Impact of COVID-19 lockdowns and aid packages

Evidence from Viet Nam

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September 2022

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wider.unu.edu

Abstract: In view of the detrimental effect of COVID-19 lockdowns on household welfare, most countries implemented economic stimulus aid packages to support households. The extent to which these packages mitigated the pandemic's adverse effects on households is not just an intriguing question for researchers but is also important for policy makers. Using individual fixed-effect regressions, I find that an additional month of lockdown reduced per capita income by 8.3 per cent in Viet Nam. Experience of longer lockdowns reduced individuals' satisfaction with provincial government's response to the pandemic. On the other hand, receipt of aid packages enabled households to increase their per capita income by 8.5 per cent. Importantly, receipt of an aid package increased the probability of satisfaction with provincial and commune governments' response to the pandemic by 3.6 and 10.3 percentage points respectively.

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1   Introduction

The COVID-19 pandemic is widely regarded as the most serious public health issue of the 21st century to date. It has had serious consequences not only for people's health but also for the global economy (e.g., Apergis and Apergis 2021; Aum et al. 2021; Dang and Nguyen 2021; Goolsbee and Syverson 2021). Labour markets and household incomes have been severely affected. Most countries have implemented economic stimulus aid packages to support households (ILO 2021). On average, countries have spent around two per cent of gross domestic product (GDP) on COVID-19-related assistance programmes (Gentilini et al. 2022).

The effect of COVID-19 lockdowns and aid packages on households is not simply an intriguing question for researchers but is also important for policy makers at both national and local levels. Understanding this effect is important for policy makers to design assistance policies to mitigate the effects of a pandemic. In this paper, I measure the effect of COVID-19 lockdowns and aid packages on a number of individual outcomes in Viet Nam, including household income, employment, and people's satisfaction with government policies in response to the pandemic. I use individual panel data taken from a survey of citizens' experiences and assessments of the impact of the pandemic and government responses, conducted by the Mekong Development Research Institute (MDRI) and United Nations Development Programme (UNDP) in 2020 and 2021.

Viet Nam is an interesting case study. In 2020, the country was praised by citizens and the international community alike for its effectiveness in containing the COVID-19 pandemic (Do et al. 2021). From May 2021, however, the arrival of the Delta variant led to a renewed COVID-19 outbreak in Viet Nam. To contain it, the government implemented lockdowns and social distancing at both national and provincial levels. At the same time, the government implemented a social insurance package with cash transfers worth VND62 trillion (US$2.7 billion)[1] to support poor and low-income households, social security beneficiaries, people with meritorious service to the country, wage earners, and household businesses affected by COVID-19 (Government of Viet Nam 2020b). Cash transfer amounts ranged from VND250,000 (around US$11) per month per person for the poor to VND1,800,000 (around US$78) per month per person for those who had lost their jobs. The transfers were paid out for a maximum of three months in the year. In 2020, around 20 per cent of the population lived in households receiving this support. In 2021, the government's VND26 trillion (around US$1.13 billion) aid package provided for those affected by the pandemic, particularly the most vulnerable. According to the mass media, however, this aid package was dispensed too slowly and did not reach many vulnerable people (e.g., Le 2021; Minh 2021).

Using individual fixed-effect regressions, I find robust evidence of a negative effect of lockdowns on household per capita income. An additional month's duration of lockdown resulted in an 8.3 per cent decrease in per capita income. Lockdown had no significant effect on labour force participation, but it tended to move workers from unskilled wage-earning employment to non-farm self-employment. Experience of longer lockdowns reduced individuals' satisfaction with provincial governments' responses to the pandemic. An additional month of lockdown reduced the probability that the public would have a good opinion of the provincial government by 3.4 percentage points. Receipt of an aid package helped households to increase their per capita income by 8.5 per cent, a ratio similar to that of the effect of a one-month lockdown (8.3 per cent),

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[1] At the time of writing, US$1 is equivalent to around VND23,000.

implying that the aid package could compensate recipients for income loss due to a month of lockdown. Interestingly, respondents in families receiving cash transfers from the package showed greater support for the government response. Receipt of an aid package increased the probability of the public forming a good opinion of the provincial government and commune authorities by 3.6 and 10.3 percentage points respectively.

My paper makes several contributions to the relevant literature. First, I look at the effects not only of lockdowns but also of aid packages. Although there is a relatively large literature on the effect of lockdowns (e.g., Apergis and Apergis 2021; Aum et al. 2021; Besley and Dray 2022; Cantor et al. 2022; Chakrabarty and Mukherjee 2022; Goolsbee and Syverson 2021; Onyeaka et al. 2021), little evidence is available concerning the effect of emergency aid packages designed to mitigate the economic effects of COVID-19. In this paper, I provide empirical findings regarding the effect of this emergency aid in a lower middle-income country. Several studies, such as those by Bayer et al. (2020), Giang et al. (2021), Hinterlang et al. (2021), and Lustig et al. (2020), do examine the effect of economic stimulus packages, but most of them rely on simulation methods instead of estimating the actual effects of the packages. Other studies, such as Abay et al. (2021) and Bottan et al. (2021), show that social protection programmes helped the poor and vulnerable to address their food insecurity during the COVID-19 pandemic. However, these studies focus on existing social insurance programmes rather than COVID-19-related programmes. An exception is the study by De Leon et al. (2021), which finds that emergency government cash transfers in Brazil reduced the probability of contracting COVID-19 through the increased practice of social distancing.

Second, I look at a wide range of outcomes for households, including not only economic outcomes (income and employment) but also households' assessment of the government's response to the pandemic. Differential successes achieved in limiting mobility, enforcing social separation (Holtz et al. 2020), and ultimately reducing consequent infection and death rates may be determined by policy differences between countries (Shokoohi et al. 2020). These policy solutions to the pandemic, which included voluntary measures such as self-quarantine and mask-wearing, required significant support from all population groups to be effective. Although the effect of lockdowns on the pandemic is well documented (see Herby et al. 2022), an important question is how to successfully implement a lockdown and social distancing to contain an epidemic. Moreover, the effectiveness of policy responses to the pandemic is a particularly contentious issue. While some countries were able to impose stringent economic lockdowns on their populations in order to lower infection and mortality rates, others were unable to properly execute and enforce tight restrictions (Cheng et al. 2020; Hale 2020). By looking at the effect of the aid packages on citizens' assessment of the government's response to the pandemic, I contribute empirical evidence to the literature on citizens' trust and confidence in government (e.g., Anderson 2010; Brollo and Nannicini 2012; Christensen and Lægreid 2005; Dahlberg and Johansson 2002; Gozgor 2022; Majid et al. 2022; Price 2012; Zhao and Hu 2017). There is still little evidence regarding the impact of cash transfers or social assistance policies on citizens' trust in government. Linos (2013) finds that a conditional cash transfer programme in Honduras increased municipal mayors' probability of re-election by 39 per cent, indicating citizens' support for local leaders. Evans et al. (2019) show that a conditional cash transfer programme increased trust in leaders in Tanzania. My paper provides supportive evidence for the hypothesis that cash transfers improved citizens' confidence in governments' responses to the pandemic.

Several studies have examined the impact of the COVID-19 pandemic in Viet Nam. Tran et al. (2020) conducted a survey to collect self-reported data on the effects of the pandemic on people's well-being. Dang et al. (2022) used labour force surveys from 2015 to 2020 to show the negative effect of the pandemic on the labour market and workers' earnings. In comparison with these two studies, I use more recent surveys to capture the effect of the lockdowns. Giang et al. (2021)

simulate the effect of the aid package on household income and poverty, using the 2020 Viet Nam Household Living Standard Survey. Compared with Giang et al. (2021), I use actual data following the receipt of the aid package to measure its effect. My paper also looks at different outcomes from those considered in previous studies on Viet Nam. Importantly, the availability of individual panel data allows me to estimate an individual fixed-effect regression that is robust to selection bias due to time-invariant unobservable variables.

This paper is structured into six sections. The second section introduces the data set used in this study. The third section presents a descriptive analysis and the country context of Viet Nam. The fourth and fifth sections describe my estimation method and empirical results respectively. The sixth section concludes.

2   Data

Since 2009, the Viet Nam Governance and Public Administration Performance Index (PAPI) surveys have been conducted annually by the UNDP and the Viet Nam Fatherland Front. The surveys collect information from approximately 14,000 citizens (aged 18 and above) throughout the country regarding their experiences and assessments of governance and public administration. With technical support from the UNDP, in 2020 and 2021 the MDRI conducted surveys of citizens' experiences and assessments of the impact of the COVID-19 pandemic, using the 2019 PAPI as the sampling frame.

In September and October 2020, the MDRI conducted the first round of the survey to assess the impact of the pandemic in that year. From the 9,982 respondents who provided phone numbers from the sampling frame of 14,333 respondents in the 2019 PAPI survey, 1,337 individuals were randomly selected. Interviews were successfully completed with 1,335 respondents (for a more detailed description of the 2020 COVID-19 survey, see Do et al. 2021). During September and October 2021, the MDRI was able to reinterview 1,142 individuals who had been included in the 2020 cycle. The MDRI randomly selected additional respondents so that the total number for the 2021 COVID-19 survey was 1,501 individuals from all 63 provinces. Panel data are available for 1,142 respondents for the three years of 2019 (before the pandemic) and 2020 and 2021 (after the pandemic). In this paper, I use a sample of individuals who appeared in at least the 2020 or 2021 surveys. The final number of observations used in this paper is 4,524, consisting of 1,688 from the 2019 PAPI survey, 1,335 from the 2020 MDRI-UNDP survey, and 1,501 from the 2021 MDRI-UNDP survey. Sampling weights were also calculated and used to ensure that the sample surveyed is representative at the national level for urban and rural areas, and that it includes male and female, Kinh majority and non-Kinh minority respondents.

The average interview duration was around 30 minutes. The data collected include respondents' employment and income, their knowledge about COVID-19, their corresponding behaviour and experience of the pandemic, their opinion and assessment of government responses, and their receipt of aid packages.

3 Country context and descriptive analysis

### 3.1 The pandemic and aid packages

Viet Nam's response to COVID-19 in 2020 was recognized by both citizens and the international development community as swift and effective (Hartley et al. 2021; Trevisan et al. 2020). Just one week after Viet Nam's first case of COVID-19 in January 2020, the government quickly established the National Steering Committee on COVID-19 Prevention and Control to respond to the pandemic. Despite the low number of COVID-19 cases detected in March (around ten new cases) (Ministry of Health of Viet Nam 2020), Viet Nam suspended the entry of all foreigners from 22 March 2020 and imposed a nationwide lockdown in all 63 provinces in April 2020, with 27 provinces opting for a 15-day lockdown and the remaining 36 provinces opting for 20- to 30-day lockdowns.[2] These lockdowns brought success in that there were no cases of COVID-19 to report in the community at the end of April, and all economic activity was resumed. After three months of zero transmission in the community, the pandemic's second wave began in the city of Da Nang (Djalante et al. 2020). Viet Nam successfully contained the disease for a second time after two months of lockdown and social distancing implemented in Da Nang and some central provinces. In 2020, there was a low mortality rate of around 100 deaths in total due to COVID-19 out of a population of nearly 100 million.

From May 2021, with the arrival of the Omicron variant, the COVID-19 pandemic spread rapidly across various provinces and was highly detrimental to the Vietnamese population. To contain the pandemic, the government implemented longer lockdowns from June to October, especially in provinces and cities in the south such as Ho Chi Minh City, Binh Duong, Dong Nai, and Long An. Figure 1 presents a geographical map of COVID-19 case rates and months of lockdown at the provincial level (there are 63 provinces and provincial-level cities). The figure shows a strong correlation between the rate of COVID-19 spread and the duration of lockdowns.

