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## Working Paper

# Impacts of COVID-19 on households in CAREC countries

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**ADB Working Paper Series**

**IMPACTS OF COVID-19 ON HOUSEHOLDS  
IN CAREC COUNTRIES**

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Trinh Long, and Peter Morgan

No. 1298  
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**Abstract**

The impacts of the COVID-19 outbreak have heavily affected 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 CAREC member countries. In order to better understand these impacts, computer-assisted telephone (CATI) interviews of households were conducted in ten countries from the CAREC region (excluding the PRC). This paper estimates the impact of COVID-19 on income declines, expenditure changes, and financial difficulty in December 2020 compared with June 2020.

**Keywords:** COVID-19, CAREC, Central Asia, household survey, household income, employment

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

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## 1. INTRODUCTION

The impacts of the COVID-19 outbreak have heavily affected 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 crisis has caused falls in demand and supply due both to uncertainty and policy interventions such as lockdowns, “social distancing,” and travel restrictions, which are having a severe impact on CAREC countries. These negative impacts manifest 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 small children or sick household members, higher prices and/or lack of availability of staple items, etc. (Morgan and Trinh 2021). In order to develop appropriate policy responses, it is necessary to understand the current situation of households. As part of the Asian Development Bank's overall strategy to deal with the current crisis, the Asian Development Bank Institute (ADBI) has been tasked with carrying out surveys of households to better understand the size, aspects, and incidence of impacts on vulnerable people. Assessing the magnitude of these challenges and deploying effective policy responses will play a critical role in determining the CAREC region's potential to efficiently recover and proceed with economic development and regional integration, in accordance with the CAREC Strategy 2030.

The main contribution of this paper is that it provides empirical evidence on the impact of the COVID-19 crisis on households in the CAREC region. Computer-assisted telephone (CATI) interviews were conducted in ten countries from the CAREC region, namely Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. The PRC, which is also part of CAREC, was excluded from the household survey and analysis compiled in this study. Face-to-face surveys were impractical due to the lockdowns being implemented in response to the pandemic and risks of spreading COVID-19. The surveys were carried out from mid-May to the end of August 2021. The surveys mainly cover the period from June to December 2020. Representative samples of 1,000 households in each country were surveyed. We compare June 2020 and December 2020 (both periods during the COVID-19 pandemic) in order to see how households were able to cope with COVID-19 six months after a big spike in the number of cases and large lockdowns in CAREC member countries (excluding PRC). In particular, we assess how household income, expenditure, and financial difficulty changed from June to December 2020.

## 2. LITERATURE REVIEW

This research is inspired by, and closely related to, Morgan and Trinh (2021). They carried out computer-assisted telephone interviews of households in eight Southeast Asian countries: Cambodia, the Lao People's Democratic Republic (Lao PDR), 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) demonstrated that various household characteristics, including pre-COVID-19 household income class, household demographic factors, and COVID-19-induced factors such as having at least one person who lost their job or being located in lockdown areas, all affected the likelihood of a decline in income. Having at least one person who lost their job or had reduced working hours increased the likelihood of a household experiencing financial difficulties. The gender of the household head also has a significant impact on financial difficulties and income decline due to COVID-19. For low-income groups, income in female-headed households was found to decline significantly more than in male-headed households due to the pandemic. In addition, female-headed households had more financial difficulties due to COVID-19 than male-headed households.

Literature studying the impact of the COVID-19 crisis in the CAREC region is limited. Compared with 2019, CAREC and ADB (2021) found for CAREC in 2020 that there were 40 million fewer airline passengers, 46 million fewer airport passengers, \$7 billion lower passenger revenues, one million travel and tourism jobs at risk, an \$11 billion reduction in international visitor spending, a \$27 billion reduction in travel and tourism contribution to gross domestic product, 33 million fewer visitor arrivals, and 5.5 million fewer visitor arrivals by air. Thus, restrictions on travel could affect households through loss of jobs and reduced working hours and income, especially those sourcing income from hospitality, travel, and tourism.

The recent book published by ADBI (Beirne, Morgan, and Sonobe 2021) titled *COVID-19 Impacts and Policy Options: An Asian Perspective* provides crucial insights into the economic effects and policy implications of the COVID-19 pandemic in the region. This book demonstrates the disproportionately negative effects on low-income households, particularly in poor and vulnerable countries. Lower employment and incomes have increased household financial distress. The book also provides policy recommendations for supporting vulnerable households, such as enhancing social security protection during the pandemic in order to limit the effects of unemployment. Temporary social protection measures should also be extended to vulnerable migrant workers.

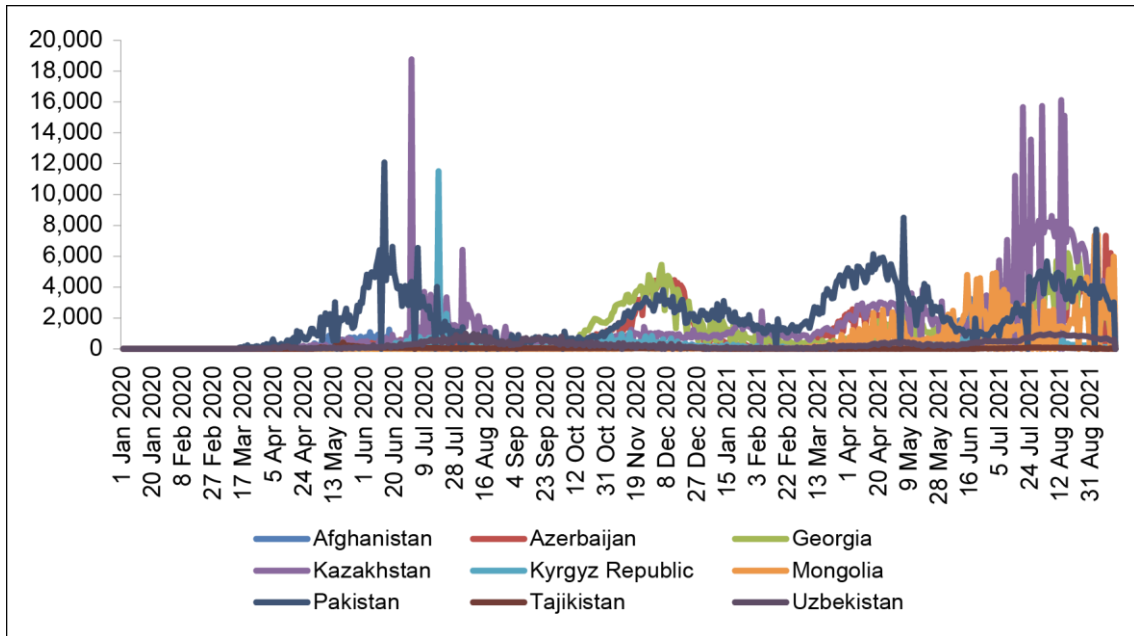
Holzhaecker (2020) suggested in early 2020 that potential economic implications of the COVID-19 outbreak in the PRC have a potentially negative impact on the economies of the CAREC region mainly through commodity prices, travel, and trade.

### **3. SPREAD OF COVID-19 AND GOVERNMENT RESPONSES**

#### **3.1 COVID-19 in CAREC**

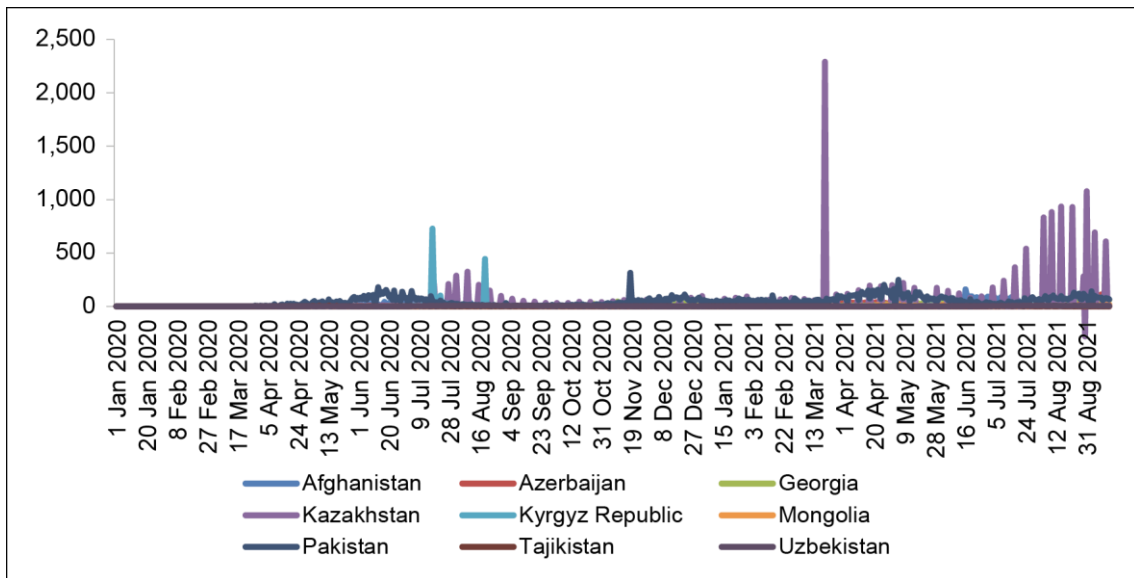
Figures 1–3 show the progress of COVID-19 in nine CAREC countries. They show daily net changes in cases of COVID-19, deaths, and vaccination doses. Unfortunately, data on COVID-19 cases, including deaths, from Hale (2020) do not include Turkmenistan, and vaccination data available from Bloomberg are available only for five out of ten CAREC countries (excluding the PRC). Cases of COVID-19 and deaths were greater in the PRC only in early 2020. Later it spread to other CAREC countries. Despite a smaller population, Georgia had more cases of COVID-19, even more than in Pakistan. Deaths were higher in Georgia, Pakistan, and Afghanistan. Vaccination started at the end of 2020 in the PRC. Vaccine doses remain high in the PRC.

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



Data source: Hale et al. (2021).

