses in learning can reduce future productivity and hamper the earning potential. Labor market compensation of workers typically rises with years of completed schooling. To measure the reduction in wages associated with foregone learning, economy- and gender-specific data on returns to education are applied to convert learning losses into lifetime earning losses.[8]

[8] Data on returns to education are based on Psacharopoulos and Patrinos (2018) and Montenegro and Patrinos (2014).

Because labor market return estimates are based on years of schooling completed and not LAYS, returns to LAYS are estimated by calibrating returns to years of schooling. If the return to 1 year of schooling is X%, and it takes Z years of schooling to complete one LAYS, then the returns to one LAYS can be approximated as Z * X%. Z is computed as the ratio of average years of schooling to LAYS in each economy. Earning losses are expressed in terms of constant 2020 US dollars.

Limitations of methodology

A limitation in assessing losses in learning and earnings is that it only accounts for losses in cognitive development. Psychosocial development and the development of soft skills are also acquired in schools, but there is much less evidence on how much the shift to remote education has affected these. In this sense, the full extent of losses is underestimated in this analysis.

The assessment of inequality in losses also has limitations. Rich households can afford better internet connection, which facilitates learning, meaning that inequality in internet access is even higher after adjusting for connection quality. Internet access, however, is an incomplete measure for gauging the efficacy of remote education. Richer households (and in many settings, boys) are more likely to have access to complementary inputs to learning, such as time, space, hardware, and private tutors. Learning efficacy itself (not just access) is likely to vary with gender and household wealth. But both go in the same direction, understating expected losses and expected inequality in losses.

Because data on partial school closures do not give a comprehensive account of the extent and coverage of closures within economies, this analysis treats partial closures uniformly. Each day of a partial school closure in this analysis is assumed to be equivalent to half a day of full closure, based on media reports and government advisories (Australian Government 2020; Inquirer Net 2021; Chopra 2021; Yoon 2020; Dagur 2021). In practice, partial closures can add to the inequality in learning losses as they affect one segment more (or less) than the others. This data limitation may lead to understated estimates of inequality.

A simulation model in Kaffenberger (2021) showed that a short period of school closures can lead to losses that accumulate over time even after schools have reopened. Three months of school closures were found to cause learning losses that accumulate up to 1.5 years of learning 7 years later because children miss out on foundational and essential skills and so they fall "further and further" behind (Kaffenberger 2021). This is another reason why the estimates in this analysis may be understated.

Remedial measures to recover lost learning can attenuate the long-term losses. Economies all over the world have started to undertake or plan strategies to make up for the damage caused by school closures. This analysis so far does not account for the effects of remedial measures, which have the potential to make a huge dent (Kaffenberger 2021). Rather, these estimates of long-term losses highlight the importance of effective action to recover lost learning.

Projecting the long-term effects of school closures comes with inherent limitations in the face of uncertainty and variety across different contexts. Even so, these findings draw attention to the magnitude of learning losses and call for measures to limit them.

Learning losses are substantial and are borne unevenly

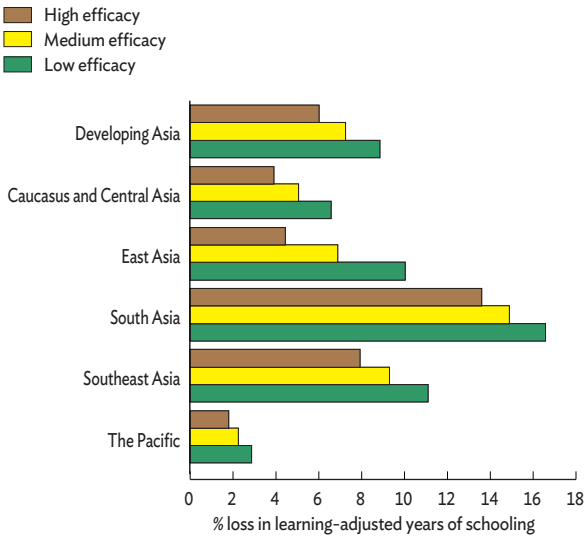
Four key findings can be drawn from this analysis:

Foregone learning due to COVID-19 school closures is estimated to have reached on average 0.57 LAYS for developing Asia and 0.52 LAYS for the world. School closures up to October 2021 are estimated to have led to foregone learning equivalent to 7% of the average LAYS before COVID-19's outbreak (Figure 1.3.4). These learning losses are expected to translate into earning losses equivalent to 6% of average pre-pandemic earnings in both developing Asia and the world (Figure 1.3.5). Expected losses in lifetime earnings reached $3.2 trillion in constant 2020 US dollars—equivalent to 13% of developing Asia's GDP in 2020. Technical Appendix 2 gives the expected losses by economy.

Figure 1.3.4 Projected foregone learning by region

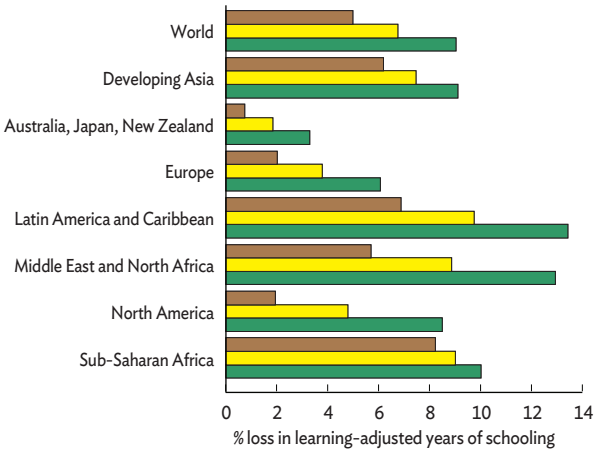
A. Developing Asia and subregions

Learning losses are equivalent to 7% of expected liftetime learning for developing Asia ...



B. World

... and 7% for the world.

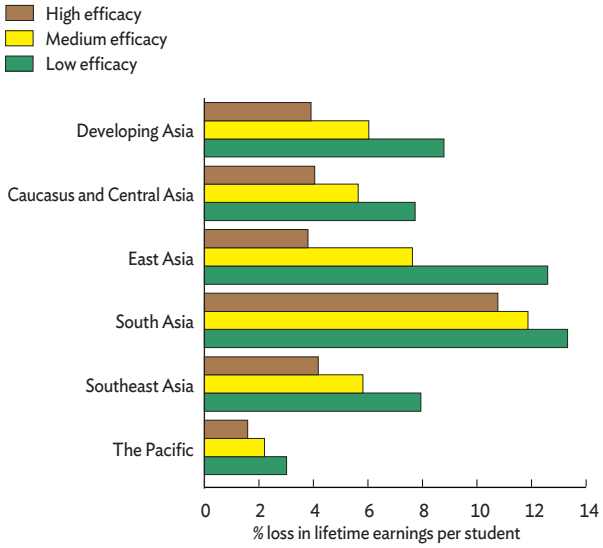


Source: Asian Development Bank estimates.