The pandemic and the lockdowns had a detrimental effect on the population and economy of Viet Nam. In 2021, more than 40,000 lives were lost due to COVID-19, and the labour market deteriorated seriously (Dang et al. 2022). Viet Nam's GDP growth rate was nearly three per cent in both 2020 and 2021, the lowest in a decade. Some sectors were more affected, such as manufacturing, tourism, accommodation, transport, and wholesale and retail trade, whereas agriculture, which overall employs 18.9 million workers, was relatively untouched (ILO 2020). The pandemic also had negative impacts on social outcomes such as psychological well-being and education (e.g., Gan et al. 2021; Tran et al. 2020; Vu and Bosmans 2021).

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[2] According to Directive 16/CT-TTg, dated 31 March 2020 (Government of Viet Nam 2020a), the lockdown was implemented on the principle that families should isolate from families, villages from villages, communes from communes, districts from districts, and provinces from provinces. Workers in workshops and manufacturing plants had to keep a safe distance from each other, wear masks, and disinfect as required by law. Everyone was to stay at home, only leaving if absolutely necessary—for example, to buy food or medicine, or in an emergency, or to work in factories, production facilities, businesses, or service enterprises. Closures, shutdowns, and other emergencies did not affect essential commodities. When communicating, people were to keep at a minimum distance of two metres, and no more than two individuals could congregate outside offices, schools, hospitals, and public areas. Detailed information about the Directive is available at: https://vncdc.gov.vn/mediacenter/media/files/1012/08-2021/805_1629106225_571611a30316f431.pdf

Figure 1: COVID-19 rates, lockdown durations, and aid packages in 2021

Panel A: number of COVID-19 cases per 1,000 people

Panel B: number of lockdown months

Panel C: proportion of people receiving aid packages (%)
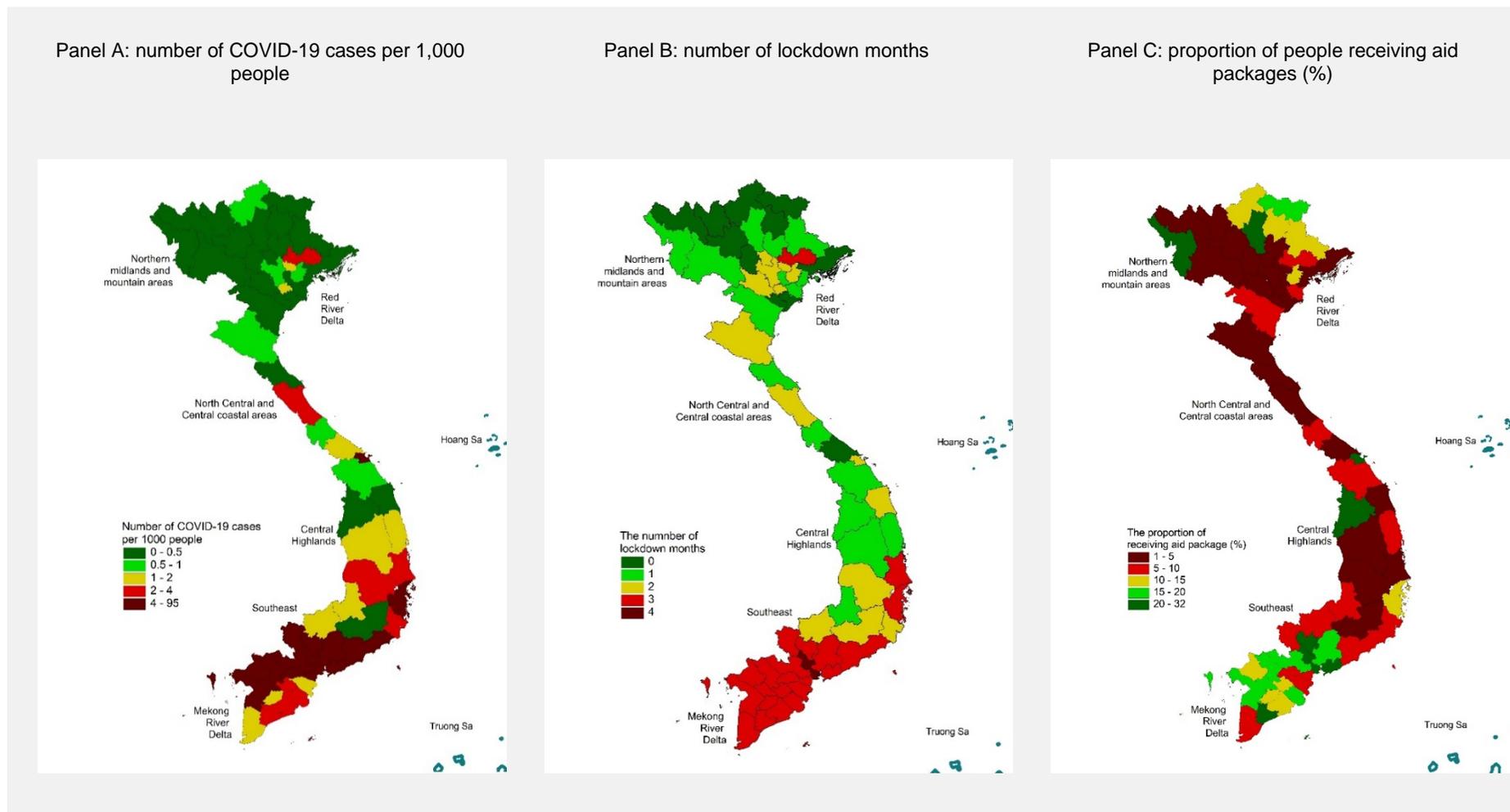
Source: author's illustration.

In Viet Nam, the central government issued overall policies and general guidelines to control the pandemic, such as lockdowns and aid packages. However, provinces could make their own decisions regarding the duration and intensity of lockdowns. In general, the lockdowns' stringency was comparable across provinces, but the durations were different. To mitigate the negative effects of the pandemic, the government of Viet Nam provided cash transfers over a period of three months in an aid package of VND62 trillion (equivalent to US$2.7 billion) to support people affected by the COVID-19 pandemic (Government of Viet Nam 2020b). In 2021, a similar aid package of VND26 trillion (around US$1.13 billion) was provided to support those in need. The central government made the general decisions on aid packages, but local people were responsible for identifying beneficiaries. The criteria used across different regions may not have been consistent or comparable. Overall, the main beneficiaries were people eligible for regular social assistance according to Decree 136/2013/NĐ-CP (i.e. the poor, near-poor, people with meritorious service to the revolution and in receipt of monthly benefits, and other designated groups)[3] and people who were heavily affected by the pandemic. Table 1 summarizes the cash transfer amounts for beneficiaries in the two aid packages.

Table 1: Cash transfers in aid packages

	Beneficiary groups	Monthly allowance	Payment period
1	Employees subject to suspension of labour contract or to unpaid leave due to COVID-19	VND1,800,000 per person (around US$78)	Paid monthly for a maximum of three months
2	Employees subject to termination of labour contract but not eligible for unemployment allowance	VND1,000,000 per person (around US$43)	Paid monthly for a maximum of three months
3	Household businesses earning annual revenue under VND100 million per year that had to suspend business operations	VND1,000,000 per household (around US$43)	Paid monthly for a maximum of three months
4	Individuals with meritorious service to the revolution and receiving monthly benefits	VND500,000 per person (around US$22)	Paid a lump sum for three months
5	Social insurance beneficiaries receiving monthly benefits	VND500,000 per person (around US$22)	Paid a lump sum for three months
6	Poor or near-poor households according to national poverty line criteria	VND250,000 per person (around US$11)	Paid a lump sum for three months

Source: author's compilation.

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[3] Since 2013, the government of Viet Nam has implemented Decree 136/2013/NĐ-CP to provide social assistance, and the government provides monthly cash transfers for older people and other people in need (Government of Viet Nam 2013). For more information on social protection in Viet Nam, see World Bank (2019).

Figure 2: Proportions receiving aid packages by population subgroup (%)
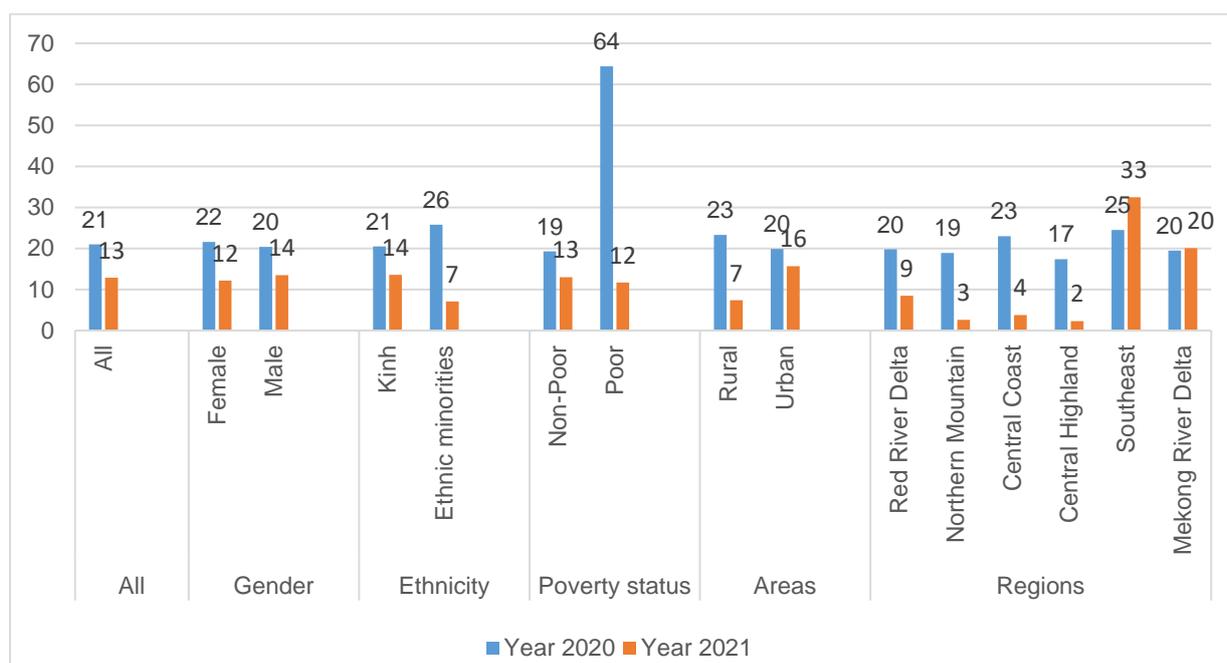
Source: author's calculations based on MDRI-UNDP survey data.

According to the MDRI-UNDP survey, 21 per cent of survey respondents reported that their households received support from the aid package in 2020. This rate declined to 13 per cent in 2021. To check the robustness and compute the numbers of people receiving the aid packages, I used the 2021 labour force survey, which also contained a question on the receipt of this aid. The figure from the 2021 labour force survey is 13.1 per cent, which is almost the same as the figure from the MDRI-UNDP survey. The pattern of aid package receipt for 2020 differed from that for 2021. In 2020, vulnerable population groups such as the poor and ethnic minorities were more likely to receive cash transfers than the better-off and Kinh people. However, this trend was reversed in 2021. A lower proportion of individuals in vulnerable groups received cash transfers. Only seven per cent of ethnic minorities reported that they received money from the aid package, while the corresponding figure for Kinh recipients doubled. The low access to the aid package among vulnerable groups in 2021 can be explained by the fact that the package was more likely to be distributed in areas with longer lockdowns. The proportion of those receiving the package in the South-East, the richest region in Viet Nam, was 33 per cent. Provinces in this region had high rates of COVID-19 and longer lockdown periods. On the other hand, poor regions, such as the Northern Mountains and Central Highlands, had the lowest numbers receiving the aid package, since these regions had the lowest rates of COVID-19 and the shortest lockdowns (Figure 2).

