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Impacts of Covid-19 on households' business, employment and school education: Evidence from household survey in CAREC countries

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ADBI Working Paper Series

IMPACTS OF COVID-19 ON HOUSEHOLDS' BUSINESS, EMPLOYMENT AND SCHOOL EDUCATION: EVIDENCE FROM HOUSEHOLD SURVEY IN CAREC COUNTRIES

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Abstract

The impacts of the COVID-19 outbreak have heavily affected Central Asia Regional Economic Cooperation (CAREC) member countries, which include Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, the People's Republic of China (PRC), Tajikistan, Turkmenistan, and Uzbekistan. The COVID-19 crisis and the resulting falls in demand and supply due both to uncertainty and policy measures such as lockdowns, "social distancing," and travel restrictions are having a severe impact on employment and education in CAREC member countries. In order to better understand these impacts, computer-assisted telephone interviews (CATI) of households were conducted in ten countries from the CAREC region (excluding the PRC). This paper estimates the impact of COVID-19 on employment, household business and education in schools in December 2020 compared with June 2020.

Keywords: COVID-19, Central Asia, household survey, school education, employment, family business

JEL Classification: D14, G51, H12, H84, I10, I24, J6

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1. INTRODUCTION

The COVID-19 outbreak has triggered one of the worst employment crises worldwide since the great depression. Policy interventions such as lockdowns, "social distancing," and travel restrictions and uncertainties in future economic outcomes have affected labor demand and supply. These negative impacts manifested through several channels, including loss of employment or reduced working hours, loss of sales and income of the household business, restricted travel to work, increased need to stay at home to look after children or sick household members, higher prices and/or lack of availability of staple items, etc. (Morgan and Trinh 2021). The shocks are expected to increase poverty and widen inequalities, especially in developing countries. Central Asia Regional Economic Cooperation (CAREC) member countries (Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, the People's Republic of China (PRC), Tajikistan, Turkmenistan, and Uzbekistan) are no exceptions. Azhgaliyeva et al. (2022) found that the pandemic brought a decline in household income as well as financial difficulties to households in these countries. In order to develop appropriate policy responses to the employment crises and other related challenges, it is necessary to understand the current employment and labor market situation from the household perspective. The Asian Development Bank Institute (ADBI) has been carrying out household surveys in CAREC countries to better understand the size, aspects, and incidence of impacts on vulnerable people, as a part of the Asian Development Bank's overall strategy to deal with the current crisis. Assessing the magnitude of these challenges and identifying the most vulnerable households are critical to deploying effective policy responses for the region's efficient recovery and economic development and regional integration, in accordance with the CAREC Strategy 2030.

The main contribution of this paper is that we provide empirical evidence on the impact of the COVID-19 crisis on employment, household business, and child education, which are not studied in Azhgaliyeva et al. (2022), in the CAREC region. We use household data from computer-assisted telephone interviews (CATI) conducted in ten countries from the CAREC region, namely Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. The surveys were conducted from mid-May through to the end of August 2021. Representative samples of 1,000 households in each country were surveyed and asked about their socioeconomic conditions during the period of June to December 2020. We compare employment and household business conditions as well as education in school in June 2020 and in December 2020 in order to see how households were affected by and able to cope with the COVID-19 pandemic.

2. LITERATURE REVIEW

2.1 Effects of COVID-19 Pandemic on Household Business

A huge number of studies also examined the effects of COVID-19 on firm activities (Adian et al. 2020; Apedo-Amah et al. 2020; Inoue and Todo 2020; Dai et al. 2021; Sonobe et al. 2021; Sun, Bao, and Lu 2021). There are several channels through which the pandemic affected the firms. These channels include supply shocks, demand shocks, uncertainty, and credit crunch (Adian et al. 2020; Apedo-Amah et al. 2020). Depending on the nature of the crises, the transmission may be different. For example, during global financial crises, the main channel was access to finance. However, different from previous crises, the most prominent feature of the COVID-19 pandemic is

that firms are hit in all the channels (Adian et al. 2020). Nonpharmaceutical measures such as stay-at-home orders or lockdown policies have reduced the labor supply since workers are forced to stay at home, and thus disrupted the supply chains. Using structural econometric methods, Brinca, Duarte, and Castro (2020) decomposed changes in working hours into supply and demand shock contributions and found that the supply shock contributed more than the demand shock. Candia, Coibion, and Gorodnichenko (2020) suggest that some firms (and most households) form aggregate inflation expectations during the pandemic, seeing it as a supply shock.

Firms also simultaneously are affected by the decline in demand, which is comes from several sources: declines in income; increases in precautionary savings; and increases in unplanned expenditure. Morgan, Trinh, and Kim (2022) showed that in seven Association of Southeast Asian Nations (ASEAN) countries, more than 70% of households experienced income declines in the early phase of the pandemic and 45% of households experienced income declines in the second half of 2020 in comparison to the first half of the year. Meanwhile, 32% of households in ASEAN countries reported a decline in expenditure and that there was a change in expenditure pattern, with a higher share of expenditure on hygiene and health-care products (Morgan, Trinh and Kim 2022). From the firms' perspective, many business owners and managers of both public firms as well as small firms reported that the negative demand shock is their most pressing concern in the early phase of the pandemic (Bartik et al. 2020; Hassan et al. 2020). Meyer, Prescott, and Sheng. (2022) further find that firms are overwhelmingly worried about the decline in demand and sale revenues. In a survey of small US firms, Bartik et al. (2020) reports that, among small US firms, the reasons behind firms' temporary closure are mainly demand shocks rather than supply shocks.

With regards to the COVID-19 pandemic, previous studies find that household businesses, which are mostly small, are more affected than larger firms. As Meyer, Prescott, and Sheng. (2022) argued, in the early phase of the pandemic, demand shock, rather than supply shock, is the major channel through which the pandemic affects a firm's operation, and the demand shock is mostly attributed to nonpharmaceutical measures imposed by governments around the world. Different from larger firms, however, many informal firms (and small and medium-sized enterprises) are operating in sectors that are more prone to be affected by the nonpharmaceutical measures, such as retail or transportation (Fairlie and Fossen 2022). Empirical evidence also shows that small firms tend to experience worse performance than that of larger firms. Using a data set of 13 countries, Adian et al. (2020) show that small firms are more likely by 9 percentage points to experience a fall in sales while the figure for larger firms is only 8 percentage points. They are also less likely to report increases in sales than larger firms. Sun et al. (2021) show that in the PRC small firms are also more likely to face weak market demand than larger firms. However, it should also be noted that, except for firms operating in some industries experiencing demand growth, such as healthcare or home-office equipment and digital firms, larger and formal firms may also face the same problem since, in addition to a decline in the domestic demand, these firms may be affected by a decline in foreign demand (Adian et al. 2020).

2.2 Effects of COVID-19 Pandemic on Children's Education

The COVID-19 pandemic is profoundly transforming society, and such transformation often exacerbates social and economic inequalities in its wake (Engzella, Frey, and Verhagena 2021). To slow down and curb the spread of the virus, governments around the world have imposed a range of measures, including suspending in-person learning

at schools. At the early stage of the pandemic, school closure was implemented in 188 countries, affecting some 95% of the world's student population (UNICEF 2020). In response, schools have moved to online learning.

School closures have devastating effects on education in many aspects. For the children, going to school is the best way to learn new skills and their ability (Burgess and Sievertsen 2020). Carlsson et al. (2015) show that students significantly raise their test scores by 1% of a standard deviation even with just ten days of extra schooling. Similarly, Lavy (2015) reports that total weekly hours of instruction in language, mathematics, and science matter for improving test scores among children in advanced economies. In the context of the pandemic, Burgess and Sievertsen (2020) estimate that if a child experiences 12 weeks (i.e., 60 school days) less schooling this implies a loss of 6% of a standard deviation in the test score.

Not only is there a decrease in accumulating knowledge, but also the likelihood of school dropout may increase. Hallgarten (2020), based on an analysis of the educational impact of the Ebola outbreaks, shows that, during the COVID-19 pandemic, several factors would hinder children from continuing their education. These factors included (1) lack of quality education, (2) reduction in the availability of education services, (3) reduced access to education services, and (4) the lower utilization of schools (Hallgarten 2020). UNESCO (2020) estimates that 24 million children are at risk of not returning to school, resulting in the same level of out-of-school children as in the year 2000, despite two decades of progress in educational access.

To sustain education, schools around the world started to offer classes using alternative means, such as online classes or classes through the television system. However, online classes or the distance learning approach have many disadvantages. Reimers (2022) argues that these alternative learning approaches only partially restore the opportunity to learn and the quality of instruction. This is partly due to the fact that more than half of Mexican students find such learning activities (i.e., online classes or classes through the TV or radio programs) boring (Mejoredu 2020 as cited in Reimers 2022). Furthermore, many students find online classes challenging since they do not receive adequate support and explanation from their teachers and feel confusion about the activities they are supposed to carry out (Reimers 2022).

The COVID-19 pandemic also further widened the educational gaps across genders and groups of students for several reasons. First, many children do not have internet access, personal computers, TVs or even a radio at home. For example, 43.6% of Mexican households did not have internet access during the pandemic (Reimers 2022). In sub-Saharan Africa, a full 80% of children lacked internet access at home. This figure was 49% in Asia and the Pacific, 39% in Latin America, and 34% in the Arab States, while it was only 14% in Western Europe and North America and 20% in Eastern Europe and Central Asia (Giannini 2020). In ASEAN countries, Morgan and Trinh (2021) show that about 8% did not attend any online classes, 19% attended only a few, and 16% attended some but not all. Most children who do not have internet access are from poorer households (Morgan and Trinh 2021). Second, the pandemic causes household economic situations to worsen, especially among poorer households. Consequently, many children, especially girls and children from low-income households, and children with disabilities have further engaged in at-home work to support their parents (Azevedo et al. 2022; Morgan, Trinh, and Kim 2022; Reimers 2022). This would ultimately amplify the effects of learning inequalities, which are rather high (UNESCO 2020).

This research is inspired by, and closely related to studies by Azhgaliyeva et al. (2022) and Morgan and Trinh (2021). This paper uses the same household survey from 10 CAREC member countries (excluding the PRC) as Azhgaliyeva et al. (2022). While Azhgaliyeva et al. (2022) assessed the impact on households' income, expenditure and financial difficulties, this paper assesses the impact on households' employment and children's school education. The main contribution of this paper is that it studies education and employment in CAREC member countries (excluding PRC) during the COVID-19 pandemic.

Morgan and Trinh (2021) carried out computer-assisted telephone interviews (CATIs) of households in eight Southeast Asian countries: Cambodia, the Lao People's Democratic Republic, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam in 2020. A nearly identical (with modifications to facilitate understanding for the households from the CAREC region) survey questionnaire was used for this study.

Morgan and Trinh (2021) examined impacts of COVID-19 on employment in seven ASEAN countries. They found that 44.4% of employees lost their jobs (temporarily and permanently) or experienced a workload cut. Notably, 73.5% Filipino employees in their samples either lost jobs or had to reduce their working hours. In Viet Nam, Thailand, Myanmar and Malaysia, the figures are high—from 45–50%. Interestingly, the proportion of employees in Indonesia who lost their jobs and/or reduced working time is rather low, especially compared with the Philippines.