Figure 1.3.5 Projected earning losses by region

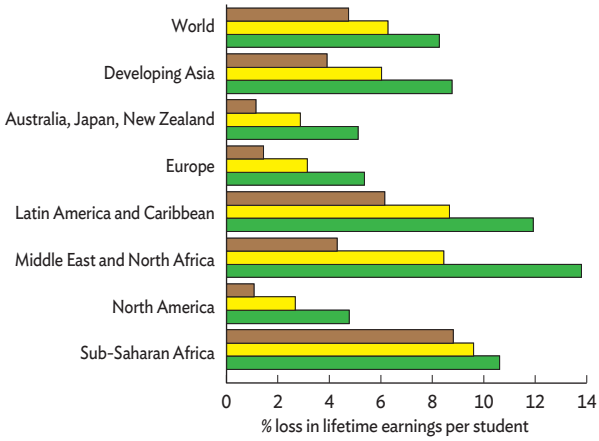
A. Developing Asia and subregions

Expected losses in future earnings are equivalent to 6% of pre-pandemic earnings for developing Asia ...



B. World

... and 6% for the world.



Source: Asian Development Bank estimates.

Expected learning losses are higher in areas where schools have been closed longer. School closures took the biggest toll in South Asia, where they were long and pre-pandemic LAYS were already low. Learning losses are also higher than the world average in Latin America and the Caribbean, the Middle East and North Africa, and Sub-Saharan Africa, but losses in South Asia exceeded losses in those regions (Figure 1.3.4).

In developing Asia, learning losses for the poorest quintile of students are projected to be 33% higher than for the richest quintile of students in their economy. The lower access of poor students to remote education during the pandemic is projected to have widened learning disparities between rich and poor. In developing Asia, students from the poorest quintile are expected to lose 0.65 LAYS, equivalent to an 8.4% decline in average LAYS, while students from the richest quintile within the same economy are expected to lose 0.49 LAYS, equivalent to a 6.3% decline (Figure 1.3.6).

Wealth gaps in foregone learning are higher in economies where schools have been closed for longer. This points to the double burden on poor students in economies with more instruction days closed.

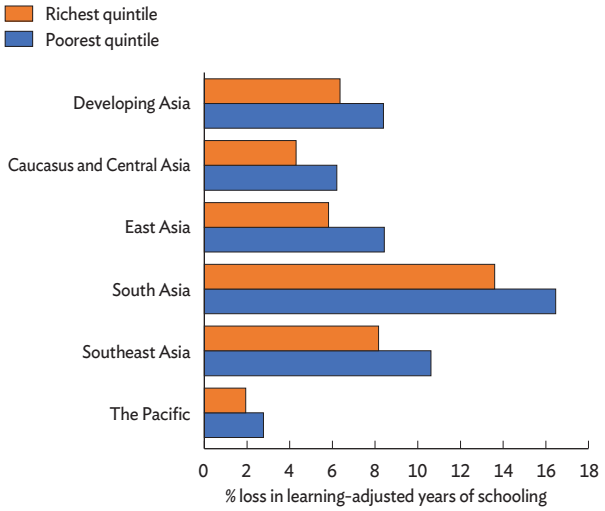
Wealth gaps in foregone learning are expected to translate into wealth gaps in earning losses—the poorest quintile of students is expected to lose 47% more than the richest quintile of students within the same economy in developing Asia (Figure 1.3.7). Globally, the average wealth gap within economies is 39% in foregone learning and 37% in earning losses.

Expected earning losses for girls are projected to be 28% higher than for boys in developing Asia. Because girls and boys have similar access to online learning in many economies, as can be seen in Figure 1.3.2, and dropout contributes a small share of foregone learning, estimated gender gaps in absolute foregone learning are small. On average, girls in developing Asia are expected to lose 0.64 LAYS or 8.3% of the average pre-pandemic LAYS, while boys lose 0.62 LAYS or 8.0% of the average pre-pandemic LAYS (Figure 1.3.8). However, there are some economies, largely in South Asia, where girls' foregone learning is significantly greater than boys' in relative terms because of high preexisting gender inequality in schooling.

Figure 1.3.6 Projected foregone learning for the poorest and richest wealth quintiles by region

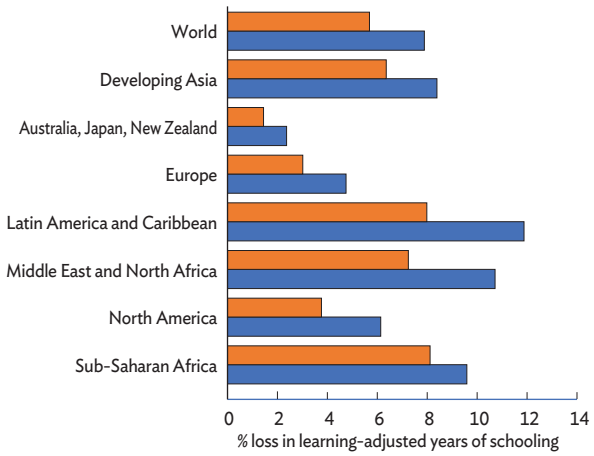
A. Developing Asia and subregions

In developing Asia, the poorest students incurred 33% more learning loss than the richest students in their economy ...



B. World

... and for the world at large, that wealth gap within economies is 39%.

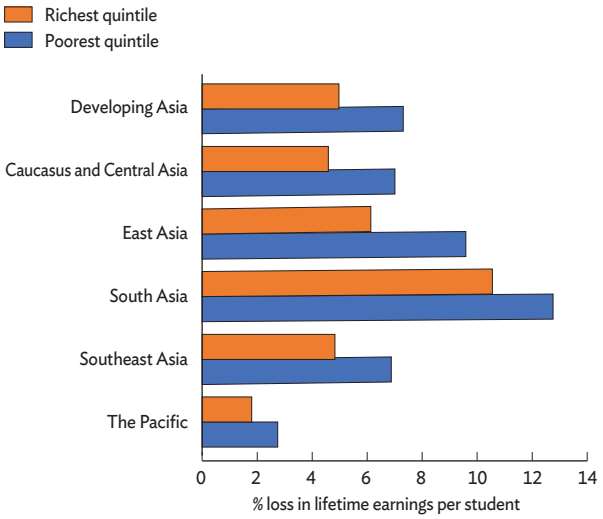


Note: This figure shows estimates in the medium-efficacy scenario of remote education.
Source: Asian Development Bank estimates.

