

Education expenditure, Enrolment Dynamics and the Impact of COVID-19 on Learning in Jordan

Objectives and Introduction

This piece is part of a set of five fast tracked and interrelated policy notes covering key issues in the current Jordanian macroeconomic and human capital landscape. The education policy note reviews the initial reaction of the Ministry of Education (MOE) to the COVID-19 pandemic, some key considerations for future policy formulation and simulation results summarizing the potential impact that the pandemic can have on learning. Specifically, the note leverages Public Expenditure Reviews (PER) conducted by the World Bank in 2016, DFID in 2020 and the International Monetary Fund’s paper on social spending for inclusive growth by focusing on a subset of data points pertinent to policymakers for immediate policy consideration. This policy note is divided into two parts: part I explores the utilization of education services by socioeconomic groups, refugee status and gender, including access to technology and online resources before the advent of the COVID-19 pandemic. This is intended to pinpoint key differences in household spending, access to education services and technologies to better understand which sub-groups are under heightened risk during school closures. Part II presents simulation results forecasting the negative impact of COVID-19 school closures on learning and future earnings. The simulation results are based on various assumptions and present multiple scenarios accounting for the expected duration of school closures and the government’s response.

The COVID-19 pandemic has forced global school closures leaving over 103 million students out of education systems in Middle East and North Africa, including 2.4 million learners in Jordan. The Government of Jordan (GOJ) promptly responded to the initial outbreak by mandating a national lockdown, including closure of all education institutions. To minimize learning disruptions, the Ministry of Education (MOE) sought to leverage various distance learning tools, the most prominent of which – *Darsak* – an online education platform developed and managed by the private sector, was made available for all 12 school grades. Thus, MOE was able to ensure that lessons, exercises and guidance was made available to students during school hours covering all essential subjects for grades 1 through 12. In addition, the country’s television sports channel was repurposed to broadcast educational material tailored to students preparing for the *tawjihi*, the high-stakes examination at the end of upper secondary. The MOE also supported teaching staff by continuously rolling out new interventions to make it easier to transition to distance learning: a new platform for teacher training launched in May 2020 offers courses on distance learning tools, blended learning, and educational technology. Finally, after the initial shock subsided, the MOE developed the Education during Emergency Plan 2020/22 (EDEP), which lays out the short- to medium-term education response to the COVID-19 pandemic in three phases:

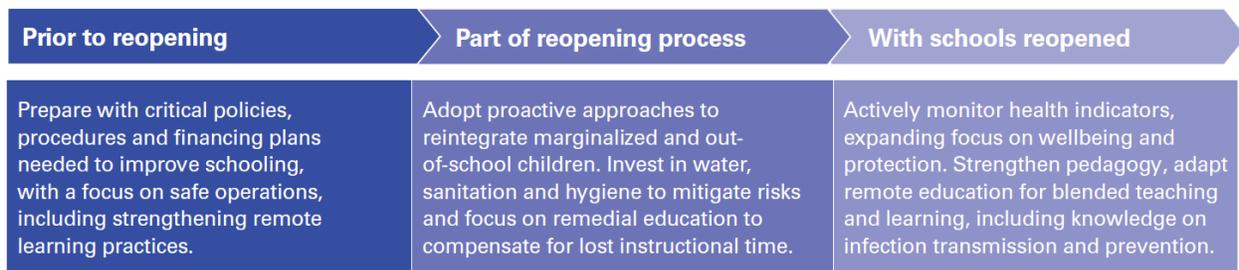
- (a) *Response Phase (March-May 2020)* – corresponds to the swift response described above.

(b) *Recovery/Remedial Phase (June-August 2020)* – Since the distance education provided will likely leave learning gaps for those who were able to access it, and even larger gaps for students from vulnerable and disadvantaged backgrounds (including Syrian refugees) who could not access TV or the internet, MOE plans to provide a month-long catch-up program prior to the beginning of the new school year in September 2020. In addition, schools will be preparing during this phase for the return of students, including ensuring minimum required health and safety measures.

(c) *Sustainability Phase (September 2020-September 2022)* – Having made the swift leap to distance education, the MOE sees the benefits of maintaining the gains made in its ability to provide distance education by integrating distance education better into traditional classroom instruction. In other words, the education system in Jordan will not only recover but “build back better” during this phase, with MOE exploring opportunities to leverage high-quality distance learning content as a complementary resource for students during regular times and piloting blended learning modalities.

MOE’s EDEP is fully aligned with the international direction on preparing for and sustaining safe school reopening. In April 2020, UNESCO, UNICEF, the World Food Programme (WFP) and the World Bank jointly published the *Framework for Reopening Schools*, which lays out a sequencing of activities leading up to the gradual return of students to school. This framework aims to inform the decision-making process on when to reopen schools, support national preparations, and guide the implementation process, as part of the overall public health and education planning processes. The framework recognizes that disruptions to instructional time in the classroom can have a severe impact on a child’s ability to learn. The longer marginalized children are out of school, the less likely they are to return. Prolonged closures disrupt essential school-based services such as school feeding and psychosocial support, and can cause stress and anxiety due to the loss of peer interaction and disrupted routines. These negative impacts will be significantly higher for marginalized children, refugees, and children with disabilities. The framework outlines three phases in terms of how to go about reopening schools, each with a set of key activities (see Figure 1).

Figure 1: Framework for Reopening Schools



Source: UNESCO, UNICEF, WFP, World Bank. April 2020.

Despite the strong reaction by the MOE, the risk of a protracted pandemic on lost learning and nationwide inequality remains high. The Syrian refugee crisis continues for a ninth consecutive year, with over 230,000 registered school-age children currently living between host communities and refugee camps at huge risk of being left behind, in addition to a commensurate large number of undocumented refugees. Children in low socioeconomic status families and temporary homes, already at great educational inequality and learning poverty risk, are now increasingly vulnerable. Although mitigating measures have been put in place, such as extended electricity hours at camps and data free access to the MOE website, significantly more attention needs to be paid to ensure that the digital divide does not lead

to an even larger learning divide. Earlier outbreaks such as the Ebola crisis showed that closures can lead to learning losses that disproportionately impact vulnerable populations, and highlighted the importance of effectively using distance learning tools while promoting equitable access to minimize the impact of disruptions. This policy note is divided into two parts: part I explores the utilization of education services by socioeconomic groups, refugee status and gender, including access to technology and online resources before the advent of the COVID-19 pandemic; part II presents simulation results forecasting the loss of learning and potential labor market outcomes, and the effect on mean scores. The simulation results are based on various assumptions and present multiple scenarios accounting for the expected duration of school closures and the government's response.