Morgan and Trinh (2021) examined impacts of COVID-19 on children's education. They found that about 27% of children who stopped schooling could not fully participate in online learning programs because of weak/insufficient internet connections and/or a lack of digital devices. Two COVID-19-related factors—(1) having at least one person who lost their job or had working hours reduced and (2) experiencing financial difficulties—had significant and negative impact on the intensity of online classes taken by children in an average household.

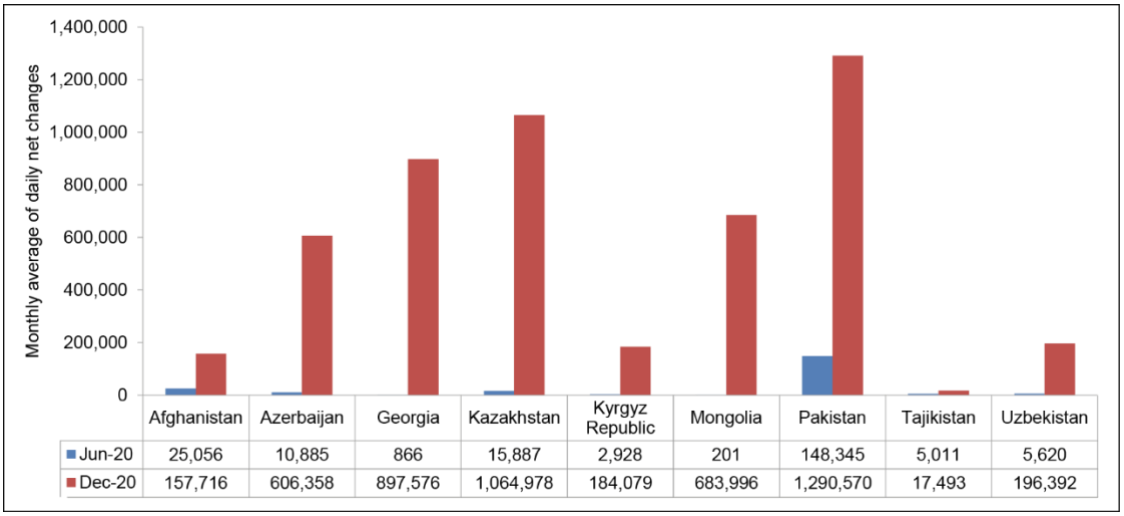
The recent book published by ADBI (Beirne, Morgan and Sonobe 2021), *COVID-19 Impacts and Policy Options: An Asian Perspective*, provides crucial insights into the economic effects of the COVID-19 pandemic in Asian countries and some policy implications for supporting vulnerable households. However, the evidence of the pandemic's impact in the CAREC region is scarce, making it difficult to draw policy recommendations.

3. SPREAD OF COVID-19 AND GOVERNMENT RESPONSES

3.1 COVID-19 in CAREC

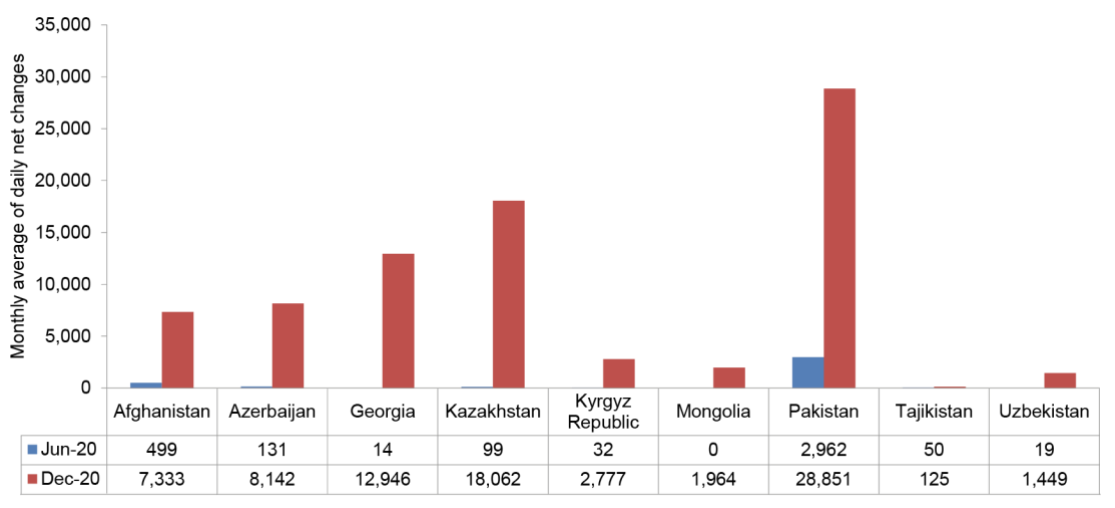
Figures 1–3 present the changes in the phase of COVID-19 pandemic in nine CAREC countries (excluding the PRC and Turkmenistan). Each figure shows the monthly average of daily net changes in confirmed cases of COVID-19, and deaths, respectively. Unfortunately, data on COVID-19 cases and deaths are not available for Turkmenistan (Figure 2). Figures 1–2 demonstrate a large increase in COVID-19 confirmed cases and deaths from June 2020 to December 2020 in nine CAREC countries.

Figure 1: COVID-19 Cases (Daily Net Changes)



Data source: Authors' own calculation using data from Hale et al. (2021).

Figure 2: COVID-19 Deaths (Daily Net Changes)



Data source: Authors' own calculation using data from Hale et al. (2021).

3.2 Government Responses

CAREC countries have implemented various measures, such as lockdowns, school closures, social distancing requirements, and border closures. However, there are some variations across countries in the times of implementation, the duration, and the stringency of these policies. Figures 3–5 show intensity indices of the measures that CAREC countries have adopted as a response to the COVID-19 pandemic (Hale et al. 2021) and Table 1 provides a description of selected indicators corresponding to each figure. These indicators are retrieved from the Oxford COVID-19 Government Response Tracker (OxCGRT) provided by the Blavatnik School of Government of the University of Oxford (2021). See Hale et al. (2021) for more details.

Table *1*: Selected Indicators of Government Response to Pandemic

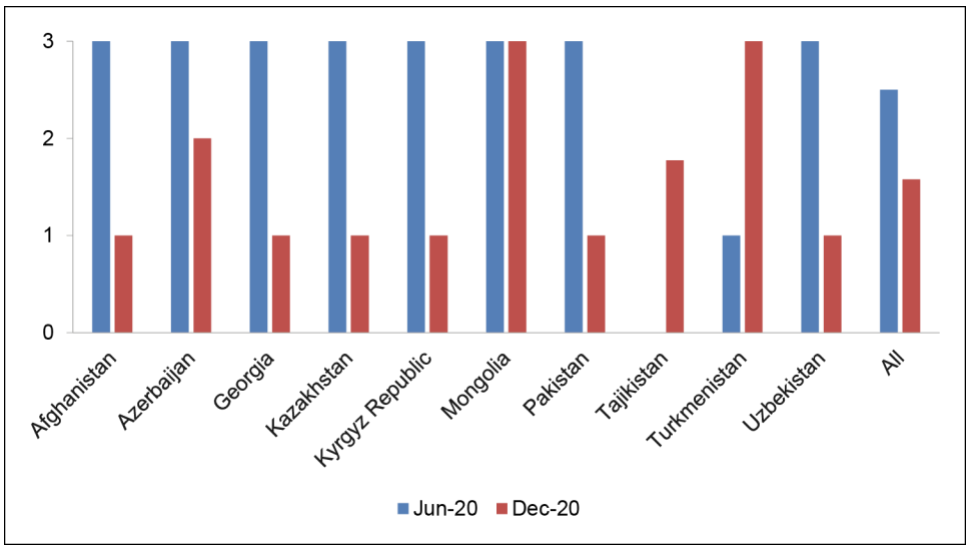
Code	Indicator	Description
C1	School closing	Government requirements for school and university to close. 0 = no requirement; 1 = reduced number of individuals in a classroom (e.g., hybrid in-person/online learning models); 2 = classes being open for some groups (e.g., exams for several days); and 3 = all classes being closed.
C2	Workplace closing	Government requirements for workplace to close. 0= no requirement; 1 = workplaces reopen under sanitation and social distancing requirements; 2 = some shops being open for essential needs (e.g., healthcare, groceries); and 3 = most shops being closed.
C6	Stay-at-home requirements	Government requirements for people to stay home. 0 = no requirement; 1 = clinically vulnerable groups of people strongly recommended or required to shield at home; 2 = curfews; and 3 = cannot leave the house for multiple days.

Note: more explanation of each indicator is provided in OxCGRT Coding Interpretation Guide.

Source: Hale et al. (2021).

Monthly average index of school closure in ten CAREC countries is demonstrated in Figure 3. Figure 3 demonstrates that schools were closed in June 2020 (average monthly index C1 equals 3) in eight of ten CAREC countries, excluding Tajikistan (C1=0) and Turkmenistan (C1=1). However, school closures were significantly relaxed by December 2020 (C1=1) in six of ten CAREC countries. In December 2020 school closure remained high in Mongolia (C1=3), was only slightly relaxed in Azerbaijan (C1=2) and increased in Tajikistan (C1=1.8) and Turkmenistan (C1=3). On average, school closure reduced from 2.5 in June 2020 to 1.6 in December 2020.

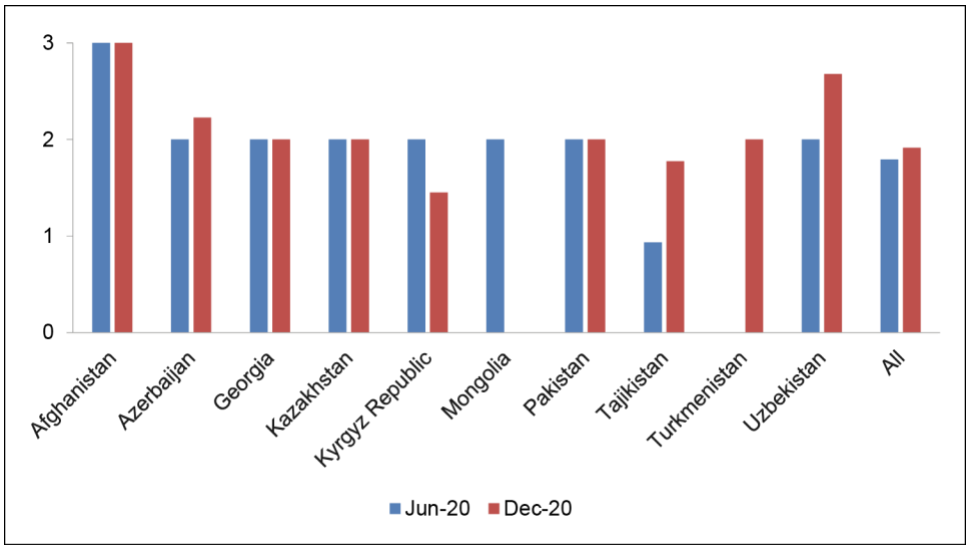
Figure 3: Monthly Average Index School Closure (C1)



Data source: Authors' own calculation using data from Hale et al. (2021).