Figure 1.3.7 Projected earning losses for the poorest and richest wealth quintiles by region

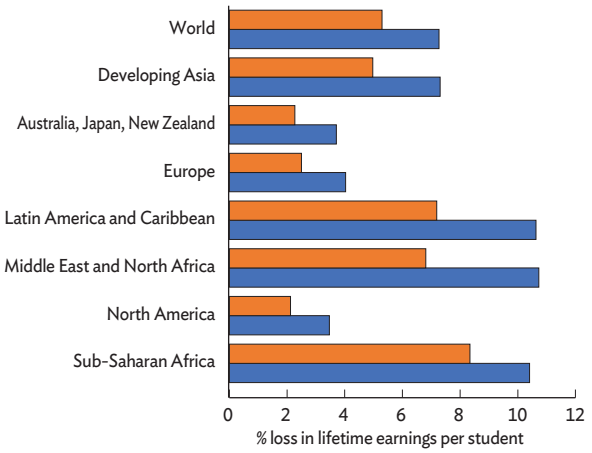
A. Developing Asia and subregions

In developing Asia, expected losses in future earnings are 47% higher for the poorest students than for the richest students in their economy ...



B. World

... and for the world at large, that wealth gap within economies is 37%.

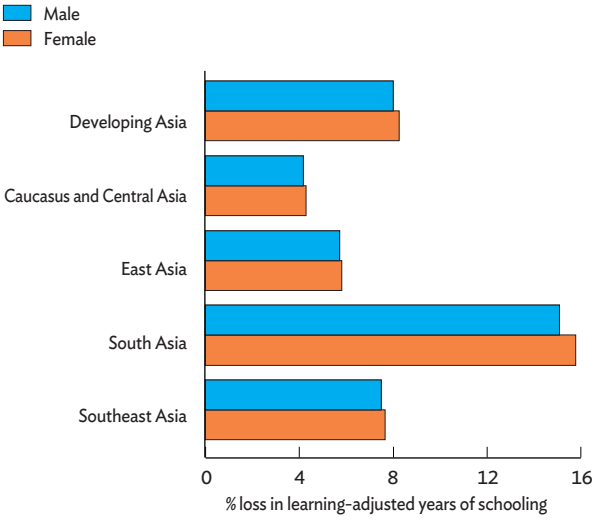


Note: This figure shows estimates in the medium-efficacy scenario of remote education.
Source: Asian Development Bank estimates.

Figure 1.3.8 Projected foregone learning for male and female students by region

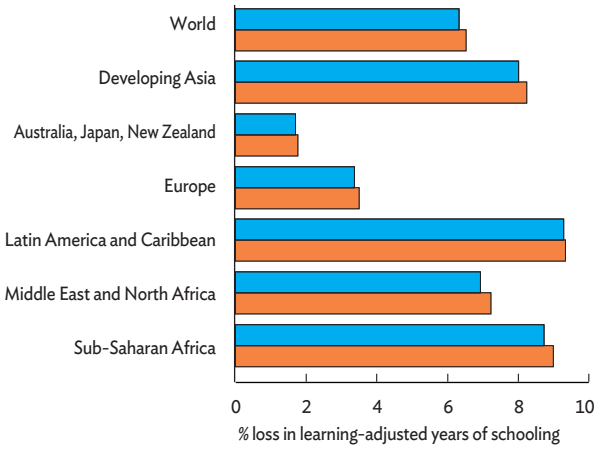
A. Developing Asia and subregions

Gender gaps in learning losses are small in much of developing Asia ...



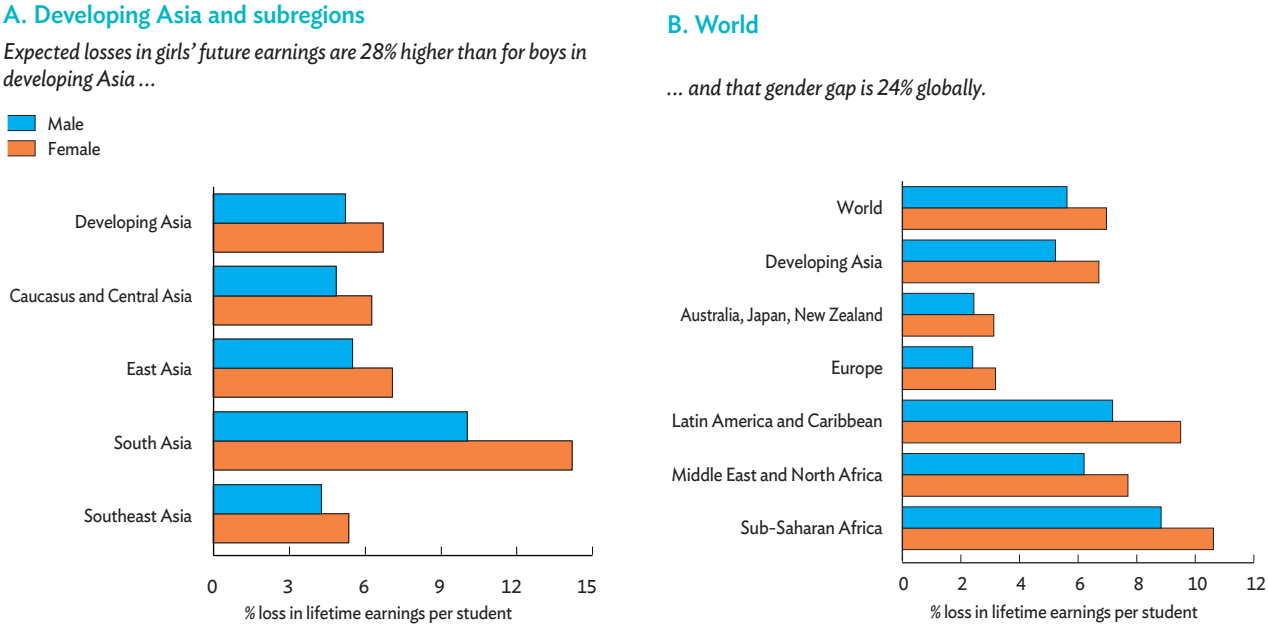
B. World

... and in most of the world.



Notes: This figure shows estimates in the medium-efficacy scenario of remote education. Data on internet use by gender are not available for North America and the Pacific.
Source: Asian Development Bank estimates.

Figure 1.3.9 Projected earning losses for male and female students



Notes: This figure shows estimates in the medium-efficacy scenario of remote education. Data on internet use by gender are not available for North America and the Pacific.