This note should be read in light of two important analytical pieces. The DFID PER highlights several key statistics that present the landscape of public and private education in Jordan. Real education expenditure has remained flat between 2013 and 2019, while the number of students has increased from 1.1 million to 1.4 million, indicating that real per pupil expenditures has dropped significantly in that period (DFID 2020). The composition of spending has remained predominantly on worker compensation at around 93 percent of current spending, while the 2013-2019 period is characterized by discrepancies between actual and budgeted capital expenditures, ranging between 65 and 115 percent compliance. During this period, learning outcomes captured by the Program for International Student Assessment (PISA) in 2018 manifest tangible improvements in reading, science and math. Despite this being only a single data point, it snaps a trend of either stagnation or decline since the adoption of PISA in Jordan.

Increasing public social spending per capita (education, health and social transfers) by 10 percent could close the Human Development Index gap by 20-65 percent. The International Monetary Fund's "social spending for inclusive growth" report highlights the need to generate fiscal space that directly addresses the equity gap in social outcomes, while focusing on streamlining the efficient use of resources across the Middle East and North Africa (MENA) region (IMF 2020). Jordan, like the majority of countries in the region, lags behind in socioeconomic outcomes and the relative efficiency of spending on social programs, with significant gains to be realized with targeted programs.

Part 1: Households expenditures and access to education services

The inequality in the Jordanian education sector manifests itself in net enrolment rates. High-income households are more likely to enroll their children in school than low-income households. Figure 2 plots the relationship between Jordanian households' per-capita income and average enrolment for that quintile. Enrolment increases with per-capita income, most likely due to low-income households being liquidity constrained and need their school-age children to work, which is especially true for the Syrian refugee population. This hypothesis is even more extreme once we focus on secondary schooling, as shown in Figure 3. Q1 households have just over 30 percent of their children enrolled, while Q5 have just over 80 percent of their children enrolled.

Figure 2: Net Enrolment in Education by Expenditure Quintile

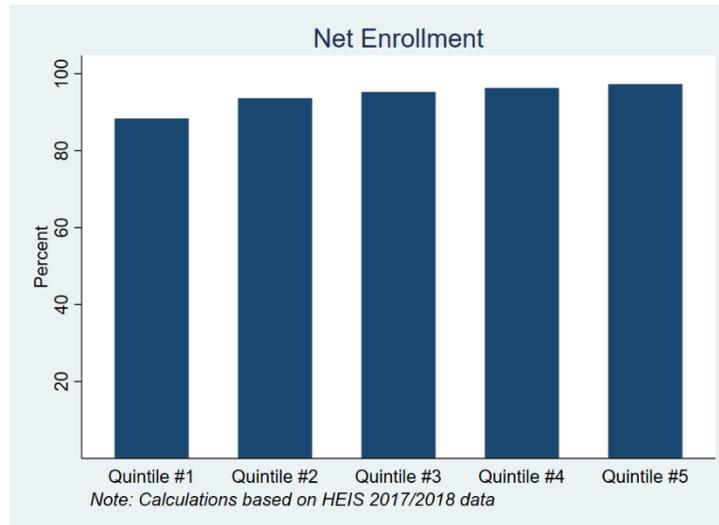
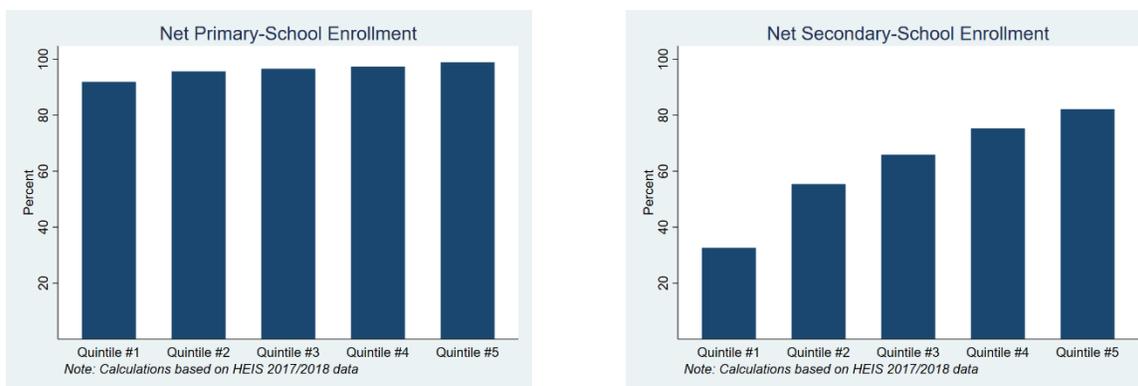


Figure 3: Net Enrolment by Expenditure Quintile and Education Level



In addition, there are also consistent differences between Jordanian citizens and Syrian refugees, with Jordanians generally having stronger education metrics. Figures 4 and 5 disaggregate our expenditure and enrolment numbers by nationality. On average, Syrians have a smaller share of their children enrolled in school, and they spend less on education, ostensibly due to their refugee status making it more difficult for them to work formally in certain high-wage sectors. However, Syrians in Q5 actually spend more on education than Jordanians of similar means. This could be because Syrians have less access to Jordanian public schools: For low-income households, limited public-school access translates into having limited access to the whole education sector. For richer households, limited access translates into enrolling their children in relatively expensive private schools.

Figure 4: Jordanian and Syrian Refugee Households’ Education Expenditures in Jordanian Dinars across Expenditure Quintiles

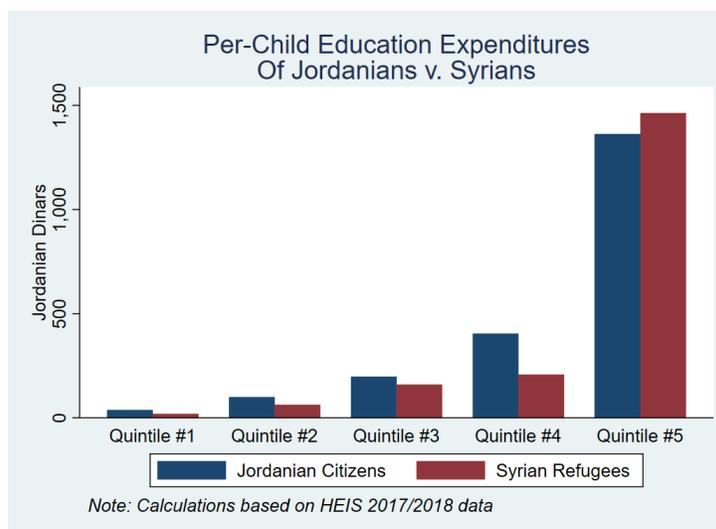
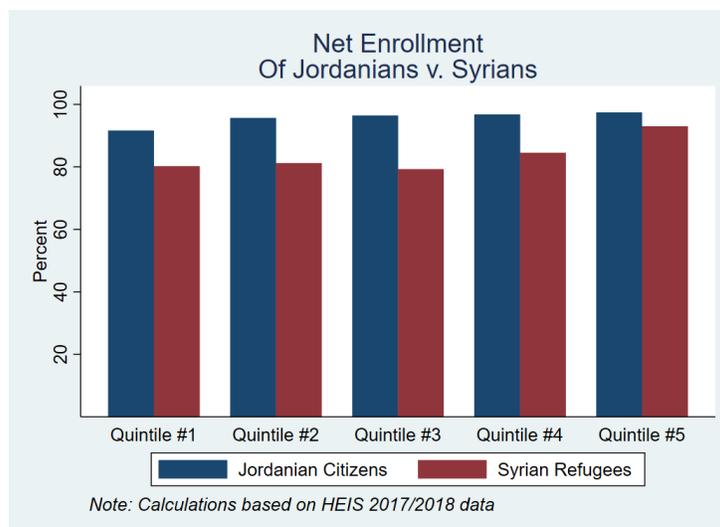


