Impact of private and public initiatives on individuals' employment and income during the COVID-19 pandemic: evidence from Peru

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Abstract

Purpose – The purpose of this paper is to determine the impact of private and public initiatives (financial literacy, entrepreneurship, remote work and government aid) on individual job loss and decrease in income during the COVID-19 pandemic in Peru.

Design/methodology/approach – The authors used an unbalanced panel data analysis with the National Household Survey for 2019–2020. The hypotheses are tested with a probit panel data model since the dependent variables are binary.

Findings – The study findings indicate that financial preparedness reduced the probability of having a decrease in income, but only to informal workers in metropolitan Lima. Furthermore, entrepreneurship helped mainly female informal workers to reduce their probability of becoming unemployed in metropolitan Lima. Besides, the implementation of remote work as a substitute of face-to-face work was not enough to avoid the decrease in income in the case of informal workers and it was only effective to avoid unemployment in the case of formal workers in metropolitan Lima. Finally, public aid proved to be instrumental in mitigating the decrease in income, but only to informal workers in Metropolitan Lima.

Research limitations/implications – The study results only apply for the first year of the pandemic.

Practical implications – Policymakers should focus on increasing the financial preparedness of informal workers, especially in provinces.

Social implications – Policymakers must expand unemployment benefits, and design public aid programs targeting informal workers in provinces.

JEL Classification — D31, I12, I38, J64

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Originality/value – This is the first study that analyses the impact of private and public initiatives on the decrease in income and unemployment situation of Peruvian individuals during the outbreak of the COVID-19 pandemic.

Keywords Personal income, Pandemic, Public policy, Unemployment

Paper type Research paper

1. Introduction

The COVID-19 pandemic generated an increase in the unemployment rate from 3.4% (2019) to 7.4% (2020) and an income per capita decline of 20.8% from 2019 to 2020 (https://datos.bancomundial.org/). Hence, it is important to assess whether the main private and public initiatives were able to mitigate the income decline and job losses. Among the private initiatives, we have an extra source of income for financially prepared individuals, entrepreneurial activities (i.e. to start a new business venture) and to work remotely, while among the public initiatives, we have government aid in the way of financial bonuses and individuals' access to their compensation for length of service (CTS).

Financial literacy means understanding and applying personal finance best practices and this leads to better money management skills, which reduce individual levels of debt and interest rates (Babiarz and Robb, 2013). Individuals with financial literacy are usually financially prepared and are less likely to obtain funds from informal channels (French and McKillop, 2016). This would have led them to have a lower financial burden than individuals in debt.

Additionally, financially prepared individuals are also more likely to have saved prior to a financial crisis period (such as the COVID-19 pandemic), to have an extra source of income, to have banking instruments (debit or credit accounts) and thus to have money available for emergencies (Klapper *et al.*, 2012). Hence, financially prepared individuals must face a lower decrease in income than not financially prepared ones because of their extra sources of income and money management skills.

There are two types of entrepreneurship: by opportunity and by necessity (Liñán *et al.*, 2013). The former is associated with taking advantage of a good business opportunity, while the latter occurs in situations of poverty, recession, unemployment or lack of resources, and is often referred to as self-employment (Fuentelsaz *et al.*, 2015). Job losses often lead to entrepreneurship by necessity, which involves starting a business because there are no alternative ways to obtain income and not because one desires to start business (Maritz *et al.*, 2020).

Economic crisis and the pandemic are important factors that drive people into self-employment due to the lack of opportunities (Amit and Muller, 1995). Devece *et al.* (2016) found an increase in the entrepreneurship by necessity activity in Spain during the recession period between 2008 and 2010. Rosa *et al.* (2006) studied entrepreneurship by necessity in a sample of 1,006 Ugandans and found that most of them adopted entrepreneurial activities to complement their rural income and access better living conditions.

According to the National Household Survey (ENAHO), 60% of the individuals started new business ventures in the face of the COVID-19 pandemic during 2020 and 53% were financially prepared. Successfully starting a new entrepreneurial activity in the face of a pandemic requires a minimum level of financial preparedness. Hence, entrepreneurial initiatives ought to be analysed jointly with financial preparedness.

According to the Ministry of Labor and Employment Promotion (2021), remote work grew by 6% in 2020, and informal employment was 75.3% in 2020, 2.8% higher than the previous year. More than 12.3% of the respondents of the ENAHO declared that they worked in a hybrid or totally remote way during 2020, and this must have mitigated the job losses due to the pandemic.

Almeida *et al.* (2021) found that the COVID-19 pandemic significantly affected the income of American individuals, especially those with low incomes. These authors describe that fiscal policy measures played an important role in reducing the size of income loss. Therefore, public initiatives played an important role in mitigating the negative effects on individual income.

Governments were the protagonists in managing the pandemic, from taking rigorous confinement measures to providing aid packages for individuals in need. In the case of developed economies, the fiscal impulse was 13.8% of GDP. In Latin America and the Caribbean countries, fiscal packages represented 3.5% of GDP, although in some countries such as Peru, Brazil and Chile, they reached values of 10% of GDP.

The Peruvian government made public disbursements up to a total of 142,272 million soles until December 2020 aimed at economic assistance for vulnerable individuals, including temporary incapacity subsidies, different types of aid bonuses and delivery of food baskets. It also allowed affiliates of pension funds to withdraw up to 17,400 soles and for all formal workers to withdraw their unemployment fund, also called compensation for length of service (CTS).

According to the ENAHO, 9% of individuals declared to have received public aid in the way of a financial bonus, access to their pension fund, and/or CTS during 2020. These individuals should have mitigated their decline in income during 2020. Findling *et al.* (2021) found that employment interruptions reported during the COVID-19 pandemic varied widely by individual income type (formal or informal), with a higher proportion of low-income individuals (informal) reporting job losses. Hence, not all private and public initiatives to mitigate the decrease in income and job losses must have been effective for both formal and informal workers.

Given the above, we aim to identify which private and public initiatives had a significant impact on mitigating the decline in employment and income in formal and informal workers in Peru and whether their age, gender and geographical location played a role too. This is the first study that analyses the impact of private and public initiatives on the decrease in income and unemployment situation of Peruvian workers during the COVID-19 pandemic.

We find that financially prepared individuals who undertook a new business venture and that received public aid faced a lower decrease in their income than individuals without those features.

Furthermore, we find that individuals older than 18 years old and whose residence was in metropolitan Lima, regardless of their gender, faced a higher decrease in income than individuals in provinces due to the pandemic. Besides, individuals who undertook a new business venture during 2020 faced a lower job loss than individuals who did not and females between 18 and 35 years old whose residence was in metropolitan Lima were more affected by job losses.

Concerning remote work, it helped only formal workers to keep their jobs and financial preparedness, entrepreneurship and public aid only helped informal workers to avoid a further decrease in income. Again, new entrepreneurial ventures only work for financially prepared informal workers to mitigate their decrease in income. Finally, public aid helped only informal workers who lost their jobs to mitigate their decrease in income, but this was heavily concentrated in metropolitan Lima.

The article is divided into four more sections. The next section provides a summary of the literature review related to our hypotheses, while in the third section, we explain the methodology. In the fourth section, we discuss our results and in the fifth section we provide our conclusions.

2. Literature review

Financial preparedness is the ability to understand and apply good personal finance practices with the aim of improving money management skills, including budgeting and investments. French and McKillop (2016) have shown that improvements in money management skills

have a positive impact on reducing individuals' debt levels and on increasing individual income levels. Lusardi and Tufano (2015) found that individuals with lower levels of financial literacy are overindebted with expensive borrowing and are less likely to have an extra source of income.