Source: Asian Development Bank estimates.

Furthermore, since labor markets place a higher premium on the education of girls than that of boys, these small learning gaps are projected to result in substantial earning gaps. The return on educating girls is about 2 percentage points higher than for boys, so that every year of schooling lost entails more foregone income for girls than for boys (Psacharopoulos and Patrinos 2018). Thus, foregone learning translates to expected earning losses for girls that are, on average, 28% higher than for boys in developing Asia (Figure 1.3.9). These projected losses likely understate the true extent to which school closures have exacerbated gender inequality. Internet access is just one input into remote learning processes, and there are complementary inputs that are likely more available to boys, notably, hardware and time. Girls have a higher burden of chores in many developing economies (Boyden, Hardgrove, and Knowles 2012; Webbink, Smits, and De Jong 2012).

As remote education methods improve, aggregate losses due to school closures will be lower, but inequality in losses will grow unless equality of access is promoted. The higher efficacy of remote education lowers average expected losses in learning, but uneven access between rich and poor means that higher efficacy also comes with a wider wealth gap in foregone learning (Table 1.3.1). Improving the efficacy

Table 1.3.1 Trade-off between remote-learning efficacy and the wealth gap in foregone learning and earning losses

Increasing the effectiveness of remote education reduces aggregate losses, but comes with wider wealth gaps.

Remote learning efficacy	Average loss in learning relative to pre-pandemic levels, %	Wealth gap in learning losses, %	Wealth gap in earning losses, %
Low	9	14	16
Medium	7	33	47
High	6	58	127

Note: Average projections for developing Asia.

Source: Asian Development Bank estimates.

of remote learning is critical for mitigating the impact of school closures, but unless there are complementary investments to promote access for poor students, any improvement in remote education technology or pedagogy will drive a bigger wedge between groups within economies.

Taken together, these key findings point to a double burden on girls from poor families. Without making up for losses, school closures will have reduced average LAYS by about 7%, but losses will be suffered unevenly within economies. Girls lose more learning and expected earnings than boys, and the poor lose about 33% more than the rich. Improvements in instruction must be accessible to all, otherwise the gap will grow as poor students gain disproportionately less from technological and pedagogical improvements.

Policies can help abate losses and growing inequalities

The larger projected learning losses shouldered by girls and lower-income students during COVID-19 will exacerbate economic inequalities that were already substantial before the pandemic. To tackle this, policy makers can pursue a range of policies. The following are six priorities.

Ensure the safety of holding classes in school, especially those serving low-income populations. Foregone learning grows with the days of closure because in most settings remote education is an imperfect substitute for classroom learning. Further losses can be prevented if classes are conducted in schools under conditions that are COVID-19 safe. Ensuring the safety of in-person classes involves both community and school actions to achieve herd immunity through the full vaccination of eligible populations and instituting school upgrades conducive to physical distancing. These upgrades include handwashing and sanitation stations, ensuring proper ventilation, expanding space to accommodate students under social distancing guidelines, scheduling mealtimes to avoid crowding, and monitoring symptoms.

Because students of similar socioeconomic backgrounds tend to cluster in schools, those serving students from low-income families can be targeted for further support for instituting upgrades. While these upgrades can be costly, providing financial assistance to schools that need them can go a long way in curbing losses for disadvantaged students.

Support innovative approaches to encourage catch-up learning. This analysis found that sizable learning losses were incurred during COVID-19 school closures and even more so for disadvantaged students. The good news is that foregone learning can be made up. Strategic efforts to recoup these losses are important to help students get back on track. This is an opportunity to rejuvenate education systems in ways that are overdue considering the learning gaps that existed even before the pandemic (Newman, Gentile, and Dela Cruz 2020). Innovative strategies that have proven effective are ripe for implementation. These include tracking students (Duflo, Dupas, and Kremer 2011) and teaching at the right level (Teaching at the Right Level 2022). These low-cost and simple approaches are now more relevant and essential given the lost learning from school closures. Rigorous experimentation is needed because taking small, calculated risks can reveal solutions that when scaled up can pay for themselves many times over from a social perspective (Kremer et al. 2021). When innovation improves learning outcomes, it generates global education public goods because the approaches can be adapted to other settings.

The simulation in Kaffenberger (2021) showed that short-term remedial action can curb long-term losses by half and that long-term remedial measures can fully offset these losses and even lead to better learning outcomes. Short-term remedial action makes up for the period of school closures immediately on reopening then resumes the business-as-usual school curriculum after 1 year. Long-term remedial measures continue perpetually and teach at the individual child's level. Implementation involves formative assessments to identify children's learning levels, training, and empowering teachers to conduct these assessments and adapt their instruction to students' levels and needs, curriculum adjustment to better match the level and pace of children's learning, and ensuring all children master foundational skills.

Even before the pandemic, programs for teaching at the students' level have significantly improved learning outcomes—for example, in India and Kenya.

Invest in bridging the digital divide through connectivity, hardware, and software. COVID-19 made digital infrastructure essential for work, communication, and education. Disproportionate access exacerbates inequality in opportunities. Disadvantaged groups will have better chances if they have adequate access to digital connectivity, and hardware and software. Funds can be allocated to facilitate access for girls through gender-sensitive digital literacy campaigns and improve internet access for low-income households. Arrangements can be made with internet service providers to make subscription plans more affordable; for example, by offering subsidies for these plans.

Strengthen social safety nets for girls and low-income families to encourage school participation. Because girls and poor students are more likely to drop out of school, school feeding programs and cash transfers for girls and poor families can be strengthened to boost attendance and reenrollment for those who dropped out of school because of COVID-19. Cash transfers explicitly labeled for education have been found to bring huge gains in school participation (Benhassine et al. 2015). Bangladesh's Female Secondary Stipend and Assistance Program, for instance, improved girls' secondary school enrollment and completion rates in the short term and women's employment and marriage outcomes in the long term (Khandker et al. 2021).

Blend some distance learning methods into the regular curriculum. The pandemic brought about innovations in pedagogy and education technology that could be useful once COVID-19 passes. These innovations can be blended into the regular curriculum and make education more effective than before. Teacher training for digital pedagogy can be conducted on a regular basis. Students can be better equipped to optimize the use of distance learning equipment. Stimulating television education programs can be used to complement classroom instruction. Improving the efficacy of distance learning for all students and blending some of its useful methods into regular classes can make education in general more effective.