Figure 5: Net Enrolment of Jordanian Citizens and Syrian Refugees by Expenditure Quintile and Education Level across Expenditure Quintiles



The COVID-19 pandemic is likely to aggravate preexisting inequality in the Jordanian education sector. As shown in Figure 6, high-income households spend much more on education than low-income households do; households in the first quintile (Q1) – i.e. the 20 percent of households with the lowest incomes – spend an average of only about 30 Jordanian Dinars (JOD) per child per year, while households in the fifth quintile (Q5) – i.e. the 20 percent of households with the highest incomes – spend an average of about JOD1,300 per child per year. In other words, high-income households spend 40-times more on education than low-income households do. This discrepancy is incremental, with progressively better off families spending, on average, progressively greater amounts per child. Given the differences in enrolment patterns across quintiles, the results are further disaggregated by education level and presented in Figure 7. At both the primary and secondary levels, Q1 households spend very little, but Q5 households spend an average of approximately JOD1,250 per child per year on primary schooling and JOD250 per child per year on secondary schooling.

Figure 6: Education Expenditures in Jordanian Dinars across Expenditure Quintiles

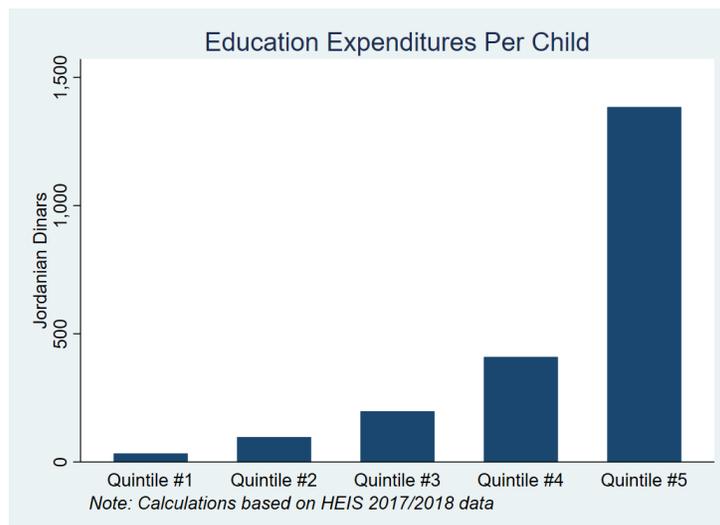
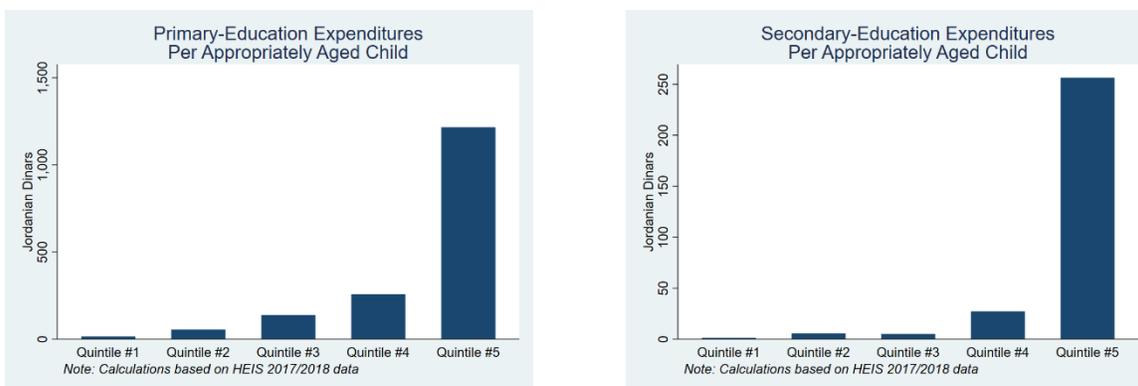


Figure 7: Education Expenditures in Jordanian Dinars across Expenditure Quintiles



As household income grows, the likelihood of enrolling in a private school also grows. Although enrolment in private education does not necessarily suggest the likelihood of greater performance, two facts stand out as possible indicators of welfare differences. First, as shown in Figure 8, students in more affluent families progressively enroll in private schools, reaching 60 percent by the 10th expenditure decile. Second, results from PISA indicate an at least 50-point difference between students in public versus private education, even when accounting for socioeconomic differences between students (Figure 9). In high-ranking OECD countries, if low-income households are able to avail themselves of good-quality publicly provided or publicly subsidized education, this difference typically either disappears or reverses. The stark difference in school type enrolment, however, whereby nearly 80 percent of first decile students are in public schools, compared to 30 percent at the highest decile, appears to indicate that affluent households tend to select towards the private sector, and for good reason.