Chhatwani and Mishra (2021) found that financial preparedness had a negative correlation with financial fragility during the COVID-19 pandemic because financially prepared individuals were able to have more resilient financial planning (savings and debts) and were less likely to be influenced by cognitive biases. Cardona-Montoya *et al.* (2022) found that individuals with more financial literacy are more prepared to face the negative effects on their finances, which reduces the probability of becoming financially fragile (i.e. to decrease their income). Financial preparedness also has a beneficial impact on an individual's chances of finding work. Cedeño *et al.* (2021) and Kurowski (2021) have shown how young people with a family history of poverty can be through their financial preparedness gain access to better job opportunities and even change their socioeconomic status. Given the above, we state the following hypothesis:

H1. Individuals who are financially prepared were able to mitigate their decrease in income during the COVID-19 pandemic.

Shepherd (2020) and Liñán and Jaén (2022) showed that in response to strong and long-lasting events such as the pandemic, entrepreneurs emerge out of necessity, which is a natural and expected response. Additionally, Kesar *et al.* (2021) conducted a study based on a sample of 5,000 individuals from the 12 states of India and found that it is likely that entrepreneurial spirit increases out of necessity, and that high-potential entrepreneurial activity could be fostered, provided that the recovery is rapid and there is sufficient support from the environment and institutions. Thus, entrepreneurship can be a way to reduce unemployment and maintain family income.

Entrepreneurial activities can also increase due to opportunities. Vazirani and Bhattacharjee (2021) found that there was a group of entrepreneurs that identified opportunities in the pandemic and decided to start businesses due to potential new markets. Ćumurović and Hyll (2019) showed that there is a positive correlation between financial preparedness and entrepreneurship in the German market. Hence, these opportunities can be exploited if individuals are financially prepared in the sense of having saved capital, having different sources of income and using banking instruments (savings, debit and/or credit accounts). Therefore, we state the following hypothesis:

H2. Financially prepared individuals who implemented entrepreneurial activities during the pandemic were able to mitigate their decrease in income, and regardless of their financial preparedness, to avoid a job loss.

The COVID-19 pandemic had a negative impact on labour markets worldwide, in the form of work stoppage and reduced working hours, which led to overall income loss (Khamis *et al.*, 2021). While the possibility of working remotely mitigated the loss of income, not all individuals have equal access to remote work. This is mainly due to factors such as the requirement for in-person interactions, the formality of positions, and access to the internet (Cueva *et al.*, 2021).

The ability to work remotely is also related to income level (Dingel and Neiman, 2020): globally, 1 in 5 jobs can transition to remote work; however, in low-income countries, only 1 in 26 jobs can successfully migrate (Garrote Sánchez *et al.*, 2021). Gottlieb *et al.* (2021) found that around 20% of urban workers can work from home in poor countries, versus a 37% in rich countries.

Adams-Prassl *et al.* (2020) agree on the fact that the impact on job losses within a country depends on the job and the worker characteristics: workers who could perform a high share of their tasks at home were less likely to lose their jobs. Furthermore, Hatayama *et al.* (2020)

found that amenability to work from home increases with a country's economic development, due to jobs in poorer countries being more physical than technologically intensive.

García *et al.* (2020) and Cárdenas *et al.* (2021) explained how remote work was introduced in most economic sectors in Latin American countries. In the case of Peru, remote work became mandatory in March 2020 as an important alternative to maintaining employment, and only critical sectors were allowed to continue with in-person work. Additionally, Cueva *et al.* (2021) found that formal workers in essential sectors were able to keep their jobs and had more opportunities to migrate to remote work modalities.

Montenovo *et al.* (2022) explain that job losses occurred in sectors that were not compatible with remote work due to isolation measures. Chetty *et al.* (2020) agree that jobs that required low skills but in-person work were those with higher rates of layoffs due to the inability to migrate to remote work modalities and the reduction of income due to a decrease in customers who preferred to avoid personal interactions to take care of their health.

Peluffo and Viollaz (2021) found a high correlation between the possibility of working remotely and access to credit. Poor families with low access to formal credit and who largely depend on informal mechanisms to generate income have fewer opportunities to work remotely than richer families with greater access to formal credit. Therefore, we propose the following hypothesis:

H3. Workers who migrated to a remote work scheme avoid a job loss but cannot mitigate their decrease in income.

Picot *et al.* (2009) found that government transfers in Canada helped reduce the percentage of individuals considered "low income" for both Canadians and immigrants. In Uruguay, there was a meaningful decrease in poverty during the 15 years prior to the COVID-19 pandemic due to the high economic growth and a wide scheme of government cash transfer policies (Amarante *et al.*, 2014).

Arndt *et al.* (2020) indicated that the COVID-19 pandemic would have had a more significant negative effect on the income of individuals with low levels of educational attainment and high dependence on labour income in South Africa if there were no transfer payments by the South African government to them. Kumar *et al.* (2022) showed, using information from 2,599 rural individuals in eastern India from June–July 2020, that a government direct cash transfer managed to alleviate the decrease in income during the COVID-19 pandemic for vulnerable families.

According to Persaud *et al.* (2021), in order for government money transfers to have a significant impact on the income of vulnerable groups, they should be given more than once in a year. Acevedo *et al.* (2020, 2021) and Busso *et al.* (2020) describe how in Latin America different government interventions were developed, expanding social programs, increasing benefits offered and incorporating other parts of the population, generating instruments for formal labour markets, such as unemployment subsidies, incentives for employers not to lay off workers, deadlines for social security payments and so forth. Hence, in general, several measurements were adopted simultaneously during the pandemic. Therefore, we state the following hypothesis:

H4. Individuals, who benefited from public aids, were able to mitigate their decrease in income during the COVID-19 pandemic.

Concerning gender, Lusardi and Mitchell (2011) stated that financial literacy is higher among men than among women, meaning that men would be more financially prepared than women. Mühlböck *et al.* (2018) indicated that men are more likely to start entrepreneurial activities than women, but entrepreneurship by necessity is more prevalent in women than entrepreneurship by opportunity due to the inequality in the ability between women and men to secure funding (Malach Pines *et al.*, 2010).

Cueva *et al.* (2021) found that women were more likely to lose their jobs because jobs with a higher proportion of female workers were more face-to-face interaction-intensive, making it difficult to transition to remote work. Ambler and De Brauw (2017) stated that direct transfers can be more effective, meaning that they are more likely to be spent as intended when given directly to women. Moreover, they serve as a mechanism to empower women, particularly in rural areas, as they increase individual resources under their control. This impact was greater for women in rural areas due to increased responsibilities related to childcare (Avdiu and Nayyar, 2020). Given the above, we state the following hypothesis:

H5. Women were no able to mitigate their probability to have a decrease in income and of having a job loss during the COVID-19 pandemic.

3. Method

Our main source of information is the National Household Survey (ENAHO) from 2019 to 2020, conducted by the Peruvian National Institute of Statistics and Information Technology (INEI). ENAHO is the main household survey in Peru obtained from the National Statistics Office. It is an important source of socioeconomic information in Peru and is widely used for governmental decision-making, academic research and public policy analysis.

The transition to a continuous survey after 2003 has enhanced the quality and utility of the collected data, making it a valuable tool for understanding the situation of the Peruvian population. The survey includes 12 modules and 344 questions about housing and household characteristics, education, health, employment, income, household expenses and social programs. In the year 2020, the annual sample size was composed of 37,103 private households, with 23,895 households located in urban areas and 13,208 in rural areas.