Build flexibility and emergency resilience into education systems. School disruptions will occur again in response to natural and humanitarian disasters. Now that the technology is in place, the capacity to shift to remote schooling at short notice must be built into education systems and all stakeholders—teachers, parents, students, and administrators—must be ready. This is an unprecedented opportunity to utilize the tools developed and sharpened during the pandemic, conduct simulation exercises in preparation for future disruptions, and build resilience, stress tests, and disaster-preparedness into education systems.

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Technical Appendix 1

Effectiveness of remote education versus classroom learning

Scenarios on the effectiveness of remote education compared with in-person classes build on the scenarios in Learning and Earning Losses from COVID-19 School Closures in Developing Asia, the Special Topic of *Asian Development Outlook 2021*. The table shows the effectiveness assumed in *ADO 2021* under each scenario for high-income economies.

Effectiveness of remote education relative to classroom learning

Efficacy level	Remote learning effectiveness in high-income economies, %
High	88
Medium	66
Low	37

Source: Asian Development Bank. 2021. Learning and Earning Losses from COVID-19 School Closures in Developing Asia. Special Topic of *Asian Development Outlook 2021*.

These scenarios are based on evidence of online-learning efficacy: Paul and Jefferson (2019) for the high-efficacy scenario and McKinsey & Company (2020) for the medium- and low-efficacy scenarios.[1]

The efficacy rate in each scenario is multiplied by the average internet penetration in high-income economies, representing access to remote learning during the period of school closures.

The scenarios for other economies are derived by applying an adjustment factor to Table A1. In this analysis, the adjustment factor applies economy-specific data on internet access. The following adjustment factor applies to economy *c:*

$$F_c = w \times (IP_c/IP_{HIC}) + (1-w) \times (TVP_k/TVP_{HIC}) \times (TVE_k/OLE_{HIC}),$$

where w is the weight of online learning relative to the television mode of instruction, IP_c is the average internet penetration in economy c, and IP_{HIC} is the average internet penetration in high-income economies. Economy c is classified into income group k, where k is either high, upper-middle, lower-middle, or low income. TVP_k is average television penetration in economy group k, TVP_{HIC} is the average television penetration in high-income economies, TVE_k is the effectiveness of television, and OLE_k the effectiveness of online learning in economy k.

[1] The high-efficacy scenario is an upper-bound estimate for students at the preprimary, primary, and secondary levels covered in this analysis because remote education may be more effective for college students in the sample of Paul and Jefferson (2019).

Technical Appendix 2

Learning and earning losses in developing Asia

Table A2.1 Expected losses in learning-adjusted years of schooling in developing Asia

	Expected LAYS losses			Pre-COVID-19 LAYS	% loss in LAYS		
	High efficacy	Medium efficacy	Low efficacy		High efficacy	Medium efficacy	Low efficacy
Developing Asia	**0.48**	**0.57**	**0.70**	**7.72**	**6.2**	**7.4**	**9.1**
Caucasus and Central Asia							
Armenia	0.21	0.29	0.40	7.99	2.6	3.6	5.0
Azerbaijan	0.41	0.59	0.83	8.28	5.0	7.1	10.0
Georgia	0.41	0.60	0.84	8.27	5.0	7.3	10.2
Kazakhstan	0.35	0.50	0.70	9.13	3.8	5.5	7.7
Kyrgyz Republic	0.62	0.67	0.74	8.65	7.2	7.7	8.6
Tajikistan	0.00	0.00	0.00	6.79	0.0	0.0	0.0
Turkmenistan	0.34	0.37	0.41	9.13	3.7	4.1	4.5
Uzbekistan	0.18	0.20	0.24	2.23	2.24	2.64	9.13
East Asia							
Hong Kong, China	0.33	0.82	1.44	11.89	2.8	6.9	12.1
Mongolia	1.10	1.19	1.31	9.15	12.0	13.0	14.3
People's Republic of China	0.25	0.37	0.52	9.27	2.7	4.0	5.6
Republic of Korea	0.24	0.59	1.06	11.68	2.1	5.1	9.1
South Asia							
Afghanistan	0.80	0.82	0.85	5.05	15.8	16.2	16.8
Bangladesh	1.20	1.30	1.42	5.99	20.0	21.7	23.7
Bhutan	0.74	0.80	0.87	6.33	11.7	12.6	13.7
India	0.97	1.04	1.14	7.10	13.7	14.6	16.1
Nepal	1.19	1.22	1.27	7.23	16.5	16.9	17.6
Pakistan	0.85	0.92	1.01	5.08	16.7	18.1	19.9
Sri Lanka	0.56	0.81	1.13	8.46	6.6	9.6	13.4
Southeast Asia							
Brunei Darussalam	0.13	0.33	0.59	9.22	1.4	3.6	6.4
Cambodia	1.01	1.09	1.20	6.84	14.8	15.9	17.5
Indonesia	0.75	0.81	0.89	7.83	9.6	10.3	11.4
Lao PDR	0.55	0.59	0.65	6.25	8.8	9.4	10.4
Malaysia	0.87	1.24	1.72	8.89	9.8	13.9	19.3
Myanmar	1.29	1.38	1.51	6.79	19.0	20.3	22.2
Philippines	1.42	1.54	1.68	7.49	19.0	20.6	22.4
Singapore	0.06	0.16	0.29	12.81	0.5	1.2	2.3
Thailand	0.35	0.49	0.68	8.68	4.0	5.6	7.8
Timor-Leste	0.47	0.51	0.56	6.29	7.5	8.1	8.9
Viet Nam	0.57	0.61	0.68	10.68	5.3	5.7	6.4
The Pacific							
Federated States of Micronesia	0.43	0.46	0.51	7.19	6.0	6.4	7.1
Fiji	0.37	0.54	0.75	6.95	5.3	7.8	10.8
Kiribati	0.06	0.07	0.07	7.38	0.8	0.9	0.9
Marshall Islands	0.05	0.06	0.07	5.66	0.9	1.1	1.2
Nauru	0.00	0.00	0.00	6.51	0.0	0.0	0.0
Palau	0.09	0.17	0.27	8.69	1.0	2.0	3.1
Papua New Guinea	0.14	0.15	0.16	6.00	2.3	2.5	2.7
Samoa	0.05	0.07	0.10	7.25	0.7	1.0	1.4
Solomon Islands	0.09	0.10	0.11	4.68	1.9	2.1	2.4
Tonga	0.03	0.04	0.05	7.14	0.4	0.6	0.7
Tuvalu	0.08	0.12	0.17	6.00	1.3	2.0	2.8
Vanuatu	0.06	0.07	0.07	5.62	1.1	1.2	1.2

Lao PDR = Lao People's Democratic Republic, LAYS = learning-adjusted years of schooling.

Source: Asian Development Bank estimates.

