

## Another Lost Year:

# Estimating the Educational and Economic Costs of Lebanon's Public-School Closures in 2022-23<sup>1</sup>

### Summary

Children in Lebanese public schools have experienced four consecutive disrupted academic years (2019-20 to 2022-23), receiving approximately 270 days of in-person teaching compared with the 600 days they should have received across four typical academic years.

Pre-COVID-19 pandemic, students in Lebanon were estimated to complete an average of 10.2 years of schooling. However, taking into account how much they actually learned, students in Lebanon received an average of only 6.3 learning-adjusted years of schooling (LAYS), on par with other countries in the region like Morocco. A learning loss simulation model, developed during the COVID-19 pandemic, estimated that private- and public-school students in Lebanon lost between 1.0-1.2 LAYS due to COVID-19-related school closures.

Extending the model, Lebanon's public-school students are estimated to have lost a further 0.4-0.5 LAYS due to school closures during 2022-23. The resulting learning levels of **4.6-4.9 LAYS** would be among the lowest in the MENA region—comparable to the pre-pandemic LAYS levels of only two MENA countries: Yemen (4.2) and Iraq (4.0), along with several countries in Sub-Saharan Africa, such as Sierra Leone (4.9) and Guinea (4.6).

The resulting negative impacts of the learning lost due to these disruptions will affect the Lebanese economy for decades to come. Learning losses will translate into losses in future earnings across the working lives of the affected students (approximately between the years 2033-2078). We estimate that, if not remediated, learning losses from the 2019-20, 2020-21, and 2021-22 school years could translate into a loss of 10 percent of future earnings across the working lives of the affected students. Additional learning losses incurred during the 2022-23 academic year could translate into a further loss of **3.2-3.8 percent** of future earnings for the affected students. Thus, the 2022-23 school closures alone could translate into losses to the Lebanese economy of between **USD 217-253 million** (in current USD terms).

The World Bank's most conservative estimate is that each additional day of public-school closure results in approximately **USD 3 million** (also in current USD terms) in future losses to the Lebanese economy across the working lives of the affected students.

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<sup>1</sup> Prepared by Igor Kheyfets (Senior Economist, HLCED) and Adelle Pushparatnam (Senior Education Specialist, HMNED) with inputs from Hana Addam El Ghali (Senior Education Specialist, HMNED) and Nadine Joseph El Franji (Consultant, HMNED) under the guidance of Jean-Christophe Carret (Country Director, MNC02), Andreas Blom (Practice Manager, HMNED) and Dina Abu-Ghaida (Lead Economist and Human Development Program Leader, HMNDR). Special thanks to Yi Ning Wong (Junior Professional Associate, HEDGE) for providing the learning loss simulation tool and corresponding support to this analysis, and to colleagues who provided valuable feedback on the note – Norbert Matthias Fiess (Lead Country Economist and Program Leader, EMNDR), Koen Geven (Senior Economist, HEDGE), and Sheena Fazili (Junior Professional Associate, HEDGE).

## 1. Introduction

Prolonged school closures—due to conflicts, pandemics, natural disasters, macroeconomic crises, or labor disputes—have been shown to have a lasting negative effect on student performance.<sup>2</sup> The channels through which the interruption in formal schooling affects learning outcomes include: foregone instructional time during which no new learning takes place; forgetting of previously learned material which could affect potential future learning; and increased dropout of students who may not return to class when schools reopen (including due to negative shocks to family incomes, which tend to affect the most vulnerable students, including girls). If not effectively remediated after schools reopen, these learning losses can lead to reduced future productivity and earnings for the affected students, which in turn translate into economy-wide losses during the working lives of the affected cohort.<sup>3</sup>