Figure 4 demonstrates monthly average index of workplace closure in ten CAREC countries. It demonstrates that the strictest workplace closure (C2=3) was in Afghanistan. Also, workplace closure did not change greatly from June 2020 to December 2020 in most countries. On average, workplace closure was around 2 in June and December 2020.

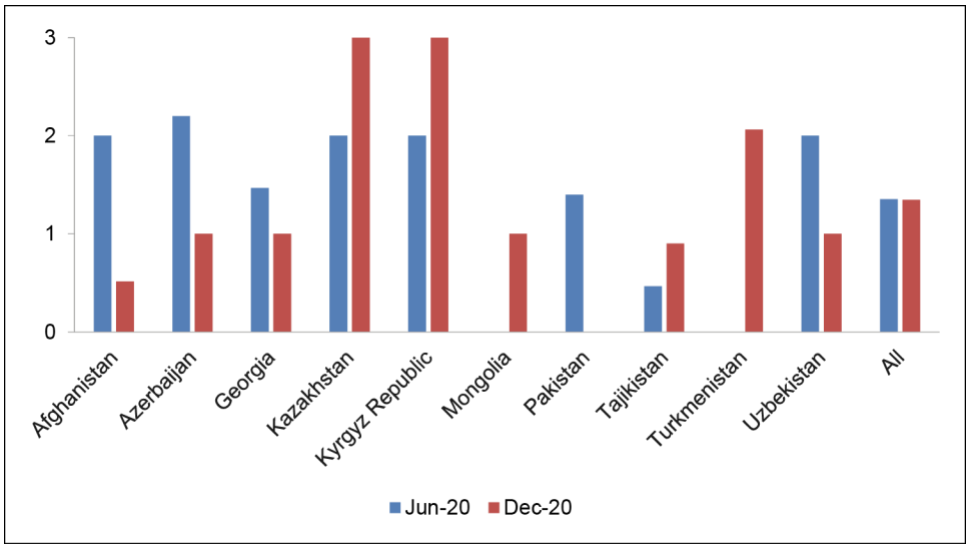
Figure 4: Monthly Average Index of Workplace Closing (C2)



Data source: Authors' own calculation using data from Hale et al. (2021).

Figure 5 demonstrates monthly average index of governments' stay-at-home requirements. It demonstrates that governments' stay-at-home requirements varied greatly across 10 CAREC countries in June 2020 and December 2020. The most strict stay-at-home requirements were in Kazakhstan and the Kyrgyz Republic in December 2020. Stay-at-home requirements were relaxed in December 2020 compared to June 2020 in Afghanistan, Azerbaijan, Georgia, Pakistan, and Uzbekistan; and more restricted in Kazakhstan, the Kyrgyz Republic, Mongolia, Tajikistan, and Turkmenistan.

Figure 5: Monthly Average Index of Stay-at-home Requirements (C6)



Data source: Authors' own calculation using data from Hale et al. (2021).

4. ADBI HOUSEHOLD SURVEY IN CAREC COUNTRIES

The household survey was carried out in ten out of eleven CAREC member countries, namely, Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.

The survey was designed by ADBI and conducted by nine survey companies in the respective countries. It was implemented during May–July 2021, after pilot tests, and all the fieldworks were finished by the end of August 2021. See Azhgaliyeva et al. (2022) for the distribution of the sample across rural and urban areas and household income groups as well as its allocation. Major characteristics of the survey are:

- Computer-assisted telephone survey because of the COVID-19 pandemic
- Respondent was household head or person knowledgeable in household finance
- Length of interview was around 20 mins (in some countries longer, partly due to screening questions)
- The questionnaire included information on:
- Characteristics of the households, including number of members, household head gender, number of employed household members, number in school, age of head of household, education level, urban vs. rural residence, and income, including types of income.
- Changes in income, employment, and working hours in December 2020 compared with the base period of June 2020.
- Whether or not the household experienced financial difficulties and, if so, what coping measures it used, including reducing consumption, borrowing, delaying payments, and applying for government aid.

5. COVID-19 IMPACTS AND COPING STRATEGIES

5.1 Impact of the COVID-19 Pandemic on Employment

Figure 6 presents the distribution of household head's employed sectors in June 2020. Overall, 16% of households work in the agriculture/fishery sector, 11% in industry/manufacturing, 11% in construction, 14% in wholesale and retail, 7% in transport service, 2% in hospitality, 15% in public administration, 11% in health and education, 6% in personal services, and 6% in other services. The distribution of sector of employment varies across countries. Most (nearly one third) work in the agriculture/fishery sector in Afghanistan (32%), Mongolia (32%) and in Pakistan (25%). Nearly one fifth in industry/manufacturing are in Kazakhstan and Turkmenistan. Most employed in construction are in Pakistan (18%), Tajikistan (18%), and Turkmenistan (17%). The highest share of those who work in wholesale and retail is in Turkmenistan (37%). The share of those working in hospitality (restaurants and hotels) is small in all countries (1–4%). The highest shares (23%) of those working in public administration are in Azerbaijan, the Kyrgyz Republic, and Tajikistan. The highest shares of those working in healthcare and education are in Georgia (26%) and Kazakhstan (18%). The share of working in personal services is not large. Most of those who work in personal services are mainly in the Kyrgyz Republic (10%), Pakistan (10%), and Uzbekistan (9%).

Figure 6: Employment Distribution (June 2020), % of Households

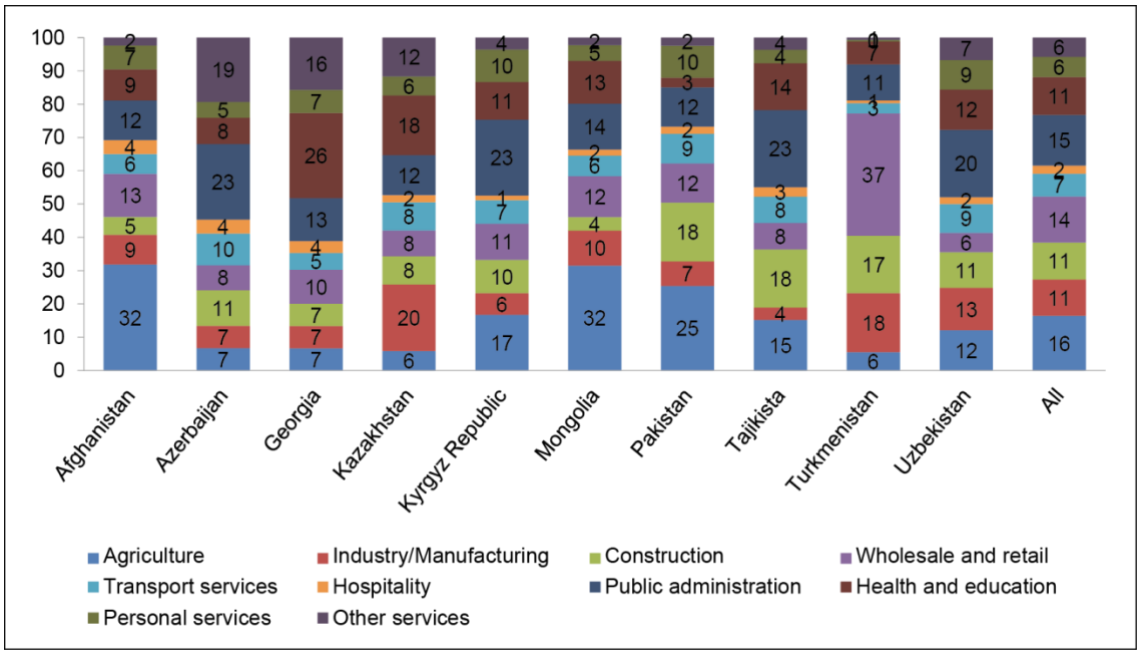


Figure 7 shows the proportion of household members with declined working hours in December 2020 in comparison to June 2020. On average, 24% of employees in our sample experienced either losing their job (temporarily or permanently) or a workload cut in December 2020 in comparison to June 2020. Notably, 67% of employees in Pakistan in our sample had either lost their jobs or had to reduce their working time. This high value is comparable with 73.5% of Filipino employees who had lost their jobs or had to reduce their working time in June 2020 (Morgan and Trinh 2021). In five countries, Azerbaijan, Afghanistan, Mongolia, Turkmenistan, and Georgia, the figures were high, in the range of 25–39%. In the remaining four countries in our sample, the Kyrgyz Republic, Kazakhstan, Tajikistan, and Uzbekistan, the share of employees who had either lost their job or had experienced a workload cut was relatively low (5–7%).

Compared to Morgan and Trinh (2021), the overall share of those who either lost jobs or had reduction in working time is lower in our sample of 10 CAREC member countries (exc. PRC) in December 2020 compared to June 2020 than that of Southeast Asian countries in June 2020 compared to before COVID. We cannot say whether employment in CAREC countries was less affected or not due to the difference in time frame. To compare impact across two regions we need to compare using the same period.

The reasons for household heads not working in December 2020 and June 2020 are demonstrated in Figure 8. Among all households, 5% and 4% had a household head who had lost their job or had no business due to the COVID-19 pandemic in June and December 2020, respectively. Others could not go to work due to one of the following reasons: 9% and 7% were in a lockdown area; 4% and 3% were temporarily absent from work; 4% and 4% were absent due to illness; 4%, and 4% were taking care of others.

Figure 7: Households with Job Loss or Workload Reduced, % of Households

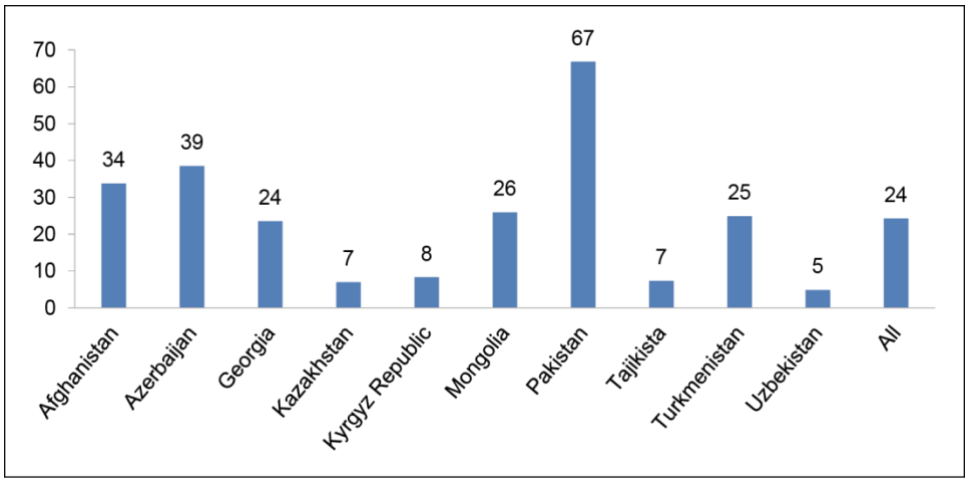
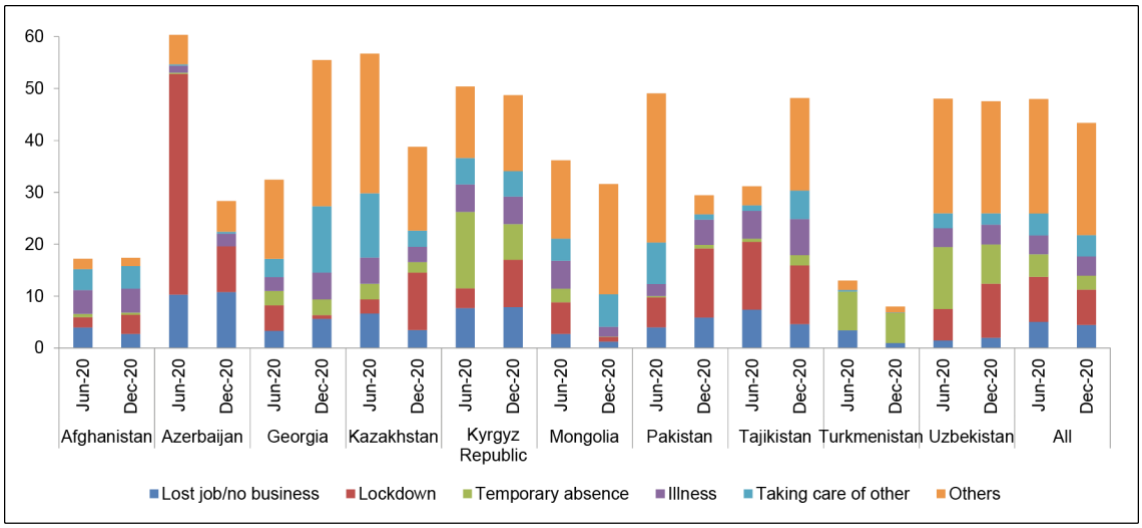