Figure 8: School Type Enrolment by Expenditure Decile

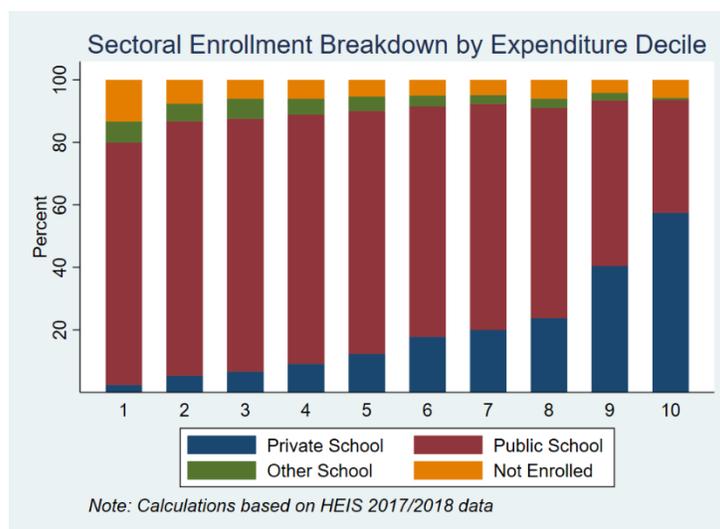
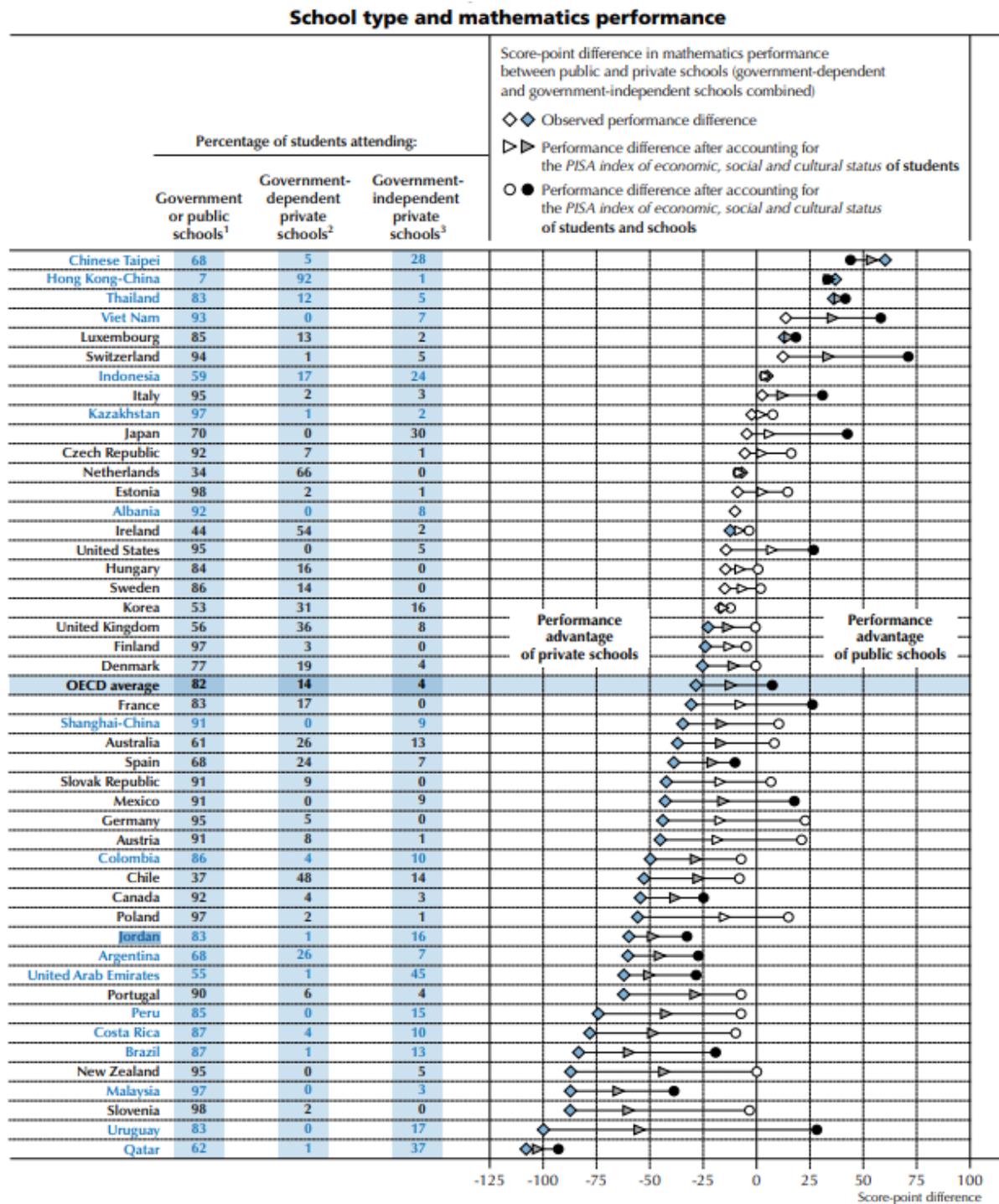
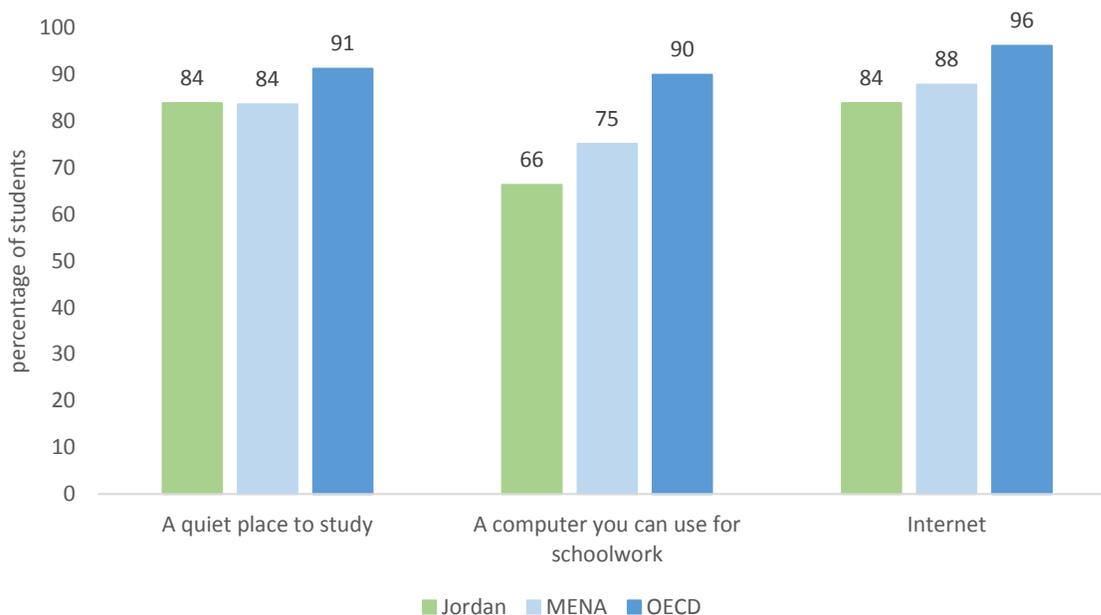


Figure 9: Score Point Difference in Mathematics Performance



In Jordan, many children have access to online learning but universality has not been achieved yet. As depicted in Figure 10, over 16 percent of students in Jordan do not have internet access, 16 percentage points below the OECD average, while one-third do not have a computer that can be used for schoolwork, 25 percentage points below the same benchmark. Looking in more detail, a lot of this digital gap is in low-income households: less than 30 percent of students from the lowest economic status groups have a computer for schoolwork, and only about 50 percent can access the internet.