## 2. World Bank learning loss simulation tool

At the beginning of the COVID-19 pandemic in 2020, the World Bank developed a global quantitative model to simulate pandemic-related losses from school closures.<sup>4</sup> In short, the model's learning loss pathways are defined as: Learning disrupted by the share and length of school system closures, and the effectiveness of mitigation measures (such as remote learning). Schooling is further affected by negative income shocks to households, which lead to increased school dropout rates. The model's outcomes of interest are: learning-adjusted years of schooling (LAYS), learning poverty, and the share of students performing below the Programme for International Student Assessment (PISA) minimum proficiency levels. The model also allows to translate the LAYS measure into economic losses: namely, the amount of lost future earnings for the current generation of children affected by school closures at the individual and economy-wide level.<sup>5</sup>

## 3. Learning losses incurred in Lebanon between 2020 and 2022

The World Bank estimates that children in Lebanese public schools received approximately 190 days of in-person teaching across the previous 3 academic years (2019-20, 2020-21, and 2021-22), compared with the 450 days they should have received across 3 typical academic years.

Using the learning loss simulation tool described above, the World Bank previously estimated that the amount of learning of an average student in Lebanon decreased from 6.3 LAYS<sup>6</sup> before the pandemic to between **5.1-5.3** LAYS as a result of the pandemic-induced school closures—a loss of between **1.0-1.2** LAYS— (see middle column in Figure 1). This translates into an average decrease of between **8.6-10.2** percent in the future earnings of the affected students over the course of their working lives.

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<sup>2</sup> Jakubowski et al. (2023).

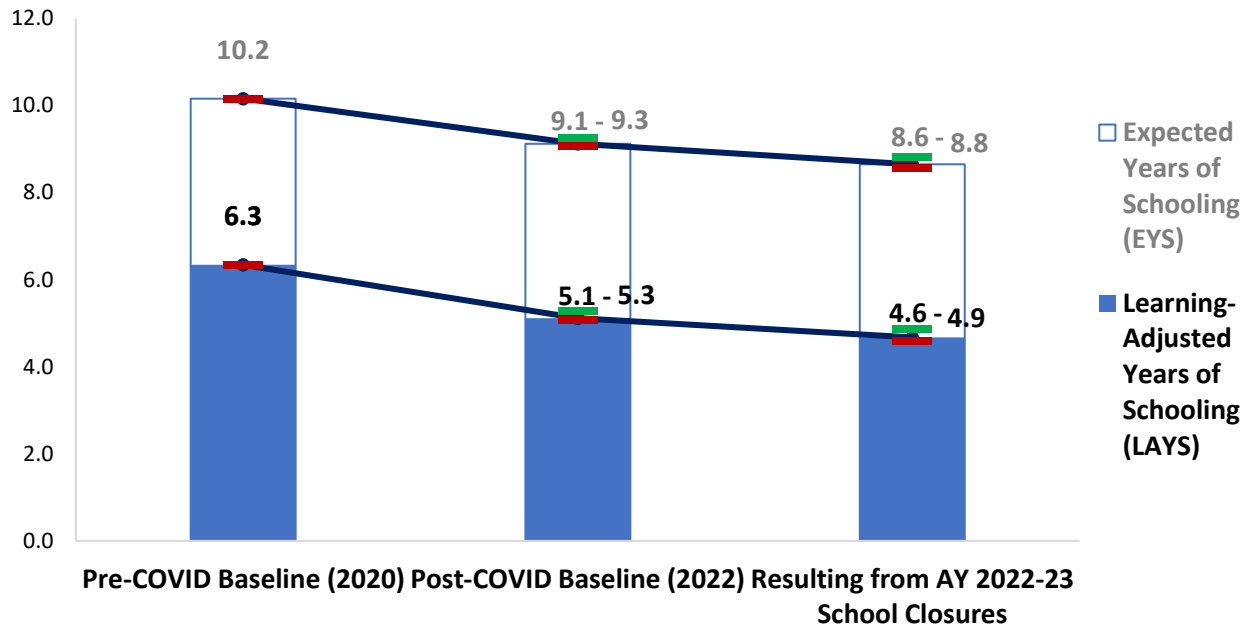
<sup>3</sup> Azevedo et al. (2021).