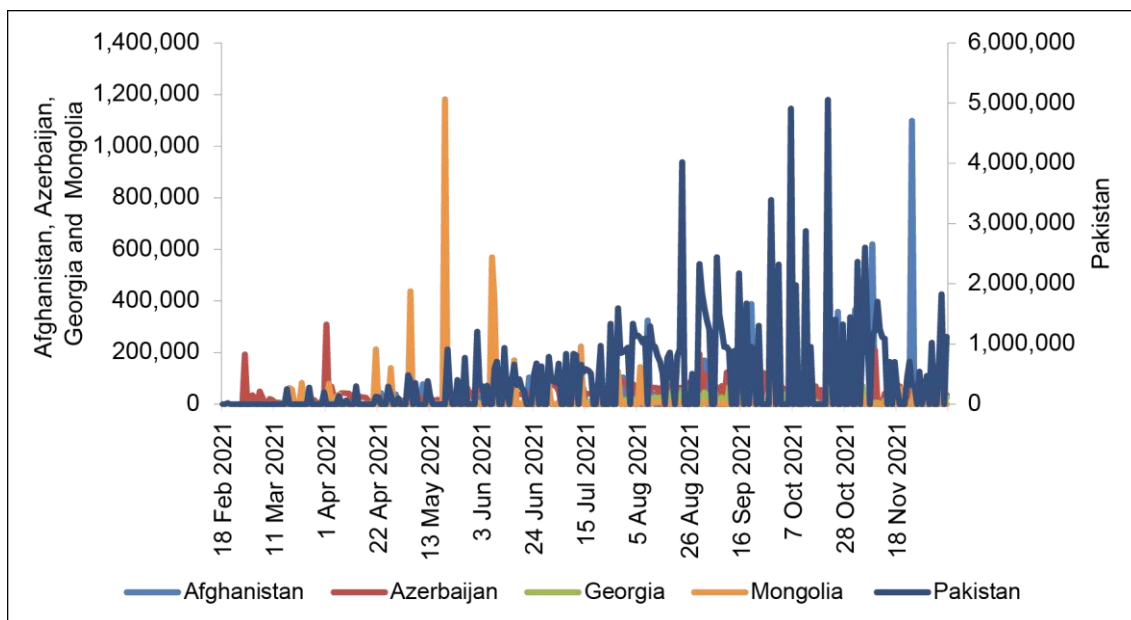
**Figure 2: COVID-19 Deaths (Daily Net Changes)**



Data source: Hale et al. (2021).



**Figure 3: COVID-19 Vaccine Doses (Daily Net Changes)**



Data source: Bloomberg.

### 3.2 Government Responses

CAREC countries have implemented various measures, including school closures, lockdowns, social distancing requirements, and border closures. However, the times at which each country implemented these measures, the duration, and the stringency of these policies vary across countries. Figures 4–7 show stringency indices of the measures that CAREC countries have adopted to contain the spread of COVID-19, as calculated by a team at Oxford University (Hale et al. 2021). Table 1 provides a description of the stringency Index of Government Nonpharmaceutical Intervention Measures and Figures 4–7 demonstrate these indexes.

The Blavatnik School of Government from the University of Oxford provides the Oxford COVID-19 Government Response Tracker (OxCGRT) (Hale et al. 2021). In order to make data comparable across countries, they measure policy responses as indices on a scale of 0–100: (i) overall government response index; (ii) containment and health index; (iii) stringency index; (iv) economic support index; (v) risk of openness index. It measures how many of the relevant indicators a government has acted upon, and to what degree, using simple, additive, unweighted indices.

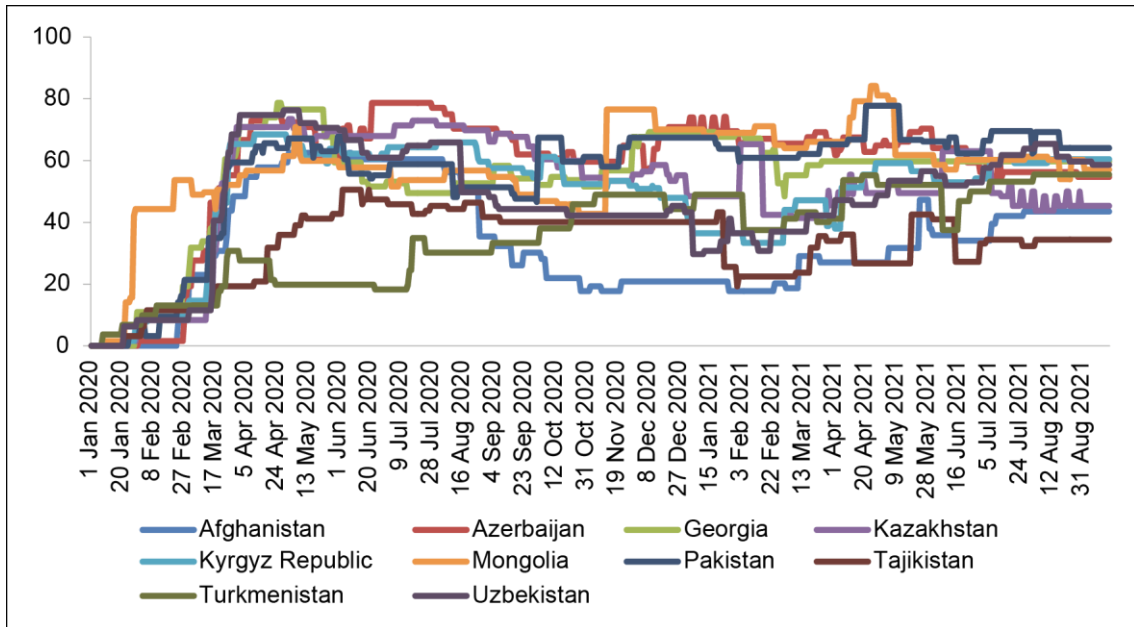
Other data sets of policy measured are provided in Annex A.

**Table 1: Policy Indices**

Policy Indices	Description
Overall government response index	Response of governments to COVID-19
Containment and health index	“Lockdown,” closures, testing policy, contact tracing, short-term investment in healthcare and vaccines
Stringency index	Strictness of “lockdown style” policies that restrict people’s behavior
Economic support index	Income support and debt relief

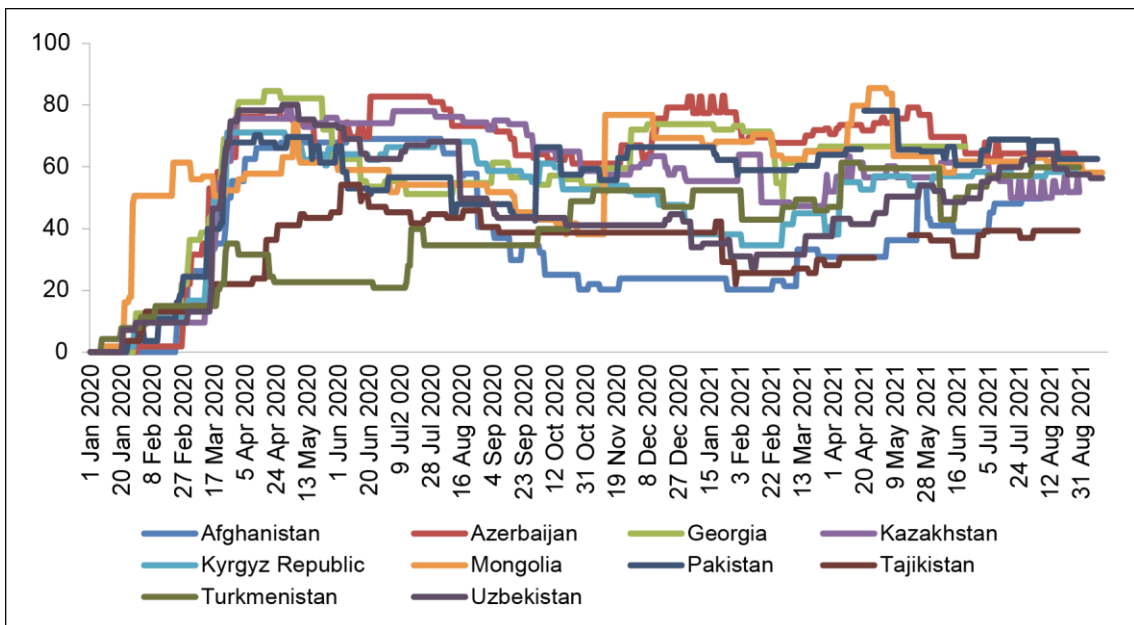
Source: Hale et al. (2021).

**Figure 4: Overall Government Response Index in CAREC Countries**



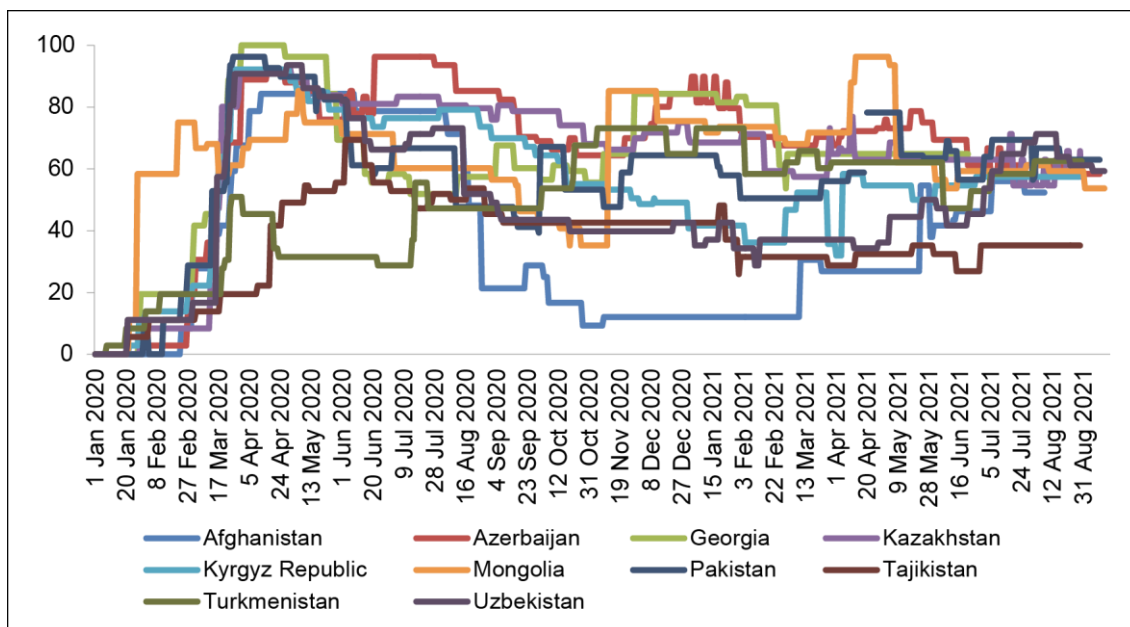
Data source: Hale et al. (2021).