Table 2 uses 2020 and 2021 pool data to examine the correlation between the receipt of aid packages and several observed characteristics of individuals. Column (1) presents the ordinary least squares (OLS) regression, while column (2) reports the individual fixed-effect regression. The table shows that people who reported job and income loss due to the pandemic were more likely to receive cash transfers from aid packages. People living in provinces with longer lockdowns were also more likely to receive aid. Interestingly, there is a U-shaped relationship between receipt of an aid package and age. The probability of receiving aid decreases as age increases, but after the lowest point at age 41 (equal to 0.0163/(2*0.0002)),[4] the probability of receiving the aid package increases

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[4] The values of 0.0163 and 0.0002 are the estimates of age and age squared variables respectively in the regression in column (1).

with age. This finding indicates a negative correlation between income and the receipt of aid, since income and age are in an inverted U-shaped relationship. The OLS regression also shows that the poor were more likely to receive an aid package than the better-off. However, urban people were more likely to receive a package than rural dwellers. There is no significant association between education and receipt of aid. Compared with workers in other occupations, unskilled workers were more likely to receive aid transfers.

Table 2: Regression of receipt of aid package

Explanatory variables	Dependent variable: receipt of aid package	
	OLS	Fixed effects
	(1)	(2)
Self-reported job loss due to COVID-19	0.0423**	0.0394
	(0.0183)	(0.0266)
Self-reported income loss due to COVID-19	0.0488***	0.0616**
	(0.0164)	(0.0307)
Lockdown duration	0.0524***	0.0432***
	(0.0088)	(0.0136)
Rate of COVID-19 cases	0.0013	0.0038**
	(0.0008)	(0.0016)
Male (male=1, female=0)	-0.0030	
	(0.0134)	
Age	-0.0163***	
	(0.0054)	
Age squared	0.0002***	
	(0.0001)	
Ethnic minority (yes=1, Kinh=0)	0.0141	
	(0.0233)	
Less than lower-secondary education	Reference	
Lower-secondary education	0.0047	
	(0.0193)	
Upper-secondary education	-0.0255	
	(0.0197)	
Tertiary education	-0.0156	
	(0.0244)	
Not working	Reference	
Skilled work	0.0190	
	(0.0243)	
Unskilled work	0.0834***	
	(0.0276)	
Self-employed farm work	0.0139	
	(0.0250)	
Self-employed non-farm work	0.0082	
	(0.0270)	
Status according to national poverty line (poor=1, better-off=0)	0.1358***	
	(0.0395)	
Urban dummy	0.0349**	
	(0.0163)	
Red River Delta	Reference	
Northern Mountains	0.0024	
	(0.0203)	
Central Coast	0.0083	
	(0.0194)	

Central Highlands	-0.0390	
	(0.0245)	
South-East	0.0667**	
	(0.0296)	
Mekong River Delta	0.0445*	
	(0.0256)	
Year 2021 dummy	-0.1196***	-0.1197***
	(0.0124)	(0.0143)
Constant	0.3826***	0.0675***
	(0.1270)	(0.0239)
Observations	2,818	2,272
R-squared	0.089	0.590

Note: robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

3.2 Outcome variables

Based on data availability, the outcome variables in this paper include per capita income, current employment (during the previous seven days), and respondents' opinions of the government's response to the COVID-19 pandemic. Table 3 shows that per capita income decreased between 2019 and 2021, reflecting the negative effect of the pandemic. I classify employment into wage-earning employment and self-employment. Wage-earning employment is further divided into skilled and unskilled employment, while self-employment is divided into farm and non-farm employment. In 2021, the proportions of skilled and unskilled workers in the whole sample were 29 per cent and 19 per cent respectively. The proportions of people in self-employed farm and non-farm work were 22 per cent and 19 per cent respectively. The proportion of those out of work declined from 18 per cent in 2019 to 12 per cent in 2021. The number of people out of work includes both the unemployed and those not participating in the labour force. The unemployment rate was very low at less than one per cent. Therefore, I put both the unemployed and individuals not in the labour force into the 'not-working' group.

Table 3: Income and employment variables

	Year 2019	Year 2020	Year 2021
Per capita income (thousand VND per month)	3.36	2.97	2.99
	(0.06)	(0.06)	(0.05)
Occupation			
Skilled	26.07	26.97	28.65
	(1.07)	(1.22)	(1.17)
Unskilled	14.63	21.80	18.65
	(0.86)	(1.13)	(1.01)
Self-employed farm work	29.09	24.34	21.52
	(1.11)	(1.18)	(1.06)
Self-employed non-farm business	12.26	13.03	18.99
	(0.80)	(0.92)	(1.01)
Not working	17.95	13.86	12.19
	(0.93)	(0.95)	(0.84)
Total	100	100	100

Note: standard error of means reported in parentheses.

Source: author's calculations based on MDRI-UNDP survey data.

In the MDRI-UNDP survey, respondents were asked to assess the government's response to the pandemic at different levels: central government, provincial government, and commune authorities. Participants allocated response scores ranging from one (very bad) to five (very good). Most had a positive opinion of the government's response to the pandemic, with less than five per cent assessing it as poor (Table 4). Specifically, approximately 84 per cent of respondents rated the performance of the central government as good or very good in 2021. The proportions of respondents giving the same rating were similar at the provincial and commune levels.

Table 4: Distribution of respondents according to their opinion of authorities' response to COVID-19 pandemic

	Opinion of central government		Opinion of provincial authorities		Opinion of commune authorities	
	Year 2020	Year 2021	Year 2020	Year 2021	Year 2020	Year 2021
Very bad	0.1	0.5	0.2	0.4	0.6	0.9
	(0.1)	(0.2)	(0.1)	(0.2)	(0.2)	(0.2)
Bad	0.2	1.8	0.5	1.5	0.9	1.2
	(0.1)	(0.3)	(0.2)	(0.3)	(0.3)	(0.3)
Neither good nor bad	3.8	13.9	6.3	9.6	13.6	11.6
	(0.5)	(0.9)	(0.7)	(0.8)	(0.9)	(0.8)
Good	23.6	38.9	39.8	41.7	45.9	42.3
	(1.2)	(1.3)	(1.3)	(1.3)	(1.4)	(1.3)
Very good	72.4	44.9	53.3	46.8	39.0	44.0
	(1.2)	(1.3)	(1.4)	(1.3)	(1.3)	(1.3)
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: standard error of means reported in parentheses.

Source: author's calculations based on MDRI-UNDP survey data.

4   Estimation method

Estimating the effect of the COVID-19 pandemic is challenging, since we do not have a clean control group. In this paper, I estimate the effect of lockdowns using the variation in lockdown durations across provinces and over years. I also estimate the effect of aid packages on individuals' outcomes. Specifically, I estimate the effect of lockdowns and aid packages on an outcome of interest using the following regression model:

$$y_{i,j,t} = \beta_0 + Aid_{i,j,t}\beta_1 + Lockdown_{j,t}\beta_2 + X_{i,j,t}\beta_3 + P_{j,t}\beta_4 + T_t\beta_5 + u_{i,j} + v_{i,j,t} \quad (1)$$

$y_{i,j,t}$ is a dependent variable, such as the per capita income of respondent i in province j in year t. $Aid_{i,j,t}$ is a dummy indicating that the respondent lived in a household receiving the aid package. $Lockdown_{j,t}$ is a discrete variable measuring the number of lockdown months in province j in year t. $X_{i,j,t}$ and $P_{j,t}$ denote individual-level and provincial-level control variables. T_t is a vector of year dummies. $u_{i,j}$ are respondent fixed effects, while $v_{i,j,t}$ denotes time-variant unobserved variables.

I use the same model specification for different dependent variables. It should be noted that data on per capita income and employment are available in the 2019 PAPI survey. Therefore, I use three years of panel data (2019, 2020, and 2021) to estimate the effect of lockdowns and aid packages on per capita income and employment. In 2019, the variables 'lockdown' and 'aid package' receive a value of zero. Before 2020, no data are available for the outcome 'opinion of

the government's response to the pandemic'. Therefore, for these outcome variables, I use panel data from 2020 and 2021 to measure the effect of the lockdowns and aid packages. Standard errors are clustered at the respondent level.

An important issue in estimating the effect of aid packages is selection bias. People receiving and not receiving cash transfers may differ not only in observed but also in unobserved variables. In this paper, I use individual fixed-effects regression to address the selection bias caused by time-invariant unobserved variables. However, the estimates may be biased due to time-variant unobserved variables and reverse causality. For example, if a family have lost their income, they are more likely to receive an aid package. If there is a negative correlation between income and the receipt of an aid package, I might underestimate the effect of the aid package on income. For a robust analysis, I use heteroscedasticity-based instruments (Lewbel 2012) to estimate equation (1). Although I am seeking evidence of a causal effect of the aid package, I am acutely aware of potential selection bias, and I am therefore cautious when interpreting my findings.

I include interactions between receipt of an aid package and various characteristics such as age, gender, education, ethnicity, and urban location, in order to examine the heterogeneous effects of aid packages across different population subgroups.

5   Empirical results

5.1   Impact of lockdowns and aid packages

Table 5 presents the individual fixed-effect regression of per capita income and employment on lockdowns and receipt of aid packages. Since I use individual fixed effects, time-invariant variables such as age, gender, and education are not included in the model. In addition to year dummies, the control variable includes only the provincial rate of COVID-19. Overall, I use a small set of control variables, since these should be exogenous and unaffected by the treatment variable, i.e. the lockdown and aid package variables (Angrist and Pischke 2009; Heckman et al. 1999). To check the robustness, I use a model with a larger set of control variables. The results from the large specification are very similar to those from the small specification.

Table 5 shows a strong negative effect of lockdowns, statistically significant at the one per cent level. An additional month of lockdown reduces per capita income by 8.3 per cent. An effect of this magnitude is quite consistent with Dang et al. (2022), who find that the lockdown in April 2020 reduced the wages of employed workers by around 11 per cent. Because the unemployment rate is very low in Viet Nam, there is no significant effect on the probability of not working.

Interestingly, I find that the lockdowns had a negative effect on unskilled wage-paying jobs (column 3) but a positive effect on self-employed non-farm jobs (column 5). This means that although the lockdowns did not increase overall unemployment, they may have reduced the number of wage-paying jobs. People who lost unskilled work in the labour market had to find self-employed non-farm work. Viet Nam is a country with a large self-employed sector, which was able to absorb the negative effect of the pandemic on the labour market. However, this finding suggests that the lockdowns may have affected more disadvantaged workers, who were more likely to work in unskilled jobs. The finding is consistent with my earlier finding (Table 2) that unskilled workers were more likely to receive aid transfers than workers in other occupations.

There were no significant effects of the aid package on employment. However, receipt of an aid package enabled households to increase their per capita income by 8.5 per cent (Table 5, column

1). This indicates the important role of aid packages in mitigating the harmful consequences of the pandemic. The effect of the aid package is quite similar to that of a one-month lockdown, indicating that the package could compensate for the economic losses of people in areas affected by a one-month lockdown. For areas with longer lockdowns, the aid was not enough to offset the negative effect.