<sup>4</sup> The analytical framework of the model is described in detail in Azevedo et al. (2021) and World Bank et al. (2022), and is similar to other learning loss simulation models (see, for example, the meta-analysis by Betthäuser et al., 2023).

<sup>5</sup> Azevedo et al. (2021) and World Bank et al. (2022).

<sup>6</sup> Before the pandemic, an average student in Lebanon could expect to complete 10.2 expected years of schooling (EYS). However, when taking into account the amount of actual learning that he or she acquired in those years, the number of learning-adjusted years of schooling (LAYS) was only 6.3.

**Figure 1. Potential Learning Losses in Lebanon between 2020 and 2023**



*Source: World Bank simulation results.*

The findings from the learning loss simulation model are corroborated by emerging evidence of actual learning losses incurred during this time.<sup>7</sup> Data from an Early Grade Reading Assessment (EGRA) administered in Lebanon in March-April 2022 showed that only 2.8 percent of Grade 2 students' reading comprehension scores were at an intermediate level or above, compared to 11.0 percent in April-May 2018.<sup>8</sup>

#### **4. Additional learning losses incurred during the 2022-23 academic year**

The ongoing economic and financial crisis in Lebanon kept public schools shut for parts of the 2022-23 academic year due to teacher strikes in the face of their severely devalued salaries. Further, public school students received at most 4 days of instruction per week even when public schools were officially open. As a result, children in Lebanon suffered a fourth consecutive disrupted year of schooling. The rest of this note estimates the learning and future earning losses resulting from the 2022-23 academic year.

Using the learning loss simulation tool described above, the World Bank estimates that the total amount of learning for an average student in Lebanon's public schools would further decrease by **0.4-0.5 LAYS** (see right-hand column in Figure 1) due to the lost schooling observed during the 2022-23 academic year. In line with emerging evidence globally, the simulations assume that when schools are closed students acquire, on average, little to no learning. The resulting LAYS of **4.6-4.9** is comparable to the pre-pandemic

<sup>7</sup> Jakubowski et al. (2023).

<sup>8</sup> USAID (2023).

LAYS levels of only two MENA countries: Yemen (4.2) and Iraq (4.0), along with several countries in Sub-Saharan Africa, such as Sierra Leone (4.9) and Guinea (4.6).<sup>9</sup>

### 5. Potential lifetime earnings losses for affected students and economy-wide losses for Lebanon

The range of estimated learning losses related to school closures in 2022-23 outlined above could lead to an additional decrease of **3.2-3.8** percent in the future earnings of the affected students. Assuming average wages in the Lebanese economy return to pre-crisis (2019) levels during the working lives of these students<sup>10</sup>— estimated to be between the years 2033 and 2078, when these students are expected to be active in the Lebanese labor force—an individual student could lose between **USD 1,051-1,257**<sup>11</sup> over the course of her working life as a result of the most recent school closures. Aggregated across all students enrolled in Lebanon’s public schools,<sup>12</sup> the country’s economy may lose an additional **USD 217-253 million** over the coming decades due to these latest school closures (equivalent to approximately 1 percent of Lebanon’s 2022 GDP). Note that this is in addition to the estimated 10 percent of future earnings that could be lost due to school closures from the previous three school years. **The World Bank’s most conservative estimate is that each additional day of public-school closures could result in approximately USD 3 million in future losses to the Lebanese economy.**

The full range of simulation results can be found in Table 1 with a detailed description of the assumptions included in the Technical Annex.