3.1 Sample

To verify our hypotheses, we use the National Household Survey (ENAHO) from 2019 to 2020. This survey provides data on the socioeconomic characteristics of households and individuals in Peru using a probabilistic sampling procedure and is representative of the national and regional levels when using the annual cross section.

Our initial sample reported 52,290 individuals, but some of them did not provide answers for all our hypotheses, so we dropped observations (individuals) who did not provide information to test at least one hypothesis.

Hence, our final sample includes a total of 45,163 individuals who were interviewed and answered either in 2019 or 2020, and that in turn involves a panel with information on 15,398 comparable individuals between the years 2019–2020 for both metropolitan Lima (urban) and provinces. Our sample data are representative of the national level, and the main patterns of demographic characteristics are relatively like the complete population.

The survey provides detailed information on the demographic characteristics of the respondents, including gender, age, marital status, occupation, educational level and, starting in 2020, questions related to the COVID-19 pandemic. As shown in Table 1, our sample was built mainly with females (53%), with and age between 36 and 55 years old (32%), and singles (33%). Approximately 51% of the sample consists of individuals in either free union or married status, while 33% represent single households, demonstrating a representative sample composition largely comprised individuals living within couple-based households.

The pandemic has a very important impact on the individuals' income because 47% declared to have an income lower than usual and mainly to the decreasing number of customers (73%). Furthermore, the pandemic also had an important impact on the individual's employment because 25% declared themselves to have suffered from a change in the way they work.

	Obs	%
Gender		
Male	24,797	47
Female	27,493	53
Total	52,290	100
Age		
18–35 years old	13,471	26
36–55 years old	16,942	32
More than 55 years old	14,758	28
Less than 18 years old	7,119	14
Total	52,290	100
Marital status		
Free union	12,277	24
Married	14,196	27
Widow	3,323	6
Divorced	306	1
Separated	4,732	9
Single	17,406	33
Total	52,240	100
Income change after the pandemic		
Higher than usual	198	2
The same	3775	46
Lower than usual	3930	47
No income	388	5
Total	8,291	100
Cause of decreasing income		
Temporary closure of own business	460	11
Decreasing number of customers	3131	73
Due to curfew	182	4
Supply difficulty due to no transportation	83	2
I got Coronavirus	22	1
I got another disease	60	1
I had to care for a sick family member	36	1
Another reason	344	8
Total	4,318	100
How did you work during the pandemic?		
Work in person in the usual way	5361	75
Work in person with a reduced schedule	571	8
A mix between remote work and in person	852	12
I had vacations or a health licence	139	2
Remote work	27	0
Other modalities	15	0
I could not do any work	174	2
Total	7,139	100

Source(s): ENAHO. Own elaboration

Table 1.
Descriptive statistics

Table 2 shows the correlogram between the variables; it is interesting to notice a negative correlation between financial preparedness with job loss and decrease in income. Entrepreneurship has a negative relation with the decrease in income; remote work has a negative relationship with job loss and decrease in income; and public aid has a positive relationship with the decrease in income. Gender has a negative relationship with job loss and

Variables	Unemployed	Decrease in income	Public aid	Entrepreneurship	Financial preparedness	Remote work	Gender	Marital status	Urban
Unemployed	1								
Decrease in income	0.0193	1							
Public aid	−0.0610	*0.0487**	1						
Entrepreneurship	0.0011	*−0.0211**	0.0082	1					
Financial preparedness	−0.0056	*−0.0322***	0.0549	0.0058	1				
Remote work	*−0.0122**	−0.0038	−0.0015	0.0119	−0.0063	1			
Gender	*−0.1140**	0.0216	*−0.1322***	−0.0472	0.0354	0.0001	1		
Marital status	0.0268	0.0243	0.0828	−0.0013	0.0466	0.0008	0.2224	1	
urban	*0.0874**	*0.1116**	*0.0099**	0.0189	0.0107	−0.0046	0.0210	0.1012	1

Note(s): ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
Source(s): ENAHO. Own elaboration

Table 2.
Correlogram between variables

public aid, while urban has a positive relationship with job loss, decrease in income and public aid. Marital status does not have a significant relationship with any other variable, so we did not include it in our models.

3.2 Model

We use a probit panel data model to test our hypotheses because our two dependent variables are binary: decrease in income and job loss. The unit of analysis will be individuals who belong to the Active Economic Population in Peru.

Our probit panel data model is as follows:

$$Y_{tn} = \beta X_{tn} + \delta Z_n + \varepsilon_{tn};\ t = 1,\ldots\ldots,T;\ n = 1,\ldots\ldots,N$$

where $Y_{tn} = (Y_{1n,\ldots\ldots,}Y_{tn})$ indicates two categories of income change from 2019 to 2020: decrease ($Y_{tn} = 1$) or increase or no change ($Y_{tn} = 0$), and also two categories for the employment change from 2019 to 2020: job loss ($Y_{tn} = 1$) or no change provided that the individual is employed ($Y_{tn} = 0$).

In addition, using the survey questionnaires, we created a set of variables that allowed us to test our hypotheses. The explanatory variables that vary over time are denoted by $X_{tn} = (X_{1n,\ldots\ldots,}X_{tn})$, and Z_n are control variables that no vary over time. We used as control variables gender, age and urban (metropolitan Lima) as the location of individuals and individuals. Also, we use fixed effects of the year (Year 2020) to measure the impact of the pandemic in 2020.

Our covariates to test our hypotheses are the following: financial preparedness is a dummy variable that takes the value one if the person had any banking instrument such as bank accounts and loans and had extra income to his or her main job during 2019 and zero otherwise.

Entrepreneurship takes the value of one if the person started a new business venture in 2020 and zero otherwise. Remote work takes the value of one if the person changed his or her work modality from face to face to remote from 2019 to 2020 and zero otherwise.

Public aid takes the value of one if the person had access to his or her CTS fund and/or had been benefited from the government financial support during 2020 through a bond (stay at home, rural or other) and zero otherwise.

Gender takes the value of one if the person is a male and zero otherwise. Age is a categorial variable that takes the value of one, two or three depending on the person's age. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise.

We also use interaction variables to capture the effect of the pandemic, so we multiply financial preparedness, entrepreneurship, remote work and public aid times the dummy Year 2020. Besides, to test our second hypothesis, we created the interaction variable financial preparedness times entrepreneurship times 2020.

4. Results

We verify our first hypothesis because individuals with financial preparedness reduce the probability of decrease in income (see Table 3). Also, column (2) shows the interaction between financial preparedness and the COVID-19-year 2020 with a negative and significant effect. This negative and significant coefficient indicates that as financial preparation increases, the probability of experiencing a decrease in income decreases. The coefficient of −0.227 represents the change in the probability of having a decrease in income if the individual is financially prepared. In addition, we find that the decrease in income applies to individuals of all ages and mainly in metropolitan Lima and the year 2020 dummy variable is also significant.