Figure 10: Student Responses on Access to Online Learning at Home, 2018



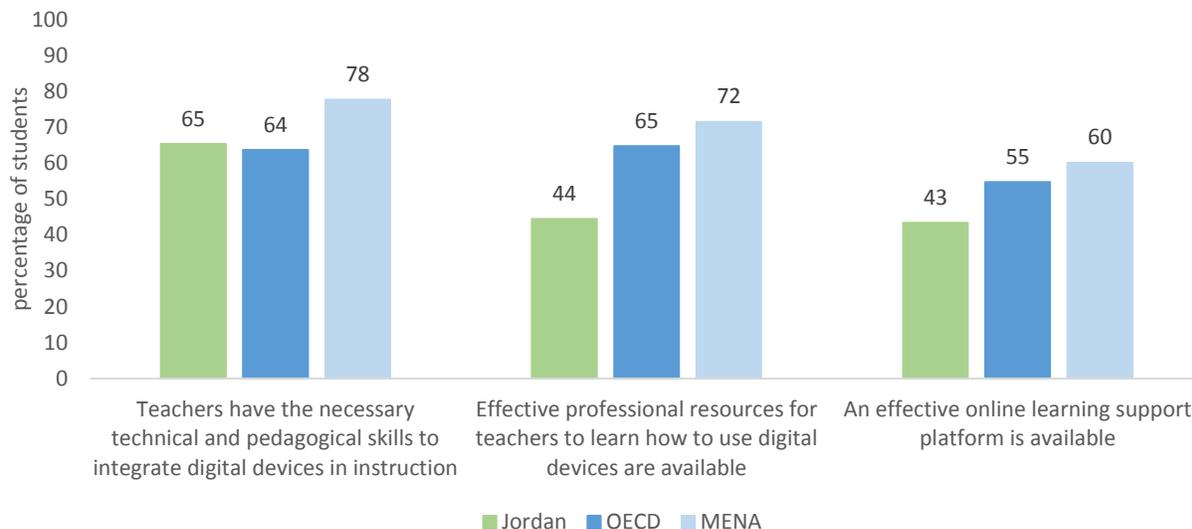
Source: World Bank calculations based on PISA 2018 data.

To refine the level of intervention needed to reach all communities, additional data on usage is needed. Results from PISA suggest that students with access make some use of online resources, with 94 percent of students reporting using the internet for reading emails, research, participating in online discussion, and messaging. Access is necessary but not sufficient for effective distance learning and must be complemented by a supporting enabling environment, both within the system and in the development of key competencies among students and teachers. Going forward, a careful assessment of the skills covered by online resources is needed, and an understanding of how best to transmit these skills to students. Without these clear guidelines, engagement with online content daunting and less learning-oriented, especially among communities who might not have the digital skills needed to make the best use of the tools developed by MOE.

Some Jordanian schools are ready to transition to online learning, but others lack the needed infrastructure and human capital. Schools play a critical role in monitoring and promoting student engagement with digital learning materials. PISA results reveal that most schools in Jordan are not well prepared to continue classes virtually and provide individualized student support. Only 43 percent of 15-year-old students in Jordan attend schools with an effective online learning support platform (as reported by school principals in Figure 11). In addition, less than half of schools have professional resources for teachers to capitalize on digital material, substantially below the MENA average of 72 percent. Results further suggest that the majority of teachers lack the necessary technical and pedagogical skills to

integrate digital resources into their instruction. Connecting physical and online resources is of paramount importance, as it creates an ecosystem that incentivizes skill development in utilizing EdTech solutions.

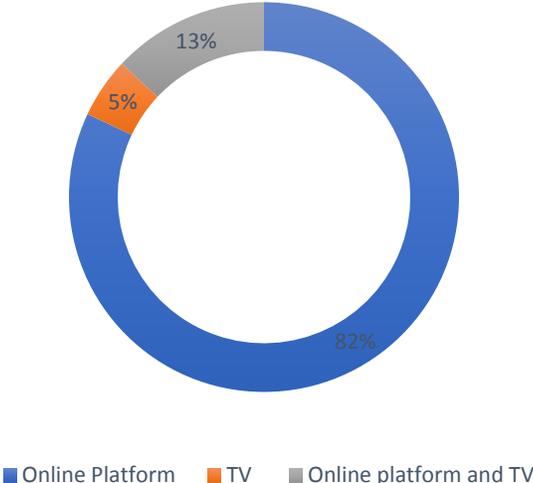
Figure 11: School Principal Responses on System Preparedness for Transition to Online Learning



Source: World Bank calculations based on PISA 2018 data.

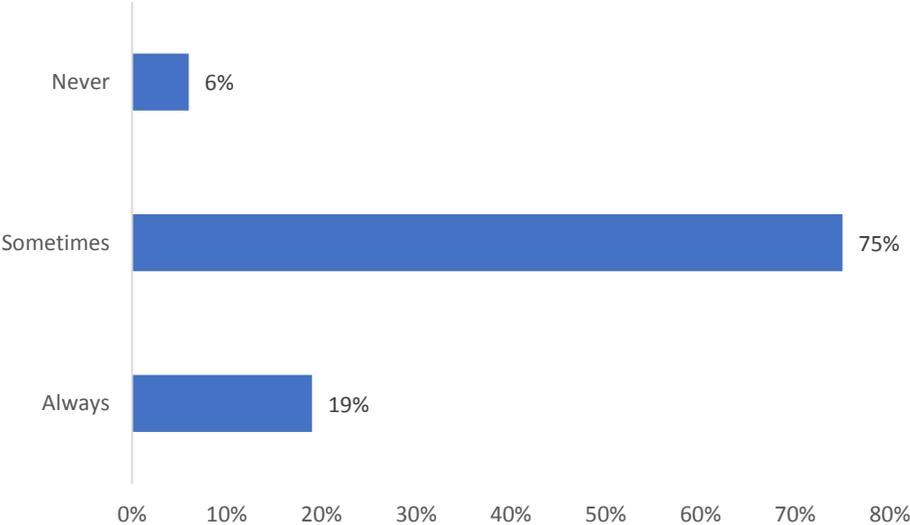
Initial feedback on distance learning modalities shows mixed results. A national survey, commissioned by the MOE and conducted by Edvise on a sample of 3,548 students and teachers from both public and private schools as well as their parents, showed that 82 percent of the respondents use online platforms to access their lessons (Figure 12). Figure 13 highlights that connectivity has consistently been an issue for students. The survey also shows that most of the sample faces difficulties and inconsistencies in connecting to the internet. This is likely to be more pronounced for students in low bandwidth regions of Jordan, and does not capture students who are completely disconnected from the internet and likely are not able to connect to platforms for any duration of time. Feedback on the actual modality performance is also mixed, with only one-third of either parents, teachers or students responding positively to the current format of distance learning (Figure 14).