Table A2.2 Expected losses in earnings per student in developing Asia

	Expected losses in per capita earnings (constant 2020 $)			Pre-COVID-19 annual earnings (constant 2020 $)	% loss in annual/lifetime earnings per capita		
	High efficacy	Medium efficacy	Low efficacy		High efficacy	Medium efficacy	Low efficacy
Developing Asia	**313**	**483**	**702**	**7,997**	**3.9**	**6.0**	**8.8**
Caucasus and Central Asia							
Armenia	67	95	131	2,863	2.3	3.3	4.6
Azerbaijan	257	371	519	4,605	5.6	8.1	11.3
Georgia	346	500	701	5,580	6.2	9.0	12.6
Kazakhstan	288	417	586	6,613	4.4	6.3	8.9
Kyrgyz Republic	20	21	23	248	8.1	8.5	9.3
Tajikistan	0	0	0	...	0.0	0.0	0.0
Uzbekistan	130	141	156	3,566	3.6	4.0	4.4
East Asia							
Hong Kong, China	891	2,217	3,925	24,870	3.6	8.9	15.8
Mongolia	761	823	904	5,252	14.5	15.7	17.2
People's Republic of China	389	565	795	11,114	3.5	5.1	7.2
Republic of Korea	989	2,482	4,416	38,512	2.6	6.4	11.5
South Asia							
Afghanistan	287	310	340	2,111	13.6	14.7	16.1
Bangladesh	246	265	291	2,596	9.5	10.2	11.2
Bhutan	368	379	394	2,360	15.6	16.1	16.7
India	247	267	292	2,303	10.7	11.6	12.7
Nepal	135	195	273	2,561	5.3	7.6	10.7
Pakistan							
Sri Lanka	345	871	1,557	19,918	1.7	4.4	7.8
Southeast Asia	**76**	**82**	**90**	**3,059**	**2.5**	**2.7**	**2.9**
Brunei Darussalam	256	276	304	1,898	13.5	14.5	16.0
Cambodia	267	289	317	3,797	7.0	7.6	8.3
Indonesia	1,069	1,529	2,121	9,136	11.7	16.7	23.2
Lao PDR	334	360	393	1,779	18.8	20.2	22.1
Malaysia	545	589	645	3,494	15.6	16.9	18.5
Myanmar	232	584	1,048	40,066	0.6	1.5	2.6
Philippines	153	216	297	5,825	2.6	3.7	5.1
Singapore	512	551	602	4,033	12.7	13.7	14.9
Thailand	246	267	294	3,540	6.9	7.5	8.3
Timor-Leste							
Viet Nam	395	570	799	6,828	5.8	8.3	11.7
The Pacific	**0**	**0**	**0**	**...**	**0.0**	**0.0**	**0.0**
Federated States of Micronesia	52	74	103	6,219	0.8	1.2	1.7
Fiji	37	53	73	8,732	0.4	0.6	0.8
Kiribati	76	82	90	6,432	1.2	1.3	1.4
Marshall Islands	0.05	0.06	0.07	5.66	0.9	1.1	1.2
Nauru	0.00	0.00	0.00	6.51	0.0	0.0	0.0
Palau	0.09	0.17	0.27	8.69	1.0	2.0	3.1
Papua New Guinea	0.14	0.15	0.16	6.00	2.3	2.5	2.7
Samoa	0.05	0.07	0.10	7.25	0.7	1.0	1.4
Solomon Islands	0.09	0.10	0.11	4.68	1.9	2.1	2.4
Tonga	0.03	0.04	0.05	7.14	0.4	0.6	0.7
Tuvalu	0.08	0.12	0.17	6.00	1.3	2.0	2.8
Vanuatu	0.06	0.07	0.07	5.62	1.1	1.2	1.2

... = not available, Lao PDR = Lao People's Democratic Republic.

Source: Asian Development Bank estimates.

Table A2.3 Expected losses in learning-adjusted years of schooling, poorest vs. richest wealth quintiles in developing Asia

	Expected LAYS losses						Wealth gap in expected learning losses, %		
	High efficacy		Medium efficacy		Low efficacy				
	Poorest	Richest	Poorest	Richest	Poorest	Richest	High efficacy	Medium efficacy	Low efficacy
Developing Asia	**0.57**	**0.36**	**0.65**	**0.49**	**0.74**	**0.65**	**58.3**	**32.7**	**13.8**
Caucasus and Central Asia									
Armenia	0.31	0.13	0.37	0.23	0.45	0.37	138.5	60.9	21.6
Azerbaijan	0.62	0.26	0.75	0.48	0.92	0.77	138.5	56.3	19.5
Georgia	0.63	0.26	0.76	0.48	0.93	0.78	142.3	58.3	19.2
Kazakhstan	0.52	0.21	0.63	0.40	0.78	0.65	147.6	57.5	20.0
Kyrgyz Republic	0.68	0.50	0.71	0.58	0.76	0.69	36.0	22.4	10.1
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
Uzbekistan	0.37	0.28	0.39	0.32	0.42	0.38	32.1	21.9	10.5
East Asia									
Hong Kong, China	0.65	0.10	1.05	0.65	1.57	1.35	550.0	61.5	16.3
Mongolia	1.19	0.89	1.26	1.03	1.35	1.22	33.7	22.3	10.7
People's Republic of China	0.38	0.16	0.46	0.30	0.57	0.48	137.5	53.3	18.8
Republic of Korea	0.47	0.07	0.77	0.47	1.15	0.99	571.4	63.8	16.2
South Asia									
Afghanistan	0.87	0.75	0.89	0.78	0.91	0.82	16.0	14.1	11.0
Bangladesh	1.30	0.98	1.37	1.13	1.46	1.33	32.7	21.2	9.8
Bhutan	0.80	0.60	0.84	0.69	0.90	0.82	33.3	21.7	9.8
India	1.05	0.79	1.11	0.91	1.18	1.07	32.9	22.0	10.3
Nepal	1.22	1.13	1.25	1.18	1.28	1.25	8.0	5.9	2.4
Pakistan	0.93	0.69	0.98	0.80	1.04	0.94	34.8	22.5	10.6
Sri Lanka	0.84	0.35	1.02	0.65	1.24	1.04	140.0	56.9	19.2
Southeast Asia									
Brunei Darussalam	0.26	0.04	0.43	0.26	0.64	0.55	550.0	65.4	16.4
Cambodia	1.10	0.82	1.16	0.95	1.24	1.12	34.1	22.1	10.7
Indonesia	0.81	0.61	0.86	0.70	0.92	0.83	32.8	22.9	10.8
Lao PDR	0.59	0.44	0.63	0.51	0.67	0.61	34.1	23.5	9.8
Malaysia	1.29	0.55	1.55	1.01	1.89	1.59	134.5	53.5	18.9
Myanmar	1.39	1.05	1.47	1.21	1.56	1.42	32.4	21.5	9.9
Philippines	1.54	1.16	1.63	1.34	1.73	1.58	32.8	21.6	9.5
Singapore	0.13	0.02	0.21	0.13	0.31	0.27	550.0	61.5	14.8
Thailand	0.52	0.23	0.63	0.40	0.76	0.63	126.1	57.5	20.6
Timor-Leste	0.52	0.39	0.55	0.44	0.58	0.52	33.3	25.0	11.5
Viet Nam	0.61	0.46	0.65	0.53	0.70	0.63	32.6	22.6	11.1
The Pacific									
Federated States of Micronesia	0.47	0.35	0.49	0.40	0.53	0.47	34.3	22.5	12.8
Fiji	0.56	0.23	0.68	0.43	0.83	0.69	143.5	58.1	20.3
Kiribati	0.07	0.05	0.07	0.06	0.08	0.07	40.0	16.7	14.3
Marshall Islands	0.07	0.04	0.08	0.05	0.08	0.06	75.0	60.0	33.3
Nauru	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
Palau	0.16	0.05	0.23	0.13	0.31	0.25	220.0	76.9	24.0
Papua New Guinea	0.16	0.11	0.17	0.13	0.18	0.15	45.5	30.8	20.0
Samoa	0.08	0.03	0.09	0.06	0.11	0.09	166.7	50.0	22.2
Solomon Islands	0.10	0.08	0.11	0.09	0.12	0.10	25.0	22.2	20.0
Tonga	0.04	0.02	0.05	0.03	0.06	0.05	100.0	66.7	20.0
Tuvalu	0.12	0.05	0.15	0.10	0.18	0.15	140.0	50.0	20.0
Vanuatu	0.07	0.05	0.07	0.06	0.08	0.07	40.0	16.7	14.3