Figure 8: Household Heads with Job Loss, % of Households



The reasons of household heads not working vary across countries. The share of household heads who lost their jobs or had no business due to the COVID-19 pandemic was highest in Azerbaijan (10%–11%). The share of those missing work due to lockdown reduced from 9% in June 2020 to 7% in December 2020. The difference was particularly large in Azerbaijan (from 42% to 9%). The share not working due to taking care of others was high in Kazakhstan in June 2020 (12%) but reduced to 3% in December 2020. However, in Georgia it was the opposite, with the share of household heads not working due to taking care of family members increasing from 4% in June 2020 to 13% in December 2020. Such large changes could be associated with the lockdown of schools or online education for small children.

We examine the factors relating to the impacts of the COVID-19 pandemic on employment (i.e., losing job during June to December 2020). Because the job loss is a binary variable, we employ a probit model and estimate the following equation:

$$JobLoss_i = \alpha_0 + \alpha_1 HH_i + \alpha_2 COVID_i + \epsilon_i \quad (1)$$

where $JobLoss_i$ is a dummy variable that takes the value of 1 if household *i* lost their job during June to December 2020 and 0 if otherwise; HH_i is a set of household characteristics including household head's gender, education, age, income source and location (i.e., rural vs. urban areas); $COVID_i$ indicates whether the household was located in a lockdown area (dummy); and ϵ_i is an error term. Unlike Morgan and Trinh (2021) and Azhgaliyeva et al. (2022), we excluded socioeconomic or income class variable due to the concern on reverse causality: For instance, those households whose head lost their job may fall into the lower-income class. We estimate the above equations for pooled data on 10 countries (with country dummy being controlled) and separately for each country except for Afghanistan because only 2.6% of the household heads lost their job during June to December 2020 there. The household head in the age bracket of "60 or above" is excluded from the regression because typically people in that wage range have already retired and their employment status remained the same during the pandemic.

Table 2: Factors Determining the Probability of Job Loss during the COVID-19 Pandemic

Variables	All	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic
Job loss (mean)	0.132	0.468	0.084	0.076	0.156
	(1)	(2)	(3)	(4)	(5)
Household head female	–0.400***	–0.403	0.004	–0.195	–1.116***
	(0.101)	(0.269)	(0.287)	(0.279)	(0.305)
Household head education					
• high school graduate	–0.104	1.049	–0.628*	–0.347	–0.295
	(0.120)	(1.361)	(0.363)	(0.802)	(0.295)
• college graduate	–0.323***	1.080	–1.047***	–0.321	–0.908***
	(0.123)	(1.355)	(0.340)	(0.780)	(0.310)
Age group (base: 50–59)					
• 20–29	0.291**	0.211	0.125	0.887**	0.464
	(0.122)	(0.325)	(0.537)	(0.427)	(0.313)
• 30–39	0.257***	–0.119	0.281	0.316	0.011
	(0.095)	(0.233)	(0.362)	(0.409)	(0.246)
• 40–49	0.221**	0.290	0.077	0.137	–0.782***
	(0.095)	(0.241)	(0.333)	(0.426)	(0.281)
Income source					
• agriculture	–0.105	–0.005	0.016	0.572	0.062
	(0.084)	(0.245)	(0.360)	(0.363)	(0.216)
• household business	0.915***	2.699***	–0.305	–0.373	–0.085
	(0.079)	(0.192)	(0.444)	(0.633)	(0.215)
• wage/salary	–0.394***	–0.895***	–0.017	0.032	–0.343*
	(0.080)	(0.239)	(0.324)	(0.409)	(0.207)
Rural	0.003	–0.125	–0.134	0.540*	0.394*
	(0.080)	(0.227)	(0.330)	(0.287)	(0.232)
Located in lockdown area	0.194**	1.794***	0.347	0.155	–0.395
	(0.098)	(0.380)	(0.278)	(0.326)	(0.241)
Constant	–3.817***	–3.462**	–1.725***	–2.815***	–0.697*
	(0.268)	(1.419)	(0.420)	(0.877)	(0.381)
Observations	7,653	900	621	819	824

Continued on next page

Table 2 *continued*

Variables	Mongolia	Pakistan	Tajikistan	Turkmenistan	Uzbekistan
Job loss (mean)	0.111	0.051	0.134	0.113	0.119
	(6)	(7)	(8)	(9)	(10)
Household head female	–0.195	0.885**	–0.433	–0.039	–1.214**
	(0.301)	(0.451)	(0.303)	(0.398)	(0.476)
Household head education					
• high school graduate	–0.108	–0.157	0.814*	–0.171	–0.732*
	(0.292)	(0.389)	(0.416)	(0.363)	(0.437)
• college graduate	–0.508	–0.176	0.028	–0.078	–0.763*
	(0.328)	(0.515)	(0.444)	(0.350)	(0.399)
Age group (base: 50–59)					
• 20–29	0.375	–0.178	0.391	–0.431	0.260
	(0.514)	(0.633)	(0.397)	(0.406)	(0.373)
• 30–39	0.806**	0.368	0.499	0.085	0.195
	(0.324)	(0.470)	(0.309)	(0.309)	(0.284)
• 40–49	0.656**	0.444	0.778***	–0.232	0.151
	(0.312)	(0.450)	(0.288)	(0.345)	(0.282)
Income source					
• agriculture	–1.186***	0.316	0.371	–0.129	0.002
	(0.458)	(0.358)	(0.232)	(0.234)	(0.248)
• household business	1.424***	0.296	–0.038	–0.028	–0.289
	(0.260)	(0.513)	(0.281)	(0.256)	(0.325)
• wage/salary	0.593**	1.021**	–0.637***	0.477	–0.449**
	(0.278)	(0.448)	(0.226)	(0.487)	(0.228)
Rural	–0.420	0.891**	–0.015	–0.146	0.134
	(0.320)	(0.423)	(0.256)	(0.229)	(0.229)
Located in lockdown area		0.305	–0.084		–0.433
		(0.622)	(0.218)		(0.355)
Constant	–2.665***	–5.091***	–2.281***	–2.164***	–0.872*
	(0.416)	(0.846)	(0.538)	(0.612)	(0.461)
Observations	725	826	728	783	795

Note: Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Samples whose household head's (HH) age is 60 or above are excluded because most heads are retired. Afghanistan is included in the combined regression but excluded from the separate regression because only 2.63% of household heads experienced job loss during June to December 2020.

Table 2 shows our estimation results. The first column reports the results using pooled data and the subsequent columns present results for each CAREC country. The estimated marginal effects are reported in Table A1 in the Appendix. Our results suggest that female household heads are less likely to experience a job loss than their male counterparts: the likelihood of losing their job is 4.2 percentage points (p.p.) lower than for male household heads. However, the results also vary by country. For example, we only observed a negative and significant relationship in two countries (the Kyrgyz Republic and Uzbekistan), while there is a positive and significant relationship in Pakistan.

The education level on average was negatively associated with the likelihood of losing a job. A household head with a college diploma has a lower probability of experiencing a job loss by 3.4 p.p. than those who have a lower qualification than a high school diploma (i.e., secondary school and below). No significant difference was found for high school graduates. This result is consistent with the finding in Azhgaliyeva et al. (2022), which showed that low-educated workers in CAREC countries were more likely to experience an income decline during the pandemic. The same is also observed in the Kyrgyz Republic, and both college and high school graduates had a lower probability of losing their job in Georgia and Uzbekistan. With the findings in Azhgaliyeva et al. (2022), we may conclude that low-educated workers were especially affected by the pandemic.

Regarding the age group, our results show that younger household heads were more likely to lose their job during the pandemic. On average those in their 20s, 30s, and 40s had a higher probability of job loss by 3.0 p.p., 2.6 p.p., and 2.2 p.p., respectively, compared to those in their 50s. A report from the ILO and ADB (2020) shows that youth employment is hit hardest by the pandemic in the Asia and the Pacific region and stresses the necessity of adopting the large-scale and targeted policy responses. Our finding provides similar results from CAREC countries, while there are some differences among countries. For example, those in their 20s were severely affected in Kazakhstan, while middle-age groups (i.e., 30s and 40s) were more affected in Mongolia and Tajikistan.

Sources of income has some significant relationship with the employment impacts. Our results show that households with income from household businesses or self-employment were more likely to lose their jobs than households that did not have such income. This pattern is also observed in Azerbaijan and Mongolia. Meanwhile, households depending on wage income were less likely to lose their jobs, which is also observed in Azerbaijan, the Kyrgyz Republic, and Tajikistan. However, the significant and positive relationship is observed in Mongolia and Pakistan. These findings indicate that while there are some notable differences across CAREC countries, on average employment in household businesses is more reversely affected by the pandemic than is that of wage labor. These implications further motivate us to study the household business impacts in the following subsection.

We also find that being located in a lockdown area increased the likelihood of losing a job, but this significant and negative employment impact was only found in Azerbaijan. Households in rural areas were also less likely to lose their jobs. The significant relationship is also observed in Kazakhstan, the Kyrgyz Republic, and Pakistan.

5.2 Impact of the COVID-19 Pandemic on Household Business

Figure 9 demonstrates the share of households that operated a business or worked on a farm at any point in the year 2020. On average, 26% of households operated a business or worked on a farm in 2020. However, this varies across countries. Countries with the smallest share of household business include the Kyrgyz Republic (10%), Tajikistan (13%) and Kazakhstan (14%). Azerbaijan has the largest share of household businesses (58%).