**Figure 5: Containment and Health Index in CAREC Countries**



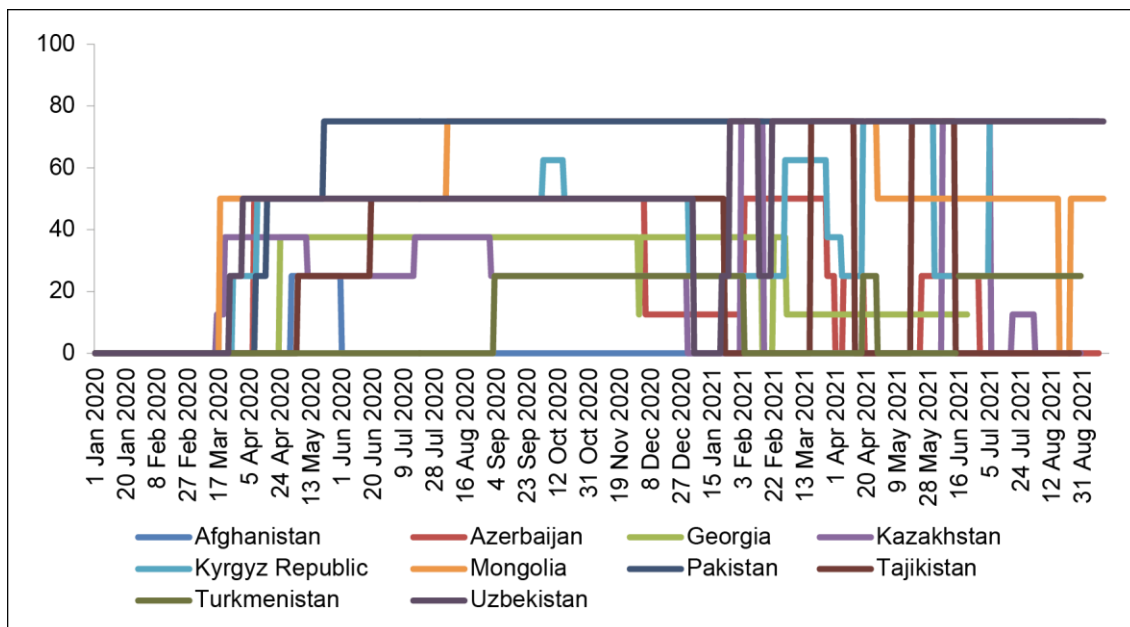
Data source: Hale et al. (2021).

**Figure 6: Stringency Index in CAREC Countries**



Data source: Hale et al. (2021).

**Figure 7: Economic Support in CAREC Countries**

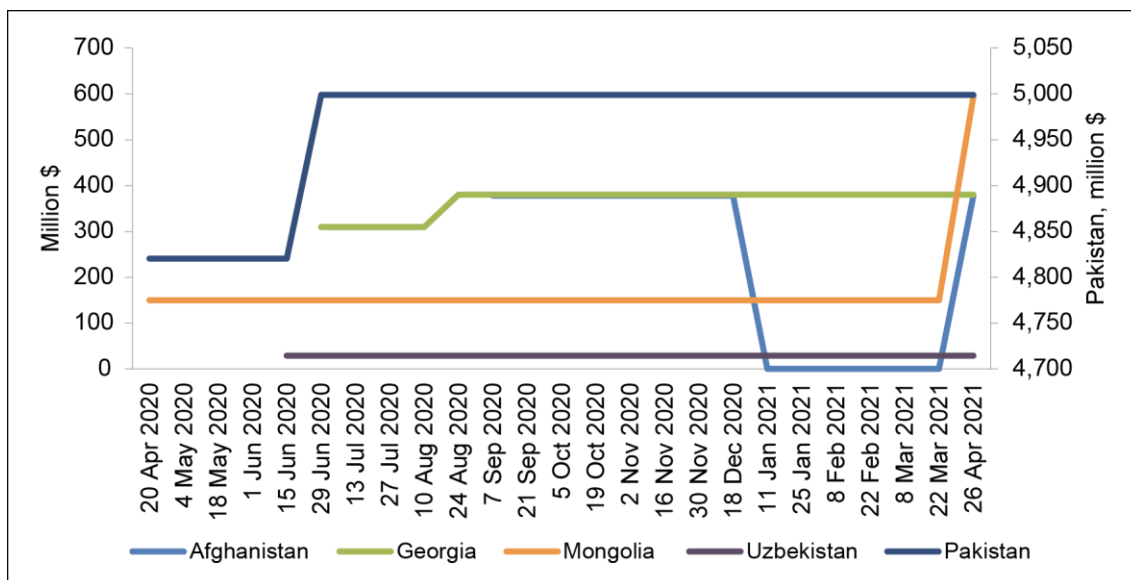


Data source: Hale et al. (2021).

### 3.3 Financing COVID-19 Responses

The ADB COVID-19 Policy Database displays the measures taken and monetary amounts announced or estimated by country (Figure 8). Data show the amounts that governments have announced will be allocated to each measure. Zero values mean that no amount is provided because the measure does not entail spending, e.g., interest rate reductions.

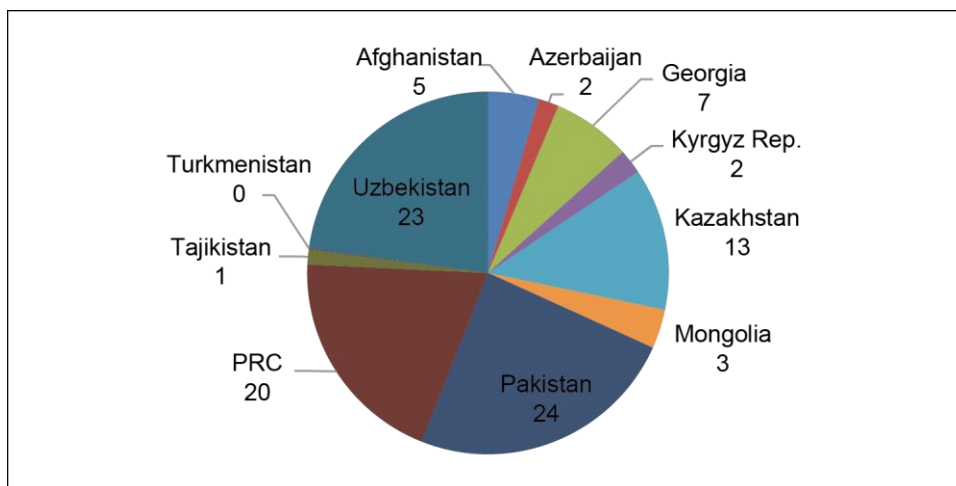
**Figure 8: Income Support: Subsidies to Individuals and Households**



Data source: ADB (2021a).

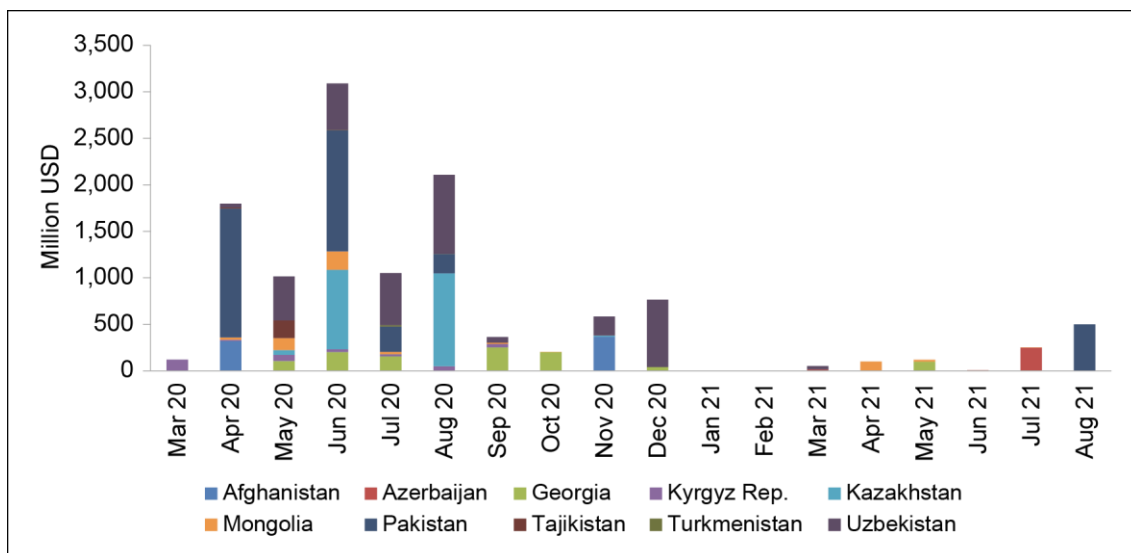
Pandemic loans (February 2020 – August 2021) were obtained by all CAREC countries, mainly by the PRC (20%), Pakistan (24%), Uzbekistan (23%), and Kazakhstan (13%) (Figure 9). Pandemic loans were particularly high in April–August 2020 (Figure 10). Nearly all of these loans (90%) were provided to governments.

**Figure 9: Pandemic Loans by Country (%)**



Data source: Bloomberg.