Various studies confirm that entrepreneurship can play an important role in crisis scenarios or economic shocks, helping to mitigate job loss; since entrepreneurship can generate resilience in the labour market, it can generate new jobs in economic crises when

Variables	Decrease in income (1)	Decrease in income (2)
Financial preparedness	*−0.142***	−0.0465
	−0.0519	−0.0674
Financial preparedness × 2020		*−0.227***
		−0.102
Gender	−0.0912	−0.0943
	−0.0645	−0.0645
18–35 years old	*0.969***	*0.972***
	−0.453	−0.453
36–55 years old	*1.024***	*1.026***
	−0.448	−0.448
More than 55 years old	*0.915***	*0.917***
	−0.448	−0.448
Year 2020	*0.543****	*0.661****
	−0.047	−0.0715
Urban	*1.325****	*1.327****
	−0.15	−0.151
Constant	−1.040**	−1.084**
	−0.448	−0.449
Observations	8,108	8,108
Number of households	5,658	5,658

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
The dependent variable is decrease in income that takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Financial preparedness is a dummy variable that takes the value one if the person had any banking instrument such as bank accounts and loans and had extra income to his/her main job during 2019 and zero otherwise. Gender takes the value of one if the person is a male and zero otherwise. Age is a categorial variable that takes the value of one, two, or three depending on the person's age. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Financial preparedness × 2020 is an interaction variable that multiplies the Financial Preparedness dummy for 2020 times the Year 2020 dummy
Source(s): ENAHO. Own elaboration

Table 3. Relationship between financial preparedness and decrease in income

traditional companies face difficulties and carry out massive layoffs (Maritz *et al.*, 2020; Khamis *et al.*, 2021).

Table 4 shows that individuals who started a new business venture during 2020 reduced the probability of losing their job in the face of the pandemic. The coefficient was negative and significant when interacting with the 2020 dummy (see columns 1 and 2). Nevertheless, entrepreneurship does not help to mitigate the decrease in income (see column 3) unless individuals are financially prepared (see column 4).

In these regressions, individuals between the ages of 18 and 35 increased the probability of losing their job and those over 35 years of age were less likely to lose their job during the pandemic. In addition, men were less likely to lose their jobs than women and living in metropolitan Lima increased the probability of losing their job.

Variables	Unemployed (1)	Unemployed (2)	Decrease in income (3)	Decrease in income (4)
Entrepreneurship	−0.00199	0.00665	−0.53	−0.476
	−0.0782	−0.0791	−0.353	−0.356
Entrepreneurship × 2020	*−1.638***	*−1.643***		
	−0.188	−0.191		
Financial preparedness		0.0386	*−0.142***	−0.0481
		−0.0599	−0.0519	−0.0672
Entrepreneurship × Financial preparedness × 2020				*−0.224***
				−0.102
18–35 years old	*0.443***	*0.379***	*0.966***	*0.969***
	−0.178	−0.171	−0.453	−0.453
36–55 years old	*−0.398***	*−0.517***	*1.021***	*1.024***
	−0.186	−0.18	−0.448	−0.448
More than 55 years old	*−0.535***	*−0.609***	*0.913***	*0.915***
	−0.18	−0.173	−0.448	−0.448
Gender	*−1.181***	*−1.158***	−0.0868	−0.0898
	−0.0744	−0.0752	−0.0646	−0.0646
Urban	*0.652***	*0.670***	*1.329***	*1.332***
	−0.156	−0.153	−0.151	−0.151
Year 2020	*0.542***	*0.539***	*0.544***	*0.659***
	−0.0852	−0.0862	−0.047	−0.0712
Constant	−9.044***	−9.004***	−0.514	−0.602
	−0.178	−0.17	−0.568	−0.57
Observations	45,163	45,163	8,108	8,108
Number of households	15,398	15,398	5,658	5,658

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
The dependent variables are decrease in income and job loss. Decrease in income takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Job loss takes the value of one if the person loses his/her job from 2019 to 2020 and zero otherwise. Entrepreneurship takes the value of one if the person started a new business venture in 2020 and zero otherwise. Financial preparedness is a dummy variable that takes the value one if the person had any banking instrument such as bank accounts and loans and had extra income to his/her main job during 2019 and zero otherwise. Age is a categorial variable that takes the value of one, two, or three depending on the person's age. Gender takes the value of one if the person is a male and zero otherwise. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Entrepreneurship × 2020 is an interaction variable that multiplies the Entrepreneurship dummy for 2020 times the Year 2020 dummy. Entrepreneurship × Financial Preparedness × 2020 is and triple interaction variable that multiplies the Entrepreneurship dummy for 2020, the Financial Preparedness dummy for 2020 and the Year 2020 dummy
Source(s): ENAHO. Own elaboration

Table 4.
Relationship between entrepreneurship and job loss and decrease in income

Table 5 describes the relationship between the use of remote work and its impact on the probability of losing a job (column 1) and a decrease in income (columns 2 and 3). The negative coefficient of the interaction term remote work times year 2020 indicates that remote work is associated with a lower probability of losing a job or decrease in income, but it is not significant (columns 1 and 3).

In addition, we found that between the ages of 35 and 55 increases the probability of losing a job and/or decreases in income and that men were less likely to lose their job than women. As before, we also find that metropolitan Lima continues to be more affected than provinces. Table 6 shows that the decrease in income is a consequence of individuals losing their jobs (column 1), and that public aid helped to mitigate their decrease in income (column 2). Furthermore, the main reason to receive public aid was losing a job (column 3) and that the decrease in income does not affect this decision (column 4).

Mamani *et al.* (2020) found in their study positive effects of bonuses and economic subsidies during the pandemic using the difference-in-differences method; their findings show impacts of between 4.8 and 7.4% on the family economy; they also show that the socioeconomic factors that most age, individual sizeand economic sector affected the granting of these bonuses, as well as job loss and stagnation in economic activities.

Variables	Unemployed (1)	Decrease in income (2)	Decrease in income (3)
Remote work	0.0351	0.0173	0.0663
	−0.0943	−0.0596	−0.0775
Remote work × 2020	−0.0226		−0.119
	−0.163		−0.12
18–35 years old	0.112	*0.948***	*0.950***
	−0.185	−0.455	−0.455
36–55 years old	*0.553****	*1.003***	*1.003***
	−0.151	−0.45	−0.449
More than 55 years old	*−0.463****	*0.888***	*0.889***
	−0.158	−0.45	−0.45
Gender	*−0.542****	−0.0865	−0.0883
	−0.108	−0.0647	−0.0646
Urban	*0.931****	*1.325****	*1.324****
	−0.117	−0.151	−0.151
Year 2020	0.00685	*0.530****	*0.475****
	−0.0773	−0.0466	−0.0545
Constant	−12.20***	−1.088**	−1.047**
	−0.147	−0.45	−0.45
Observations	45,163	8,108	8,108
Number of households	15,398	5,658	5,658

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
The dependent variables are decrease in income and job loss. Decrease in income takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Job loss takes the value of one if the person loses his/her job from 2019 to 2020 and zero otherwise. Remote work takes the value of one if the person changed his/her work modality from face-to-face to remote from 2019 to 2020 and zero otherwise. Gender takes the value of one if the person is a male and zero otherwise. Age is a categorial variable that takes the value of one, two, or three depending on the person's age. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Remote work × 2020 is an interaction variable that multiplies the remote work dummy from 2020 times the Year 2020 dummy
Source(s): ENAHO. Own elaboration

Table 5.
Relationship between remote work with job loss and decrease in income

Variables	Decrease in income (1)	Decrease in income (2)	Public aid (3)	Public aid (4)
Public aid	0.171	*−1.575***		
	−0.107	−0.537		
Public aid × 2020		*−1.458***		
		−0.546		
Unemployed	*0.317***	*0.206***	*0.199***	
	−0.119	−0.0299	−0.0288	
Decrease in income				0.119
				−0.0829
18–35 years old	*1.257***	*0.941***	*1.567***	7.758
	−0.632	−0.455	−0.218	−2589
36–55 years old	*1.290***	*0.986***	*1.769***	7.895
	−0.628	−0.45	−0.218	−2589
More than 55 years old	*1.179**	*0.877**	*1.645***	7.972
	−0.628	−0.45	−0.218	−2589
Gender	−0.0751	−0.0769	*−0.209***	*−1.030***
	−0.0674	−0.0651	−0.0235	−0.199
Urban	*1.290***	*1.322***	*0.191***	0.0954
	−0.155	−0.151	−0.0336	−0.171
Year 2020	*0.523***	*0.516***	*0.604***	*2.583***
	−0.0507	−0.0496	−0.0239	−0.462
Constant	−1.422**	−1.085**	−3.537***	−11.52
	−0.628	−0.45	−0.218	−2589
Observations	7,707	8,108	34,852	8,108
Number of households	5,342	5,658	15,397	5,658