Figure 9: Share of Households that Operate a Business or Work on a Farm

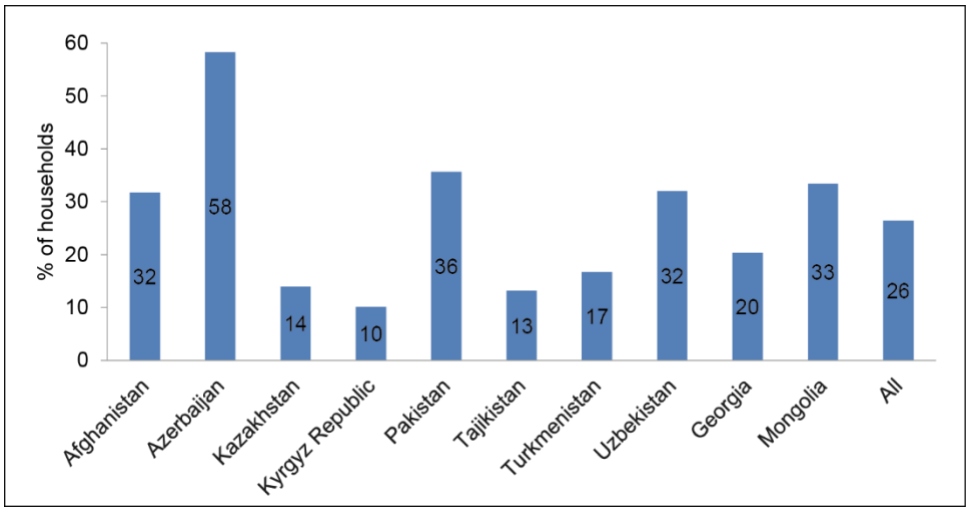


Figure 10: Sectors of a Household Business
(%)

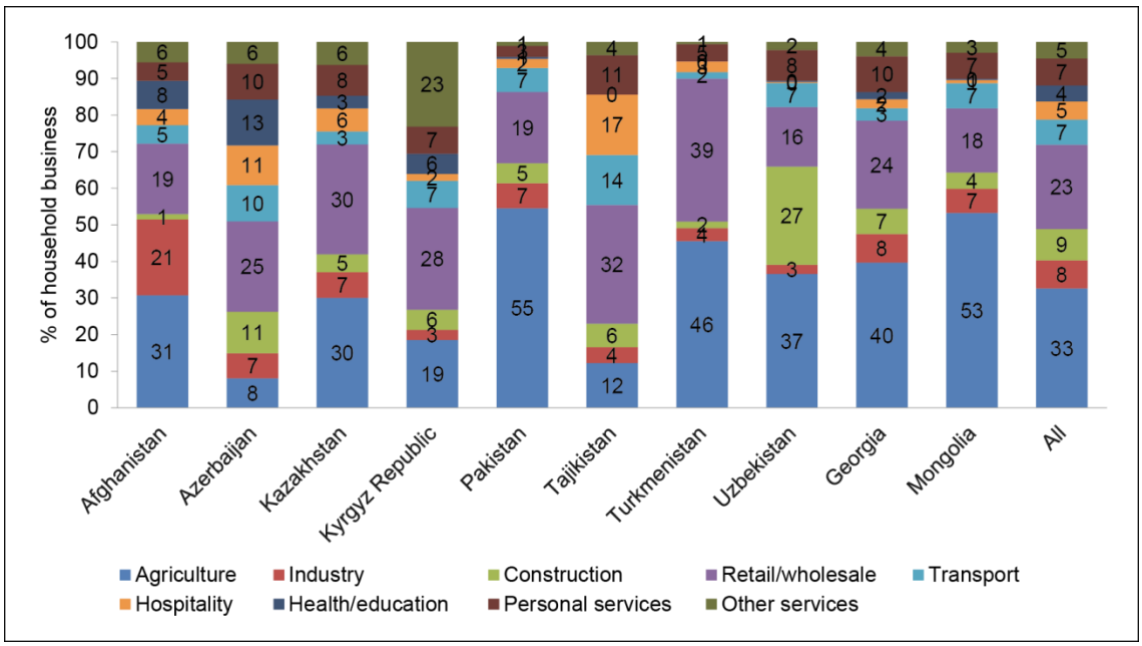


Figure 10 demonstrates sectors of household business. Overall, most of household businesses are in agriculture (33%) and retail and wholesale (23%). On average, household businesses in agriculture is 33%, in industry is 8%, in construction is 9%, wholesale and retail is 23%, in transport is 7%, in hospitality (restaurants and hotels) is 5%, in health and education is 4%, personal services is 7%, and 5% is other services. However, sectors vary across countries. Household businesses in agriculture are mainly in Pakistan (55%), Mongolia (53%), Turkmenistan (46%), Georgia (40%), Uzbekistan (37%), Afghanistan (31%), and Kazakhstan (30%). Household businesses in industry are mainly in Afghanistan (21%). Household businesses in construction are mainly in Uzbekistan 27%. Household businesses in retail and wholesale are well represented in all countries from 16–39%. Household business in transport is mainly in Tajikistan (14%). Household business in hospitality is mainly in Tajikistan (17%).

Household business in health and education is mainly in Azerbaijan (13%). Household business in personal services is mainly in Tajikistan (11%), Azerbaijan (10%), and Georgia (10%).

Figure 11 demonstrates the status of the household business at the time of interview (May–August 2021). Overall, nearly three quarters of household businesses (76%) remained open in May–August 2021. The remaining 24% were closed, out of which 17% were closed temporarily and 7% were closed permanently.

Figure 11: Business Status at the Time of Interview (May–Aug 2021)
(%)

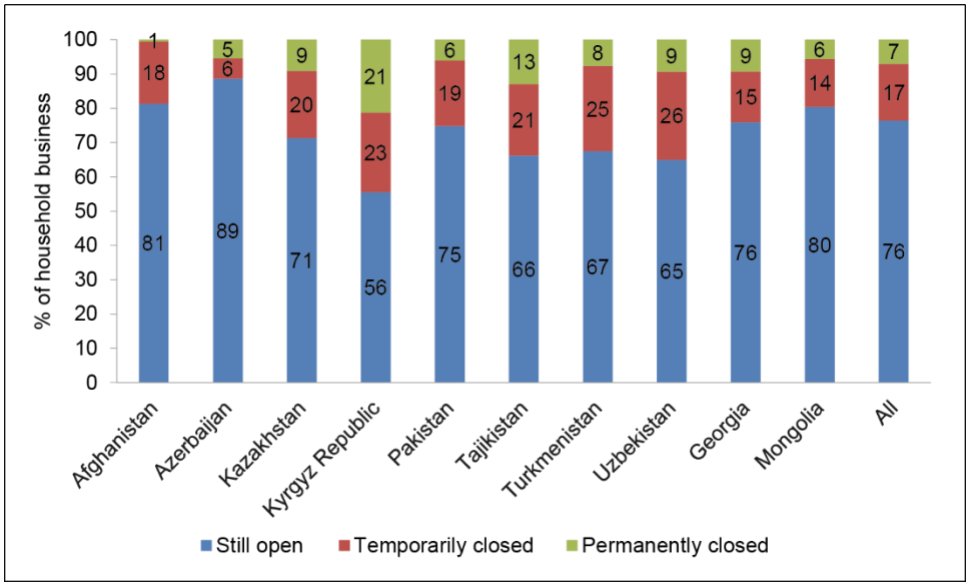


Figure 12 demonstrates change in income from household business since the beginning of the year 2020. Overall, most household businesses (41%) had lower income, 32% had the same income, 14% had no income, and 12% had a higher income. Income change varies across countries. The highest share of household businesses with lower income was reported in Tajikistan (76%), while for the rest of the countries the share of household businesses with lower income varies from 27% to 50%. The highest shares of household businesses without income are reported in Uzbekistan (28%), the Kyrgyz Republic (22%), and Mongolia (20%). For the rest of the countries this varies from 6% to 16%. Household businesses with no income change (same income) were reported mainly in Afghanistan (54%), Pakistan (44%), Georgia (42%). For the rest of the countries this varies from 13% to 34%. The highest shares of household businesses with an income increases were reported in Georgia (25%), Azerbaijan (23%), and Turkmenistan (18%). The lowest share of household businesses with an income increase were reported in Afghanistan (1%), Mongolia (2%), Uzbekistan (3%), and Tajikistan (4%).

Figure 12: Change of Income from Family Business from Beginning of 2020
(%)

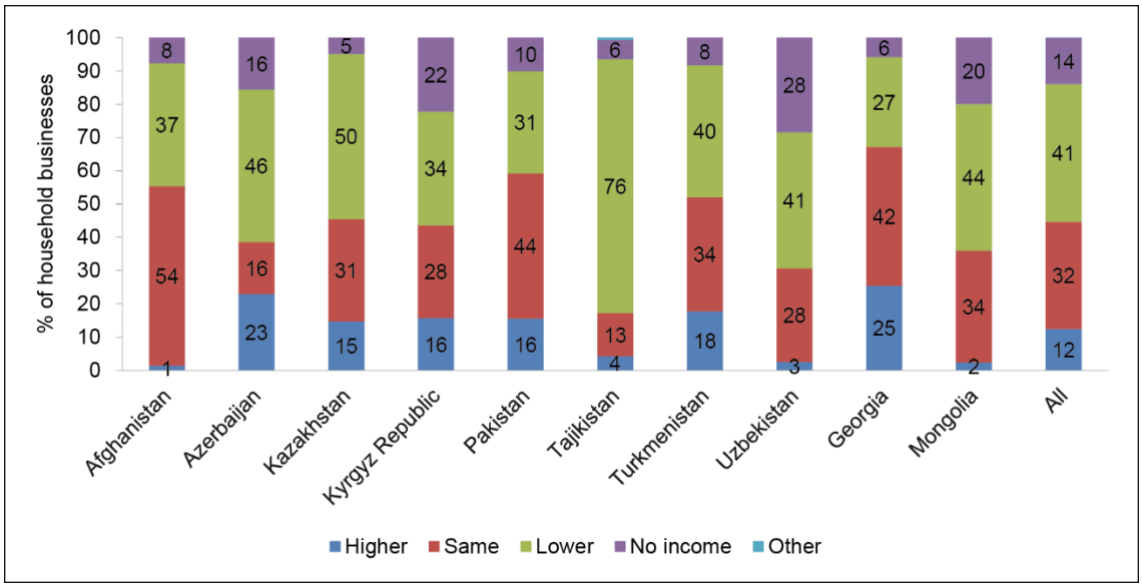


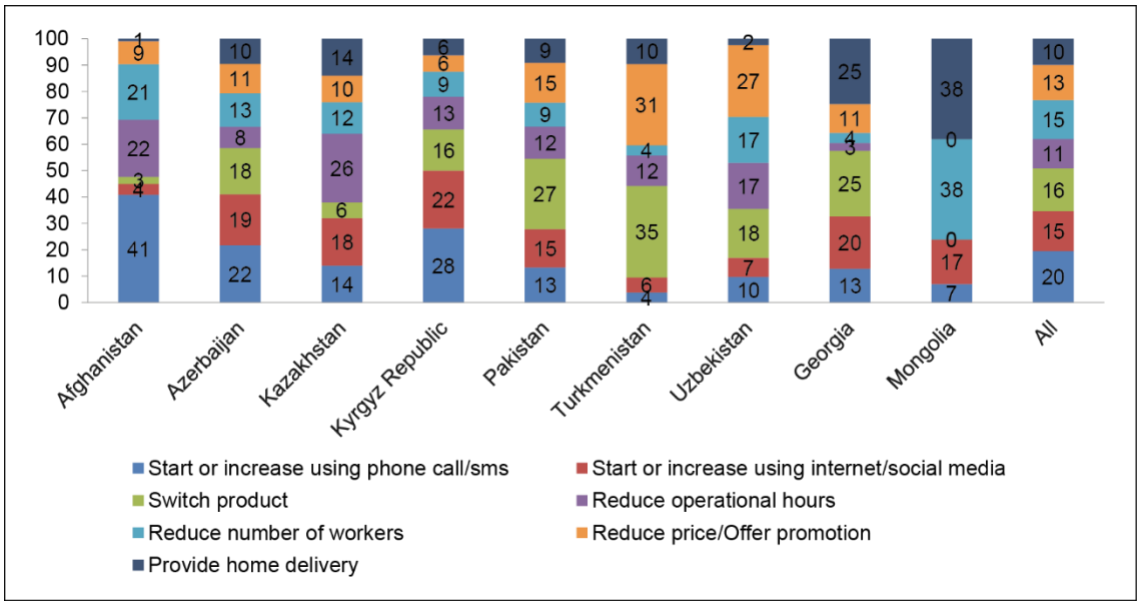
Figure 13: Reasons for Household Business Income Reduction
(%)