**Table 1. Summary of Learning Loss Estimates**

		<b>“Optimistic” Scenario (Low Learning Losses)</b>	<b>“Intermediate” Scenario (Medium Learning Losses)</b>	<b>“Pessimistic” Scenario (High Learning Losses)</b>
	<b>Learning-adjusted Years of Schooling (LAYS)</b>			
[1]	Pre-COVID baseline (2020)	6.3	6.3	6.3
[2]	Post-COVID baseline (2022)	5.3	5.1	5.1
[3]	Resulting from 2022-23 school closures	4.9	4.7	4.6
[4]	<b>Change from 2022 baseline</b>	<b>-0.4</b>	<b>-0.4</b>	<b>-0.5</b>
	<b>Future earnings losses resulting from 2022-23 school closures (USD)</b>			
[5]	Annual Earnings Losses, Individual	-276	-296	-323
[6]	Lifetime Earnings Losses, Individual	-1,051	-1,127	-1,227
[7]	<b>Lifetime Earnings Losses, Economy (USD mln)</b>	<b>-217 M</b>	<b>-233 M</b>	<b>-253 M</b>
[8]	<b>Percent change from baseline earnings</b>	<b>-3.2%</b>	<b>-3.5%</b>	<b>-3.8%</b>

<sup>9</sup> See World Bank (2020).

<sup>10</sup> Average annual pre-crisis earnings of **USD 9,360** from ILO (n.d.) are adjusted by the COVID-induced losses discussed in section 3. Sensitivity analyses in section 7 relax the assumption that expected long-run earnings in Lebanon will return to pre-crisis levels.

<sup>11</sup> All estimates in this paragraph are in current USD terms.

<sup>12</sup> Adjusting for pre-pandemic adult survival and labor force participation rates.

## 6. Sensitivity analyses: Adjusting for lower expected long-run earnings in Lebanon

Average earnings in USD terms have fallen dramatically during Lebanon's current economic crisis. Between 2019 and 2022, average monthly earnings of employees at their main job declined by approximately 88 percent—from USD 787 to USD 91—according to the Lebanon Follow-up Labor Force Survey carried out in January 2022. It is, therefore, possible that due to the ongoing crises, the earnings of future workers—i.e., the current students who would be affected by school closures in 2022-23—may not return to pre-crisis levels.

Table 2 below reports the results of the sensitivity analyses, which adjust the long-run expectations of average earnings in Lebanon to below pre-crisis (2019) levels. Respectively, they assume that the average earnings during the working lives of the affected students—expected to be between the years 2033 and 2078—will be at 75, 50, 25, and 12 percent of the COVID-adjusted baseline annual earnings described in section 5 above, as these more pessimistic scenarios are within the realm of possibility given the severity of the ongoing economic and financial crisis.

The resulting losses in lifetime earnings are estimated at **USD 163-190 million** (75 percent scenario), **USD 109-127 million** (50 percent scenario), **USD 54-63 million** (25 percent scenario), and **USD 26-30 million** (12 percent scenario). The resulting percentage losses in expected earnings are estimated at **2.4-2.9 percent** (75 percent scenario), **1.6-1.9 percent** (50 percent scenario), **0.8-1.0 percent** (25 percent scenario), and **0.4-0.5 percent** (12 percent scenario).

## 7. Sensitivity analyses: Adjusting for varying discount rates

Varying discount rates are also applied to calculate the present value of future earnings. The baseline scenario of all results reported above uses a conservative discount rate of 10 percent, which may understate total future economic losses. More aggressive discount rates of 5 percent and 3 percent are used in the sensitivity analyses reported in Panels B and C of Table 2, resulting in higher ranges of potential future economic losses.

The resulting estimated losses in lifetime earnings increase to **USD 623-727 million** (5 percent discount rate with expected long-run earnings returning to 100 percent of pre-crisis levels) and **USD 1,042-1,215 million** (3 percent discount rate with expected long-run earnings returning to 100 percent of pre-crisis levels).