Table 5: Individual fixed-effect regression of per capita income and employment

Explanatory variables	Dependent variables				
	Log of per capita income	Not working (not working=1, working=0)	Unskilled work (yes=1, no=0)	Self-employed farm work (yes=1, no=0)	Self-employed non-farm work (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)
Receipt of aid package (yes=1, no=0)	0.0852*	-0.0296	0.0525	0.0083	-0.0333
	(0.0487)	(0.0203)	(0.0424)	(0.0210)	(0.0387)
Lockdown months in provinces	-0.0834***	0.0030	-0.0297*	0.0002	0.0374**
	(0.0219)	(0.0106)	(0.0168)	(0.0121)	(0.0149)
Rate of COVID-19 cases in provinces	-0.0011	-0.0004	0.0011	0.0009	-0.0024***
	(0.0012)	(0.0007)	(0.0011)	(0.0007)	(0.0009)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes
Year 2020 dummy	0.0163	-0.0386**	0.1302***	-0.0807***	-0.0471**
	(0.0361)	(0.0171)	(0.0268)	(0.0196)	(0.0231)
Year 2021 dummy	0.0674	-0.0548**	0.1038***	-0.1105***	0.0153
	(0.0493)	(0.0261)	(0.0368)	(0.0305)	(0.0299)
Constant	0.9010***	0.1732***	0.1708***	0.3181***	0.1328***
	(0.0151)	(0.0070)	(0.0104)	(0.0082)	(0.0090)
Observations	4,268	4,524	4,524	4,524	4,524
R-squared	0.720	0.713	0.572	0.765	0.534

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

Table 6 reports the effect of the lockdowns and aid packages on citizens' opinions of the government's response to the pandemic. I measure opinions by response level (ranging from a score of one for 'very bad' to a score of five for 'very good') and a dummy indicating a positive opinion (responses of 'good' and 'very good'). The lockdowns and aid packages have no significant effect on opinions of central government. However, the lockdowns do have a negative effect on opinions of provincial government. An additional month of lockdown reduces the probability of a positive assessment of the provincial government's pandemic response by 3.4 percentage points. On the other hand, respondents in receipt of an aid package tend to have a positive opinion of the provincial and commune governments. Specifically, receipt of an aid package increases the probability of positive opinions about the provincial and commune governments by 3.6 and 10.2 percentage points respectively. My findings are consistent with Linos (2013) and Evans et al. (2019), who found a positive effect of cash transfers on trust in politicians. My findings also provide evidence in support of the influential argument that better public services can result in greater trust in government. A number of studies have found a positive correlation between public

service performance and trust in government (e.g., Christensen et al. 2020; Kim 2010; Van de Walle and Bouckaert 2003; Vigoda-Gadot 2006).

Table 6: Individual fixed-effect regression of opinion of government's response to COVID-19 pandemic

Explanatory variables	Dependent variables					
	Opinion of central government (level 1–5)	Good opinion of central government (yes=1, no=0)	Opinion of provincial government (level 1–5)	Good opinion of provincial government (yes=1, no=0)	Opinion of commune authorities (level 1–5)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)
Receipt of aid package (yes=1, no=0)	-0.0355	0.0234	-0.0843	0.0363*	0.0662	0.1027***
	(0.0849)	(0.0374)	(0.0622)	(0.0209)	(0.0747)	(0.0392)
Lockdown months in provinces	0.0518	0.0050	-0.0917***	-0.0336**	-0.0467	-0.0193
	(0.0384)	(0.0144)	(0.0346)	(0.0138)	(0.0409)	(0.0191)
Rate of COVID-19 cases in provinces	-0.0031	-0.0010	-0.0107***	-0.0021	-0.0121***	-0.0061***
	(0.0034)	(0.0014)	(0.0031)	(0.0014)	(0.0036)	(0.0017)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year 2021 dummy	-0.4093***	-0.1071***	0.0724*	0.0256*	0.2345***	0.1022***
	(0.0545)	(0.0191)	(0.0380)	(0.0149)	(0.0445)	(0.0224)
Constant	4.6382***	0.9504***	4.5760***	0.9561***	4.2456***	0.8395***
	(0.0471)	(0.0185)	(0.0481)	(0.0191)	(0.0542)	(0.0263)
Observations	2,274	2,274	2,276	2,276	2,278	2,278
R-squared	0.632	0.618	0.661	0.634	0.635	0.598

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table 6 also reveals interesting findings on the correlation between COVID-19 rates and the outcome variables. The rate of COVID-19 cases does not affect per capita income or employment (after controls for lockdowns and aid packages). However, the rate of cases is negative and significant in regressions of opinions of provincial and commune governments. Thus, higher COVID-19 rates erode local citizens' positive assessment of the government's response to the pandemic.

5.2 Robustness analysis

I conducted a number of robustness checks. First, I examined the effect of the lockdowns in regressions without controlling for the variable 'aid packages'. As Table 2 showed, people living in provinces with longer lockdowns were more likely to receive an aid package. In Table A1 in the Appendix, I exclude the aid package variable from regressions to see whether the effect of the lockdowns changes significantly. The effect estimates of the lockdowns are very similar to those based on the model controlling for the aid package.

Second, I included additional control variables at the provincial level. The PAPI surveys contain information on eight dimensions measuring public services and provincial administration. When these variables are included (Table A2 in the Appendix), the results for the effect of lockdowns and aid packages remain almost unchanged compared with the results in the small specification model (Tables 5 and 6).

Third, I estimated the effect of lockdowns and aid packages using a balanced panel for the three years. In previous tables, I used observations that appeared at least twice in the data sets. Table A3 in the Appendix uses the sample of individuals who were included in all three years. This shows that the effects of the lockdowns and aid packages on per capita income are similar to those in Table 5.

Fourth, I examined whether there is reverse causality by conducting a placebo test. I regressed per capita income in 2019 on variables indicating the receipt of an aid package in 2020 and 2021. Table A4 in the Appendix shows that the receipt of an aid package in 2020 or 2021 is not statistically significantly correlated with per capita income in 2019, i.e. per capita income in the absence of an aid package.

Finally, as mentioned in section 4, I estimated the effect of aid packages using the approach of Klein and Vella (2010) and Lewbel (2012), which constructs heteroscedasticity-based instruments for the endogenous variable. Following Lewbel (2012), I ran an OLS regression of aid package receipt on all control variables. Since I used OLS instead of individual fixed-effects regression, the control variable included time-invariant variables such as age, gender, and education. The effect of receipt of an aid package on an outcome variable was then estimated using two-stage least squares with the instruments for aid receipt as $(X - \bar{X})\varepsilon$, where ε represents residuals from the first-stage regression. A condition for these instruments was heteroscedasticity in errors in the first-stage regression, i.e. $cov(X, \varepsilon^2) \neq 0$, which could be tested using a Breusch-Pagan test. The test results strongly rejected the homoscedasticity assumption. The larger number of instruments allowed me to conduct a Hansen J statistical test for overidentification for all the instruments. I performed a heteroscedasticity-based instrument regression on outcomes in which the aid package was statistically significant. Table A5 in the Appendix shows that the effect of the aid package based on the heteroscedasticity-based instrument regression is quite similar to that based on the individual fixed-effect regression.

5.3   Mechanisms

In this section, I discuss probable mechanisms through which aid packages improve citizens' opinions of local government. A direct channel is through the income effect. The effect of income on citizens' trust in government is ambiguous. Several studies document that people with higher incomes have lower trust in government (e.g., Kim 2010; Kumar et al. 2021; Zhao and Hu 2017), while other studies suggest that people with higher incomes are more likely to trust the government (Anderson 2010; Price 2012). To examine the income channel, I regressed citizens' opinions of the government's response to the pandemic on the log of per capita income and other control variables. Table A6 in the Appendix shows insignificant effects of the log of per capita income. This indicates that income is not a channel through which aid packages improve citizens' opinions of the government.

Another possible explanation for the effect of aid packages on opinions of local government is that it may capture the effect of locality rather than of the aid package per se. People who received aid packages may have positive opinions of their local government because it actually performed well in response to the pandemic. To explore this issue, I constructed a dummy variable that received a score of one if a respondent lived in a commune with at least one household receiving

an aid package, and zero if no one in the commune received an aid package. I then regressed the outcome variables on this dummy using a sample that excluded respondents who actually received the aid package. In other words, this model is similar to the model that estimates the spillover effect of receiving an aid package. The results are reported in Tables A7 and A8 in the Appendix. The dummy variable 'living in communes with aid package recipients' is not statistically significant at conventional levels in all regressions. This finding suggests that aid package recipients do not have positive opinions of local government because they live in communes with better government.

I suggest that a possible reason for the positive effect of aid packages on citizens' assessment of local government is simply that the government's provision of aid packages meets citizens' expectations. The provision of social benefits indicates that the government is paying attention to citizens' welfare and needs (Hunter and Sugiyama 2014; Martínez and Del Bosque 2013). A number of studies have found a positive correlation between public service performance and trust in government (e.g., Christensen et al. 2020; Kim 2010; Van de Walle and Bouckaert 2003; Vigoda-Gadot 2006). In the case of Viet Nam, according to Do et al. (2021), most recipients had a positive view of the aid packages. Nearly 90 per cent of recipients said they had received correct cash amounts as per the policy. More than 80 per cent of recipients mentioned that the aid package was provided on time and that the application procedures were simple.

5.4   Heterogeneous effects

I examined whether the effect of the lockdowns and aid packages varied across population subgroups by including interactions between these two variables and several observed variables. The interacted variables included gender, age, education level, an urban dummy, and ethnic minorities. I first estimated the heterogeneous effect of the lockdowns on per capita income and a good opinion of the provincial government's response to the pandemic. Tables A9 and A10 in the Appendix report these regressions. None of the interactions were statistically significant, indicating that the effect of lockdowns did not differ significantly across population subgroups.

Regarding aid packages, there were no significant heterogeneous effects on per capita income (Table A11 in the Appendix). However, I found some heterogeneous effects of aid packages on people's good opinion of commune authorities' response to the COVID-19 pandemic (Table 7). Specifically, I found that aid packages had a smaller effect on male respondents' good opinion of commune authorities than they had on the opinions of female respondents. The effect also tended to be lower for older people. This finding suggests that women and younger people were more likely to support the local government's policies on the pandemic after receiving aid packages.

Table 7: Heterogeneous effect of aid packages on good opinion of commune authorities' response to COVID-19 pandemic

Explanatory variables	Dependent variable: good opinion of commune authorities' response to COVID-19 pandemic				
	(1)	(2)	(3)	(4)	(5)
Receipt of aid package	0.1815***	0.0546	0.6194***	0.1557*	0.1097***
	(0.0680)	(0.0376)	(0.2094)	(0.0814)	(0.0408)
Receipt of aid package * Male	-0.1322*				
	(0.0791)				
Receipt of aid package * Urban areas		0.0741			
		(0.0661)			
Receipt of aid package * Age			-0.0101***		
			(0.0036)		
Receipt of aid package * Education level				-0.0270	
				(0.0324)	
Receipt of aid package * Ethnic minorities					-0.1276
					(0.1087)
Lockdown months	-0.0201	-0.0183	-0.0216	-0.0179	-0.0179
	(0.0192)	(0.0190)	(0.0190)	(0.0191)	(0.0191)
Rate of COVID-19 cases	-0.0058***	-0.0063***	-0.0060***	-0.0062***	-0.0062***
	(0.0017)	(0.0017)	(0.0016)	(0.0017)	(0.0017)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes
Year 2021 dummy	0.1026***	0.1001***	0.1062***	0.1011***	0.1001***
	(0.0223)	(0.0223)	(0.0224)	(0.0223)	(0.0223)
Constant	0.8407***	0.8398***	0.8411***	0.8379***	0.8389***
	(0.0264)	(0.0263)	(0.0258)	(0.0265)	(0.0263)
Observations	2,278	2,278	2,278	2,278	2,278
R-squared	0.600	0.598	0.603	0.598	0.598

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

6   Conclusions

To contain the COVID-19 pandemic, Viet Nam implemented lockdowns in all provinces in 2020 and in most provinces in 2021, and provided aid in the form of cash transfers for disadvantaged groups. Overall, these aid packages reached vulnerable groups relatively well. In 2020, when a lockdown was implemented nationwide, the aid package was targeted at the poor and ethnic minorities. In 2021, people living in areas with longer lockdown periods were more likely to receive an aid package.