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
The dependent variables are decrease in income and public aid. Decrease in income takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Public aid takes the value of one if the person had access to his/her Compensation for the Length of Service (CTS) fund and/or had been benefited from the government financial support during 2020 through a bond (stay at home, rural or other) and zero otherwise. Age is a categorial variable that takes the value of one, two, or three depending on the person's age. Gender takes the value of one if the person is a male and zero otherwise. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Public aid × 2020 is an interaction variable that multiplies public aid for 2020 times Year 2020 dummy variable
Source(s): ENAHO. Own elaboration

Table 6.
Relationship between public aid, decrease in income and job loss

Consistent with their results, we found that individuals between 36 and 55 years old are more likely to be affected by a decrease in income and to receive public aid. We also found that women are more likely to receive public aid than men, and individuals whose residence is in metropolitan Lima are more likely to receive public aid rather than those whose residence is in provinces.

5. Discussion

5.1 Theoretical implications

Legal informality (not the illegal one, nor the one associated with domestic activities) includes all production of goods and services for commercial purposes that is hidden from public authorities for various reasons. Among the main reasons are tax evasion, evasion of social contributions and other labour regulations.

Informality is around 45% in Latin America, and it reaches 73% in Peru, making this country one of the most informal economies in the world, where nearly 90% of the firms are also informal (OECD, 2016). Remeikiene and Gaspareniene (2021) found that unemployed

individuals in Lithuania, due to the pandemic, substantially engaged in informal work and hid income and consumption of contraband goods. The CEPAL (2020) confirms that the crisis significantly increased informal employment as a survival strategy and considers it a group with high vulnerability and greater likelihood of entering poverty.

Hence, given the high level of informality in Peru, it is important to assess whether the previous private and public initiatives impact in the same way formal and informal workers. Since the ENAHO survey provides information by type of work, we also tested the same hypotheses for formal and informal workers as a robustness check.

The results of Table 7 put in perspective our previous results for the first hypothesis. Yes, financial preparedness helps to mitigate the decrease in income, but mainly for informal workers located in metropolitan Lima (columns 3 and 4). This result does not apply for formal workers probably because they are already financially prepared (columns 1 and 2).

Concerning our second hypothesis, starting a new business venture (entrepreneurship) helped informal workers to have a job during the pandemic, but to mitigate their decrease in income, they needed to be financially prepared (see Table 8, columns 3 and 4). However, entrepreneurship did not help formal workers much because a small proportion of them (0.63%) started business during the pandemic (columns 1 and 2).

Table 9 shows the results for our third hypothesis. In this case, remote work helped formal workers to reduce the probability of losing their jobs, especially those located in metropolitan Lima (column 1). Nevertheless, it did not help them to reduce the probability of decrease in income and neither did informal workers at all (columns 2–4).

	Formal workers		Informal workers	
Variables	Decrease in income (1)	Decrease in income (2)	Decrease in income (3)	Decrease in income (4)
Financial preparedness	−0.242	−0.0697	*−0.162***	−0.0637
	(0.238)	(0.285)	(0.0534)	(0.0695)
Financial preparedness × 2020		−0.560		*−0.231***
		(0.527)		(0.105)
Gender	0.137	0.139	−0.0929	−0.0964
	(0.272)	(0.271)	(0.0657)	(0.0658)
Year 2020	*0.861****	*1.244****	*0.538****	*0.655****
	(0.266)	(0.471)	(0.0483)	(0.0724)
Urban	0.133	0.147	*1.469****	*1.469****
	(0.372)	(0.371)	(0.167)	(0.167)
Constant	0.787***	0.692**	−0.127**	−0.169***
	(0.282)	(0.287)	(0.0592)	(0.0625)
Observations	670	670	7,437	7,437
Number of households	528	528	5,234	5,234

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

This table shows the results according to two sets of samples: formal and informal workers. The dependent variable is decrease in income that takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Financial preparedness is a dummy variable that takes the value one if the person had any banking instrument such as bank accounts and loans and had extra income to his/her main job during 2019 and zero otherwise. Gender takes the value of one if the person is a male and zero otherwise. The year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Urban is a variable that takes the value of one if the person comes from Lima Metropolitan area and zero otherwise. Financial preparedness × 2020 is an interaction variable that multiplies the Financial Preparedness dummy for 2020 times the Year 2020 dummy

Source(s): ENAHO. Own elaboration

Table 7. Relationship between financial preparedness and decrease in income according to formal and informal workers

Variables	Formal workers		Informal workers	
	Unemployed (1)	Decrease in income (2)	Unemployed (3)	Decrease in income (4)
Entrepreneurship	0.551	−0.547	*−0.443***	−0.500
	(0.491)	(0.351)	(0.156)	(0.350)
Financial preparedness				−0.0654
				(0.0693)
Entrepreneurship × Financial preparedness × 2020				*−0.228***
				(0.105)
Gender	−0.156	−0.0824	*−1.754***	−0.0915
	(0.186)	(0.0660)	(0.0819)	(0.0659)
Urban	−0.623	*1.478***	*1.501***	*1.473***
	(0.429)	(0.168)	(0.169)	(0.167)
Year 2020		*0.527***		*0.654***
		(0.0481)		(0.0721)
Constant	−13.79***	0.336	−4.290***	0.324
	(0.489)	(0.350)	(0.152)	(0.352)
Observations	4,441	7,437	17,886	7,437
Number of households	2,856	5,234	10,773	5,234

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
This table shows the results according to two sets of samples: formal and informal workers. The dependent variables are decrease in income and job loss. Decrease in income takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Job loss takes the value of one if the person loses his/her job from 2019 to 2020 and zero otherwise. Entrepreneurship takes the value of one if the person started a new business venture in 2020 and zero otherwise. Financial preparedness is a dummy variable that takes the value one if the person had any banking instrument such as bank accounts and loans and had extra income to his/her main job during 2019 and zero otherwise. Gender takes the value of one if the person is a male and zero otherwise. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Entrepreneurship × Financial Preparedness × 2020 is and triple interaction variable that multiplies the Entrepreneurship dummy for 2020, the Financial Preparedness dummy for 2020 and the Year 2020 dummy
Source(s): ENAHO. Own elaboration

Table 8.
Relationship between entrepreneurship and job loss and decrease in income according to formal and informal workers

Concerning our fourth hypothesis, public aid helped only informal workers to reduce the probability of a decrease in income and for those located in metropolitan Lima (see Table 10, columns 1 and 3). There is no difference between formal and informal workers because both received public aid, but especially women (columns 2 and 4).

We also found that female informal workers reduced their probability of having a job loss in metropolitan Lima (see Table 8 and Table 9, column 3), but we did not find evidence that female workers pay a role in reducing the probability of having a decrease in income. Hence, we do find partial support for our fifth hypothesis.

5.2 Political implications

Policymakers should focus on increasing in a meaningful way the financial literacy and financial inclusion of individuals and individuals, especially in provinces and within informal workers. This will help them to improve their financial preparedness and to start business ventures by opportunity and not only by necessity. To improve readiness for future crises, the government must use a combination of financial education, regulatory measures and strategies for specific groups. This approach has the potential to elevate financial literacy, promote compliance with regulations and be cost-effective.