Figure 12: Digital source used to access distance learning materials



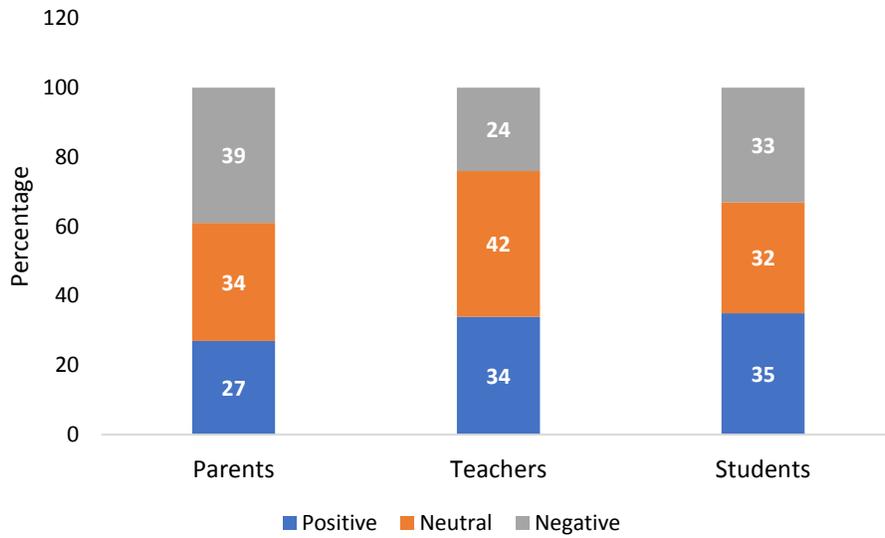
Source: Edvise ME survey, March 2020.

Figure 13: How often do students have difficulties connecting to the internet.



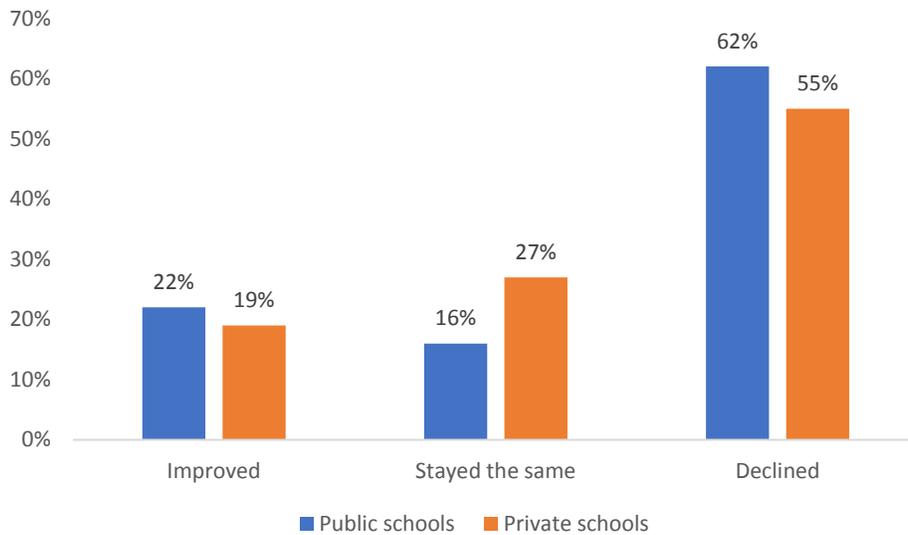
Source: Edvise ME survey, March 2020.

Figure 14: Public school feedback on distance learning



Source: Edvise ME survey, March 2020.

Figure 15: Parents' reflection on students' performance during distance learning



Source: Edvise ME survey, March 2020.

Part II: Simulating the Impact of COVID-19 on Learning in Jordan

Part I provides an important context of the landscape of public and private spending on education, as well as the utilization of services across population sub-categories. This context is used as a baseline in the assumptions of analyzing the potential impact of the pandemic on learning, particularly for more vulnerable populations. Part II highlights how pertinent policies on tightening efficiency and bringing equity in learning outcomes has become since school closures, in light of the existing gaps laid out. Therefore, understanding the overall impact on key outcome indicators is used to shed light on the pertinence of ensuring that the MOE's strategy for the upcoming school years directly accounts for vulnerable populations.

Simulating the potential impact of COVID-19 on learning outcomes in Jordan clearly illustrates the magnitude of the education sector challenge. The World Bank has developed a tool to estimate the adverse effects of COVID-19 on children's learning and the differential impact of the crisis across socioeconomic groups (Azevedo et al. 2020a). The purpose of this simulation is to highlight the importance of developing effective strategies to help students catch up. The simulation results should not be misinterpreted as a call to accelerate the reopening of schools. Any decision on the gradual return to in-person instruction in the classroom needs to be driven by health and safety considerations (UNESCO et al. 2020).

The pandemic negatively affects student learning through multiple channels, including school closures and reductions in family income. School closures have a direct impact on student learning by suspending in-person classroom instruction and substantially reducing overall instructional time due to the limitations of distance learning. The adverse impact on learning may be amplified by mental health challenges. School closures can lead to social isolation, increase exposure to domestic violence and disrupt daily routines that are particularly important for students with pre-existing mental health conditions (Lee 2020). Early studies suggest a general increase in signs of major depression among students (Asanov et al. 2020; Xie et al. 2020). In addition to temporary school closures, learning will also be negatively affected by the economic consequences of the global pandemic. Reductions in family income due to reduced economic activity or parental job loss may lead to long-term increases in student dropout rates and reductions in education expenditure (Azevedo et al. 2020b). The simulation tool accounts for both the length of school closures and the potential impact of income shocks on learning.