Lao PDR = Lao People's Democratic Republic, LAYS = learning-adjusted years of schooling.

Note: The wealth gap in expected learning losses is calculated as the difference in LAYS lost by the poorest and richest quintiles, expressed as a percentage of the richest quintile's lost LAYS.

Source: Asian Development Bank estimates.

Table A2.4 Expected losses in earnings, poorest vs. richest wealth quintiles in developing Asia

	Expected losses in per capita earnings (constant 2020 $)						Wealth gap in expected earning losses, %		
	High efficacy		Medium efficacy		Low efficacy				
	Poorest	Richest	Poorest	Richest	Poorest	Richest	High efficacy	Medium efficacy	Low efficacy
Developing Asia	**450**	**198**	**584**	**397**	**759**	**655**	**127.3**	**47.1**	**15.9**
Caucasus and Central Asia									
Armenia	101	43	121	77	147	121	134.9	57.1	21.5
Azerbaijan	389	160	469	299	575	479	143.1	56.9	20.0
Georgia	521	215	630	403	773	647	142.3	56.3	19.5
Kazakhstan	435	179	527	336	647	541	143.0	56.8	19.6
Kyrgyz Republic	21	16	22	18	24	22	31.3	22.2	9.1
Tajikistan	0	0	0	0	0	0	0.0	0.0	0.0
Uzbekistan	142	105	150	123	161	145	35.2	22.0	11.0
East Asia									
Hong Kong, China	1,765	262	2,861	1,756	4,279	3,674	573.7	62.9	16.5
Mongolia	826	617	871	716	932	845	33.9	21.6	10.3
People's Republic of China	588	242	714	455	878	735	143.0	56.9	19.5
Republic of Korea	1,964	287	3,203	1,964	4,812	4,133	584.3	63.1	16.4
South Asia									
Bangladesh	310	234	327	270	349	318	32.5	21.1	9.7
India	267	201	281	232	300	272	32.8	21.1	10.3
Nepal	377	351	386	367	398	387	7.4	5.2	2.8
Pakistan	268	201	283	232	302	273	33.3	22.0	10.6
Sri Lanka	203	85	245	158	300	252	138.8	55.1	19.0
Southeast Asia									
Brunei Darussalam	688	100	1,126	689	1,698	1,457	588.0	63.4	16.5
Cambodia	83	62	87	72	93	84	33.9	20.8	10.7
Indonesia	278	207	293	240	314	284	34.3	22.1	10.6
Lao PDR	290	217	306	251	327	296	33.6	21.9	10.5
Malaysia	1,595	677	1,917	1,240	2,335	1,964	135.6	54.6	18.9
Myanmar	362	274	381	315	406	368	32.1	21.0	10.3
Philippines	591	443	623	513	664	603	33.4	21.4	10.1
Singapore	462	67	756	461	1,144	979	589.6	64.0	16.9
Thailand	229	99	273	175	331	274	131.3	56.0	20.8
Timor-Leste	564	418	593	480	630	560	34.9	23.5	12.5
Viet Nam	268	199	283	232	303	275	34.7	22.0	10.2
The Pacific									
Fiji	595	246	719	460	881	738	141.9	56.3	19.4
Nauru	0	0	0	0	0	0	0.0	0.0	0.0
Samoa	79	33	94	60	115	95	139.4	56.7	21.1
Tonga	55	25	66	43	81	68	120.0	53.5	19.1
Vanuatu	87	62	91	71	97	83	40.3	28.2	16.9

Lao PDR = Lao People's Democratic Republic.

Note: The wealth gap in expected earning losses is calculated as the difference in expected earning losses of the poorest and richest quintiles, expressed as a percentage of the richest quintile's expected earning losses.

Source: Asian Development Bank estimates.

Table A2.5 Expected losses in learning-adjusted years of schooling, male versus female students in developing Asia