Using individual fixed-effects regression, I examined the effect of the lockdowns and aid packages on per capita income, employment, and citizens' assessment of the government's response to the pandemic. I found that the lockdowns had a negative effect on per capita income, reducing

people's probability of working in an unskilled wage-paying job and increasing their probability of engagement in self-employed non-farm work. Receipt of an aid package increased per capita income, largely cancelling the effect of the one-month lockdown. This means that for those who experienced lockdowns for longer than one month, the aid package was not enough to offset the negative effect of the lockdowns. The lockdowns reduced citizens' positive assessment of the performance of provincial government, while the aid packages promoted a positive assessment of the performance of provincial and commune governments. The positive effect of the aid package on citizens' incomes and trust in government highlights the important role of the provision of social assistance for citizens, especially in emergency situations such as the COVID-19 pandemic.

My findings have several policy implications. First, aid packages are very important during a pandemic. Aid packages not only mitigate the adverse impact of a pandemic on economic outcomes but also help to foster citizens' trust in the government's performance. Second, greater support and larger cash transfers should be provided for vulnerable people and those living in areas with longer periods of lockdown.

References

Abay, K., G. Berhane, J. Hoddinott, and K. Tafere (2021). 'COVID-19 and Food Security in Ethiopia: Do Social Protection Programs Protect?' *Economic Development and Cultural Change*. https://doi.org/10.1086/715831

Anderson, M. (2010). 'Community Psychology, Political Efficacy, and Trust'. *Political Psychology*, 31(1): 59–84. https://doi.org/10.1111/j.1467-9221.2009.00734.x

Angrist, J.D., and J.-S. Pischke (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press. https://doi.org/10.1515/9781400829828

Apergis, E., and N. Apergis (2021). 'The Impact Of COVID-19 on Economic Growth: Evidence from a Bayesian Panel Vector Autoregressive (BPVAR) Model'. *Applied Economics*, 53(58): 6739–51. https://doi.org/10.1080/00036846.2021.1946479

Aum, S., S.Y.T. Lee, and Y. Shin (2021). 'Inequality of Fear and Self-Quarantine: Is There a Trade-Off Between GDP and Public Health?' *Journal of Public Economics*, 194: 104354. https://doi.org/10.1016/j.jpubeco.2020.104354

Bayer, C., B. Born, R. Luetticke, and G.J. Müller (2020). 'The Coronavirus Stimulus Package: How Large Is the Transfer Multiplier?' CEPR Discussion Paper DP14600. London: CEPR. Available at: https://ssrn.com/abstract=3594222 (accessed 13 September 2022).

Besley, T., and S. Dray (2022). 'Pandemic Responsiveness: Evidence from Social Distancing and Lockdown Policy During Covid-19'. *PloS One*, 17(5): e0267611. https://doi.org/10.1371/journal.pone.0267611

Bottan, N., B. Hoffmann, and D.A. Vera-Cossio (2021). 'Stepping up During a Crisis: The Unintended Effects of a Noncontributory Pension Program During the Covid 19 Pandemic'. *Journal of Development Economics*, 150: 102635. https://doi.org/10.1016/j.jdeveco.2021.102635

Brollo, F., and T. Nannicini (2012). 'Tying Your Enemy's Hands in Close Races: The Politics of Federal Transfers in Brazil'. *American Political Science Review*, 106(4): 742–61. https://doi.org/10.1017/S0003055412000433

Cantor, J., N. Sood, D.M. Bravata, M. Pera, and C. Whaley (2022). 'The Impact of the COVID-19 Pandemic and Policy Response on Health Care Utilization: Evidence from County-Level Medical Claims and Cellphone Data'. *Journal of Health Economics*, 82: 102581. https://doi.org/10.1016/j.jhealeco.2022.102581

Chakrabarty, M., and S. Mukherjee (2022). 'A Pandemic and Economic Slowdown: The Case of India'. *Applied Economics*, 54(19): 2214–30. https://doi.org/10.1080/00036846.2021.1985077

Cheng, C., J. Barceló, A.S. Hartnett, R. Kubinec, and L. Messerschmidt (2020). 'COVID-19 Government Response Event Dataset (CoronaNet v. 1.0)'. *Nature Human Behaviour*, 4(7): 756–68. https://doi.org/10.1038/s41562-020-0909-7

Christensen, T., and P. Lægreid (2005). 'Trust in Government: The Relative Importance of Service Satisfaction, Political Factors, and Demography'. *Public Performance & Management Review*, 28(4): 487–511.

Christensen, T., K. Yamamoto, and S. Aoyagi (2020). 'Trust in Local Government: Service Satisfaction, Culture, and Demography'. *Administration & Society*, 52(8): 1268–96. https://doi.org/10.1177/0095399719897392

Dahlberg, M., and E. Johansson (2002). 'On the Vote-Purchasing Behavior of Incumbent Governments'. *American Political Science Review*, 96(1): 27–40. https://doi.org/10.1017/S0003055402004215

Dang, H.-A., and C. Nguyen (2021). 'Gender Inequality During the COVID-19 Pandemic: Income, Expenditure, Savings, and Job Loss'. *World Development*, 140: 105296. https://doi.org/10.1016/j.worlddev.2020.105296

Dang, H.-A., C. Nguyen, and C. Carletto (2022). 'Did a Successful Fight Against COVID-19 Come at a Cost? Impacts of the Pandemic on Employment Outcomes in Vietnam'. Working Paper 607. Rome: ECINEQ.

De Leon, F.L.L., B. Malde, and B. Mcquillin (2021). 'The Effects of Emergency Government Cash Transfers on Beliefs and Behaviours During the COVID Pandemic: Evidence from Brazil'. http://dx.doi.org/10.2139/ssrn.3957404

Djalante, R., L. Nurhidayah, H.V. Minh, N.T.N. Phuong, Y. Mahendradhata, A. Trias, J. Lassa, and M.A. Miller (2020). 'COVID-19 and ASEAN Responses: Comparative Policy Analysis'. *Progress in Disaster Science*, 8: 100129. https://doi.org/10.1016/j.pdisas.2020.100129

Do, H.T., C.V. Nguyen, L.T. Nguyen, P.M. Nguyen, Q.H. Ngo, and P. Tung (2021). 'Citizens' Opinions of and Experiences with Government Responses to COVID-19 Pandemic in Vietnam'. GLO Discussion Paper 776. Essen: GLO.

Evans, D.K., B. Holtemeyer, and K. Kosec (2019). 'Cash Transfers Increase Trust in Local Government'. *World Development*, 114: 138–55. https://doi.org/10.1016/j.worlddev.2018.08.020

Gan, C., D.L.T. Anh, and Q.T.T. Nguyen (2021). 'Psychological Impact of the COVID-19 Lockdown on Vietnamese Community'. *International Journal of Social Economics*, 48: 1347–71. https://doi.org/10.1108/IJSE-08-2020-0552

Gentilini, U., M.B.A. Almenfi, T.M.M. Iyengar, Y. Okamura, J.A. Downes, P. Dale, M. Weber, DL. Newhouse, C.P. Rodriguez Alas, M. Kamran, and I.V. Mujica Canas (2022). 'Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures'. Washington, DC: World Bank. Available at: https://openknowledge.worldbank.org/handle/10986/37186 (accessed 27 September 2022).

Giang, L.T., A. Kikkawa, and C.V. Nguyen (2021). 'An Ex-Ante Assessment on Poverty and Cash Transfer Benefits in Viet Nam Under the Covid-19 Pandemic'. GLO Discussion Paper 864. Essen: GLO.

Goolsbee, A., and C. Syverson (2021). 'Fear, Lockdown, and Diversion: Comparing Drivers of Pandemic Economic Decline 2020'. *Journal of Public Economics*, 193: 104311. https://doi.org/10.1016/j.jpubeco.2020.104311

Government of Viet Nam (2013). 'Decree of the Government 136/2013/NĐ-CP on Provisions on Social Support Policies for Social Protection People'. Available at: https://thuvienphapluat.vn/van-ban/Tai-chinh-nha-nuoc/Nghi-dinh-136-2013-ND-CP-chinh-sach-tro-giup-xa-hoi-bao-tro-xa-hoi-210669.aspx (accessed 10 August 2022).

Government of Viet Nam (2020a). 'Directive 16/CT-TTg on Measures to Contain COVID-19'. Available at: https://vncdc.gov.vn/mediacenter/media/files/1012/08-2021/805_1629106225_571611a30316f431.pdf (accessed 6 September 2022).

Government of Viet Nam (2020b). 'Resolution No. 42/NQ-CP on Assistance for People Affected by Covid-19'. Available at: http://english.molisa.gov.vn/Pages/Document/Detail.aspx?Id=39439 (accessed 6 September 2022).

Gozgor, G. (2022). 'Global Evidence on the Determinants of Public Trust in Governments During the COVID-19'. *Applied Research in Quality of Life*, 17(2): 559–78. https://doi.org/10.1007/s11482-020-09902-6

Hale, T., N. Angrist, E. Cameron-Blake, L. Hallas, B. Kira, S. Majumdar, A. Petherick, T. Phillips, H. Tatlow, and S. Webster (2020). 'COVID-19 Government Response Tracker'. Oxford: Blavatnik School of Government. Available at: www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker (accessed 13 September 2022).

Hartley, K., S. Bales, and A.S. Bali (2021). 'COVID-19 Response in a Unitary State: Emerging Lessons from Vietnam'. *Policy Design and Practice*, 4(1): 152–68. https://doi.org/10.1080/25741292.2021.1877923

Heckman, J.J., R.J. LaLonde, and J.A. Smith (1999). 'The Economics and Econometrics of Active Labor Market Programs'. In A. Ashenfelter and D. Card (eds), *Handbook of Labor Economics, Vol. 3*. Amsterdam: Elsevier Science. https://doi.org/10.1016/S1573-4463(99)03012-6

Herby, J., L. Jonung, and S. Hanke (2022). 'A Literature Review and Meta-Analysis of the Effects of Lockdowns on COVID-19 Mortality'. Studies in Applied Economics Working Paper Series 200. Baltimore: Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. Available at: https://sites.krieger.jhu.edu/iae/files/2022/01/A-Literature-Review-and-Meta-Analysis-of-the-Effects-of-Lockdowns-on-COVID-19-Mortality.pdf (accessed 13 September 2022).

Hinterlang, N., S. Moyen, O. Röhe, and N. Stähler (2021). 'Gauging the Effects of the German COVID-19 Fiscal Stimulus Package'. Deutsche Bundesbank Discussion Paper 43/2021. Frankfurt: Deutsche Bundesbank. http://dx.doi.org/10.2139/ssrn.3988529

Holtz, D., M. Zhao, S. Benzell, C.Y. Cao, M.A. Rahimian, J. Yang, J. Allen, A. Collis, A. Moehring, T. Sowrirajan, D. Ghosh, Y. Zhang, P.S. Dhillon, C. Nicolaides, D. Eckles, and S. Aral (2020). 'Interdependence and the Cost of Uncoordinated Responses to COVID-19'. *Proceedings of the National Academy of Sciences*, 117(33): 19837–43. https://doi.org/10.1073/pnas.2009522117

Hunter, W., and N.B. Sugiyama (2014). 'Transforming Subjects into Citizens: Insights from Brazil's Bolsa Família'. *Perspectives on Politics*, 12(4): 829–45. https://doi.org/10.1017/S1537592714002151

ILO (2020). *COVID-19 and the Labour Market in Vietnam*. Hanoi: ILO.

ILO (2021). 'Social Protection Monitor: Announced Measures Throughout the World'. Available at: www.social-protection.org/gimi/ShowWiki.action?id=3426 (accessed 13 September 2022).