Variables	Formal workers		Informal workers	
	Unemployed (1)	Decrease in income (2)	Unemployed (3)	Decrease in income (4)
Remote work	*−0.493***	0.0672	−0.0332	0.0674
	(0.217)	(0.331)	(0.0912)	(0.0801)
Remote work × 2020		−0.0844		−0.107
		(0.578)		(0.123)
Gender	0.215	0.138	*−1.779****	−0.0875
	(0.174)	(0.274)	(0.0817)	(0.0659)
Urban	*0.522***	*0.140*	*1.473****	*1.471****
	(0.222)	(0.374)	(0.168)	(0.168)
Year 2020		*0.827****		*0.552****
		(0.280)		(0.0565)
Constant	−15.38***	0.650**	−4.714***	−0.221***
	(0.138)	(0.264)	(0.0588)	(0.0575)
Observations	4,441	670	17,886	7,437
Number of households	2,856	528	10,773	5,234

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
This table shows the results according to two sets of samples: formal and informal workers. The dependent variables are decrease in income and job loss. Decrease in income takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Job loss takes the value of one if the person loses his/her job from 2019 to 2020 and zero otherwise. Remote work takes the value of one if the person changed his/her work modality from face-to-face to remote from 2019 to 2020 and zero otherwise. Gender takes the value of one if the person is a male and zero otherwise. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Remote work × 2020 is an interaction variable that multiplies the remote work dummy from 2020 times the Year 2020 dummy
Source(s): ENAHO. Own elaboration

Table 9.
Relationship between remote work with job loss and decrease in income according to formal and informal workers

It is also necessary to enhance the entrepreneurial ecosystem that encourages individuals to start their own businesses, but with financial preparedness; otherwise, it will foster only more entrepreneurship for necessity. This can be achieved by increasing financial education programs like financial literacy programs to equip individuals with the necessary skills to make informed financial decisions, by simplifying administrative procedures, by providing access to financing and mentorship programs and by offering tax incentives for start-ups.

By supporting financially prepared entrepreneurs, governments can create a conducive environment for job creation, economic growth and resilience against crisis. The Peruvian government should strengthen social protection programs to provide a safety net for informal workers facing income reduction or job loss, especially in provinces. This includes expanding unemployment benefits for informal workers too, implementing targeted cash transfer programs and improving access to healthcare and social services.

Policymakers should generate collaboration between public institutions, private-sector organizations and academia to create synergies and maximize the impact of entrepreneurship, financial preparedness and remote work initiatives.

5.3 Limitations and future agenda

We face two different challenges with the data: a great number of missing values and some extreme values reported in the ENAHO survey. Furthermore, the answers were heavily concentrated in Lima rather than in provinces. Hence, a future research agenda should consider collecting primary and detailed information in provinces. It is also important to try to collect information for a higher number of the same individuals through time (longitudinal study), including the years 2021 and 2022 after the pandemic.

Variables	Formal workers		Informal workers	
	Decrease in income (1)	Public aid (2)	Decrease in income (3)	Public aid (4)
Public aid	−0.471		1.886	
	(1.429)		(0.613)	
Public aid × 2020	1.174		*−1.783***	
	(1.571)		(0.621)	
Unemployed	*0.910**		*0.262***	
	(0.539)		(0.123)	
Decrease in income		0.128		0.332
		(0.201)		(0.252)
Gender	0.162	*−0.323**	−0.0772	*−2.533****
	(0.280)	(0.177)	(0.0690)	(0.265)
Urban	0.0354	0.106	*1.449****	0.428
	(0.377)	(0.229)	(0.173)	(0.540)
Year 2020	*0.803****	*1.028****	*0.531****	*14.46****
	(0.264)	(0.200)	(0.0527)	(0.420)
Constant	0.600**	−2.188***	−0.253***	−22.63***
	(0.251)	(0.233)	(0.0592)	(0.423)
Observations	654	670	7,052	7,437
Number of households	514	528	4,928	5,234

Note(s): Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
This table shows the results according to two sets of samples: formal and informal workers. The dependent variables are decrease in income and public aid. Decrease in income takes the value one if the person's income diminished from 2019 to 2020 and the value of zero otherwise. Public aid takes the value of one if the person had access to his/her Compensation for the Length of Service (CTS) fund and/or had been benefited from the government financial support during 2020 through a bond (stay at home, rural or other) and zero otherwise. Gender takes the value of one if the person is a male and zero otherwise. Urban is a variable that takes the value of one if the person comes from the Lima Metropolitan area and zero otherwise and Year 2020 is a dummy variable that takes the value of one in 2020 and zero otherwise. Public aid × 2020 is an interaction variable that multiplies public aid for 2020 times Year 2020 dummy variable
Source(s): ENAHO. Own elaboration

Table 10.
Relationship between public aid, decrease in income and job loss according to formal and informal workers

6. Conclusions

Our study examined the impact of private and public initiatives on individuals' job loss and decrease in income during the COVID-19 pandemic in Peru. The findings shed light on the effectiveness of various measures taken by both the private and public sectors to mitigate the economic consequences of the crisis.

In general, we verify our hypotheses. Our analysis revealed that financial preparedness reduced the probability of having a decrease in income but only for informal workers in metropolitan Lima. Bottan, Vera-Cossio and Hoffmann (2020) find that individuals financially vulnerable before pandemic COVID-19, their economic situation has worsened specially for low-income individuals, also they explain that individuals with liquid savings and with employment amenable to continuous in virtually experiment financial security.

We also find that financial preparedness helped informal workers to decrease the probability of having a decrease in income in metropolitan Lima. We further conclude that women were more vulnerable to financial crisis because their job occupations are in service sectors, the sector most affected for the quarantine during the pandemic.

Furthermore, entrepreneurship helped mainly female informal workers to reduce their probability of losing a job in metropolitan Lima, and a necessary condition to reduce the probability of a decrease in income is that they must be financially prepared. Many studies explain the importance of how innovative start-ups and entrepreneurships deals with the

lockdown finding in the adversity, opportunities to maintain their occupation and the individual incomes (Kuckertz *et al.*, 2020; Ratten, 2020), but none of them stressed the importance of being financially prepared as a condition to reduce the probability of losing a job.

Espitia *et al.* (2021) confirm the feasibility of remote work to mitigate the negative effects of pandemic in occupation; also, Peluffo and Viollaz (2021) focus on spouses employed in nonessential occupations and find that poor families with an informal mechanism of consumption have lower chances of work remotely. In contrast with the previous studies, we find that the implementation of remote work as a substitute of face-to-face work was not enough to avoid the decrease in income and was partially effective in avoiding job loss in the case of formal workers in metropolitan Lima.

Government interventions, such as cash transfers and social protection programs, proved to be instrumental in mitigating the decrease in income but only for informal workers in metropolitan Lima. These public aids were given mainly to women regardless of their age and geographical location.

These results confirm the findings of Busso *et al.* (2021) who examine the implementation of income assistance programs by Latin American governments during the COVID-19 pandemic. They found that the expansion of existing programs, such as conditional cash transfers and non-contribution pensions, was insufficient to fully support the poorest population who were unable to work.

All in all, we may conclude that financial preparedness is an important condition to avoid a decrease in income for informal workers, and to foster entrepreneurship by opportunity and in this way to avoid losing a job. Besides, remote work is an instrument that works mainly for formal workers and of limited application in an informal country, such as Peru, that females as informal workers in provinces were the most affected by a decrease in income and job losses. Public aid was not enough to alleviate unemployment and it was concentrated in metropolitan Lima. Hence, policymakers should focus on increasing the financial literacy and financial inclusion of informal workers, especially in provinces, on expanding unemployment benefits for informal workers and on designing target public aid programs for informal workers in provinces.