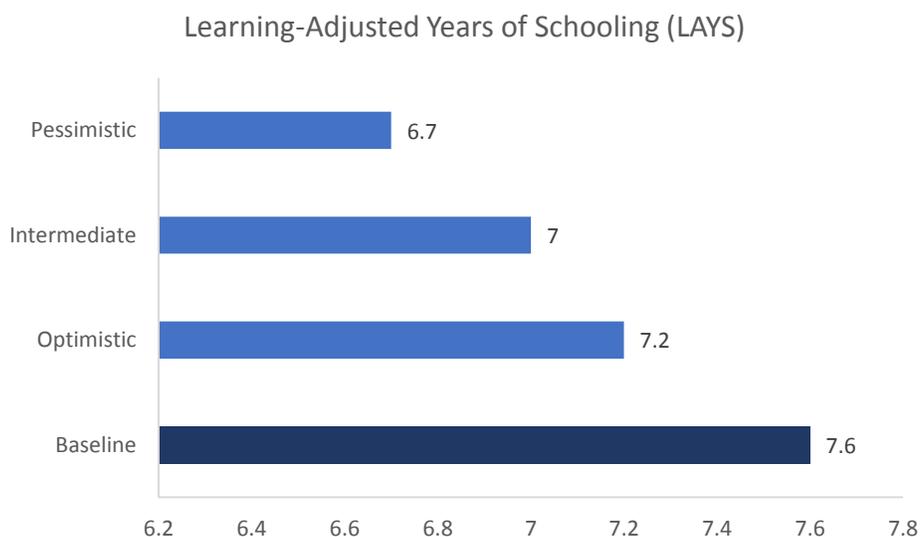
The effectiveness of mitigation measures depends on the government's education sector response, students' access to distance learning materials, and the general effectiveness of distance learning arrangements. As already described above, the Jordanian Ministry of Education was quick to implement distance learning through its online platform *Darsak* and lectures broadcasted on TV. Access to distance learning, however, varies substantially by socioeconomic status (SES). According to PISA data, as few as 27 percent of students in the bottom SES quintile have access to a computer that they can use for schoolwork, compared to 94 percent of students in the top SES quintile (Gortazar et al. 2020). Robust evidence on the effectiveness of distance learning is still very scarce, especially at the K-12 level (2020c). While existing studies on education technology and online learning suggest that online learning may also offer opportunities for improving learning (J-PAL 2019; Escueta et al. 2017), they do not account for the emergency nature and rapid shift of entire education systems towards distance learning in the context of a pandemic. In Jordan, a survey conducted in early April 2020 among 6-18-year-old students enrolled in public schools provides insights on the perceived effectiveness of distance learning measures: around 7 percent of respondents felt online and TV lectures were not clear at all, while 23 percent found that only a small share of online/TV lectures explained the subject clearly to students (CSS 2020). Building on the information available for the Jordanian context, the parameter settings of the simulation tool were adjusted to closely match the realities on the ground and generate informed estimates (for technical

details, see appendix).

The potential impact of COVID-19 on learning can be expressed in different metrics. In the following, we estimate the effect on (1) learning-adjusted years of schooling (LAYS); (2) Jordan’s mean score in the Program for International Student Assessment (PISA); and (3) the share of Jordanian students not meeting minimum proficiency levels in reading as assessed in PISA. In addition, the simulation tool is used to assess to what extent learning losses may translate into long-term earnings losses for affected students. Results are presented for an optimistic, intermediate and pessimistic scenario. These scenarios differ by assumptions taken for key parameters of the model, including the length of school closures and the assumed effectiveness of mitigation measures to reduce learning losses (see appendix).

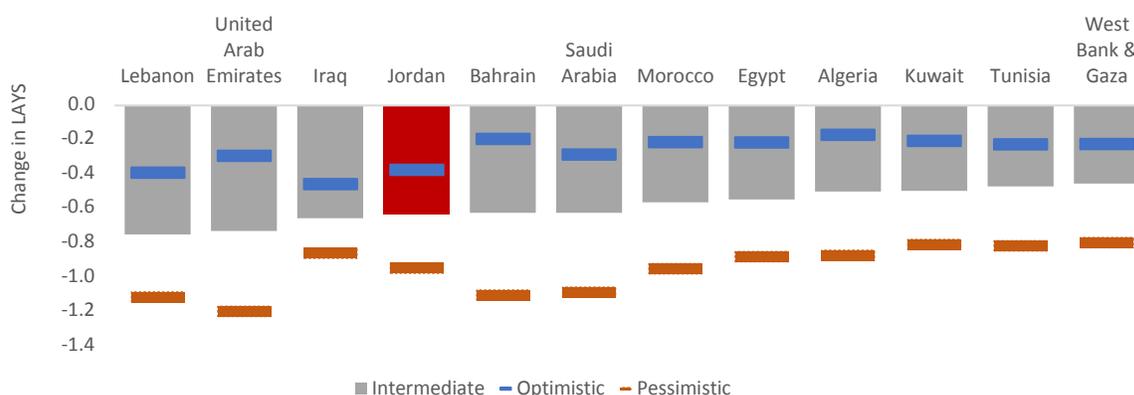
Even in the optimistic scenario, COVID-19 may reduce the effective years of basic schooling that Jordanian children receive by 0.4 years. Learning-adjusted years of schooling are based on the number of years of schooling a child is expected to receive and adjusts for the quality of schooling received based on results from international student assessments (Filmer et al. 2018). As such it gives an indication of the education system’s effectiveness and is also a key component feeding into the World Bank’s Human Capital Index (World Bank 2018). The pandemic may reduce LAYS in Jordan by an estimated 0.4-0.9 years (see Figure 16). In other words, Jordanian children may receive one year of *effective* schooling less due to the pandemic. This impact is comparable to the impact on the Middle East and North Africa at the regional level, which is estimated to average a loss of up to 1.0 LAYS (see Figure 17).

Figure 16: Estimated impact of COVID-19 on learning-adjusted years of schooling in Jordan, by scenario



Source: World Bank MENA regional tool for simulating the potential impacts of COVID-19 school closures on schooling and learning outcomes (henceforth “World Bank Simulation Tool”).

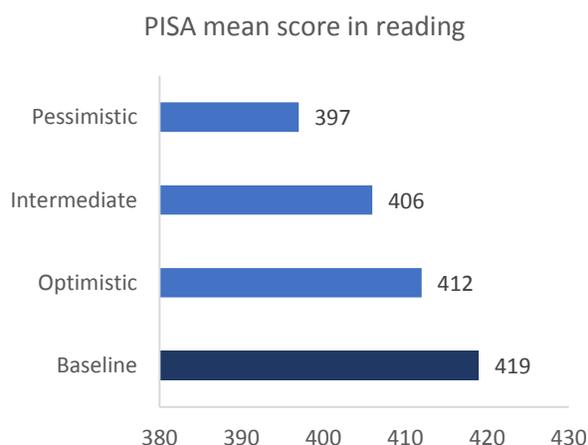
Figure 17: Estimated change in learning-adjusted years of schooling across MENA, by scenario



Source: Azevedo et al. 2021.

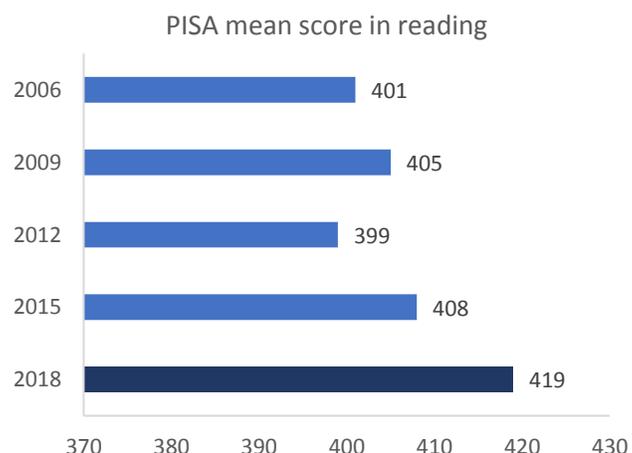
COVID-19 threatens to undo years of hard-earned progress in improving children’s learning, as evidenced by the simulated impact on PISA reading scores. When comparing the results of the simulation tool to the historical trends in Jordan’s PISA reading scores, the magnitude of the potential impact of COVID-19 becomes apparent (see Figures 18 and 19). In the optimistic scenario, COVID-19 will erase almost the entire progress made by Jordan between PISA 2015 and PISA 2018. In the pessimistic scenario, the mean reading score may fall even below the lowest value Jordan has ever recorded in this category. The intermediate scenario suggests that Jordan may fall back to its performance level of PISA 2009. An analysis of heterogeneous impact by socio-economic status suggests that the achievement gap between the poorest and richest quintile may increase by 11 percent, highlighting the significant negative impact of COVID-19 on equity.

