

School Is Closed

Simulating the Long-Term Impact of the COVID-19 Pandemic–Related School Disruptions in Kuwait

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Abstract

The schooling disruption caused by COVID-19 in Kuwait is among the longest in the world. Using the similarities between the schooling disruptions due to the Gulf War and the schooling disruption due to the COVID-19 pandemic, this note shows that students in school during the COVID-19 pandemic face significant reductions in the present value of their lifetime income. Furthermore, the

findings show that students in higher grades during the pandemic are likely to face larger reductions in lifetime earnings than students in lower grades. Kuwaiti females in secondary school who will become civil service workers face a reduction of close to \$40,000. The corresponding reduction for males is more than \$70,000.

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1. Introduction

The COVID-19 pandemic forced schools to close worldwide. Psacharopoulos et al. (2020) report that as of April 2020, 192 countries closed schools countrywide. As of February 2022, schooling capacity is improved but still not back to its pre-pandemic levels (UNESCO n.d.). This disruption will be costly (Hanushek & Woessmann 2020: 14–15; Azevedo et al. 2021a: 4–8; Donnelly and Patrinos 2021), however, the magnitude of the costs remains elusive.

A few studies attempt to simulate the lost schooling and its cost. In Azevedo et al.'s (2021a: 18–20) model scenario with 0.3 learning-adjusted years of schooling lost, the average student loses 2 percent of their earnings annually, or (2017 PPP) \$366. They also simulate a “very pessimistic” scenario of 1.1 years lost, which predicts a loss of 10 percent of earnings annually, equivalent to (2017 PPP) \$1,776. Psacharopoulos et al. (2021) build their baseline simulation on the existing estimates of the key variables, including returns to schooling, pandemic-related school closures, and the availability of distance learning during the pandemic.

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They assume private returns to a year of schooling of 8%, schooling time lost to be 0.33 years, implying 2.67 percent lower future earnings. After considering the assumed mitigating effects of distance learning, the average annual loss per student is (2011 PPP) \$458. Finally, Hanushek and Woessmann (2020: 8–9) use the OECD’s Survey of Adult Skills predominantly conducted in high-income countries and estimate that a loss of 0.25 school years predicts a 1.9 percent decrease of income over one’s career, while 1 lost year predicts a 7.7 percent decrease.

These simulations are certainly useful. However, they also have inherent weaknesses when assessing long-term impacts because the underlying parameters are not directly estimated from a school-disruption event. Instead, the parameters are the best guesses of what the overall disruption might look like, by necessity simplifying and omitting the complex system of response feedback loops initiated by the disruption. Among the key omissions are the mitigating bottom-up activities of parents and students in response to school closures, such as private tutoring and mentoring. Moreover, the simulations are by design assessing the global effects of the schooling disruption, setting the issue of more disaggregate effects aside.

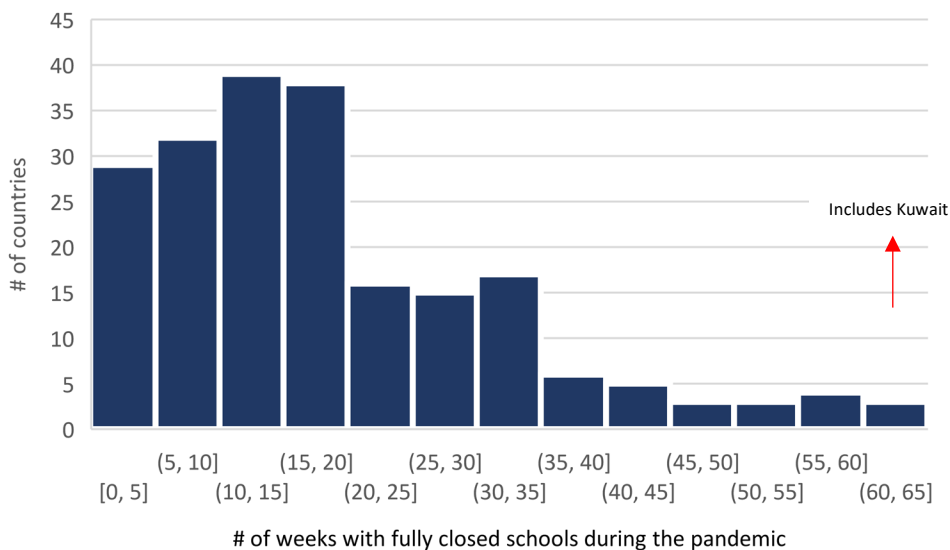
This paper estimates the present value of lost income for a future Kuwaiti civil servant whose studies are disrupted by the COVID-19 pandemic. We do so by building on Bilo et al. (2021), who use a unique data set and the natural experiment of the Gulf War induced school disruption, to estimate the private costs of the pandemic. We argue that the Gulf War induced a school disruption that is similar to the schooling disruption caused by the COVID-19 pandemic and therefore, the methodology is well suited to simulating the long-term impacts of schooling disruptions in the context of the pandemic. Equally importantly, the Gulf War disruption happened almost 30 years ago, allowing us to capture the mentioned bottom-up feedback

loops that are missing in other approaches. Applying this methodology, we find that Kuwaiti females in secondary school who will become civil service workers face close to \$40,000 reduction in the present value of their lifetime income; and males who will become civil service workers face close to \$70,000 reduction. Furthermore, we demonstrate that the impacts last long – even after almost 30 years.