Figure 13 provides reported reasons for household business income decline. Overall, as reported, household income decline was due to no/fewer customers (52%), temporary closure due to restrictions (30%), no/fewer suppliers (11%), seasonal closure (7%). Overall, the major reported reason for household business income reduction was no/fewer customers (52%) and temporary closure due to restrictions (30%). No or fewer customers was the major reported reason for household business income reduction in all countries (44–61%), except for Kazakhstan where the major reported reason for household business income decline was reported temporary closure due to restrictions (51%). Countries with the largest share of household income decline due to temporary closure due to restrictions include Kazakhstan (51%), Mongolia (40%), and Azerbaijan (30%). Household businesses with income due to

no/fewer suppliers were mainly in Uzbekistan (24%), Azerbaijan (22%), Turkmenistan (15%), the Kyrgyz Republic (11%), and Pakistan (10%). Household businesses with income decline due to seasonal closure were mainly in Georgia (32%), Pakistan (27%), Uzbekistan (18%), the Kyrgyz Republic (15%), and Turkmenistan (14%).

Figure 14 demonstrates measures taken by households to adjust ways of doing business. Twenty percent of household businesses started or increased using a phone calls/sms (20%), started or increased using internet/social media (15%), switched product (16%), reduced operating hours (11%), reduced number of workers (15%), reduced price/offer promotion (13%), and provided home delivery (10%).

Figure 14: Adjustment to the Way of Doing Business (Implemented or Planned)



Last, we investigate the impacts of the COVID-19 pandemic on the household business condition during the pandemic. We estimate the following equation in a probit model:

$$dHBI_i = \beta_0 + \beta_1 HH_i + \beta_2 HHB_i + \beta_3 COVID_i + \epsilon_i \quad (2)$$

where $dHBI_i$ is a dummy variable that takes the value of 1 if *i*'s household business income has declined since the beginning of 2020 and 0 otherwise. HH_i is a set of household characteristics that may relate to the pandemic impacts on household business, including household head's gender, education, and financial literacy measured by four quizzes to test their understandings on financial management. We also considered whether the household received government aid during the pandemic. HHB_i is a set of household business characteristics including the use of digital technology (dummy), business adjustment to the pandemic (dummy), business sector, and location (i.e., rural vs. urban areas). The estimation procedure is the same as for equation (1). The sample whose household business income is null is excluded from the regression.

Table 3: Factors Determining the Probability of Household Business Income Decline during the COVID-19 Pandemic

Variables	All (1)	Afghanistan (2)	Azerbaijan (3)	Georgia (4)	Kazakhstan (5)	Kyrgyz Republic (6)
Family business income decline (mean)	0.481	0.400	0.542	0.522	0.44	0.341
Household head female	0.167		–0.177	–0.123	–0.165	0.134
	(0.139)		(0.351)	(0.441)	(0.621)	(0.347)
Household head education						
• High school graduate	0.164	–0.427	1.741	–0.110	1.310	0.258
	(0.145)	(0.357)	(12.912)	(0.596)	(11.416)	(0.507)
• College graduate	0.159	–0.398	1.678	0.015	1.362	0.484
	(0.150)	(0.386)	(12.912)	(0.488)	(11.416)	(0.496)
Household head financial literacy	–0.027	–0.128	–0.081	–0.413**	–0.135	0.279**
	(0.045)	(0.153)	(0.096)	(0.198)	(0.270)	(0.141)
Received government aid	–0.018	–0.569	0.278	0.130	–0.190	–0.334
	(0.121)	(0.389)	(0.256)	(0.401)	(0.553)	(0.322)
Business adjustment	–0.508***	–1.246***	–1.238***	–0.052	0.219	–0.316
	(0.113)	(0.423)	(0.280)	(0.509)	(0.685)	(0.319)
Use of digital technology	–0.041	–0.539	–1.315*	–0.126	–0.069	0.616**
	(0.120)	(0.414)	(0.789)	(0.479)	(0.853)	(0.309)
Business sector (base: Agriculture and Fishery)						
• industry and Manufacturing	0.619***	–0.072	0.184	0.131		1.348***
	(0.180)	(0.429)	(0.527)	(0.933)		(0.465)
• construction	0.809***		0.344	1.145	0.497	0.592
	(0.193)		(0.482)	(1.255)	(1.273)	(0.563)
• retail	0.634***	0.248	0.053	–0.175	0.855	0.447
	(0.130)	(0.448)	(0.427)	(0.610)	(0.850)	(0.337)
• transportation services	0.532***	0.508	0.150	–1.418	–1.440	0.236
	(0.191)	(0.677)	(0.486)	(1.163)	(1.344)	(0.503)
• restaurants, Hotels, and Cafes	0.983***	1.143	1.183**	–0.076		0.723
	(0.248)	(0.802)	(0.570)	(0.998)		(0.810)
• health and Education	0.196	0.800	–0.197	–0.856	–0.742	
	(0.231)	(0.557)	(0.456)	(1.139)	(1.466)	
• personal services	0.648***	0.492	0.356	0.002	0.995	
	(0.201)	(0.769)	(0.518)	(0.906)	(1.059)	
Rural	–0.325***	–1.395***	–0.114	–1.184**	–1.542**	0.302
	(0.100)	(0.345)	(0.218)	(0.585)	(0.726)	(0.303)
Located in lockdown area	0.413***	–1.811**	2.430***	0.889**	–0.384	0.310
	(0.141)	(0.833)	(0.515)	(0.417)	(0.636)	(0.304)
Constant	–0.503	3.728***	–17.054	0.641	–13.288	–1.891**
	(0.310)	(1.148)	(12.912)	(0.995)	(11.416)	(0.950)
Observations	2,278	311	486	136	84	326

Continued on next page

Table 3 *continued*

Variables	Mongolia (7)	Pakistan (8)	Tajikistan (9)	Turkmenistan (10)	Uzbekistan (11)
Family business income decline (mean)	0.550	0.809	0.432	0.572	0.286
Household head female	0.855**	0.898	1.115**	0.215	–0.290
	(0.435)	(1.328)	(0.519)	(0.607)	(0.587)
Household head education					
• high school graduate	–0.469	0.486	0.767	0.325	0.021
	(0.319)	(0.648)	(0.772)	(0.457)	(0.389)
• college graduate	0.525	2.361**	0.372	0.212	
	(0.484)	(1.202)	(0.740)	(0.454)	
Household head financial literacy	–0.008	–0.209	0.173	–0.177	0.056
	(0.128)	(0.302)	(0.206)	(0.195)	(0.188)
Received government aid		1.838**	–2.602**		
		(0.857)	(1.177)		
Business adjustment	–0.542	–0.807	0.852	–0.054	–0.430
	(0.460)	(0.590)	(0.555)	(0.524)	(0.375)
Use of digital technology	–0.442	0.362	–1.342**	0.230	0.055
	(0.351)	(0.654)	(0.660)	(0.532)	(0.370)
Business sector (base: Agriculture and Fishery)					
• industry and Manufacturing	1.559**	0.798	3.065**		1.453**
	(0.629)	(1.175)	(1.274)		(0.608)
• construction	2.825**	0.089		0.657*	–0.034
	(1.155)	(1.065)		(0.358)	(0.719)
• retail	2.093***	3.272***	0.765*	0.353	0.565
	(0.505)	(1.123)	(0.407)	(0.393)	(0.435)
• transportation services	2.137***	1.516		–0.192	0.335
	(0.702)	(1.003)		(0.547)	(0.907)
• restaurants, hotels, and cafes		–0.063	4.545**		0.779
		(0.842)	(1.794)		(0.990)
• health and education					
• personal services	2.765***	0.378	0.930	–0.134	–0.293
	(0.861)	(1.117)	(0.846)	(0.518)	(0.702)
Rural	0.016	–1.235*	0.454	0.202	0.290
	(0.458)	(0.651)	(0.448)	(0.281)	(0.361)
Located in lockdown area		2.620**	0.691*		–0.149
		(1.172)	(0.379)		(0.458)
Constant	1.003	–0.897	–1.453	0.636	–1.060
	(1.064)	(1.804)	(1.131)	(1.079)	(0.964)
Observations	269	131	154	229	192

Note: Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 3 shows our estimation results. See Table A2 in the Appendix for the estimated marginal effects. Regarding the household characteristics, while there are no significant factors that relate to the probability of experiencing business income decline in the combined regression, country-specific regressions suggest some notable relationships. First, female-headed households in Mongolia and Tajikistan were more likely to experience a decline in household business income. Second, the household head's education level was not significantly related to the decline in household

business income except for Pakistan. In Pakistan, college graduates had a lower probability of experiencing an income decline compared to those without high school diploma. Third, financial literacy lowered the probability in most countries except for Tajikistan and Uzbekistan, while significant effect was only found in Georgian and the Kyrgyz Republic. Last, receiving government aid had mixed results across countries. In Tajikistan, this is related to a lower probability of the decline in business income while the situation is vice versa in Pakistan. It could be that in Pakistan, government aid was provided for vulnerable sectors. In our data, only households engaging in retail, transportation services, restaurants, hotels, and cafes, and personal services sectors answered that they received government aid.

When it comes to household business characteristics, some interesting results are also found. The business adjustment to the pandemic (c.f., Figure 14) significantly lowered the probability of household business income decline. On average, adjustment to the pandemic decreased the probability of the decline in the business income by as much as 11.3 p.p. This strong effect provides evidence for the need for institutional support for the household business adjustment to the pandemic. The significant and negative relation is observed in Afghanistan and Azerbaijan. Use of digital technology is also associated with the lower probability of experiencing business income decline. The relation is significant in Azerbaijan and Tajikistan, while in the Kyrgyz Republic it is associated with a higher probability of business income decline.