Kim, S. (2010). 'Public Trust in Government in Japan and South Korea: Does the Rise of Critical Citizens Matter?' *Public Administration Review*, 70(5): 801–10. https://doi.org/10.1111/j.1540-6210.2010.02207.x

Klein, R., and F. Vella (2010). 'Estimating a Class of Triangular Simultaneous Equations Models Without Exclusion Restrictions'. *Journal of Econometrics*, 154: 154–64. https://doi.org/10.1016/j.jeconom.2009.05.005

Kumar, D., B. Pratap, and A. Aggarwal (2021). 'Public Trust in State Governments in India: Who Are More Confident and What Makes Them Confident About the Government?' *Asian Journal of Comparative Politics*, 6(2): 154–74. https://doi.org/10.1177/2057891119898763

Le, H.V. (2021). 'Chậm giải ngân, lao động ngồi dài chờ hỗ trợ'. *Tienphong*, 1 September. Available at: https://tienphong.vn/cham-giai-ngan-lao-dong-ngoi-dai-cho-ho-tro-post1371724.tpo (accessed 13 September 2022).

Lewbel, A. (2012). 'Using Heteroscedasticity to Identify and Estimate Mismeasured and Endogenous Regressor Models'. *Journal of Business & Economic Statistics*, 30(1): 67–80. https://doi.org/10.1080/07350015.2012.643126

Linos, E. (2013). 'Do Conditional Cash Transfer Programs Shift Votes? Evidence from the Honduran PRAF'. *Electoral Studies*, 32(4): 864–74. https://doi.org/10.1016/j.electstud.2013.03.007

Lustig, N., V. Pabon, F. Sanz, and S. Younger (2020). 'The Impact of COVID-19 Lockdowns and Expanded Social Assistance on Inequality, Poverty and Mobility in Argentina, Brazil, Colombia and Mexico'. CEQ Working Paper 92. New Orleans: Tulane University, CEQ Institute.

Majid, U., A. Wasim, J. Truong, and S. Bakshi (2022). 'Public Trust in Governments, Health Care Providers, and the Media During Pandemics: A Systematic Review'. *Journal of Trust Research*, 11(2): 119–41. https://doi.org/10.1080/21515581.2022.2029742

Martínez, P., and I.R. del Bosque (2013). 'CSR and Customer Loyalty: The Roles of Trust, Customer Identification with the Company and Satisfaction'. *International Journal of Hospitality Management*, 35(1): 89–99. https://doi.org/10.1016/j.ijhm.2013.05.009

Minh, A. (2021). 'Gói hỗ trợ Covid-19 chưa 'chạm' tới đối tượng dễ bị tổn thương'. *Vnexpress*, 15 June. Available at: https://vnexpress.net/goi-ho-tro-covid-19-chua-cham-toi-doi-tuong-de-bi-ton-thuong-4294503.html (accessed 13 September 2022).

Ministry of Health of Viet Nam (2020). 'Bản tin dịch COVID trong 24h qua: Việt Nam chắc chắn không có 1.000 ca bệnh mắc COVID-19 vào cuối tháng 3/2020'. Available at: https://covid19.gov.vn/ban-tin-dich-covid-trong-24h-qua-viet-nam-chac-chan-khong-co-1000-ca-benh-mac-covid-19-vao-cuoi-thang-3-2020-1717021680.htm (accessed 27 September 2022).

Onyeaka, H., C.K. Anumudu, Z.T. Al-Sharify, E. Egele-Godswill, and P. Mbaegbu (2021). 'COVID-19 Pandemic: A Review of the Global Lockdown and Its Far-Reaching Effects'. *Science Progress*, 104(2): 00368504211019854. https://doi.org/10.1177/00368504211019854

Price, G. (2012). 'Race, Trust in Government, and Self-Employment'. *American Economist*, 57(2): 171–87. https://doi.org/10.1177/056943451205700203

Shokoohi, M., M. Osooli, and S. Stranges (2020). 'COVID-19 Pandemic: What Can the West Learn from the East?' *International Journal of Health Policy and Management*, 9(10): 436. https://doi.org/10.34172/ijhpm.2020.85

Tran, B.X., H.T. Nguyen, H.T. Le, C.A. Latkin, H.Q. Pham, L.G. Vu, X.T.T. Le, T.T. Nguyen, Q.T. Pham, N.T.K. Ta, and Q.T. Nguyen (2020). 'Impact of COVID-19 on Economic Well-Being and Quality of Life of the Vietnamese During the National Social Distancing'. *Frontiers in Psychology*. https://doi.org/10.3389/fpsyg.2020.565153

Trevisan, M., L.C. Le, and A.V. Le (2020). 'The COVID-19 Pandemic: A View from Vietnam'. *American Journal of Public Health*, 110(8): 1152–53. https://doi.org/10.2105/AJPH.2020.305751

Van de Walle, S., and G. Bouckaert (2003). 'Public Service Performance and Trust in Government: The Problem of Causality'. *International Journal of Public Administration*, 26: 891–913. https://doi.org/10.1081/PAD-120019352

Vigoda-Gadot, E. (2006). 'Citizens' Perceptions of Politics and Ethics in Public Administration: A Five-Year National Study of Their Relationship to Satisfaction with Services, Trust in Governance, and Voice Orientations'. *Journal of Public Administration Research and Theory*, 17(2): 285–305. https://doi.org/10.1093/jopart/muj018

Vu, B.T., and G. Bosmans (2021). 'Psychological Impact of COVID-19 Anxiety on Learning Burnout in Vietnamese Students'. *School Psychology International*, 42(5): 486–96. https://doi.org/10.1177/01430343211013875

World Bank (2019). 'A Vision for the 2030 Social Protection System in Vietnam'. Washington, DC: World Bank. Available at: https://documents1.worldbank.org/curated/en/457311600401962011/pdf/A-Vision-for-the-2030-Social-Protection-System-in-Vietnam.pdf (accessed 13 September 2022).

Zhao, D., and W. Hu (2017). 'Determinants of Public Trust in Government: Empirical Evidence from Urban China'. *International Review of Administrative Sciences*, 83(2): 358–77. https://doi.org/10.1177/0020852315582136

Appendix

Table A1: Effect of lockdown months in regression without controls for aid package

Explanatory variables	Dependent variables										
	Log of per capita income	Not working (not working=1, working=0)	Have unskilled job (yes=1, no=0)	Have self-employed farm job (yes=1, no=0)	Have self-employed non-farm job (yes=1, no=0)	Opinion of central government (level 1–5)	Good opinion of central government (yes=1, no=0)	Opinion of provincial government (level 1–5)	Good opinion of provincial government (yes=1, no=0)	Opinion of commune authorities (level 1–5)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Provinces' lockdown months	-0.0782***	0.0012	-0.0265	0.0007	0.0354**	0.0507	0.0057	-0.0948***	-0.0323**	-0.0444	-0.0157
	(0.0223)	(0.0106)	(0.0170)	(0.0121)	(0.0149)	(0.0380)	(0.0142)	(0.0346)	(0.0138)	(0.0406)	(0.0192)
Provinces' rates of COVID-19 cases	-0.0009	-0.0005	0.0012	0.0009	-0.0026***	-0.0034	-0.0008	-0.0113***	-0.0018	-0.0116***	-0.0054***
	(0.0012)	(0.0007)	(0.0011)	(0.0007)	(0.0009)	(0.0032)	(0.0014)	(0.0030)	(0.0014)	(0.0035)	(0.0017)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year 2020 dummy	0.0277	-0.0426**	0.1372***	-0.0796***	-0.0515**						
	(0.0351)	(0.0168)	(0.0266)	(0.0194)	(0.0229)						
Year 2021 dummy	0.0663	-0.0543**	0.1028***	-0.1106***	0.0160	-0.4048***	-0.1100***	0.0831**	0.0210	0.2260***	0.0890***
	(0.0495)	(0.0261)	(0.0367)	(0.0305)	(0.0299)	(0.0526)	(0.0184)	(0.0365)	(0.0149)	(0.0432)	(0.0218)
Constant	0.9008***	0.1733***	0.1708***	0.3181***	0.1328***	4.6327***	0.9541***	4.5638***	0.9614***	4.2555***	0.8549***
	(0.0150)	(0.0070)	(0.0104)	(0.0082)	(0.0090)	(0.0468)	(0.0185)	(0.0472)	(0.0186)	(0.0545)	(0.0259)
Observations	4,268	4,524	4,524	4,524	4,524	2,274	2,274	2,276	2,276	2,278	2,278
R-squared	0.719	0.713	0.571	0.765	0.534	0.632	0.617	0.660	0.633	0.635	0.593

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

Table A2: Effect of lockdown and aid package using large specification model

Explanatory variables	Dependent variables										
	Log of per capita income	Not working (not working=1, working=0)	Have unskilled job (yes=1, no=0)	Have self-employed farm job (yes=1, no=0)	Have self-employed non-farm job (yes=1, no=0)	Opinion of central government (level 1–5)	Good opinion of central government (yes=1, no=0)	Opinion of provincial government (level 1–5)	Good opinion of provincial government (yes=1, no=0)	Opinion of commune authorities (level 1–5)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Receipt of aid package	0.0823*	-0.0296	0.0507	0.0087	-0.0336	-0.0358	0.0178	-0.0762	0.0467**	0.0747	0.1043***
	(0.0486)	(0.0199)	(0.0419)	(0.0211)	(0.0382)	(0.0814)	(0.0357)	(0.0664)	(0.0226)	(0.0762)	(0.0377)
Lockdown months	-0.0609**	0.0038	-0.0325**	-0.0031	0.0315*	0.0575	0.0064	-0.1098***	-0.0388**	-0.0428	-0.0164
	(0.0237)	(0.0087)	(0.0162)	(0.0124)	(0.0163)	(0.0357)	(0.0144)	(0.0386)	(0.0162)	(0.0440)	(0.0215)
Rate of COVID-19 cases	-0.0021	-0.0005	0.0014	0.0005	-0.0020**	-0.0017	-0.0005	-0.0085***	-0.0013	-0.0114***	-0.0062***
	(0.0014)	(0.0008)	(0.0011)	(0.0008)	(0.0010)	(0.0036)	(0.0015)	(0.0032)	(0.0014)	(0.0039)	(0.0018)
Participation score	-0.0348	-0.0067	0.0196	0.0261	-0.0050	-0.0053	-0.0383	0.0073	0.0240	0.1338	0.0301
	(0.0593)	(0.0271)	(0.0400)	(0.0308)	(0.0400)	(0.1013)	(0.0453)	(0.1096)	(0.0415)	(0.1207)	(0.0631)
Transparency score	-0.0530	0.0117	-0.0162	-0.0396	-0.0049	-0.0472	-0.0169	0.1887	-0.0581	-0.0903	-0.0323
	(0.0881)	(0.0438)	(0.0674)	(0.0493)	(0.0591)	(0.1795)	(0.0645)	(0.1709)	(0.0585)	(0.1866)	(0.0845)
Vertical accountability score	0.0859	0.0057	-0.0226	0.0539	-0.0213	0.0362	0.0882	-0.3389**	-0.0453	-0.1446	-0.0238
	(0.0904)	(0.0324)	(0.0550)	(0.0520)	(0.0559)	(0.1637)	(0.0707)	(0.1700)	(0.0635)	(0.1776)	(0.0876)
Control of corruption score	0.0048	0.0070	-0.0521	0.0449	-0.0276	-0.1649	-0.0815**	-0.0169	0.0378	-0.0488	0.0021
	(0.0624)	(0.0321)	(0.0485)	(0.0376)	(0.0438)	(0.1100)	(0.0409)	(0.1027)	(0.0398)	(0.1054)	(0.0506)
Public administrative procedures score	0.0571	0.0122	-0.0640	-0.0092	0.0710	0.3209	0.1354	0.0204	0.1406**	0.0531	0.0166
	(0.0933)	(0.0417)	(0.0693)	(0.0506)	(0.0650)	(0.2051)	(0.0825)	(0.1740)	(0.0645)	(0.2127)	(0.1055)
Public service delivery score	0.0708	0.0206	0.0773	-0.0646	-0.0403	0.0522	-0.0199	-0.0946	-0.0569	0.0635	-0.0508
	(0.0721)	(0.0327)	(0.0597)	(0.0446)	(0.0586)	(0.1145)	(0.0442)	(0.1106)	(0.0432)	(0.1259)	(0.0609)
Environmental governance score	0.0823	-0.0317	0.0674	-0.0401	-0.0059	0.0628	0.0349	-0.0187	-0.0913*	0.0956	0.0490
	(0.0842)	(0.0376)	(0.0669)	(0.0512)	(0.0644)	(0.1768)	(0.0581)	(0.1477)	(0.0541)	(0.1667)	(0.0835)
E-governance score	0.0227	-0.0116	0.0122	-0.0209	-0.0008	0.0451	-0.0008	-0.0551	0.0365	0.2077	0.1572**
	(0.0357)	(0.0142)	(0.0226)	(0.0206)	(0.0188)	(0.1367)	(0.0527)	(0.1502)	(0.0530)	(0.1472)	(0.0667)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.4165	-0.0174	0.2490	0.5876	0.2717	2.7965**	0.3777	6.0785***	0.7007	3.3699**	0.5917
	(0.7316)	(0.3526)	(0.5514)	(0.3888)	(0.5395)	(1.2982)	(0.4799)	(1.2517)	(0.4875)	(1.3422)	(0.6907)
Observations	4,268	4,524	4,524	4,524	4,524	2,274	2,274	2,276	2,276	2,278	2,278
R-squared	0.721	0.713	0.575	0.766	0.536	0.636	0.625	0.664	0.641	0.638	0.603