**Table 2. Sensitivity Analyses:**

Adjusting for lower expected long-run earnings in Lebanon and varying discount rates

Panel A. Discount Rate = 10% (baseline)

Sensitivity Analyses:		Discount Rate = 10% (baseline)		
Adjusting for lower expected long-run earnings in Lebanon (↓) and varying discount rates (→)		“Optimistic” Scenario (Low Learning Losses)	“Intermediate” Scenario (Medium Learning Losses)	“Pessimistic” Scenario (High Learning Losses)

*Baseline: Expected long-run earnings in Lebanon = 100% of pre-crisis levels*

[7]	Lifetime Earnings Losses, Economy (USD mln)	-217 M	-233 M	-253 M
[8]	Percent change	-3.2%	-3.5%	-3.8%

*(a) Expected long-run earnings in Lebanon = 75% of pre-crisis levels*

[7a]	Lifetime Earnings Losses, Economy (USD mln)	-163 M	-175 M	-190 M
[8a]	Percent change	-2.4%	-2.6%	-2.9%

*(b) Expected long-run earnings in Lebanon = 50% of pre-crisis levels*

[7b]	Lifetime Earnings Losses, Economy (USD mln)	-109 M	-116 M	-127 M
[8b]	Percent change	-1.6%	-1.8%	-1.9%

*(c) Expected long-run earnings in Lebanon = 25% of pre-crisis levels*

[7c]	Lifetime Earnings Losses, Economy (USD mln)	-54 M	-58 M	-63 M
[8c]	Percent change	-0.8%	-0.9%	-1.0%

*(d) Expected long-run earnings in Lebanon = 12% of pre-crisis levels*

[7d]	Lifetime Earnings Losses, Economy (USD mln)	-26 M	-28 M	-30 M
[8d]	Percent change	-0.4%	-0.4%	-0.5%

Table 2 (continued). Sensitivity Analyses:

Adjusting for lower expected long-run earnings in Lebanon and varying discount rates

Panel B. Discount Rate = 5%

Sensitivity Analyses:		Discount Rate = 5%		
Adjusting for lower expected long-run earnings in Lebanon (↓) and varying discount rates (→)		“Optimistic” Scenario (Low Learning Losses)	“Intermediate” Scenario (Medium Learning Losses)	“Pessimistic” Scenario (High Learning Losses)

*Baseline: Expected long-run earnings in Lebanon = 100% of pre-crisis levels*

[7]	Lifetime Earnings Losses, Economy (USD mln)	-623 M	-668 M	-727 M
[8]	Percent change	-3.2%	-3.5%	-3.8%

*(a) Expected long-run earnings in Lebanon = 75% of pre-crisis levels*

[7a]	Lifetime Earnings Losses, Economy (USD mln)	-467 M	-501 M	-545 M
[8a]	Percent change	-2.4%	-2.6%	-2.9%

*(b) Expected long-run earnings in Lebanon = 50% of pre-crisis levels*

[7b]	Lifetime Earnings Losses, Economy (USD mln)	-311 M	-334 M	-363 M
[8b]	Percent change	-1.6%	-1.8%	-1.9%

*(c) Expected long-run earnings in Lebanon = 25% of pre-crisis levels*

[7c]	Lifetime Earnings Losses, Economy (USD mln)	-156 M	-167 M	-182 M
[8c]	Percent change	-0.8%	-0.9%	-1.0%

*(d) Expected long-run earnings in Lebanon = 12% of pre-crisis levels*

[7d]	Lifetime Earnings Losses, Economy (USD mln)	-75 M	-80 M	-87 M
[8d]	Percent change	-0.4%	-0.4%	-0.5%

Table 2 (continued). Sensitivity Analyses:

Adjusting for lower expected long-run earnings in Lebanon and varying discount rates

Panel C. Discount Rate = 3%

Sensitivity Analyses:		Discount Rate = 3%		
Adjusting for lower expected long-run earnings in Lebanon (↓) and varying discount rates (→)		“Optimistic” Scenario (Low Learning Losses)	“Intermediate” Scenario (Medium Learning Losses)	“Pessimistic” Scenario (High Learning Losses)