The business sector is an important determinant of the COVID-19 pandemic effects on the household business. Compared to the agriculture and fishery sector, almost all the sectors (except for health and education) were more affected by the pandemic. The impacts were the largest in restaurants, hotels, and cafes (22.3 p.p. higher probability than agriculture and fishery), followed by construction (18.4 p.p.), personal services (14.8 p.p.), retail (14.4 p.p.), industry and manufacture (14.1 p.p.), and transportation services (12.1 p.p.). Although the pandemic negatively affected the household business in all the sectors, there seems to be some differences in its magnitude and the policy support may need to prioritize some sectors over others. Significant and similar sectoral differences in the pandemic impacts are also observed in Azerbaijan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, and Uzbekistan.

We also find that being located in a lockdown area increases the likelihood of experiencing a decline in the household business income. The positive and significant association of the lockdown with the likelihood of income decline is observed in many countries, while the opposite relationship is found in Afghanistan. Last, household businesses in rural areas were less likely to experience income decline, which may be because of the popular business sector in rural areas (i.e., agriculture and fishery).

5.3 Impact of the COVID-19 Pandemic on Education

Figure 15 provides the percentage of households having at least one school-going child (girl/boy). In Uzbekistan every sample household reported having a school-going child in the household, followed by Afghanistan (82.8%). In Pakistan, a high percentage of households reported the presence of a school-going child (79.3%). In Turkmenistan only 37% of the total sample households reported the presence of a school-going child in the family.

Figure 15: Ratio of Households Having School-going Children

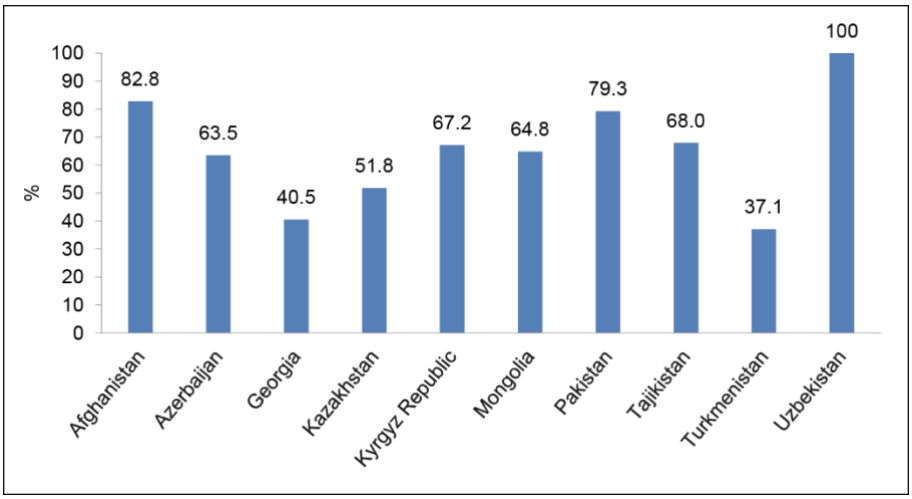


Figure 16 provides the information on the status of online classes as reported by the households having at least one child of school-going age. The region reported that 46.4% of the households reported that the schools were offering online classes for all the children in the household. Azerbaijan (93.4%), Georgia (91.6%), the Kyrgyz Republic (84.3%) and Kazakhstan (72.3%) reported a high percentage of schools offering online classes for their children. Surprisingly, in Turkmenistan no one reported the provision of online classes provided by the schools across the sample households. In Pakistan (74.8%), Afghanistan (63.5%), and Tajikistan (47.6%), a high proportion of households reported the unavailability of online classes' participation for the school-aged children in the household.

Figure 16: Provision of Online Classes

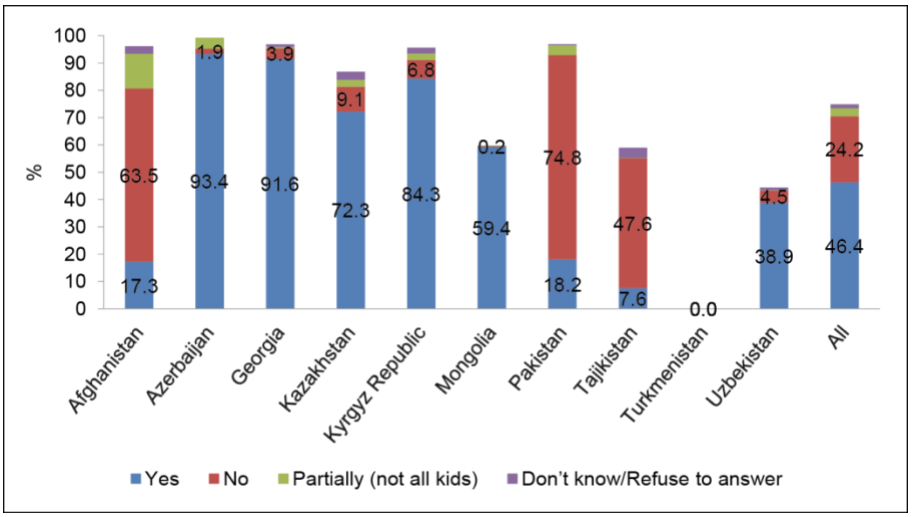


Figure 17 provides the information on the percentage of households where children are attending online classes, if the schools are offering them. The region has an average of 84.4% of households reporting that their children are attending online classes. Countries like Georgia (98.2%), Kazakhstan (94.2%), Uzbekistan (93.1%), and Azerbaijan (92.6%) reported a high rate of the online classes attendance, whereas Pakistan (33%), Tajikistan (32.1%), and Afghanistan (19.7%) reported a very high rate of absence from the online classes.

We further examine underlying factors correlated with why some children could not fully take the online courses, based on child-level information. We estimate the following equation:

$$ONLClS_i = \gamma_0 + \gamma_1 CH_{ij} + \gamma_2 HH_i + \gamma_3 COVID_i + \epsilon_i \quad (3)$$

in which $ONLClS_i$ is a dummy variable that takes the value of 1 when the children are attending all (most of) the classes and 0 if they do not take most of the classes. CH_i is a set of dummy variables related to child *j* of household *i*, it includes the gender of the child and his/her role in household chores, availability of computers, availability of internet and internet speed; HH_i is a set of household characteristics including average income, household head's education, age, and gender, and household size (measured by the total number of household members); and the location of the household in a lockdown area. Because of the sample limitations, we estimate the above equation as a logit model for pooled data of ten countries. The results of this regression analysis should be interpreted cautiously since the sample used is limited to those children who study in schools that offer online classes.

Figure 17: Children Attending Online Classes

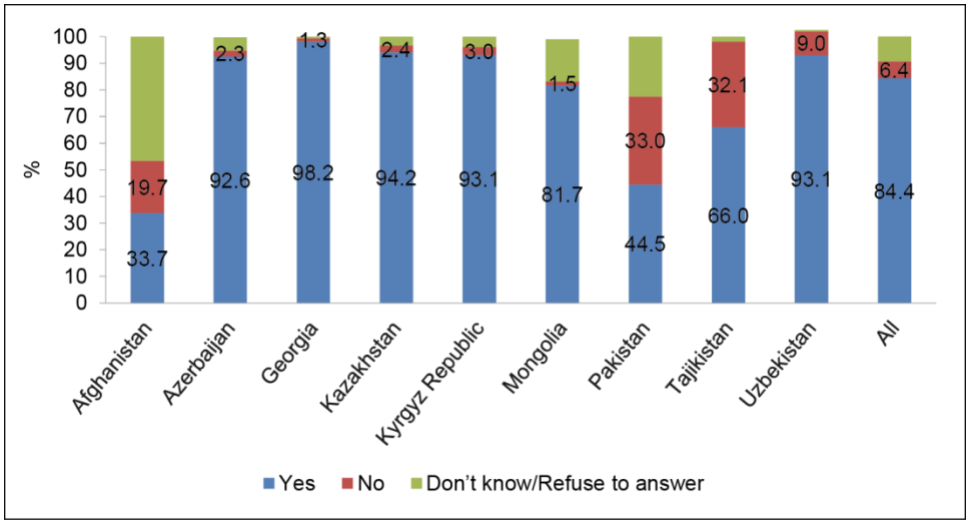


Table 4 presents the results for the determinants of the online course attendance. Household characteristics also matter for the intensity of online class taking. Children from households whose head is well educated are more likely to take all online classes, which is consistent with the case in ASEAN (Morgan and Long 2021). The gender of the household head is not correlated with the intensity of the online class attendance of children. However, the age of the household head is related to the level of online course attendance. This is also consistent with ASEAN countries (Morgan and Long 2021). Children in households whose heads are younger are less likely not to take all

online courses; while older children are more likely to take online classes. This may be because the older (30 to 49 years) the household head is, the more resilient the household is to external shocks and therefore children are given more resources for their education. With regard to COVID-19-induced variables, living in a lockdown area has no significant impact on taking all online courses. Those children who are engaged in household chores are less likely to attend all the online classes. As expected, children with no computer are less likely to attend all the online classes. However, child gender does not show significant impact.

Table 4: Factors Determining the Probability of Attending Online School during the COVID-19 Pandemic

Variables	(1)
Household head female	0.0373
	(0.250)
Child gender (female)	–0.0931
	(0.130)
Household head education	
• secondary school graduate, school graduate	0.381
	(0.372)
• high school graduate	0.374*
	(0.197)
• college graduate	–0.0207
	(0.143)
Household head age group (base: 60 or above)	
• 20–29	0.253
	(0.173)
• 30–39	0.424**
	(0.185)
• 40–49	0.739***
	(0.236)
• 50–59	0.0847
	(0.244)
Average household income, log	0.0112
	(0.0312)
Child engaging in household chores	–0.494***
	(0.166)
No computer	–0.674***
	(0.140)
No internet	0.171
	(0.153)
Slow internet	0.0298
	(0.158)
Located in lockdown area	–0.0987
	(0.136)
Constant	–0.208
	(0.405)

Note: Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

6. CONCLUDING REMARKS

The COVID-19 outbreak has heavily affected households in CAREC member countries, which include Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, the PRC, Tajikistan, Turkmenistan, and Uzbekistan. The COVID-19 crisis and the resulting falls in labor demand and supply due both to policy interventions such as lockdowns, "social distancing," and travel restrictions, and uncertainties in future economic outcomes are having a severe impact on employment and education in CAREC member countries.

In order to better understand these impacts, ADBI has conducted computer-assisted telephone interviews (CATIs) with households in ten CAREC countries (excluding the PRC). This paper estimates the impact of COVID-19 on employment and education in December 2020 compared with June 2020. The samples were representative of the income classes and the rural and urban population in each country.

While our findings are mostly consistent with results on ASEAN (Morgan and Trinh 2020), there are some differences due to differences in the structures of economies. We provide results for all countries combined and for each country, finding some similarities and differences across CAREC countries. The paper presents several interesting results.

Firstly, 24% of employees in our sample experienced either losing their job (temporarily or permanently) or a workload cut in December 2020 compared to June 2020. This number greatly varies among countries from 5% (Uzbekistan) to 67% (Pakistan).