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

Table A3: Effect of lockdown and aid package on log of per capita income using balanced panel data

Explanatory variables	Dependent variable: log of per capita income	
	Small model	Large model
	(1)	(2)
Receipt of aid package	0.1377**	0.1349**
	(0.0542)	(0.0538)
Lockdown months	-0.0804***	-0.0566**
	(0.0246)	(0.0254)
Rate of COVID-19 cases	-0.0015	-0.0024
	(0.0016)	(0.0017)
Participation score		-0.0492
		(0.0616)
Transparency score		-0.0874
		(0.0952)
Vertical accountability score		0.0854
		(0.0960)
Control of corruption score		-0.0026
		(0.0669)
Public administrative procedures score		0.0790
		(0.1053)
Public service delivery score		0.1051
		(0.0776)
Environmental governance score		0.1216
		(0.0919)
E-governance score		0.0209
		(0.0416)
Individual fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
Constant	0.8532***	-0.7039
	(0.0195)	(0.8115)
Observations	3,330	3,330
R-squared	0.025	0.033

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

Table A4: Placebo effect of aid package in 2019 (pre-pandemic year)

Explanatory variables	Dependent variable: log of per capita income in 2019					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	(1)	(2)	(3)	(4)	(5)	(6)
Receipt of aid package in 2020	-0.0582		-0.0714		-0.0860	
	(0.0554)		(0.0533)		(0.0557)	
Receipt of aid package in 2021		-0.0501		-0.0179		0.0317
		(0.0782)		(0.0717)		(0.0772)
Male (male=1, female=0)	0.0846*	0.0434	0.0882**	0.0403	0.1154**	0.0917
	(0.0460)	(0.0541)	(0.0446)	(0.0521)	(0.0536)	(0.0624)
Age	-0.0009	-0.0113	-0.0001	-0.0081	-0.0151	-0.0114
	(0.0155)	(0.0207)	(0.0148)	(0.0207)	(0.0173)	(0.0226)
Age squared	-0.0000	0.0001	-0.0000	0.0000	0.0001	0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Ethnic minorities (yes=1, Kinh=0)	-0.1600**	-0.1798**	-0.1243*	-0.1149	-0.0103	0.0672
	(0.0677)	(0.0744)	(0.0679)	(0.0749)	(0.0904)	(0.0885)
Below lower-secondary	Reference					
Lower-secondary education	0.0977*	0.0569	0.0707	0.0272	0.0433	-0.0384
	(0.0569)	(0.0593)	(0.0566)	(0.0622)	(0.0642)	(0.0718)
Upper-secondary education	0.3354***	0.2900***	0.3137***	0.2689***	0.2876***	0.2174***
	(0.0638)	(0.0690)	(0.0596)	(0.0658)	(0.0710)	(0.0824)
Tertiary education	0.6198***	0.5033***	0.5744***	0.4862***	0.4794***	0.4293***
	(0.0869)	(0.0882)	(0.0816)	(0.0874)	(0.1089)	(0.1108)
Having a skilled job	-0.0068	0.0201	-0.0406	-0.0074	-0.0182	0.0219
	(0.0760)	(0.0804)	(0.0721)	(0.0830)	(0.0805)	(0.0967)
Having an unskilled job	-0.1449*	-0.1505*	-0.1211*	-0.1418*	-0.0771	-0.1141
	(0.0753)	(0.0796)	(0.0639)	(0.0744)	(0.0721)	(0.0851)
Having a self-employed non-farm job	0.0502	0.0135	0.0471	0.0198	0.0318	0.1039
	(0.0856)	(0.0970)	(0.0753)	(0.0895)	(0.0843)	(0.1121)
Urban dummy	0.0341	0.0649	0.1296***	0.1396***	0.3157***	0.2615*
	(0.0459)	(0.0515)	(0.0405)	(0.0496)	(0.0923)	(0.1497)
Status according to national poverty line (poor=1, non-poor=0)	-0.3680***	-0.4782***	-0.2942**	-0.4390***	-0.2227**	-0.2898**
	(0.1347)	(0.1198)	(0.1386)	(0.1350)	(0.1094)	(0.1301)
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	No	No	Yes	Yes	Yes	Yes
Commune fixed effects	No	No	No	No	Yes	Yes
Constant	0.8181**	1.1962**	0.7636**	1.1206**	0.9836**	1.0318*
	(0.3846)	(0.4847)	(0.3663)	(0.4839)	(0.4405)	(0.5555)
Observations	2,385	1,397	2,385	1,397	2,385	1,380
R-squared	0.173	0.235	0.255	0.307	0.419	0.489

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table A5: Effect of aid package using heteroscedasticity-based instruments

Explanatory variables	Dependent variables		
	Log of per capita income	Good opinion of provincial government (yes=1, no=0)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)
Receipt of aid package	0.1020*	0.0259	0.0851*
	(0.0590)	(0.0418)	(0.0460)
Male (male=1, female=0)	0.0096	-0.0103	-0.0312
	(0.0362)	(0.0176)	(0.0209)
Age	0.0119	0.0073	0.0025
	(0.0150)	(0.0080)	(0.0085)
Age squared	-0.0001	-0.0001	0.0000
	(0.0002)	(0.0001)	(0.0001)
Ethnic minorities (yes=1, Kinh=0)	-0.2589***	-0.0177	-0.0360
	(0.0476)	(0.0288)	(0.0346)
Below lower-secondary education	Reference		
Lower-secondary education	0.1545***	0.0158	-0.0053
	(0.0471)	(0.0229)	(0.0279)
Upper-secondary education	0.3916***	0.0048	0.0293
	(0.0463)	(0.0211)	(0.0264)
Tertiary education	0.6795***	0.0022	0.0236
	(0.0649)	(0.0302)	(0.0352)
Lockdown duration	-0.0107	-0.0398***	-0.0412***
	(0.0235)	(0.0111)	(0.0125)
Rate of COVID-19 cases	0.0055***	-0.0021**	-0.0026***
	(0.0013)	(0.0008)	(0.0009)
Urban dummy	0.0648*	-0.0050	-0.0000
	(0.0380)	(0.0176)	(0.0222)
Year 2020 dummy	-0.1167***	-0.0335**	-0.1007***
	(0.0372)	(0.0136)	(0.0201)
Year 2021 dummy	-0.1713***		
	(0.0520)		
Constant	0.4345	0.7927***	0.8506***
	(0.3618)	(0.2022)	(0.2144)
Observations	4,334	2,821	2,821
R-squared	0.124	0.036	0.030
Weak identification test (Cragg-Donald Wald F-statistic)	621.7	141.2	157.7
P-value of Hansen J-statistic (overidentification test of all instruments)	0.114	0.756	0.169

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table A6: Effect of log of per capita income on respondents' opinion of provincial government's response to COVID-19 pandemic without controls for aid package

Explanatory variables	Dependent variables					
	Opinion of central government (level 1–5)	Good opinion of central government (yes=1, no=0)	Opinion of provincial government (level 1–5)	Good opinion of provincial government (yes=1, no=0)	Opinion of commune authorities (level 1–5)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)
Log of per capita income	-0.0348	-0.0151	0.0421	0.0063	-0.0096	0.0142
	(0.0718)	(0.0304)	(0.0558)	(0.0245)	(0.0619)	(0.0343)
Provinces' lockdown months	0.0478	0.0041	-0.0927***	-0.0306**	-0.0495	-0.0145
	(0.0400)	(0.0148)	(0.0357)	(0.0142)	(0.0414)	(0.0196)
Provinces' rate of COVID-19 cases	-0.0033	-0.0006	-0.0115***	-0.0019	-0.0115***	-0.0057***
	(0.0033)	(0.0014)	(0.0030)	(0.0014)	(0.0036)	(0.0017)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year 2021 dummy	-0.4075***	-0.1096***	0.0860**	0.0180	0.2204***	0.0872***
	(0.0550)	(0.0190)	(0.0364)	(0.0153)	(0.0435)	(0.0217)
Constant	4.6659***	0.9677***	4.5282***	0.9560***	4.2795***	0.8463***
	(0.0801)	(0.0342)	(0.0749)	(0.0289)	(0.0777)	(0.0399)
Observations	2,186	2,186	2,190	2,190	2,192	2,192
R-squared	0.629	0.622	0.666	0.627	0.636	0.597

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table A7: Effect of living in communes with recipients of aid packages using small specification model

Explanatory variables	Dependent variables										
	Log of per capita income	Not working (not working=1, working=0)	Have unskilled job (yes=1, no=0)	Have self-employed farm job (yes=1, no=0)	Have self-employed non-farm job (yes=1, no=0)	Opinion of central government (level 1–5)	Good opinion of central government (yes=1, no=0)	Opinion of provincial government (level 1–5)	Good opinion of provincial government (yes=1, no=0)	Opinion of commune authorities (level 1–5)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Living in communes with recipients of aid package	0.0213	0.0078	0.0124	-0.0266	-0.0063	0.0455	0.0336	-0.0337	0.0113	0.0353	0.0298
	(0.0434)	(0.0235)	(0.0350)	(0.0263)	(0.0311)	(0.0738)	(0.0319)	(0.0886)	(0.0369)	(0.0853)	(0.0455)
Provinces' lockdown months	-0.0875***	0.0023	-0.0339*	-0.0038	0.0384**	0.0637	0.0101	-0.0536	-0.0190	-0.0126	-0.0019
	(0.0250)	(0.0115)	(0.0181)	(0.0138)	(0.0159)	(0.0466)	(0.0177)	(0.0466)	(0.0178)	(0.0515)	(0.0228)
Provinces' rate of COVID-19 cases	-0.0015	-0.0008	0.0023*	0.0014	-0.0026***	-0.0010	-0.0007	-0.0150***	-0.0062**	-0.0169**	-0.0064***
	(0.0018)	(0.0009)	(0.0013)	(0.0012)	(0.0010)	(0.0051)	(0.0023)	(0.0056)	(0.0025)	(0.0070)	(0.0024)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year 2020 dummy	0.0271	-0.0417**	0.1256***	-0.0661***	-0.0427*						
	(0.0381)	(0.0204)	(0.0281)	(0.0232)	(0.0243)						
Year 2021 dummy	0.0789	-0.0519*	0.0979***	-0.1049***	0.0167	-0.4381***	-0.1200***	0.0673	0.0240	0.2424***	0.0949***
	(0.0524)	(0.0277)	(0.0379)	(0.0321)	(0.0302)	(0.0661)	(0.0229)	(0.0456)	(0.0183)	(0.0541)	(0.0271)
Constant	0.8982***	0.1759***	0.1591***	0.3309***	0.1294***	4.6011***	0.9348***	4.5382***	0.9485***	4.1963***	0.8183***
	(0.0148)	(0.0068)	(0.0096)	(0.0082)	(0.0084)	(0.0654)	(0.0223)	(0.0646)	(0.0255)	(0.0803)	(0.0338)
Observations	3,922	4,099	4,099	4,099	4,099	2,394	2,394	2,399	2,399	2,403	2,403
R-squared	0.036	0.014	0.025	0.048	0.030	0.149	0.093	0.040	0.038	0.043	0.032