References

Acevedo, I., Castellani, F., Flores, I., Lotti, G. and Székely, M. (2020), "Social effect of COVID-19: estimates and alternatives for Latin America and the Caribbean", *Latin American Economic Review*, Vol. 29, pp. 1-44, doi: 10.47872/laer.v29.10.

Acevedo, I., Castellani, F., Lotti, G. and Székely, M. (2021), "Informality in the time of COVID-19 in Latin America: implications and policy options", *PLOS ONE*, Vol. 16, p. 12, doi: 10.1371/journal.pone.0261277.

Adams-Prassl, A., Boneva, T., Golin, M. and Rauh, C. (2020), "Inequality in the impact of the coronavirus shock: evidence from real time surveys", *Journal of Public Economics*, Vol. 189, p. 104245, doi: 10.1016/j.jpubeco.2020.104245.

Almeida, V., Barrios, S., Christl, M., De Poli, S., Tumino, A. and van der Wielen, W. (2021), "The impact of covid-19 on households' income in the EU", *The Journal of Economic Inequality*, Vol. 19 No. 3, pp. 413-431, doi: 10.1007/s10888-021-09485-8.

Amarante, V., Colafranceschi, M. and Vigorito, A. (2014), "Uruguay's income inequality and political regimes over the period 1981-2010", in *Falling Inequality in Latin America*", pp. 118-139, doi: 10.1093/acprof:oso/9780198701804.003.0006.

Ambler, K. and De Brauw, A. (2017), "The impacts of cash transfers on women's empowerment", Social Protection and Labor Discussion Paper No 1702, World Bank, Washington, doi: 10.1596/26272.

Amit, R. and Muller, E. (1995), "Push' and 'pull' entrepreneurship", *Journal of Small Business and Entrepreneurship*, Vol. 12 No. 4, pp. 64-80, doi: 10.1080/08276331.1995.10600505.

Arndt, C., Davies, R., Gabriel, S., Harris, L., Makrelov, K., Robinson, S. and Levy, S. (2020), "COVID-19 lockdowns, income distribution, and Food Security: an analysis for South Africa", *Global Food Security*, Vol. 26, pp. 100-410, doi: 10.1016/j.gfs.2020.100410.

Avdiu, B. and Nayyar, G. (2020), "When face-to-face interactions become an occupational hazard: jobs in the time of COVID-19", *Economics Letters*, Vol. 197, 109648, doi: 10.1016/j.econlet.2020.109648.

Babiarz, P. and Robb, C.A. (2013), "Financial Literacy and emergency saving", *Journal of Family and Economic Issues*, Vol. 35 No. 1, pp. 40-50.

Bottan, N.L., Vera-Cossio, D.A. and Hoffmann, B. (2020), "The unequal impact of the coronavirus pandemic: evidence from seventeen developing countries", IDB Working Paper Series IDB-WP-1150, Washington, doi: 10.18235/0002451.

Busso, M., Camacho, J., Messina, J. and Montenegro, G. (2020), "The challenge of protecting informal households during the COVID-19 pandemic: evidence from Latin America", IDB Discussion Paper IDB-DP-780, Washington, doi: 10.18235/0002388.

Busso, M., Camacho, J., Messina, J. and Montenegro, G. (2021), "Social Protection and informality in Latin America during the COVID-19 pandemic", *PloS One*, Vol. 16, p. 11, doi: 10.1371/journal.pone.0259050.

Cardenas, J., Montana, J. and Bosworth, D. (2021), "Which workers are most exposed to COVID-19 and social distancing effects in a dual labour market?", *Revista de Economía del Rosario*, Vol. 24 No. 2, pp. 1-44, doi: 10.12804/revistas.urosario.edu.co/economia/a.10549.

Cardona-Montoya, R.A., Cruz, V. and Mongrut, S.A. (2022), "Financial Fragility and financial stress during the COVID-19 crisis: evidence from Colombian households", *Journal of Economics, Finance and Administrative Science*, Vol. 27 No. 54, pp. 376-393, doi: 10.1108/jefas-01-2022-0005.

Cedeño, D., Lannin, D.G., Russell, L., Yazedjian, A., Kanter, J.B. and Mimnaugh, S. (2021), "The effectiveness of a financial literacy and job-readiness curriculum for youth from low-income households", *Citizenship, Social and Economic Education*, Vol. 20 No. 3, pp. 197-215, doi: 10.1177/20471734211051770.

CEPAL (2020), "Employment situation in Latin America and the Caribbean: decent work for platform workers in Latin America", available at: https://repositorio.cepal.org/items/e1ed5d21-0ea7-457b-98f2-b32657bfab5c

Chetty, R., Friedman, J., Stepner, M. and Team, T.O. (2020), "The economic impacts of COVID-19: evidence from a new public database built using private sector data", NBER Working Paper Series 27431, Cambridge, doi: 10.3386/w27431.

Chhatwani, M. and Mishra, S.K. (2021), "Does financial literacy reduce financial fragility during COVID-19? The moderation effect of psychological, economic and social factors", *International Journal of Bank Marketing*, Vol. 39 No. 7, pp. 1114-1133, doi: 10.1108/ijbm-11-2020-0536.

Cueva, R., Del Carpio, X. and Winkler, H. (2021), "The impacts of COVID-19 on informal labor markets: evidence from Peru", Policy Research Working Papers, doi: 10.1596/1813-9450-9675.

Ćumurović, A. and Hyll, W. (2019), "Financial Literacy and self-employment", *Journal of Consumer*, Vol. 53 No. 2, pp. 455-487, doi: 10.1111/joca.12198.

Devece, C., Peris-Ortiz, M. and Rueda-Armengot, C. (2016), "Entrepreneurship during economic crisis: success Factors and paths to failure", *Journal of Business Research*, Vol. 69 No. 11, pp. 5366-5370, doi: 10.1016/j.jbusres.2016.04.139.

Dingel, J. and Neiman, B. (2020), "How many jobs can be done at home?", *Journal of Public Economics*, Vol. 189, p. 104235, doi: 10.3386/w26948.

Espitia, A., Mattoo, A., Rocha, N., Ruta, M. and Winkler, D. (2021), "Pandemic trade: covid-19, remote work and global value chains", *The World Economy*, Vol. 45 No. 2, pp. 561-589, doi: 10.1111/twec.13117.

Findling, M.G., Blendon, R.J. and Benson, J.M. (2021), "Serious financial burdens facing U.S. households with employment loss during COVID-19", *Challenge*, Vol. 64 No. 1, pp. 3-10, doi: 10.1080/05775132.2020.1866905.

French, D. and McKillop, D. (2016), "Financial literacy and over-indebtedness in low-income households", *International Review of Financial Analysis*, Vol. 48, pp. 1-11, doi: 10.1016/j.irfa.2016.08.004.

Fuentelsaz, L., González, C., Maícas, J.P. and Montero, J. (2015), "How different formal institutions affect opportunity and Necessity Entrepreneurship", *BRQ Business Research Quarterly*, Vol. 18 No. 4, pp. 246-258, doi: 10.1016/j.brq.2015.02.001.

García, P.J., Alarcón, A., Bayer, A., Buss, P., Guerra, G., Ribeiro, H., Rojas, K., Saenz, R., Salgado de Snyder, N., Solimano, G., Torres, R., Tobar, S., Tuesca, R., Vargas, G. and Atun, R. (2020), "Covid-19 response in Latin America", *The American Journal of Tropical Medicine and Hygiene*, Vol. 103 No. 5, pp. 1765-1772, doi: 10.4269/ajtmh.20-0765.