Figure 18: Estimated impact of COVID-19 on mean PISA mean score in reading, by scenario



Source: World Bank Simulation Tool.

Figure 19: Jordan PISA mean score in reading over time (retrospective)

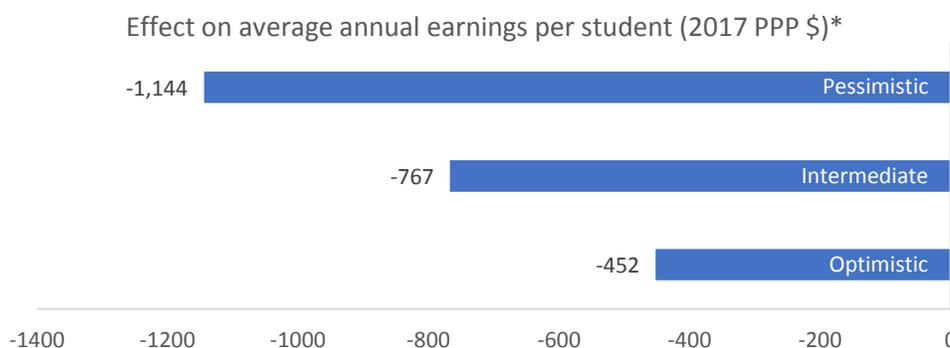


Source: World Bank 2020, based on PISA.

Syrian refugee children are likely to be disproportionately affected by COVID-19. Long-term reductions in household income will have a negative impact on children’s school enrolment and access to digital devices that are key to benefit from distance learning. Preliminary data suggests that Syrian workers are more likely to have permanently lost their jobs due to the pandemic than Jordanian workers (ILO 2020). Phone surveys among almost 1,600 Jordanian and Syrian workers revealed that 35 percent of surveyed Syrians who were employed before the crisis lost their jobs permanently, compared to 17 percent of Jordanian workers. While the sample is not representative at the national level, it suggests that Syrian households are particularly vulnerable to the adverse impact of COVID-19. As such, many Syrian refugee children are likely to suffer greater learning losses than their Jordanian peers.

Learning losses of students affected by the COVID-19 pandemic will translate into losses in future earnings. For Jordanian students, average future annual earnings may fall by as much as 8 percent (see Figure 20). To put this estimate into perspective, across the MENA region the potential losses in lifetime earnings per student per year range from \$457 to \$1,789; notably higher levels than those estimated for other regions such as South Asia (\$116 to \$319) or Latin America Caribbean (\$242 to \$835) (Blom and Nannyonjo 2021). On the global scale the average student is expected to face an average reduction of 2 to 8 percent of annual expected earnings (Azevedo et al. 2020b). This estimate is just the impact expected from learning losses and does not factor in the worsened prospects of young people today due to macroeconomic challenges caused by COVID-19 across the globe. Expressed in terms of Present Value loss to economy lifetime earnings (accounting for average adult survival and labor force participation rates) for all Jordanian students, reductions due to COVID-19 may amount to US\$0.014 trillion.

Figure 20: Estimated effect on average earnings per student, by scenario



Note: Mean monthly earnings of employees in 2017 PPP \$ from ILO. Assumes returns to education of 8%.
Source: World Bank Simulation Tool.

The results of the simulation tool show that COVID-19 is posing an unprecedented challenge to education sectors around the world. The pandemic will inevitably lead to a sharp decline in human capital and widening inequality. It is likely that intergenerational income and education mobility will be affected for years to come. With emerging evidence suggesting a risk of COVID-19 transmission among children above age 10, countries around the world may face prolonged school closures, which will further exacerbate the learning crisis (Park et al. 2020). As such, the Jordanian Ministry of Education needs to continue placing its focus on ensuring that all children are reached with distance learning measures, including those without access to digital devices or TV. Building on its strong collaboration with Edraak and other private sector institutions, coupled with financial and technical support under the World Bank Jordan Education Reform Support Program-for-Results, Jordan has the potential to pioneer a coherent and sustainable blended learning approach to “build back better”.

Appendix

Table 1 provides an overview of parameters set for the simulation of the impact of COVID-19 on learning outcomes in Jordan. The optimistic scenario assumes that, on average, one third of schools will be closed due to COVID between March 2021 and December 2021, while the intermediate scenario assumes slightly more than half of the system will be closed. In the pessimistic scenario, an average 80 percent of the education system will be closed. For all scenarios, the simulation tool accounted for actual observed school closures between March 2020 and February 2021.

The assumed effectiveness of distance learning arrangements has been increased as compared to the default values for upper-middle income countries, given the Government of Jordan's swift education response to the crisis and comprehensiveness of learning materials disseminated through the online platform *Darsak* and TV.

For estimating the access to distance learning modalities by socioeconomic quintile, the team used PISA data on availability of a computer for schoolwork as a proxy.

For average learning gains assumed for one school year on the harmonized learning outcome (HLO) scale¹, the team took the average of the mean points for upper- and lower-middle-income countries as reported in Azevedo et al. 2020b, given that Jordan is on the lower end of the upper-middle-income spectrum with \$4,300 GNI per capita in 2019². The World Bank definition of upper-middle-income economies spans \$4,046 - \$12,535 GNI per capita³.

Table 1: Parameters for simulation of impact of COVID-19 on learning in Jordan

Scenario	<i>Optimistic</i>	<i>Intermediate</i>	<i>Pessimistic</i>
Share of school system closed between March-Dec 2021 (average)	33%	55%	80%
Effectiveness of distance learning modalities (simple average across SES quintiles)	45%	25%	15%
Access to distance learning modalities by socioeconomic quintile			
Poorest Quintile	27%		
Quintile 2	58%		
Quintile 3	71%		
Quintile 4	80%		
Richest Quintile	94%		
Learning gains during one school year (points in HLO scale)			
Average across socioeconomic quintiles	35		

¹ See Patrinos and Angrist 2018 for further details on the modeling of the HLO scale.

² See World Bank World Development Indicators Database.

³ See World Bank Country and Lending Groups 2020.

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