2. Comparing the Two Schooling Disruptions

Figure 1 illustrates that Kuwait is among the countries with the longest school closures for in-person education caused by the COVID-19 pandemic. Public schools were closed for in-person learning for 62 weeks nationwide between February 26, 2020, and October 2021, when they reopened (Alhouti 2020; Kuwait Times 2021). Further, public schools did not begin fully remote schooling until more than seven months after the last day of in-person schooling (Alhouti 2020; Kuwait News Agency 2020). As in many countries, this remote learning system was hurriedly put together by the government. Unfortunately, the benefits of even well-functioning remote learning are likely below those of in-person schooling (Engzell et al. 2021).

Figure 1: Distribution of the length of school closures during the pandemic across countries



Note: As of November 2021, Kuwait had sixty-two weeks of closures.
 Source: UNESCO (n.d.)

Bilo et al. (2021) use a 2019 cross-sectional payroll data set on Kuwait’s civil service to estimate private returns to schooling for Kuwaiti nationals. Their estimates are notable for two reasons. First, such a detailed and high-quality data set—covering fully 64 percent of all employed Kuwaitis—is a rare find, particularly in the Middle East and North Africa region. Second, the estimation method uses a natural experiment, the Gulf War of 1990–91, to estimate the impact of school disruptions on salaries.

We argue that the Gulf War school disruption is similar to the current pandemic in four respects (see Table 1).¹ First, schools closed during both episodes. The Gulf War led to general school closures and damaged education infrastructure in Kuwait during the 1990/91 school year, with adverse effects on schooling extending into the 1991/92 school year. Second, learning did not come to a standstill. A large, though unknown, number of students sought

¹ See Bilo et al. (2021) for details on the Gulf War school closures.

schooling abroad during the Gulf War. Pandemic school closures led to remote schooling. Third, both episodes harmed mental health, though the nature and extent of the harm remain unknown (Bilo et al. 2021: 9–10; de Miranda et al. 2020; Vindegaard & Benros 2020). Last, school disruptions did not lead to universal grade repetition. After the catch-up period in the 1991/92 academic year, students continued their schooling as if the war had not happened. Similarly, during this pandemic, students in Kuwait are continuing without repeating grades.

We concede that the two episodes are not identical. For example, it is impossible to give a precise comparison of pandemic remote schooling with its heterogeneous quality across students and the schooling abroad that some students received during the war. Instead, we show that the episodes are meaningfully similar in terms of the order of magnitude of the schooling shocks they represent. The meaningful similarities between the two episodes, we argue, justify our use of the Gulf War experience to simulate the effect of pandemic-related school disruptions on labor-market outcomes.

Table 1: Comparing the two schooling disruptions in Kuwait

	Gulf War schooling shock	COVID-19 schooling shock
School closures	1 school year (1990/91)	~4 months (spring 2020) + 1 school year (2020/21)
Schooling during closures	A large, though unknown, number of students studied abroad	Online/remote schooling
Other factors	War-related mental health problems	Pandemic-related mental health problems
Post-shock remediation	Tutoring and catchup schooling in 1991/92	Pandemic is still ongoing, but grade repetitions are unlikely

Sources: Alhouti 2020; de Miranda et al. 2020; Kuwait News Agency 2020; Vindegaard & Benros 2020; Bilo et al. (2021); Kuwait Times 2021.

3. Estimating the Costs of Schooling Disruptions

Given that the Gulf War did not lead to universal grade repetition, Bilo et al. (2021) estimate schooling lost in the Gulf War’s aftermath instead of schooling lost during the war. Table 2 summarizes their estimates and the resulting average percentage change in monthly compensation. Each estimation compares a schooling cohort affected by the war (a treatment group) with a postwar control group of students born between March 16, 1985, and March 15, 1992.²

Table 2: The effect of the Gulf War on average years of schooling and average monthly compensation of Kuwaiti nationals working in the civil service

Exposed to the war in:	Women			Men		
	Estimated returns to 1 year of schooling	Estimated change in years of schooling	Change in monthly compensation	Estimated returns to 1 year of schooling	Estimated change in years of schooling	Change in monthly compensation
Elementary school	8.6%	-0.39	-3.4%	8.8%	-0.50	-4.3%
Middle school	7.5%	-0.58	-4.3%	9.4%	-0.45	-4.2%
Secondary school	6.6%	-0.79	-5.1%	7.3%	-0.82	-6.0%

Source: Bilo et al. (2021), authors’ calculations.