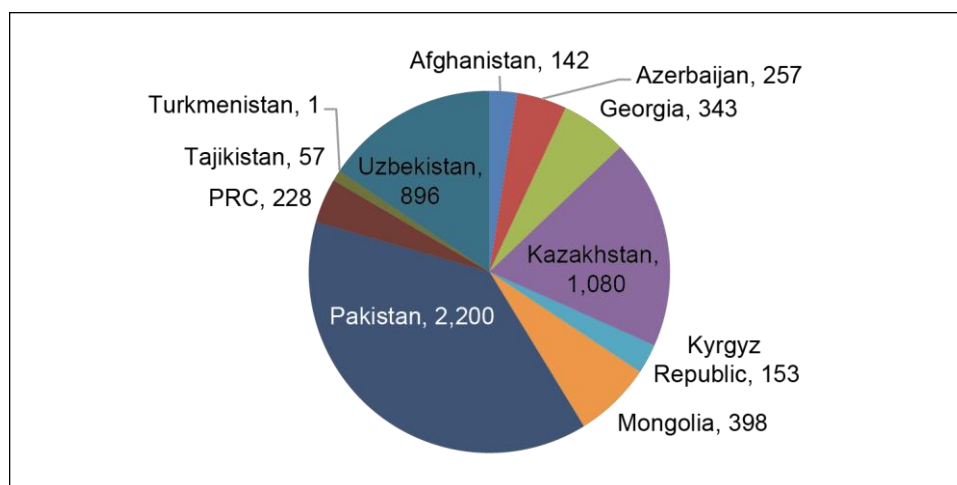
**Figure 10: Pandemic Loans, Mln USD**



Data source: Bloomberg.

International financial institutions provided financial support to governments for responding to COVID-19. ADB’s COVID-19 response consists of a \$20 billion package announced in April 2020 with a breakdown of commitment across all CAREC countries (Figure 11). Support was provided in different forms, such as loans, grants, and technical assistance. The ADB COVID-19 response package supports its developing member countries in countering the severe macroeconomic and health impacts caused by COVID-19.

**Figure 11: Committed Amount of ADB COVID-19 Response in the CAREC Region, Mln USD**



Data source: ADB (2021b).

## 4. ADBI HOUSEHOLD SURVEY IN CAREC COUNTRIES

The household survey was carried out in 10 out of 11 CAREC member countries: Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.

The survey was designed by ADBI and implemented by nine survey companies in the respective countries. The survey was implemented from May–July 2021, after pilot tests. The distribution of the sample across rural/urban and household income groups (SEC) is provided in Table 2. Income group allocation in local currency for each country is provided in Table 7 (Appendix B). All the fieldwork was finished by the end of August 2021. Household survey in Afghanistan was finished by 17 August 2021. Major characteristics of the survey included:

- Computer-assisted telephone survey (due to COVID-19)
- Respondent: household head or person knowledgeable in household finance
- Length of interview: around 20 mins (in some countries longer, partly due to screening questions)
- The questionnaire included information on:
  1. 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.
  2. 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.

**Table 2: Characteristics of the Sample**

Countries	Total Sample Households	Rural	Urban	SEC1 (Poorest)	SEC2	SEC3	SEC4 (Richest)	Languages
Afghanistan	1,064	315	749	252	417	269	126	Dari, Pashto
Azerbaijan	1,000	545	455	135	213	213	439	Azerbaijani, Russian
Georgia	1,024	406	618	160	253	192	419	Georgian, Russian, Armenian, and Azerbaijani
Kazakhstan	1,066	647	419	144	234	217	471	Kazakh and Russian
Kyrgyz Republic	1,001	649	352	217	275	249	260	Kyrgyz and Russian
Mongolia	1,006	318	688	139	359	230	278	Mongolian
Pakistan	1,056	681	375	203	408	170	137	Urdu, Balochi, Pashtu, Punjabi, and Sindhi
Tajikistan	1,000	281	730	279	269	257	206	Tajik, Uzbek, Russian
Turkmenistan	1,000	462	538	110	277	277	336	Turkmen, Uzbek, Russian
Uzbekistan	1,001	511	490	233	252	215	301	Uzbek, Russian

Note: SEC – income class.

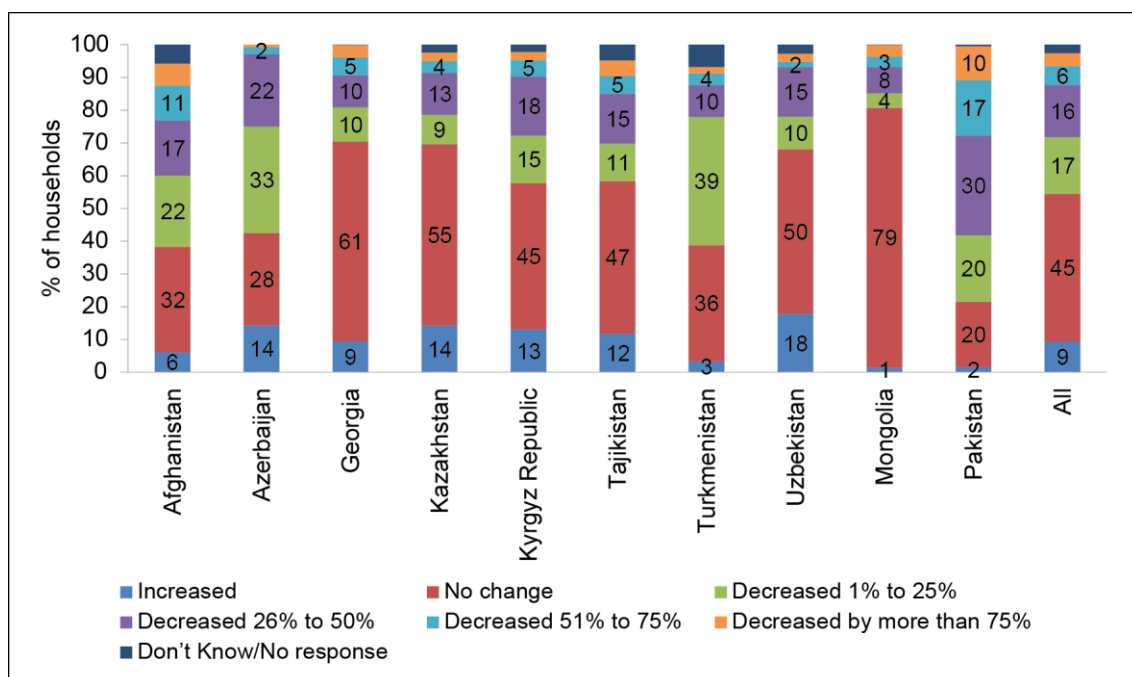
Source: Authors' calculation based on ADBI's database.

## 5. COVID-19 IMPACTS AND COPING STRATEGIES

### 5.1 Determinants of Having Income Decline Due to COVID-19

Figure 12 presents the impact of COVID-19 on household income change in December 2020 in comparison to June 2020. The figure shows that about 45% of households reported income declines. Income decline ranges from 80% of households (Pakistan) to 20% of households (Mongolia). Among households with a declining income, the largest share (17.3%) reported that their income had fallen by 1–25 %, 15.9% reported that their income had declined by 26–50 %, and 12.3% of households reported over a 50% income decline.

**Figure 12: Change of Household Income, % of Households**

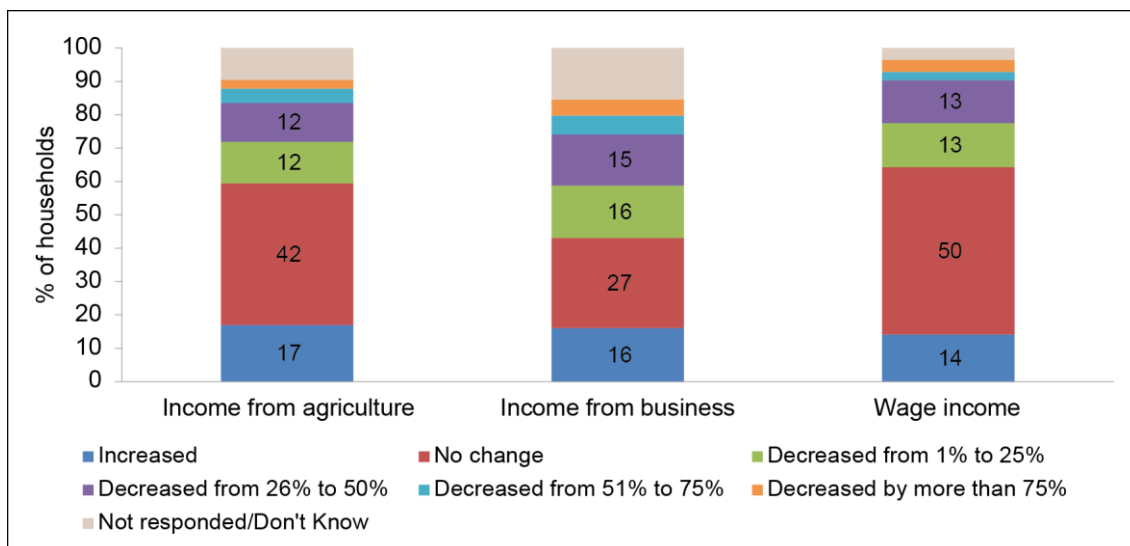


Source: Authors' calculation based on ADBI's database.

Figure 13 presents changes in income by source. Income from household businesses or self-employment declines the most, with 42% of households with income from those sources reporting declines. Income from agriculture-related activities and from wages and salaries did not decline as much as that from household business or self-employment, although still about 31% and 32% of households with income from these sources, respectively, reported declines.