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table A8: Effect of living in communes with recipients of aid packages using large specification model

Explanatory variables	Dependent variables										
	Log of per capita income	Not working (not working=1, working=0)	Have unskilled job (yes=1, no=0)	Have self-employed farm job (yes=1, no=0)	Have self-employed non-farm job (yes=1, no=0)	Opinion of central government (level 1–5)	Good opinion of central government (yes=1, no=0)	Opinion of provincial government (level 1–5)	Good opinion of provincial government (yes=1, no=0)	Opinion of commune authorities (level 1–5)	Good opinion of commune authorities (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Living in communes with recipients of aid package	0.0179	0.0065	0.0128	-0.0192	-0.0093	0.0392	0.0284	-0.0237	0.0228	0.0349	0.0357
	(0.0439)	(0.0243)	(0.0343)	(0.0269)	(0.0312)	(0.0738)	(0.0304)	(0.0852)	(0.0372)	(0.0833)	(0.0443)
Lockdown months	-0.0546**	-0.0020	-0.0306*	-0.0066	0.0335**	0.0604	0.0105	-0.0665	-0.0252	-0.0108	-0.0028
	(0.0265)	(0.0100)	(0.0159)	(0.0138)	(0.0162)	(0.0426)	(0.0170)	(0.0478)	(0.0186)	(0.0528)	(0.0244)
Rate of COVID-19 cases	-0.0026	-0.0009	0.0027**	0.0009	-0.0022**	-0.0010	-0.0006	-0.0133**	-0.0053**	-0.0167**	-0.0063***
	(0.0019)	(0.0010)	(0.0014)	(0.0012)	(0.0010)	(0.0055)	(0.0025)	(0.0057)	(0.0025)	(0.0071)	(0.0024)
Participation score	0.0309	-0.0114	0.0570	0.0038	-0.0202	0.0015	-0.0380	0.0415	0.0397	0.1791	0.0545
	(0.0601)	(0.0312)	(0.0410)	(0.0357)	(0.0403)	(0.1213)	(0.0505)	(0.1396)	(0.0547)	(0.1433)	(0.0703)
Transparency score	-0.1285	0.0145	-0.0672	-0.0059	-0.0113	-0.2014	-0.0442	0.1664	-0.0519	-0.0859	-0.0518
	(0.0941)	(0.0538)	(0.0670)	(0.0540)	(0.0608)	(0.2129)	(0.0700)	(0.1996)	(0.0717)	(0.2210)	(0.0956)
Vertical accountability score	0.1216	0.0236	-0.0662	0.0563	-0.0148	0.2115	0.1131	-0.2489	-0.0208	-0.0965	-0.0410
	(0.0973)	(0.0362)	(0.0557)	(0.0538)	(0.0548)	(0.1887)	(0.0807)	(0.2024)	(0.0793)	(0.2091)	(0.1013)
Control of corruption score	0.0065	0.0063	-0.0322	0.0434	-0.0248	-0.0598	-0.0655	0.0327	0.0289	-0.0361	0.0242
	(0.0688)	(0.0354)	(0.0499)	(0.0423)	(0.0453)	(0.1298)	(0.0470)	(0.1140)	(0.0446)	(0.1172)	(0.0558)
Public administrative procedures score	0.1754*	-0.0032	-0.0580	-0.0175	0.1018	0.1495	0.0965	0.0541	0.1676**	-0.0342	-0.0002
	(0.0999)	(0.0502)	(0.0664)	(0.0560)	(0.0632)	(0.2675)	(0.0972)	(0.2260)	(0.0812)	(0.2746)	(0.1285)
Public service delivery score	0.0960	0.0224	0.0765	-0.0838*	-0.0279	0.0300	-0.0436	-0.0402	-0.0613	0.1047	-0.0010
	(0.0791)	(0.0360)	(0.0615)	(0.0495)	(0.0613)	(0.1343)	(0.0542)	(0.1311)	(0.0534)	(0.1452)	(0.0658)
Environmental governance score	0.0502	-0.0492	0.0818	-0.0191	-0.0193	-0.0146	0.0497	-0.1352	-0.1042	0.0583	0.0087
	(0.0886)	(0.0430)	(0.0697)	(0.0574)	(0.0669)	(0.2063)	(0.0677)	(0.1698)	(0.0633)	(0.1860)	(0.0908)
E-governance score	0.0041	-0.0174	0.0310	-0.0214	0.0009	0.0924	0.0165	-0.0251	0.0290	0.2868*	0.1674**
	(0.0384)	(0.0150)	(0.0219)	(0.0218)	(0.0190)	(0.1604)	(0.0625)	(0.1765)	(0.0645)	(0.1676)	(0.0720)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.3959*	0.0929	0.2494	0.6536	0.0508	3.5204**	0.6256	4.8953***	0.4192	3.0233*	0.3732
	(0.8278)	(0.4297)	(0.5289)	(0.4541)	(0.5216)	(1.7416)	(0.6078)	(1.5856)	(0.6074)	(1.7785)	(0.8435)
Observations	3,922	4,099	4,099	4,099	4,099	2,394	2,394	2,399	2,399	2,403	2,403
R-squared	0.044	0.017	0.036	0.055	0.035	0.157	0.111	0.049	0.060	0.059	0.048

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table A9: Heterogeneous effect of lockdown months on per capita income

Explanatory variables	Dependent variable: log of per capita income				
	(1)	(2)	(3)	(4)	(5)
Lockdown months	0.0849*	0.0896*	0.0872*	0.0853*	0.0851*
	(0.0492)	(0.0481)	(0.0478)	(0.0486)	(0.0487)
Lockdown months * Male	-0.0853***	-0.0665***	-0.1192**	-0.0768**	-0.0838***
	(0.0249)	(0.0239)	(0.0587)	(0.0313)	(0.0221)
Lockdown months * Urban areas	0.0030				
	(0.0208)				
Lockdown months * Age		-0.0292			
		(0.0205)			
Lockdown months * Education level			0.0007		
			(0.0011)		
Lockdown months * Ethnic minorities				-0.0032	
				(0.0102)	
Lockdown months					0.0070
					(0.0483)
Rate of COVID-19 cases	-0.0011	-0.0009	-0.0012	-0.0011	-0.0011
	(0.0012)	(0.0013)	(0.0012)	(0.0012)	(0.0012)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes
Year 2020 dummy	0.0166	0.0150	0.0171	0.0166	0.0163
	(0.0362)	(0.0361)	(0.0363)	(0.0362)	(0.0362)
Year 2021 dummy	0.0677	0.0651	0.0676	0.0676	0.0674
	(0.0493)	(0.0492)	(0.0493)	(0.0493)	(0.0493)
Constant	0.9010***	0.9010***	0.9008***	0.9009***	0.9009***
	(0.0151)	(0.0150)	(0.0150)	(0.0151)	(0.0151)
Observations	4,268	4,268	4,267	4,268	4,268
R-squared	0.720	0.720	0.720	0.720	0.720

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.

Table A10: Heterogeneous effect of lockdown months on good opinion of provincial government's response to COVID-19 pandemic

Explanatory variables	Dependent variable: good opinion of provincial government's response to COVID-19 pandemic				
	(1)	(2)	(3)	(4)	(5)
Lockdown months	0.0360*	0.0386*	0.0357*	0.0457**	0.0369*
	(0.0211)	(0.0210)	(0.0207)	(0.0210)	(0.0209)
Lockdown months * Male	-0.0360*	-0.0226	0.0231	0.0408	-0.0264*
	(0.0190)	(0.0190)	(0.0652)	(0.0269)	(0.0138)
Lockdown months * Urban areas	0.0037				
	(0.0220)				
Lockdown months * Age		-0.0188			
		(0.0215)			
Lockdown months * Education level			-0.0011		
			(0.0012)		
Lockdown months * Ethnic minorities				-0.0381***	
				(0.0124)	
Lockdown months					-0.0749
					(0.0629)
Rate of COVID-19 cases	-0.0021	-0.0021	-0.0020	-0.0018	-0.0023*
	(0.0013)	(0.0014)	(0.0013)	(0.0012)	(0.0013)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes
Year 2021 dummy	0.0256*	0.0253*	0.0274*	0.0252*	0.0215
	(0.0149)	(0.0149)	(0.0151)	(0.0148)	(0.0155)
Constant	0.9564***	0.9551***	0.9550***	0.9613***	0.9552***
	(0.0191)	(0.0190)	(0.0194)	(0.0187)	(0.0186)
Observations	2,276	2,276	2,276	2,276	2,276
R-squared	0.634	0.634	0.635	0.644	0.636

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1.

Source: author's calculations based on MDRI-UNDP survey data.

Table A11: Heterogeneous effect of aid package on per capita income

Explanatory variables	Dependent variable: log of per capita income				
	(1)	(2)	(3)	(4)	(5)
Receipt of aid package	0.0326	0.0692	-0.2808	0.1257	0.0945*
	(0.0819)	(0.0590)	(0.2433)	(0.1060)	(0.0488)
Receipt of aid package * Male	0.0870				
	(0.0957)				
Receipt of aid package * Urban areas		0.0256			
		(0.0848)			
Receipt of aid package * Age			0.0073		
			(0.0046)		
Receipt of aid package * Education level				-0.0206	
				(0.0541)	
Receipt of aid package * Ethnic minorities					-0.1455
					(0.2285)
Lockdown months	-0.0834***	-0.0833***	-0.0817***	-0.0825***	-0.0826***
	(0.0219)	(0.0220)	(0.0218)	(0.0217)	(0.0219)
Rate of COVID-19 cases	-0.0011	-0.0012	-0.0012	-0.0012	-0.0012
	(0.0012)	(0.0013)	(0.0012)	(0.0012)	(0.0012)
Individual fixed effect	Yes	Yes	Yes	Yes	Yes
Year 2020 dummy	0.0168	0.0168	0.0154	0.0151	0.0161
	(0.0362)	(0.0360)	(0.0361)	(0.0361)	(0.0361)
Year 2021 dummy	0.0672	0.0673	0.0650	0.0658	0.0659
	(0.0493)	(0.0493)	(0.0493)	(0.0494)	(0.0493)
Constant	0.9008***	0.9009***	0.9006***	0.9009***	0.9010***
	(0.0151)	(0.0151)	(0.0150)	(0.0150)	(0.0150)
Observations	4,268	4,268	4,267	4,268	4,268
R-squared	0.720	0.720	0.720	0.720	0.720

Note: robust standard errors in parentheses. Standard errors clustered at individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: author's calculations based on MDRI-UNDP survey data.