*Baseline: Expected long-run earnings in Lebanon = 100% of pre-crisis levels*

[7]	Lifetime Earnings Losses, Economy (USD mln)	-1,042 M	-1,117 M	-1,215 M
[8]	Percent change	-3.2%	-3.5%	-3.8%

*(a) Expected long-run earnings in Lebanon = 75% of pre-crisis levels*

[7a]	Lifetime Earnings Losses, Economy (USD mln)	-781 M	-838 M	-912 M
[8a]	Percent change	-2.4%	-2.6%	-2.9%

*(b) Expected long-run earnings in Lebanon = 50% of pre-crisis levels*

[7b]	Lifetime Earnings Losses, Economy (USD mln)	-521 M	-558 M	-608 M
[8b]	Percent change	-1.6%	-1.8%	-1.9%

*(c) Expected long-run earnings in Lebanon = 25% of pre-crisis levels*

[7c]	Lifetime Earnings Losses, Economy (USD mln)	-260 M	-279 M	-304 M
[8c]	Percent change	-0.8%	-0.9%	-1.0%

*(d) Expected long-run earnings in Lebanon = 12% of pre-crisis levels*

[7d]	Lifetime Earnings Losses, Economy (USD mln)	-125 M	-134 M	-146 M
[8d]	Percent change	-0.4%	-0.4%	-0.5%



## Technical Annex: Notes, Sources, and Assumptions

[1] From World Bank (2020).

[2] Based on simulations conducted for World Bank et al. (2022) using the analytical framework described in Azevedo et al. (2021).

[3] New simulations using [2] as the baseline and applying the analytical framework described in Azevedo et al. (2021). **Key assumptions:**

- School years lost = **0.47** (equivalent to 70 days missed of a 150-day school year);
- Share of students affected in public schools (i.e., not transferring to private schools) = **90% / 95% / 100%** (optimistic/intermediate/pessimistic);
- Mitigation effectiveness (i.e., share of learning happening when schools are closed, e.g., through private tutoring) = **10% / 5% / 0%** (optimistic/intermediate/pessimistic).

[4] = [3] – [2].

[5] Based on [4] applying the analytical framework described in Azevedo et al. (2021) without adjusting for purchasing-power parity (PPP). **Key assumptions:**

- Average annual earnings in Lebanon based on LFS2019 from ILOSTAT (**USD 9,360**) minus the COVID-induced earnings losses resulting [2] above = **USD 8,559 / 8,442 / 8,404** (optimistic/intermediate/pessimistic);
- Mincerian return = **8%** increase in earnings for one additional year of education.

[6] Present value of [5] over the working life of the average affected student, applying the analytical framework described in Azevedo et al. (2021) without adjusting for PPP. **Key assumptions:**

- Discount rate = **10%**;
- Years for currently enrolled cohorts to enter the labor market = **10**;
- Years of working life = **45**.

[7] Economy-wide present value of [6] for all affected students, applying the analytical framework described in Azevedo et al. (2021) without adjusting for PPP. **Key assumptions:**

- Number of affected students (i.e., current enrollment in public schools) = **484,973**;
- Adjustment factor for adult survival and labor force participation, based on World Bank (2020) = **43%**.

[8] = [5] / COVID-adjusted baseline annual earnings described in note [5] above.

[7a-8a], [7b-8b], [7c-8c], [7d-8d]: Sensitivity analyses adjusting the long-run expectations of average earnings in Lebanon to below pre-crisis (2019) levels. Respectively, they assume that the average earnings during the working lives of the affected students—between roughly 2033 and 2078—will be at **75%, 50%, 25%, and 12%** of the COVID-adjusted baseline annual earnings described in note [5] above. All other analyses assume a return to 100% of pre-crisis levels of average earnings.

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