Secondly, overall, there is no large difference in the reasons for why household heads did not work in December 2020 compared to June 2020, however there are differences across countries. The share of those missing work due to lockdown reduced from 9% in June 2020 to 7% in December 2020. However, in Georgia, the share of household heads not working due to taking care of family members increased from 4% in June 2020 to 13% in December 2020. Such large changes could be associated with the lockdown of schools or online education for small children.

Our econometric analysis suggests that many different factors are related to the likelihood of losing jobs during the pandemic. On average, less educated and younger household heads were more likely to experience job loss due to the pandemic. Households with income from household business or self-employment tended to experience job loss whereas those with income from wages were less likely to lose their job, while there are notable differences across countries.

Thirdly, overall, 24% of households answered that their businesses were closed due to the COVID-19 pandemic, out of which 7% were closed permanently while 17% were closed temporarily. More than 40% of household businesses had lower income in December 2020 compared to June 2020. No/fewer customers (52%) and temporary closure due to restrictions (30%) are two major reasons for the reduction in household business income.

Regarding the factors associated with the likelihood of experiencing the decline in household business income, we find that business adjustment to the pandemic and the sector of household business are key determinants. On average, households who adjusted their business model to the pandemic were 11.3% less likely to experience business income decline compared to those who did not. We also found that household business in some tourism-related sectors such as restaurants, hotels, and cafes were much more affected by the pandemic than others like agriculture and fishery.

Lastly, overall, only 49% of the households with school-going children in the family reported the provision of online classes offered by the schools. A large proportion of households in Pakistan (74.8%), Afghanistan (63.5%), and Tajikistan (47.6%) reported unavailability of online classes for the school-going-aged children in the household. Children in many households in Afghanistan (33.7%), Pakistan (44.5%), and Tajikistan (66%) could not attend online classes even if their schools have adapted to online classes. Children with responsibility for household chores are less likely to attend all online classes. Also, availability of computers for each child increases the chances of attending online classes.

APPENDIX

Table A1: Factors Determining the Probability of Job Loss during the COVID-19 Pandemic, Marginal Effect

	All	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
HH head female	–0.042***	–0.055	0.000	–0.013	–0.146***
	(0.011)	(0.036)	(0.025)	(0.019)	(0.040)
HH head education					
• High school graduate	–0.011	0.142	–0.055*	–0.024	–0.039
	(0.013)	(0.185)	(0.032)	(0.055)	(0.039)
• College graduate	–0.034***	0.147	–0.092***	–0.022	–0.119***
	(0.013)	(0.184)	(0.030)	(0.053)	(0.040)
Age group (base: 50–59)					
• 20–29	0.030**	0.029	0.011	0.068**	0.075
	(0.013)	(0.044)	(0.048)	(0.033)	(0.052)
• 30–39	0.026***	–0.016	0.026	0.019	0.002
	(0.010)	(0.032)	(0.034)	(0.024)	(0.035)
• 40–49	0.022**	0.040	0.006	0.008	–0.090***
	(0.010)	(0.033)	(0.028)	(0.023)	(0.032)
Income source					
• Agriculture	–0.011	–0.001	0.001	0.039	0.008
	(0.009)	(0.033)	(0.032)	(0.025)	(0.028)
• Household business	0.097***	0.367***	–0.027	–0.026	–0.011
	(0.008)	(0.014)	(0.039)	(0.043)	(0.028)
• Wage/ salary	–0.042***	–0.122***	–0.002	0.002	–0.045*
	(0.008)	(0.032)	(0.029)	(0.028)	(0.027)
Rural	0.020**	0.244***	0.031	0.011	–0.052*
	(0.010)	(0.050)	(0.025)	(0.022)	(0.031)
Located in lockdown area	0.000	–0.017	–0.012	0.037*	0.052*
	(0.008)	(0.031)	(0.029)	(0.020)	(0.030)
Observations	7,653	900	621	819	824

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Table A1 *continued*

	Mongolia	Pakistan	Tajikistan	Turkmenistan	Uzbekistan
Variables	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
HH head female	–0.021	0.041*	–0.053	–0.004	–0.135**
	(0.033)	(0.021)	(0.037)	(0.040)	(0.053)
HH head education					
• High school graduate	–0.012	–0.007	0.100**	–0.017	–0.082*
	(0.032)	(0.018)	(0.051)	(0.036)	(0.049)
• College graduate	–0.055	–0.008	0.003	–0.008	–0.085*
	(0.035)	(0.024)	(0.054)	(0.035)	(0.044)
Age group (base: 50–59)					
• 20–29	0.033	–0.006	0.041	–0.039	0.029
	(0.049)	(0.021)	(0.044)	(0.036)	(0.043)
• 30–39	0.083**	0.016	0.054	0.009	0.021
	(0.033)	(0.020)	(0.033)	(0.034)	(0.031)
• 40–49	0.064**	0.020	0.093***	–0.023	0.016
	(0.029)	(0.020)	(0.033)	(0.034)	(0.030)
Income source					
• Agriculture	–0.129***	0.015	0.045	–0.013	0.000
	(0.050)	(0.017)	(0.028)	(0.023)	(0.028)
• Household business	0.154***	0.014	–0.005	–0.003	–0.032
	(0.027)	(0.024)	(0.034)	(0.025)	(0.036)
• Wage/ salary	0.064**	0.047**	–0.078***	0.047	–0.050**
	(0.030)	(0.021)	(0.027)	(0.048)	(0.025)
Rural		0.014	–0.010		–0.048
		(0.029)	(0.027)		(0.040)
Located in lockdown area	–0.045	0.041**	–0.002	–0.015	0.015
	(0.035)	(0.020)	(0.031)	(0.023)	(0.026)
Observations	7,653	777	900	621	819

Note: Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Samples whose household head's (HH) age is 60 or above are excluded because most heads are retired. Afghanistan is included in the combined regression but excluded from the separate regression because only 2.63% of household heads experienced job loss during June to December 2020.

Table A2: Factors Determining the Probability of Household Business Income Decline During the COVID-19 Pandemic, Marginal Effect

	All	Afghanistan	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Household characteristics						
HH head female	0.037		–0.038	–0.026	–0.049	0.033
	(0.031)		(0.075)	(0.094)	(0.117)	(0.072)
HH head education						
• High school graduate	0.037	–0.073	3.728	–0.024	2.528	0.056
	(0.032)	(0.060)	(276.510)	(0.128)	(198.037)	(0.106)
• College graduate	0.035	–0.065	3.594	0.003	2.631	0.100
	(0.033)	(0.064)	(276.510)	(0.104)	(198.037)	(0.103)
HH head financial literacy	–0.006	–0.021	–0.017	–0.088**	–0.042	0.059**
	(0.010)	(0.026)	(0.020)	(0.040)	(0.051)	(0.029)
Received government aid	–0.004	–0.095	0.059	0.028	–0.028	–0.067
	(0.027)	(0.065)	(0.055)	(0.086)	(0.105)	(0.067)
Business characteristics						
Business adjustment	–0.113***	–0.209***	–0.265***	–0.011	0.071	–0.071
	(0.025)	(0.068)	(0.056)	(0.109)	(0.128)	(0.066)
Use of digital technology	–0.009	–0.091	–0.282*	–0.027	–0.030	0.128**
	(0.027)	(0.069)	(0.168)	(0.102)	(0.165)	(0.063)
Business sector (base: Agriculture and Fishery)						
• Industry and Manufacturing	0.141***	–0.012	0.041	0.028		0.305***
	(0.041)	(0.072)	(0.116)	(0.198)		(0.104)
• Construction	0.184***		0.076	0.219	0.110	0.128
	(0.044)		(0.106)	(0.214)	(0.281)	(0.128)
• Retail	0.144***	0.043	0.012	–0.038	0.186	0.095
	(0.029)	(0.078)	(0.095)	(0.130)	(0.187)	(0.073)
• Transportation services	0.121***	0.089	0.033	–0.289	–0.258	0.049
	(0.044)	(0.121)	(0.107)	(0.203)	(0.208)	(0.107)
• Restaurants, hotels, and cafes	0.223***	0.202	0.238**	–0.016		0.159
	(0.055)	(0.142)	(0.110)	(0.214)		(0.189)
• Health and Education	0.044	0.141	–0.044	–0.182	–0.150	
	(0.052)	(0.099)	(0.101)	(0.230)	(0.277)	
• Personal services	0.148***	0.086	0.078	0.001	0.215	
	(0.046)	(0.137)	(0.113)	(0.194)	(0.223)	
Rural	0.092***	–0.304**	0.520***	0.190**	–0.062	0.079
	(0.031)	(0.137)	(0.101)	(0.084)	(0.117)	(0.062)
Located in lockdown area	–0.072***	–0.236***	–0.024	–0.253**	–0.288**	0.075
	(0.022)	(0.053)	(0.047)	(0.118)	(0.128)	(0.063)
Observations	2,278	311	486	136	84	326

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Table A2 *continued*

	Mongolia	Pakistan	Tajikistan	Turkmenistan	Uzbekistan
VARIABLES	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
Household characteristics					
HH head female	0.164**	0.105	0.213**	0.051	–0.055
	(0.081)	(0.155)	(0.097)	(0.144)	(0.113)
HH head education					
• High school graduate	–0.079	0.057	0.153	0.068	0.003
	(0.060)	(0.075)	(0.151)	(0.106)	(0.075)
• College graduate	0.112	0.277**	0.069	0.036	
	(0.091)	(0.133)	(0.146)	(0.106)	
HH head financial literacy	–0.001	–0.025	0.036	–0.045	0.011
	(0.024)	(0.035)	(0.041)	(0.046)	(0.036)
Received government aid		0.216**	–0.577**		
		(0.094)	(0.232)		
Business characteristics					
Business adjustment	–0.106	–0.095	0.178*	–0.006	–0.082
	(0.087)	(0.067)	(0.107)	(0.124)	(0.071)
Use of digital technology	–0.072	0.043	0.255**	0.052	0.010
	(0.066)	(0.077)	(0.124)	(0.126)	(0.071)
Business sector (base: Agriculture and Fishery)					
• Industry and Manufacturing	0.352***	0.131	0.534***	0.000	0.325**
	(0.126)	(0.181)	(0.132)	(.)	(0.139)
• Construction	0.538***	0.016		0.156*	–0.006
	(0.121)	(0.189)		(0.083)	(0.124)
• Retail	0.447***	0.337***	0.153*	0.086	0.113
	(0.086)	(0.117)	(0.080)	(0.095)	(0.089)
• Transportation services	0.454***	0.222		–0.047	0.064
	(0.112)	(0.140)		(0.134)	(0.183)
• Restaurants, Hotels, and Cafes		–0.011	0.632***		0.162
		(0.151)	(0.080)		(0.227)
• Health and Education					
• Personal services	0.532***	0.065	0.188	–0.033	–0.047
	(0.098)	(0.190)	(0.175)	(0.128)	(0.107)
Rural		0.308**	0.142**		–0.027
		(0.129)	(0.071)		(0.087)
Located in lockdown area	0.002	–0.145**	0.093	0.047	0.056
	(0.086)	(0.072)	(0.087)	(0.066)	(0.069)
Observations	269	131	154	229	192

Note: Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

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