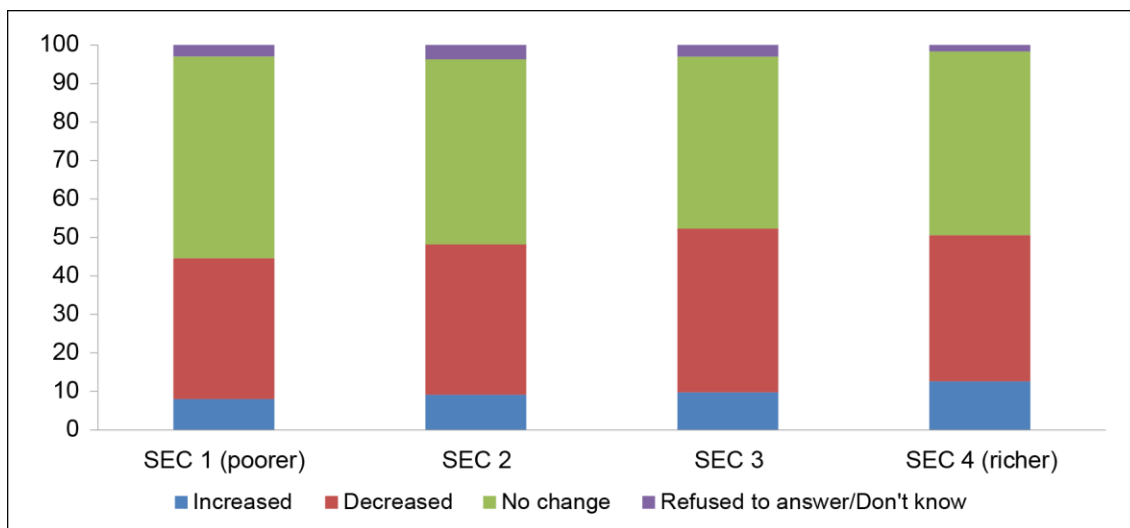
Figure 14 presents changes in income by income SEC1–4 levels (from poor to rich). Among income levels, mostly households from SEC3 (43%) reported an income decline. Fewer households from other income levels, i.e., SEC1, SEC2, and SEC4, reported an income decline. Thirty-seven percent of SEC1 income-level households experienced a decline in income, while 39% of households from the SEC2 income level and 38% from the SEC4 income level reported an income decline.

**Figure 13: Change of Household Income, by Source of Income, % of Households**



Source: Authors' calculation based on ADBI's database.

**Figure 14: Change in Income, by Income Level, % of Total Subgroup**

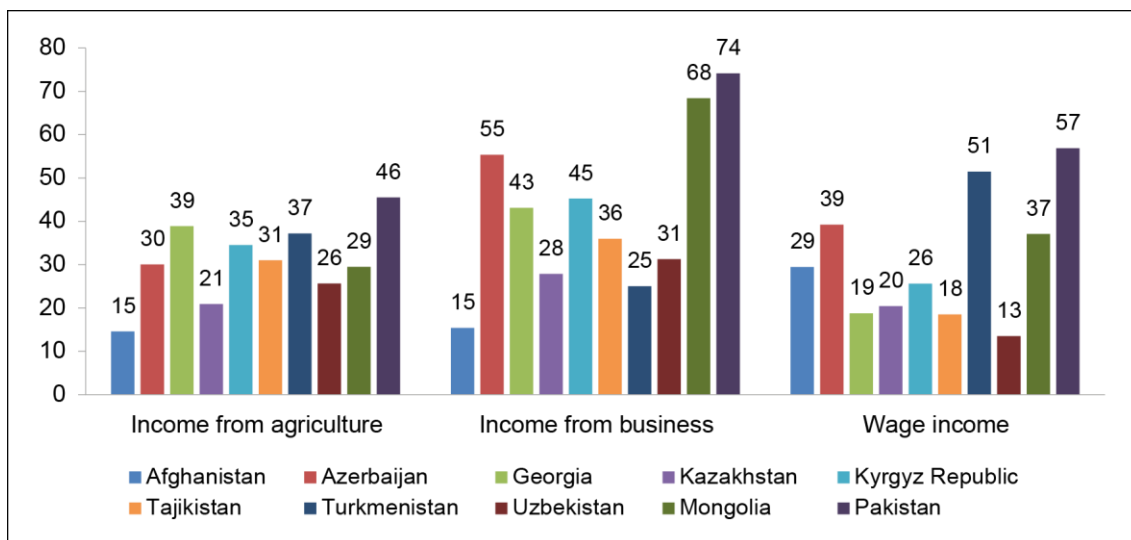


Source: Authors' calculation based on ADBI's database.

Figure 15 presents a decline in income across income sources for each country. Household business income fell the most in all countries except Afghanistan and Turkmenistan, where wage income showed the highest decline (29% and 51%, respectively).



**Figure 15: Sources of Income Decline, by Country, % of Households**



Source: Authors' calculation based on ADBI's database.

We examine the effects of the COVID-19 pandemic on household income. Following Morgan and Trinh (2021), we estimate the following equation:

$$iDecline_i = \alpha_0 + \alpha_1 SEC_i + \alpha_2 HH_i + \alpha_3 COVID_i + \epsilon_i \tag{1}$$

in which  $iDecline_i$  is a dummy variable that takes the value of one if household  $i$  experienced a decline in income during the COVID-19 period;  $SEC_i$  is a set of dummy variables indicating the socioeconomic class that household  $i$  belongs to;  $HH_i$  is a set of household characteristics including sources of income, household head's education, age, and gender, household location (i.e., rural vs. urban areas), and household size (total number of household members);  $COVID_i$  is a set of variables reflecting COVID-19-induced effects such as whether the household was located in a lockdown area or not; and  $\epsilon_i$  is the error term. We estimate the above equations for pooled data on 11 countries (with country dummy being controlled) and separately for each country in our sample.

Table 3 presents our estimation results. The first column reports the results using pooled data and the subsequent columns are results for Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan, Mongolia, and Pakistan, respectively. We found that on average, the socioeconomic class of household on average is not related to the likelihood of experiencing a decline in income, suggesting that the COVID-19 pandemic affected the income of all households relatively equally regardless of their economic status before the pandemic. This is also found in ASEAN households (Morgan and Trinh 2021). However, we find the COVID-19 pandemic may have different impacts on different countries. For example, in Afghanistan, households in the second SEC class are less likely to suffer from income decline than households in the poorest SEC, while there is no difference between richer groups (SECs 3 and 4) and the poorest groups. Or in the case of Azerbaijan, while there is no difference among households in SECs 1, 2, and 4, households in the middle upper class (SEC 3) are more likely to experience a decline in income than the poorest group (SEC 1 as our reference group). The situation is similar in Tajikistan where middle-income households (in SECs 2 and 3) are more prone to income decline than households in the poorest groups. Among these ten

countries, we only find that richer households are less likely to suffer income decline than the poorest households.

Different sources of income may also have different effects on the likelihood of decline in income. On average, households with income from wages tended to experience a decline in income while those with income from agricultural production or from household businesses or self-employment were not different from households in the reference group. This is different from the situation in ASEAN economies, where households with income from agricultural production and from household businesses or self-employment were more likely to experience a decline in income (Morgan and Trinh 2021). The difference may be due to the structure of the economy between ASEAN and CAREC countries. ASEAN economies seem more dependent on small-scale agricultural production and household businesses.

While the effect of income source on the likelihood of experiencing income decline is quite similar among ASEAN economies, we observe a large difference among CAREC countries. For example, those households with income from agriculture experienced a decline in income in the Kyrgyz Republic but were less likely to have a decreased income in Afghanistan. Households with wages as income sources were more likely to experience income declines in Afghanistan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, and Pakistan, but less likely to do so in Azerbaijan and there were no effects in the other three countries. Similarly, Afghan and Mongolian households with income from household businesses or self-employment were more likely to experience income declines but less likely to experience them in Tajikistan and Uzbekistan. In other countries, households with income from household businesses or self-employment were not different from those households without such sources of income.

The household head's education level on average was negatively associated with the likelihood of experiencing an income decline. For example, a household head with a high school diploma has a lower probability of experiencing an income decline by 16.1 percentage points than those who have a lower qualification than a high school diploma (i.e., secondary school and below). The figure for those who have a higher education level than high school is 27.6 percentage points. This result is consistent with that among ASEAN households (Morgan and Trinh 2021). Similarly to the case of ASEAN households, the role of a household head's education level is not observed in all countries in our sample. For example, in Afghanistan, households with a higher education level have a much higher likelihood of experiencing an income decline than those with a lower education level. The same situation is also observed in the Kyrgyz Republic and in Mongolia, but only for households whose household head has a higher education level than high school. We do not observe the relationship between household head education and the likelihood of income decline in other countries.

Our results also suggest that female-headed households are less likely to experience a decline in income than their male counterparts. However, the results also vary by country. For example, we only observed a negative relationship in three countries (Georgia, Uzbekistan, and Mongolia), while there is a positive relationship in Turkmenistan and no relationship in other countries.