The salary reduction caused by the schooling disruption is estimated at 3.4 to 6 percent.³ The numbers add up over a lifetime (see Table 3). Given the similarity of the two schooling disruptions, our estimates suggest the average pandemic-related lifetime income loss

² The results are likely more reliable the closer the control and treatment groups are in age, making the estimates for the elementary school–treatment cohort the most reliable. When students are close in age, unobserved characteristics are more likely to be similar between treatment and control groups, decreasing the estimates’ bias (Bilo et al. 2021).

³ One might argue that compared to the private sector, civil servant salaries are less tied to the marginal product of labor, thereby less responsive to losses in human capital. If this is the case, the estimates we present are likely a lower bound of the percentage salary loss of private sector employees.

may be close to \$40,000 in present-value terms for women and more than \$70,000 for men, assuming a 3 percent discount rate.⁴

The estimated annual salary losses also allow a comparison with the simulations discussed in the introduction, and they are of the same order of magnitude. Azevedo et al.'s (2021a: 18–20) estimated range for the average annual student loss is between (2017 PPP) \$366 and \$1,776. Our results range between (2019) \$1,589 and \$3,722. Our results might tend to be higher for two reasons. First, we use 2019 rather than 2017 US dollars. And second, Azevedo et al.'s results represent the averages for students across the world. In contrast, we estimate the impact for students in a high-income country, where average salaries are significantly higher.

Table 3: Estimates of annual income loss and the present value of lifetime income loss

Exposed to school disruption in:	Women		Men	
	Annual salary loss (US\$)	Present value of lifetime loss (US\$)	Annual salary loss (US\$)	Present value of lifetime loss (US\$)
Elementary school	1,589	20,663	2,667	40,185
Middle school	2,010	30,141	2,605	44,536
Secondary school	2,384	39,964	3,722	70,248

Note: All values are in 2019 US dollars, using the exchange rate of \$3.29 per Kuwaiti dinar. This is the average exchange rate in 2019, the source year of the data.

Assumptions: Working life of women is twenty-five years. Working life of men is thirty years. Discount rate is 3%. Annual salary loss is computed from the average salary of a Kuwaiti national of a given gender working in the civil service. Present value of lifetime loss uses average annual salary of a Kuwaiti national of a given gender working in the civil service with a given number of years of service. Average number of years before joining labor force is 11.8 (elementary school), 7.3 (middle school), and 3.8 (secondary school) for women and 11.6 (elementary school), 7.1 (middle school), and 3.6 (secondary school) for men.

Source: Bilo et al. (2021), authors' calculations.

⁴ There are two reasons for the gender difference. First, male average earnings are higher. Second, we assume a longer working life for men because the earliest retirement age in some cases comes after 25 years of service for women but only after 30 years of service for men.

4. Conclusion

This paper contributes to the literature simulating the size of the private earning losses caused by school closures during the COVID-19 pandemic. Such estimates of pandemic-related damage must suffice until the pandemic's effects unfold and we can measure them directly.

The high estimated cost naturally leads to the question of mitigation options. A joint UNESCO, UNICEF, and World Bank report (Azevedo et al. 2021b: 35–40) provides one of the most recent overviews of the options in the context of the COVID-19 pandemic, offering a list of interventions based on past experiences. It introduces three policy levers that can accelerate learning. First, it suggests using the pandemic-induced learning crisis to adjust curricula to the existing learning levels and replacing overly aspirational learning outcomes of the pre-pandemic curricula. Second, it points out that learning losses can be recouped through extended instructional time, such as extending the school day or the school year. Third, it lists interventions proven to increase the efficiency of learning. The list, for example, includes targeted instruction, where teachers present material according to the learning level of students rather than according to their age.

Ultimately, however, one has to recognize that education policies and their adjustments happen in most countries through the political arena. Optimal and desirable adjustments, as seen by the education experts, might then not turn out to be “optimal” through the lens of a given institutional setting, whether in Kuwait or elsewhere. Desirability of an outcome does not make such an outcome necessarily feasible as the public choice scholars have been suggesting all along. One always has to ask whether the policy makers and government employees have the necessary incentive and knowledge to accomplish what is asked of them (Gwartney and

Wagner 1988: 6). Specifically, in the case of education, if the pandemic-related policy response is deemed insufficient, one not only has to seek the more appropriate policy responses, but also must ask whether the ecosystem of formal and informal rules makes such responses incentive-compatible. This is not an easy task, but our evidence suggests that the stakes are high enough to take it seriously.

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