	Expected LAYS losses						Gender gap in expected learning losses, %		
	High efficacy		Medium efficacy		Low efficacy				
	Male	Female	Male	Female	Male	Female	High efficacy	Medium efficacy	Low efficacy
Developing Asia	**0.46**	**0.48**	**0.62**	**0.64**	**0.82**	**0.83**	**4.3**	**3.2**	**1.2**
Caucasus and Central Asia									
Armenia	0.19	0.19	0.28	0.28	0.39	0.39	0.0	0.0	0.0
Azerbaijan	0.26	0.30	0.48	0.51	0.77	0.79	15.4	6.3	2.6
Georgia	0.33	0.34	0.54	0.54	0.81	0.81	3.0	0.0	0.0
Kazakhstan	0.20	0.22	0.40	0.40	0.65	0.65	10.0	0.0	0.0
Kyrgyz Republic	0.35	0.36	0.47	0.48	0.63	0.63	2.9	2.1	0.0
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
Uzbekistan	0.19	0.21	0.26	0.28	0.35	0.36	10.5	7.7	2.9
East Asia									
Hong Kong, China	0.15	0.21	0.68	0.73	1.37	1.39	40.0	7.4	1.5
Mongolia	0.74	0.71	0.92	0.90	1.16	1.15	–4.1	–2.2	–0.9
People's Republic of China	0.22	0.21	0.34	0.34	0.50	0.50	–4.5	0.0	0.0
Republic of Korea	0.05	0.07	0.45	0.47	0.98	0.99	40.0	4.4	1.0
South Asia									
Afghanistan	0.73	0.78	0.77	0.80	0.82	0.84	6.8	3.9	2.4
Bangladesh	1.13	1.20	1.24	1.30	1.39	1.42	6.2	4.8	2.2
Bhutan	0.69	0.74	0.76	0.80	0.86	0.88	7.2	5.3	2.3
India	0.89	0.96	0.99	1.04	1.11	1.14	7.9	5.1	2.7
Nepal	1.07	1.13	1.14	1.18	1.22	1.25	5.6	3.5	2.5
Pakistan	0.81	0.86	0.89	0.93	0.99	1.01	6.2	4.5	2.0
Sri Lanka	0.86	0.94	1.03	1.09	1.25	1.28	9.3	5.8	2.4
Southeast Asia									
Brunei Darussalam	0.08	0.00	0.29	0.23	0.57	0.54	–100.0	–20.7	–5.3
Cambodia	0.55	0.55	0.75	0.75	1.01	1.01	0.0	0.0	0.0
Indonesia	0.52	0.56	0.64	0.67	0.80	0.81	7.7	4.7	1.3
Lao PDR	0.32	0.33	0.43	0.43	0.56	0.56	3.1	0.0	0.0
Malaysia	0.47	0.52	0.95	0.98	1.56	1.58	10.6	3.2	1.3
Myanmar	1.16	1.24	1.29	1.35	1.46	1.50	6.9	4.7	2.7
Philippines	0.85	0.87	1.11	1.13	1.45	1.46	2.4	1.8	0.7
Singapore	0.11	0.11	0.20	0.19	0.31	0.30	0.0	–5.0	–3.2
Thailand	0.26	0.27	0.43	0.44	0.64	0.65	3.8	2.3	1.6
Timor-Leste	0.29	0.30	0.38	0.38	0.48	0.49	3.4	0.0	2.1
Viet Nam	0.32	0.35	0.43	0.45	0.57	0.59	9.4	4.7	3.5

Lao PDR = Lao People's Democratic Republic, LAYS = learning-adjusted years of schooling.

Notes: Data on internet use by gender is not available for the Pacific. The gender gap in expected learning losses is calculated as the difference in LAYS lost by female and male students, expressed as a percentage of male students' lost LAYS.

Source: Asian Development Bank estimates.

Table A2.6 Expected losses in earnings, male versus female students in developing Asia

	Expected losses in per capita earnings (constant 2020 $)						Gender gap in expected earning losses, %		
	High efficacy		Medium efficacy		Low efficacy				
	Male	Female	Male	Female	Male	Female	High efficacy	Medium efficacy	Low efficacy
Developing Asia	**211**	**282**	**418**	**537**	**685**	**867**	**33.4**	**28.4**	**26.4**
Caucasus and Central Asia									
Armenia	54	68	80	102	113	145	26.3	27.3	27.9
Azerbaijan	146	209	268	355	428	546	43.4	32.4	27.6
Georgia	248	314	402	502	602	746	26.7	24.9	23.9
Kazakhstan	150	201	290	377	474	606	34.3	29.9	28.0
Kyrgyz Republic	10	13	13	17	17	22	32.4	29.9	27.9
Uzbekistan	64	92	87	118	116	152	42.9	36.3	31.6
East Asia									
Hong Kong, China	366	618	1,669	2,181	3,344	4,189	69.0	30.6	25.3
Mongolia	455	548	567	692	714	881	20.5	22.1	23.5
People's Republic of China	298	361	468	572	692	848	21.3	22.1	22.6
Republic of Korea	174	341	1,693	2,192	3,657	4,585	96.0	29.4	25.4
South Asia									
Bangladesh	229	330	252	356	282	391	44.5	41.5	38.3
India	191	284	212	307	238	337	48.5	45.1	41.6
Nepal	289	397	307	414	330	437	37.4	35.1	32.5
Pakistan	200	286	220	308	245	336	42.6	40.0	37.2
Southeast Asia									
Brunei Darussalam	181	5	683	685	1,337	1,570	–97.2	0.4	17.4
Cambodia	18	65	25	88	33	119	257.0	257.0	256.9
Indonesia	163	206	200	247	248	301	26.6	23.7	21.3
Lao PDR	137	184	180	239	236	310	34.2	32.6	31.4
Malaysia	518	703	1,047	1,338	1,725	2,152	35.7	27.8	24.7
Myanmar	272	356	302	387	342	428	30.9	28.2	25.3
Philippines	274	387	359	501	468	648	41.2	39.6	38.3
Singapore	363	430	633	782	989	1,244	18.5	23.4	25.8
Thailand	91	142	149	227	226	339	56.1	52.2	50.2
Timor-Leste	299	350	381	441	488	560	17.2	15.8	14.7
Viet Nam	127	168	170	216	226	280	32.3	27.6	24.2

Lao PDR = Lao People's Democratic Republic.

Notes: Data on internet use by gender is not available for the Pacific. The gender gap in expected earning losses is calculated as the difference in expected earning losses of female and male students, expressed as a percentage of male students' expected earning losses.

Source: Asian Development Bank estimates.

Asian Development Outlook 2022

Mobilizing Taxes for Development

Developing Asia faces greater uncertainty from the Russian invasion of Ukraine even as the region continues to contend with COVID-19 outbreaks. The war has sent shockwaves across financial and commodity markets. The highly transmissible Omicron variant has fueled a sharp rise in cases in the region, though its less severe health impact, coupled with increased immunity, has allowed economies to remain relatively open. As such, growth in the region is forecast to remain strong, supported by recovering domestic demand. The Russian invasion of Ukraine, aggressive monetary policy tightening in the US, and renewed COVID-19 outbreaks pose near-term risks to the outlook, alongside medium-term risks such as rising inequality due to school closures.

Fiscal resources are needed to aid recovery and support sustainable development. But deficits and debt expanded substantially during the pandemic. Mobilizing taxes and optimizing tax incentives needs to be combined with improved spending efficiency to help developing Asia achieve its development objectives.

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ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members —49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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