**Table 3: Determinants of Income Decline Due to the COVID-19 Pandemic**

Variables	All	Afghanistan	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic
	(1)	(2)	(3)	(4)	(5)	(6)
HH head female	-0.110* (0.057)	-0.620 (0.381)	0.195 (0.195)	-0.286* (0.150)	0.0294 (0.140)	-0.105 (0.156)
HH head education						
• below high school	-0.007*** (0.00157)	-0.019*** (0.00492)	-0.003 (0.00586)	-0.013** (0.00515)	-0.004 (0.00541)	-0.003 (0.00524)
• high school	-0.161** (0.073)	-0.612*** (0.188)	0.209 (0.621)	0.365 (0.419)	0.240 (0.426)	-0.323 (0.240)
• above high school	-0.275*** (0.071)	-0.702*** (0.166)	-0.0574 (0.618)	0.332 (0.405)	0.0874 (0.414)	-0.626*** (0.237)
Located in lockdown area	0.265*** (0.058)	-1.436*** (0.266)	0.960*** (0.211)	0.527*** (0.143)	0.286* (0.162)	0.288* (0.149)
Income group (base: SEC1 poorer)						
• SEC2	-0.016 (0.065)	-0.428** (0.186)	0.147 (0.231)	0.195 (0.230)	-0.398* (0.225)	0.223 (0.191)
• SEC3	-0.020 (0.0674)	-0.214 (0.202)	0.454* (0.236)	-0.018 (0.254)	-0.502** (0.229)	0.123 (0.199)
• SEC4 (richer)	-0.078 (0.065)	-0.907*** (0.250)	0.132 (0.216)	-0.029 (0.233)	-0.648*** (0.207)	0.417** (0.200)
Income source						
• agriculture	-0.0029 (0.049)	-0.318** (0.154)	0.101 (0.176)	0.021 (0.165)	-0.276 (0.218)	0.251* (0.149)
• wage	0.298*** (0.053)	0.303* (0.164)	-0.573*** (0.150)	0.477** (0.218)	0.704*** (0.209)	0.424*** (0.147)
• business	-0.045 (0.049)	0.398*** (0.149)	-0.202 (0.166)	-0.197 (0.172)	-0.200 (0.178)	0.064 (0.144)
Rural	-0.097** (0.047)	-0.392** (0.160)	-0.114 (0.176)	0.313* (0.163)	0.149 (0.147)	-0.136 (0.149)
Constant	0.713*** (0.130)	3.362*** (0.397)	-0.198 (0.705)	-0.878 (0.536)	-0.313 (0.548)	-0.182 (0.357)
Observations	10,252	1,064	1,000	1,024	1,066	1,024
Variables	Tajikistan	Turkmenistan	Uzbekistan	Mongolia	Pakistan	
	(7)	(8)	(9)	(10)	(11)	
HH head female	-0.117 (0.175)	0.437* (0.237)	-0.594*** (0.217)	-0.373* (0.222)	0.219 (0.285)	
HH head education						
• below high school	-0.011** (0.00452)	0.004 (0.00539)	-0.012** (0.00550)	-0.032*** (0.00737)	0.017*** (0.00532)	
• high school	-0.019 (0.232)	-0.224 (0.226)	-0.308 (0.367)	-0.372 (0.234)	0.130 (0.205)	
• above high school	-0.202 (0.229)	-0.104 (0.219)	-0.373 (0.348)	-0.926*** (0.260)	0.309 (0.223)	
Located in lockdown area	0.426*** (0.135)	-0.488 (1.017)	0.652*** (0.192)		-0.039 (0.265)	
Income group (base: SEC1 poorer)						
• SEC2	0.631*** (0.183)	-0.093 (0.233)	-0.024 (0.204)	0.145 (0.241)	-0.251 (0.276)	
• SEC3	0.574*** (0.186)	0.085 (0.234)	-0.051 (0.213)	-0.094 (0.317)	-0.578** (0.257)	
• SEC4 (richer)	0.127 (0.205)	0.035 (0.228)	-0.047 (0.200)	0.128 (0.258)	-0.283 (0.239)	
Income source						
• agriculture	0.012 (0.145)	0.081 (0.136)	-0.166 (0.163)	-0.336 (0.291)	-0.070 (0.173)	
• wage	0.218 (0.172)	0.097 (0.141)	0.261 (0.190)	1.239*** (0.204)	0.530* (0.275)	
• business	-0.392*** (0.140)	0.020 (0.238)	-0.641*** (0.154)	0.762*** (0.211)	-0.198 (0.185)	
Rural	-0.048 (0.153)	-0.132 (0.131)	-0.042 (0.152)	-0.642*** (0.244)	-0.230 (0.170)	
Constant	-0.088 (0.357)	0.379 (0.435)	0.623 (0.441)	0.091 (0.478)	1.087** (0.459)	
Observations	1,011	1,000	1,001	1,006	1,056	

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

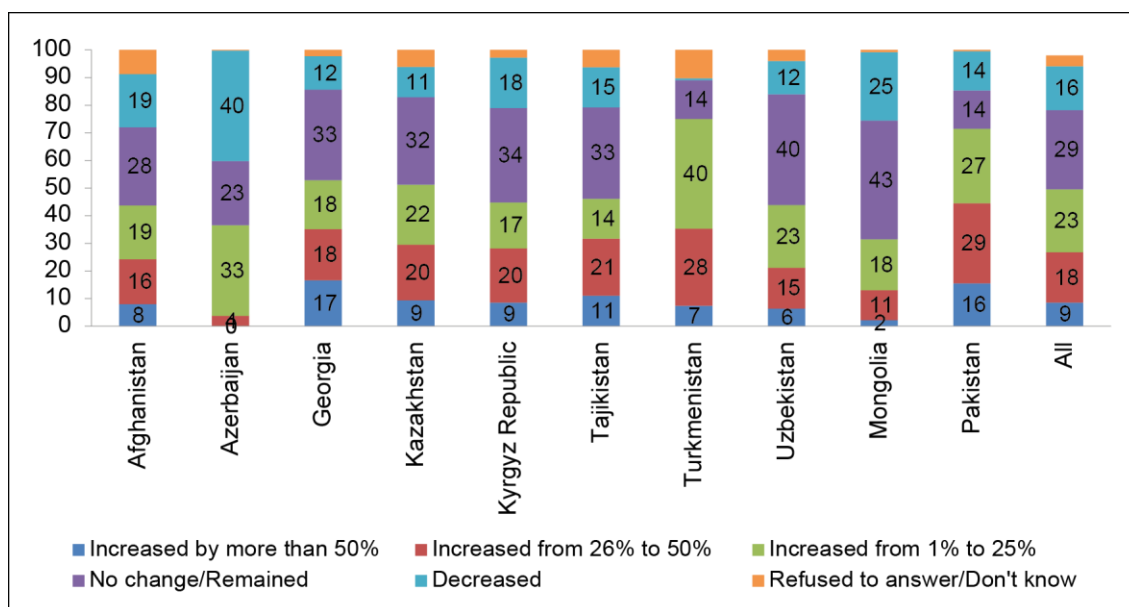
Similarly to the case of ASEAN households, being located in a lockdown area on average increases the likelihood of experiencing an income decline. This is also observed in most countries, except for Afghanistan, Turkmenistan, and Pakistan. While living in a lockdown area does not have an effect on the likelihood of experiencing an income decline in Turkmenistan and Pakistan, it reduces the likelihood of income decline in Afghanistan. This finding is rather different from other countries. According to Morgan and Trinh (2021), this negative relationship could be because those living in lockdown areas receive a subsidy from the government to enable them to keep their income stable.

Households in rural areas were also less likely to experience income declines, but this relationship is only observed in two countries (Afghanistan and Mongolia). Meanwhile we find that Georgian rural households were more likely to suffer income declines than their urban counterparts.

### 5.2 Determinants of Having Expenditure Increase Due to the COVID-19 Pandemic

Half of the households (50%) in our sample reported that their expenditure increased (Figure 16). Only 16% reported that their expenditure declined, which was much lower than the 45% of households that experienced a decline in income (Figure 13).

Figure 16: Changes in Household Expenditure, % of Households



Source: Authors' calculation based on ADBI's database.

We examine the effects of the COVID-19 pandemic on household expenditure using the following equation:

$$Exp_i = \alpha_0 + \alpha_1 SEC_i + \alpha_2 HH_i + \alpha_3 COVID_i + \epsilon_i \tag{2}$$

in which  $Exp_i$  is a dummy variable that takes the value of one if household  $i$  experienced an increase in expenditure during the COVID-19 period;  $SEC_i$ ,  $HH_i$ , and  $COVID_i$  are similar to Equation (1) and  $\epsilon_i$  is the error term. As before, we estimate the

above equations for pooled data of 11 countries (with country dummy being controlled) and separately for each country.

**Table 1: Determinants of Experiencing an Expenditure Increase Due to the COVID-19 Pandemic**

Variables	All	Afghanistan	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic
	(1)	(2)	(3)	(4)	(5)	(6)
HH head female	-0.0875 (0.0540)	-0.149 (0.383)	0.361* (0.194)	-0.145 (0.133)	-0.0218 (0.128)	0.0597 (0.153)
HH head education						
• below high school education	-0.00495*** (0.00150)	-0.0186*** (0.00496)	-0.00223 (0.00615)	-0.00665 (0.00462)	-0.00300 (0.00494)	-0.00313 (0.00518)
• high school education	-0.0980 (0.0703)	-0.0588 (0.185)	0.785 (0.800)	-0.349 (0.359)	-0.374 (0.387)	-0.399* (0.239)
• above high school education	0.108 (0.0683)	0.225 (0.156)	1.330* (0.795)	-0.0452 (0.345)	0.00486 (0.374)	-0.233 (0.235)
Located in lockdown area	-0.166*** (0.0559)	-1.043*** (0.200)	0.578** (0.227)	0.0494 (0.130)	-0.278* (0.153)	-0.539*** (0.151)
Income group (base: SEC1 poorer)						
• SEC2	0.0185 (0.0618)	0.0790 (0.176)	0.330 (0.240)	0.140 (0.206)	0.265 (0.217)	0.152 (0.188)
• SEC3	0.000358 (0.0649)	0.422** (0.190)	-0.244 (0.250)	0.174 (0.225)	0.313 (0.219)	0.0502 (0.195)
• SEC4 (richer)	0.145** (0.0621)	-0.00737 (0.244)	0.255 (0.228)	0.265 (0.208)	0.465** (0.198)	0.203 (0.198)
Income source						
• agriculture	-0.00139 (0.0476)	-0.327** (0.153)	0.0609 (0.183)	-0.108 (0.150)	0.0403 (0.197)	0.112 (0.147)
• wage	-0.0159 (0.0519)	0.462*** (0.156)	-0.858*** (0.156)	-0.219 (0.209)	-0.0761 (0.203)	-0.0128 (0.147)
• business	0.0926** (0.0466)	-0.126 (0.145)	0.147 (0.179)	0.0516 (0.154)	0.138 (0.168)	0.255* (0.143)
Rural	-0.0442 (0.0456)	-0.163 (0.153)	0.0697 (0.186)	-0.120 (0.143)	-0.00117 (0.135)	-0.206 (0.147)
Constant	0.0237 (0.126)	1.408*** (0.328)	-2.062** (0.877)	0.554 (0.471)	-0.0998 (0.503)	0.152 (0.353)
Observations	10,252	1,064	1,000	1,024	1,066	1,024
Variables	Tajikistan	Turkmenistan	Uzbekistan	Mongolia	Pakistan	
	(7)	(8)	(9)	(10)	(11)	
HH head female	-0.326* (0.172)	0.00392 (0.252)	-0.253 (0.192)	-0.422** (0.173)	0.293 (0.252)	
HH head education						
• below high school education	-0.00672 (0.00439)	0.00714 (0.00615)	-0.00635 (0.00504)	-0.000733 (0.00550)	8.18e-05 (0.00422)	
• high school education	-0.0634 (0.230)	0.109 (0.253)	-0.0800 (0.358)	0.173 (0.188)	0.0185 (0.183)	
• above high school education	0.0980 (0.226)	-0.0791 (0.242)	-0.00123 (0.341)	0.298 (0.199)	-0.324* (0.183)	
Located in lockdown area	0.129 (0.131)		-0.160 (0.189)		0.0675 (0.230)	
Income group (base: SEC1 poorer)						
• SEC2	-0.366** (0.178)	-0.368 (0.288)	-0.0222 (0.194)	-0.0220 (0.187)	-0.103 (0.234)	
• SEC3	-0.228 (0.180)	-0.670** (0.283)	0.239 (0.200)	-0.162 (0.253)	-0.209 (0.221)	
• SEC4 (richer)	0.0673 (0.195)	-0.512* (0.280)	0.443** (0.188)	-0.0240 (0.208)	0.00314 (0.196)	
Income source						
• agriculture	-0.0740 (0.142)	-0.175 (0.153)	0.275* (0.151)	0.199 (0.215)	-0.0456 (0.151)	
• wage	0.0720 (0.169)	0.158 (0.161)	0.298 (0.182)	0.116 (0.180)	-0.0307 (0.208)	
• business	0.175 (0.136)	-0.245 (0.288)	0.410*** (0.149)	0.0452 (0.169)	-0.197 (0.161)	
Rural	-0.112 (0.150)	-0.194 (0.149)	-0.0148 (0.142)	0.144 (0.183)	-0.0638 (0.146)	
Constant	0.277 (0.349)	1.645*** (0.514)	-0.473 (0.425)	-0.917** (0.378)	1.139*** (0.391)	
Observations	1,011	996	1,001	1,006	1,056	