Garrote Sánchez, D., Gómez Parra, N., Ozden, C., Rijkers, B., Viollaz, M. and Winkler, H. (2021), "Who on earth can work from home?", *World Bank Research Observer*, Vol. 36 No. 1, pp. 67-100, doi: 10.1596/1813-9450-9347.

Gottlieb, C., Grobovšek, J., Poschke, M. and Saltiel, F. (2021), "Working from home in developing countries", *European Economic Review*, Vol. 133, 103679, doi: 10.1016/j.euroecorev.2021.103679.

Hatayama, M., Viollaz, M. and Winkler, H. (2020), "Jobs' amenability to working from home: evidence from skills surveys for 53 countries" Policy Research Working Paper 9241, World Bank Group, Washington, doi: 10.1596/1813-9450-9241.

Kesar, S., Abraham, R., Lahoti, R., Nath, P. and Basole, A. (2021), "Pandemic, informality, and vulnerability: impact of COVID-19 on livelihoods in India", *Canadian Journal of Development Studies/Revue Canadienne d'études Du Développement*, Vol. 42 Nos 1-2, pp. 145-164, doi: 10.1080/02255189.2021.1890003.

Khamis, M., Prinz, D., Newhouse, D., Palacios-Lopez, A., Pape, U. and Weber, M. (2021), "The early labor market impacts of COVID-19 in developing countries: evidence from high-frequency phone surveys" Jobs Working Paper Issue No 58, World Bank Group, Washington, doi: 10.1596/35044.

Klapper, L., Lusardi, A. and Panos, G. (2012), "Financial literacy and the financial crisis" NBER Working Paper Series 17930, Cambridge, doi: 10.3386/w17930.

Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Morales Reyes, C.A., Prochotta, A. and Steinbrink, K.M. (2020), "Startups in times of crisis – a rapid response to the COVID-19 pandemic", *Journal of Business Venturing Insights*, Vol. 13, doi: 10.1016/j.jbvi.2020.e00169.

Kumar, A., Mishra, A.K., Saroj, S. and Rashid, S. (2022), "Government transfers, Covid-19 shock, and food insecurity: evidence from rural households in India", *Agribusiness*, Vol. 38 No. 3, pp. 636-659, doi: 10.1002/agr.21746.

Kurowski, Ł. (2021), "Household's overindebtedness during the COVID-19 crisis: the role of debt and Financial Literacy", *Risks*, Vol. 9 No. 4, p. 62, doi: 10.3390/risks9040062.

Liñán, F. and Jaén, I. (2022), "The covid-19 pandemic and entrepreneurship: some reflections", *International Journal of Emerging Markets*, Vol. 17 No. 5, pp. 1165-1174.

Liñán, F., Romero Luna, I. and Fernández Serrano, J. (2013), "Necessity and opportunity entrepreneurship: the mediating effect of culture", *Revista de Economía Mundial*, Vol. 33, pp. 21-47.

Lusardi, A. and Mitchell, O.S. (2011), "Financial literacy around the world: an overview", *Journal of Pension Economics and Finance*, Vol. 10 No. 4, pp. 497-508, doi: 10.1017/s1474747211000448.

Lusardi, A. and Tufano, P. (2015), "Debt literacy, financial experiences, and overindebtedness", *Journal of Pension Economics and Finance*, Vol. 14 No. 4, pp. 332-368, doi: 10.1017/s1474747215000232.

Malach Pines, A., Lerner, M. and Schwartz, D. (2010), "Gender differences in entrepreneurship", *Equality, Diversity, and Inclusion: An International Journal*, Vol. 29 No. 2, pp. 186-198, doi: 10.1108/02610151011024493.

Mamani, J.C., Marca, H., Guevara, M., Roque, C., Quispe, F. and Yapuchura, C. (2020), "Impacto del otorgamiento de subsidios económicos en la economía familiar en tiempos de pandemia (COVID-19), en la ciudad de Puno, Perú", *Revista Faro*, Vol. 2 No. 32, pp. 89-111.

Maritz, A., Perenyi, A., de Waal, G. and Buck, C. (2020), "Entrepreneurship as the unsung hero during the current COVID-19 economic crisis: Australian perspectives", *Sustainability*, Vol. 12 No. 11, p. 4612, doi: 10.3390/su12114612.

Ministry of Labor and Employment Promotion (2021), "Reporte de coyuntura", available at: https://www2.trabajo.gob.pe/boletin-de-coyuntura/

Montenovo, L., Jiang, X., Lozano-Rojas, F., Schmutte, I., Simon, K., Weinberg, B.A. and Wing, C. (2022), "Determinants of disparities in early COVID-19 job losses", *Demography*, Vol. 59 No. 3, pp. 827-855, doi: 10.1215/00703370-9961471.

Mühlböck, M., Warmuth, J.-R., Holienka, M. and Kittel, B. (2018), "Desperate entrepreneurs: no opportunities, no skills", *International Entrepreneurship and Management Journal*, Vol. 14 No. 4, pp. 975-997, doi: 10.1007/s11365-017-0472-5.

OECD Development Pathways (2016), *Multi-Dimensional Review of Peru: Volume 2. In-depth Analysis and Recommendations, OECD Development Pathways Series*, OECD Publishing, Paris doi: 10.1787/9789264264670-en.

Peluffo, C. and Viollaz, M. (2021), "Intra-household exposure to labor market risk in the time of COVID-19: lessons from Mexico", *Review of Economics of the Household*, Vol. 19 No. 2, pp. 327-351, doi: 10.1007/s11150-020-09541-8.

Persaud, N., Thorpe, K.E., Bedard, M., Hwang, S.W., Pinto, A., Jüni, P. and da Costa, B.R. (2021), "Cash transfer during the COVID-19 pandemic: a Multicentre, randomised controlled trial", *Family Medicine and Community Health*, Vol. 9 No. 4, doi: 10.1136/fmch-2021-001452.

Picot, G., Lu, Y. and Hou, F. (2009), "Immigrant low-income rates: the role of market income and government transfers", *Perspectives on Labour and Income*, Vol. 10 No. 12, pp. 13-27.

Ratten, V. (2020), "Coronavirus (COVID-19) and entrepreneurship: cultural, lifestyle and societal changes", *Journal of Entrepreneurship in Emerging Economies*, Vol. 13 No. 4, pp. 747-761, doi: 10.1108/jeee-06-2020-0163.

Remeikiene, R. and Gaspareniene, L. (2021), "The nexus between unemployment and the shadow economy in Lithuanian regions during the COVID-19 pandemic", *Journal of International Studies*, Vol. 14 No. 3, pp. 59-72, doi: 10.14254/2071-8330.2021/14-3/4.

Rosa, P., Kodithuwakku, S.S. and Balunywa, W. (2006), "Entrepreneurial motivation in developing countries: what does 'necessity' and 'opportunity' entrepreneurship really mean?", *Frontiers of Entrepreneurship Research*, Vol. 26 No. 20, pp. 1-14, doi: 10.2139/ssrn.1310913.

Shepherd, D.A. (2020), "Covid 19 and entrepreneurship: time to pivot?", *Journal of Management Studies*, Vol. 57 No. 8, pp. 1750-1753, doi: 10.1111/joms.12633.

Vazirani, A. and Bhattacharjee, T. (2021), "Necessity or opportunity: a case of business venturing decision during COVID-19 pandemic", *Managerial and Decision Economics*, Vol. 43 No. 3, pp. 768-778, doi: 10.1002/mde.3417.

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