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

Table 4 presents our estimation results. The structure of this table is similar to that in Table 3. We find that on average, only the richest households experienced an increase in expenditure. More specifically, the likelihood of having an expenditure increase among the richest households was 14.5 percentage points more than that of the poorest households (SEC 1, our reference group), while the likelihood of having an expenditure increase was not different among other SEC groups. However, in five countries, namely Azerbaijan, Georgia, the Kyrgyz Republic, Mongolia, and Pakistan, we did not find any difference among households across SEC groups. In other countries, richer households (either in SEC 3 or SEC 4) were more likely to have expenditure increases than poorer households (either in SEC 1 or SEC 2), except for the case of Turkmenistan. Our results show that richer households (SECs 3 and 4) in Turkmenistan were less likely to experience an expenditure increase than poorer households (SECs 1 and 2).

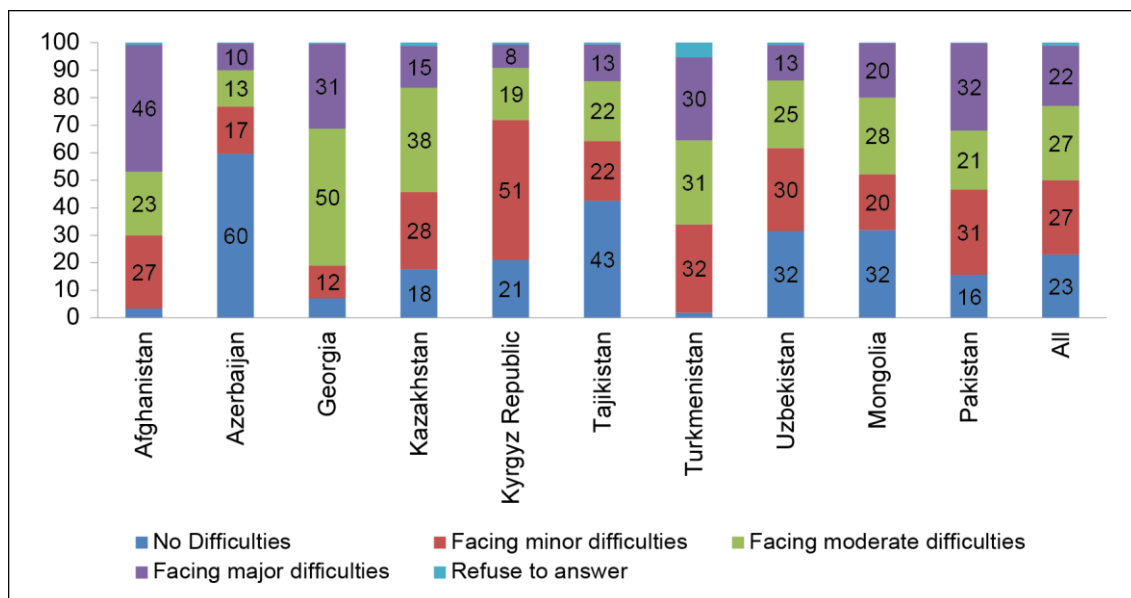
With regard to sources of income, our results show that on average, households with income from household businesses or self-employment were more likely to increase their expenditure than households that do not have such income. Meanwhile, there is no difference for households with agricultural or wage income from the reference group. The effect of income sources on household expenditure also differs by country. For example, while Afghan households with income from agriculture are less likely to experience an increase in expenditure than households without such a source of income, their Uzbekistani counterparts are more likely to have higher expenditure.

Our results also show that on average, education level and gender of household head have not affected the changes in household expenditure during the pandemic. The evidence also suggests that households located in a lockdown area have tended to experience an expenditure decline during the pandemic.

### **5.3 Determinants of Having Financial Difficulty**

Financial difficulty is defined as a lack of financial resources for at least a week. About 76% of households in our sample reported that they had experienced financial difficulties (Figure 17). However, the share of households that reported financial difficulties varies across countries from 40% in Azerbaijan to 96% in Afghanistan. In nearly all countries, with Azerbaijan being the exception, more than half of the households reported financial difficulties. Nearly all (above 80%) households reported financial difficulties in Kazakhstan (81%), Pakistan (84%), Turkmenistan (93%), Georgia (92%), and Afghanistan (96%). These numbers are higher than in SEA (Morgan and Trinh 2021), which means that more households reported financial difficulties in CAREC than in SEA. In SEA there are five countries where more than half of the households did not report financial difficulties (Cambodia, the Lao PDR, Malaysia, Myanmar, and Viet Nam) in 2020. Also, in SEA there were only two countries where nearly all households (above 80%) reported financial difficulties (Indonesia (84%) and the Philippines (85%)).

**Figure 17: Households Experiencing Financial Difficulty during the Pandemic, % of Total Households**



Source: Authors' calculation based on ADBI's database.

This section examines which households are more likely to be financially vulnerable to the pandemic (or any expected shocks) than others. Following Morgan and Trinh (2021), we estimate the following equation:

$$FinDiff_i = \beta_0 + \beta_1 SEC_i + \beta_2 HH_i + \beta_3 COVID_i + \eta_i \tag{3}$$

in which  $FinDiff_i$  is a dummy variable that takes the value of one if household  $i$  experienced financial difficulties (which is defined as a lack of financial resources for daily expenditure if all the income sources disappear for a week) during the COVID-19 period;  $SEC_i$ ,  $HH_i$ , and  $COVID_i$  are similar to Equation (1) and  $\eta_i$  is the error term. As before, we estimate the above equations for pooled data of 11 countries (with country dummy being controlled) and separately for each country.

Table 5 presents our estimation results. The first column reports the results using pooled data and the subsequent columns are results for Afghanistan, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan, Mongolia, and Pakistan, respectively. We found that, on average, households in the lowest socioeconomic class (i.e., the poorest group) had a higher likelihood of getting into financial difficulty than households in the highest socio-economic class (i.e., the richest group) by about 94.6 percentage points. This is consistent with the results Morgan and Trinh (2021) found among ASEAN countries. However, we also find a wide difference across countries. In Afghanistan, Georgia, and Tajikistan, there was no difference across households in different SECs, while in Uzbekistan, Mongolia, and Pakistan, only households in the richest group were less likely to have financial difficulty than the poorest group while households in other SEC groups were not different. Meanwhile in Kazakhstan and the Kyrgyz Republic the two upper income groups were less likely to have financial difficulty. Only in Azerbaijan did we find that all three richer household groups were less likely to suffer from financial difficulty.

**Table 2: Determinants of Financial Difficulties Due to the COVID-19 Pandemic**

Variables	All	Afghanistan	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic
	(1)	(2)	(3)	(4)	(5)	(6)
HH head female	0.0944 (0.0666)		-0.167 (0.232)	-0.00370 (0.253)	0.0911 (0.164)	0.670*** (0.211)
HH head education						
• below high school education	-0.0118*** (0.00186)	0.00388 (0.0119)	-0.00991 (0.00706)	-0.0173** (0.00879)	-0.00147 (0.00629)	-0.00282 (0.00627)
• high school education	0.0735 (0.0904)	-0.815 (0.499)	-1.241 (0.826)	0.706 (0.550)	0.221 (0.470)	0.0223 (0.294)
• above high school education	0.122 (0.0893)	-0.529 (0.473)	-0.900 (0.823)	0.883* (0.520)	0.498 (0.454)	-0.0635 (0.290)
Located in lockdown area	0.138* (0.0706)	-0.262 (0.652)	-0.451* (0.249)	0.263 (0.252)	-0.120 (0.191)	0.0704 (0.182)
Income group (base: SEC1 poorer)						
• SEC2	-0.193** (0.0808)	0.949 (0.728)	-2.219*** (0.340)	-0.151 (0.416)	0.110 (0.313)	-0.209 (0.251)
• SEC3	-0.442*** (0.0837)	-0.725 (0.612)	-2.318*** (0.341)	-0.0990 (0.464)	-0.493* (0.295)	-0.677*** (0.247)
• SEC4 (richer)	-0.946*** (0.0785)	-2.192*** (0.592)	-4.459*** (0.353)	-0.539 (0.410)	-0.570** (0.272)	-0.842*** (0.248)
Income source						
• agriculture	-0.0567 (0.0600)	-0.152 (0.407)	0.260 (0.204)	-0.327 (0.269)	0.0217 (0.256)	-0.269 (0.176)
• wage	0.0857 (0.0645)	-0.890** (0.376)	0.128 (0.180)	0.0275 (0.390)	0.252 (0.270)	0.105 (0.174)
• business	0.232*** (0.0576)	0.527 (0.374)	0.0816 (0.203)	-0.151 (0.296)	-0.388* (0.234)	0.112 (0.173)
Rural	-0.109* (0.0577)	1.275*** (0.365)	-0.111 (0.209)	-0.0455 (0.277)	0.173 (0.174)	-0.241 (0.182)
Constant	3.730*** (0.210)	3.678*** (0.943)	4.096*** (0.956)	3.074*** (0.824)	1.681*** (0.638)	1.938*** (0.442)
Observations	10,252	1,031	1,000	1,024	1,066	1,024
Variables	Tajikistan	Turkmenistan	Uzbekistan	Mongolia	Pakistan	
(7)	(8)	(9)	(10)	(11)		
HH head female	0.0567 (0.173)	0.572 (0.682)	-0.0261 (0.202)	0.0348 (0.173)	0.407 (0.341)	
HH head education						
• below high school education	-0.00171 (0.00439)	0.0136 (0.0156)	-0.0135** (0.00532)	-0.0324*** (0.00592)	-0.0171*** (0.00510)	
• high school education	0.286 (0.230)	-0.380 (0.650)	-0.231 (0.403)	0.285 (0.188)	-0.124 (0.230)	
• above high school education	0.306 (0.226)	-0.769 (0.644)	-0.153 (0.387)	0.249 (0.199)	-0.531** (0.224)	
Located in lockdown area	0.355*** (0.132)	-0.0663 (2.197)	0.328 (0.208)		0.430* (0.256)	
Income group (base: SEC1 poorer)						
• SEC2	0.0808 (0.180)	-1.106 (0.817)	-0.207 (0.210)	0.138 (0.196)	0.706* (0.364)	
• SEC3	-0.179 (0.182)	-1.129 (0.825)	-0.338 (0.219)	-0.167 (0.266)	0.156 (0.305)	
• SEC4 (richer)	-0.163 (0.198)	0.375 (0.850)	-0.673*** (0.203)	-0.442** (0.223)	-0.536** (0.242)	
Income source						
• agriculture	-0.238* (0.142)	1.295*** (0.420)	-0.226 (0.158)	-0.224 (0.222)	-0.267 (0.186)	
• wage	0.150 (0.172)	0.387 (0.431)	-0.175 (0.191)	1.036*** (0.224)	-0.0837 (0.246)	
• business	-0.233* (0.138)	4.778*** (0.402)	-0.489*** (0.162)	0.306* (0.182)	0.171 (0.197)	
Rural	-0.380** (0.154)	-0.321 (0.379)	-0.298** (0.151)	-0.612*** (0.187)	-0.129 (0.185)	
Constant	0.423 (0.352)	-0.545 (1.233)	2.442*** (0.483)	2.257*** (0.406)	2.455*** (0.480)	
Observations	1,011	1,000	1,001	1,006	1,056	

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



We also find some evidence on the effects of income sources on the likelihood of getting into financial difficulty. On average, households receiving income from household businesses and/or self-employment were more likely to suffer from financial difficulty, while there is no difference between households with and without income from agricultural production and from wages. This may be due to the fact that households with income from household businesses tend to experience an increase in expenditure (as shown in Table 5). As with other results, we also find a large difference across countries. For example, households in Turkmenistan with income from agricultural production were more likely to experience financial difficulty, while their counterparts in Tajikistan were less likely to do so. Similarly, households in Afghanistan with income from wages are less likely to have financial difficulty than those without this source of income, but in Mongolia, these households are more likely to have financial difficulties. Different patterns were also found across households with income from household businesses across countries.

Our empirical results show that the education level of the household head on average was not associated with the likelihood of getting into financial difficulties. This result is different from that found in ASEAN economies where household heads with a higher education level were less likely to experience financial difficulty. We find a negative relationship between education and the likelihood of getting into financial difficulty in Pakistan, while in Georgia the relationship was positive, i.e., households whose heads have an education level higher than high school were more likely to experience financial difficulties.

The estimation results also suggest that being located in a lockdown area increased the likelihood of getting into financial difficulty on average. But the effects seem to be weak and differ by country. Only in Tajikistan and Pakistan did we find a positive relationship between living in lockdown areas and the likelihood of getting into financial difficulties, while the relationship is negative in Azerbaijan and there is no relationship between the two variables in other countries. We also find that rural households are less likely to experience financial difficulty, but this relationship is only statistically significant at the 10% level. This variable is only statistically significant in four countries. Rural households in Tajikistan, Uzbekistan, and Mongolia were less likely to have financial difficulties than their urban counterparts, but in Afghanistan urban households were less likely to experience financial difficulty than rural households.

## **6. CONCLUDING REMARKS**

The impacts of the COVID-19 outbreak have heavily affected 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 demand due both to uncertainty and policy measures such as lockdowns, “social distancing,” and travel restrictions are having a severe impact on CAREC member countries. In order to better understand these impacts, computer-assisted telephone (CATI) interviews of households were conducted in ten countries from the CAREC region (excluding the PRC) over the period May–August 2021. The samples were representative of the income classes and the rural and urban population in each country.

Using empirical methods, this paper studies the determinants of the impact of COVID-19 on (i) income decline, (ii) expenditure increase, and (iii) financial difficulty. Our results are mostly consistent with results on ASEAN by Morgan and Trinh (2020), however some difference exist due to differences in the structures of economies. We provide results for all countries together and for each country. The results also vary across countries. The paper presents several interesting results.

Overall, the COVID-19 pandemic has affected the income of all households regardless of their economic status. Nearly half of households (45%) reported income declines. The share of households with income declines ranged greatly among CAREC countries from 80% of households (Pakistan) to 20% of households (Mongolia). Among households with a declining income the largest share (17.3%) reported that their income had fallen by 1–25 %, while 15.9% reported that their income had declined by 26–50 %, and 12.3% of households reported an income decline of over 50%. On average, households with income from wages tended to experience a decline in income compared to other sources of income like agricultural production, business, and self-employment. Households with less educated household heads were more likely to experience income declines due to COVID-19. Female-headed households were less likely to experience a decline in income due to COVID-19. Households located in a lockdown area on average increased the likelihood of experiencing an income decline. Households in rural areas were also less likely to experience an income decline, but this relationship is only observed in two countries (Afghanistan and Mongolia), while Georgian rural households were more likely to experience an income decline than their urban counterparts.

On average, only the richer household income groups (SEC4) experienced an increase in expenditure. With regard to sources of income, on average, households with income from household businesses or self-employment were more likely to increase their expenditure than households that did not have such sources of income. Households located in lockdown areas have tended to experience expenditure declines during the pandemic.

Households in the lowest socioeconomic class, SEC1 (i.e., the poorest group), were more likely to get into financial difficulty than those households in the highest socio-economic class. On average, households with income from household businesses and/or self-employment were more likely to suffer from financial difficulty while there was no difference between households with and without income from agricultural production and from wages. Being located in a lockdown area increased the likelihood of getting into financial difficulty on average. But the effects seem to be weak and vary by country. More households reported financial difficulties in CAREC than in SEA.

## ANNEX A: DATABASES OF COVID-19 POLICY RESPONSES AND MEASURES BY INTERNATIONAL ORGANIZATIONS

A number of international organizations have produced a database of COVID-19 policies and measures from many countries including CAREC member countries (Table 6).

**Table 6: Databases of COVID-19 Policy Responses and Measures by International Organizations**

Organization	Database Title	Link
ADB	COVID-19 Policy Database	<a href="https://covid19policy.adb.org/">https://covid19policy.adb.org/</a>
IMF	POLICY RESPONSES TO COVID-19	<a href="https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19">https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19</a>
UNWTO	COVID-19: Measures to support travel and tourism	<a href="https://www.unwto.org/covid-19-measures-to-support-travel-tourism">https://www.unwto.org/covid-19-measures-to-support-travel-tourism</a>
WTO	COVID-19: Measures affecting trade in services	<a href="https://www.wto.org/english/tratop_e/covid19_e/trade_related_services_measure_e.htm">https://www.wto.org/english/tratop_e/covid19_e/trade_related_services_measure_e.htm</a>
	COVID-19: Measures affecting trade in goods	<a href="https://www.wto.org/english/tratop_e/covid19_e/trade_related_goods_measure_e.htm">https://www.wto.org/english/tratop_e/covid19_e/trade_related_goods_measure_e.htm</a>
WB	COVID-19 Trade Policy Database: Food and Medical Products	<a href="https://www.worldbank.org/en/topic/trade/brief/coronavirus-covid-19-trade-policy-database-food-and-medical-products">https://www.worldbank.org/en/topic/trade/brief/coronavirus-covid-19-trade-policy-database-food-and-medical-products</a>
IMF	POLICY RESPONSES TO COVID-19	<a href="https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19">https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19</a>

## ANNEX B: INCOME GROUPS

Since different countries have different numbers of SECs, in our empirical analyses we recategorized the SECs into four groups to make them consistent across countries. More specifically, we regrouped SEC 5 and SEC 6 into SEC 4 in Kazakhstan, and SEC 5 into SEC 4 in Afghanistan, Azerbaijan, Georgia, Mongolia, Pakistan, Tajikistan, and Turkmenistan.

**Table 7: Income Levels in Local Currency for Each Country**

Under which of the following ranges does your average monthly HOUSEHOLD INCOME from June 2020 to December 2020 fall?

Original SEC	Revised SEC	Afghanistan, AFN	Azerbaijan, manat	Georgia, GEL	Kazakhstan, tenge	Kyrgyz Republic, som
SEC 1	SEC 1	≤ 5000	≤ 820	≤ 299	≤ 60,000	≤ 6,000
SEC 2	SEC 2	5,001–15,000	820,1–1,035,0	300–599	60,001–100,000	6,001–12,000
SEC 3	SEC 3	15,001–30,000	1035,1–1240,0	600–999	100,001–150,000	12,001–20,000
SEC 4	SEC 4	30,001–60,000	1,240,1–1650,0	1,000–1,499	150,001–250,000	> 20,000
SEC 5		> 60,000	> 1,650,1	> 1,500	250,001–300,000	
SEC 6					> 300,000	
Original SEC	Revised SEC	Mongolia, tugrug	Pakistan, rupee	Tajikistan, somoni	Turkmenistan, manat	Uzbekistan, sum
SEC 1	SEC 1	≤ 500,000	≤ 5,000	≤ 800	≤ 1,000	≤ 1,200,000
SEC 2	SEC 2	500,001–900,000	5,001–15,000	801–1,400	1,001–1,500	1,200,001–2,000,000
SEC 3	SEC 3	900,001–1,100,000	15,001–30,000	1,401–2,400	1,501–1,800	2,000,001–3,200,000
SEC 4	SEC 4	1,100,001–2,100,000	30,001–60,000	< 2,400	1,801–2,500	< 3,200,000
SEC 5		> 2,100,001	> 60,000		≤ 2,501	
SEC 6						

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