國立臺灣大學生物資源暨農學院農業經濟學系

碩士論文

Department of Agricultural Economics

College of Bioresources and Agriculture

National Taiwan University

Master Thesis

前南斯拉夫經濟體在 COVID-19 疫情期間財務憂慮分析

An Analysis of Financial Worry during the COVID-19 Pandemic in Former Yugoslav Economies

哈里斯

Haris Hadzimejlic

指導教授：雷立芬 博士

Advisor: Li-Fen Lei, Ph.D.

中華民國 112 年 7 月

July, 2023

doi:10.6342/NTU202301413

國立臺灣大學碩士學位論文

口試委員會審定書

Master Thesis Certification by Oral Defense Committee

National Taiwan University

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本論文係 哈里斯 君（R10627032）在國立臺灣大學農業經濟學研究所完成之碩士學位論文，於 2023 年 6 月 30 承下列考試委員審查通過及口試及 格，特此證明。

This is to certify that the Master thesis above is completed by Haris Hadzimejlic (Student ID R10627032) during his studying in the Department of Agricultural Economics at National Taiwan University, and that the oral defense of this thesis is passed on June 30th, 2023 in accordance with decisions of the following committee members:

指導教授 Advisor：

口試委員 Committee members：

doi:10.6342/NTU202301413

Acknowledgment and Dedication

First, I would like to dedicate this work to the one person who made this all possible, my uncle Mirsad, who passed away when I came back to visit my family in February 2023. Thank you for your guidance, support, and encouragement to come here and study while many people questioned and advised me to reconsider the pursuit of this invaluable journey. May Allah bless your soul and grant you Jannah. Surely, we belong to Allah, and to Him shall we return.

I further dedicate this work to my parents, who only 30 years ago were fleeing from war and genocide during the Bosnian War in the 90s and had to deal with severe financial hardship and worry while raising my bigger brother and me. Even though I was born in Austria, this work may showcase to you that I hold on strongly to our Bosnian roots.

Next, I dedicate this work to my big brother Hasan, who inspired me to deal with several health issues I developed after receiving my COVID-19 vaccine. I understand that you went through a lot and acknowledge your bravery despite all the struggle. You truly are a big brother to look up to.

Finally, I dedicate this work to the strongest and most influential individual I have ever met, my beloved grandmother Fikreta. Despite all the uncertainties you had to go through in life, you always stayed strong and never gave in to negativity. Having had the chance to grow up with you by my side makes me feel extremly lucky, as I have learned so many invaluable lessons about life through the wisdom and love you have blessed me with.

doi:10.6342/NTU202301413

Abstract

This study examines determinants and levels of financial worry in former Yugoslav nations (Ex-Yugoslavia) during the COVID-19 pandemic. The nations included are Bosnia & Herzegovina, Croatia, Kosovo, North Macedonia, and Serbia which are characterized by lower levels of development, more poverty and higher unemployment rates compared to developed economies around the world. Many individuals in this region still struggle with accessing and managing their bank accounts, digital banking and other modern financial services that were crucial during the pandemic. In order to determine the influence of various socio-demographic characteristics and factors of financial inclusion and resilience, the 2021 Global Findex Database, published by the World Bank, is used and several ordered logistic regression models are constructed. The results indicate that socio-demographic factors, financial inclusion and financial resilience, significantly influence the level of financial worry for an individual. Further, comparisons with developed economies showcase noteworthy differences in the impact of these factors illustrating the importance of considering country-specific contexts. It can also be inferred, from the findings, that the COVID-19 pandemic has played a significant role in shaping these factors and intensifying financial worry. Hence, the findings in this paper contribute to a better understanding of financial worry in former Yugoslav economies during uncertain periods such as the COVID-19 pandemic. The conclusions of this study shed light on the importance and need of carefully tailored policy making that protects marginalized socio-demographic groups and considers unintended consequences of pandemic prevention measures.

Keywords: COVID-19 Pandemic, Financial Inclusion, Financial Worry, Former Yugoslavia

doi:10.6342/NTU202301413

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CHAPTER I INTRODUCTION

1.1 Background and Motivation

Ever since the COVID-19 virus pandemic was declared in early 2020, it has spread to almost, if not, every country on the globe, and along with that, it has brought severe impacts on every aspect of life for the average individual. According to official numbers from the World Health Organization (WHO), as of June 2023, 767 million people have officially contracted the virus, 6.94 million have succumbed to the disease and 13.4 billion doses of rapidly developed novel COVID-19 vaccines have been administered on the global population (WHO, 2023). Due to the novelty of the virus and the unique situation of a pandemic developing for the first time in a globalized world, governments and established international organizations such as the WHO were not prepared enough to react effectively and efficiently (Sachs et al., 2022).

Varying policies on restrictions in regard to COVID-19 in the less developed European nations such as the former Yugoslav states (Ex-Yugoslav) which include Bosnia & Herzegovina, Croatia, Montenegro, North Macedonia, Serbia, Slovenia, and Kosovo have caused confusion & worry, economic hardship & uncertainty, and bureaucratic complications & inconveniences for citizens. As these countries are particularly vulnerable economies in Europe, due to their ongoing political, social, and infrastructural recovery from the Balkan Wars in the ‘90s. One study about GDP growth rate of different countries in Europe during the financial crisis in 2008 to 2012, illustrated how specifically former Yugoslav countries had negative growth rates on average whereas developed European economies such as Austria, Germany, Sweden etc., experienced positive growth rates (Mazurek , 2015). This

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shows how countries from this region are more vulnerable in the long-term to recovery from periods of economic crisis compared to more developed nations in Europe which is another reason, particularly, former Yugoslav economies are the main focus of this study.

The COVID-19 pandemic has significantly disrupted the financial well-being and financial planning of both various demographics, leading to unprecedented challenges and uncertainties. For instance, studies have found that the pandemic-induced economic downturn resulted in job losses and reduced work hours, impacting individuals of all age groups. Younger individuals faced difficulties in finding employment opportunities or experienced job instability (International Labour Organization & Asian Development Bank, 2020). Older adults, particularly those nearing retirement, may have faced uncertainties related to their retirement income as stock market fluctuations and economic downturns affected their investment portfolios and pension funds (Antolin & Despalins, 2020). Financial inclusion is the "cornerstone of development" as the World Bank describes it in many of its works and projects. It is the ability and limitation of an individual to access and use financial services such as bank accounts, debit or credit cards, mobile banking, and many and is therefore key enabler helping people out of poverty (World Bank, 2022). When it comes to financial inclusion, a trustworthy system that offers quality and ease of use is crucial (World Bank, 2020). For citizens to engage in economic activity, effectively handle their finances, and enhance their general well-being, they require access to reliable financial services (Allen et al., 2012). Therefore, any economic hardship, both at a macro or micro level, is going to interfere with and degrade an individual's ability to participate in the financial system, thereby resulting in financial exclusion (Allen et al., 2012; Dabla-Norris et al., 2015). Financial inclusion can be hampered by economic difficulties which might include

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recessions or financial instability, which can disrupt financial systems, restrict access to financial services, and worsen inequality (Neaime, 2018).

Financial resilience is defined as the capability of an individual to withstand and bounce back from economic or financial hardship through the use of different financial resources such as savings and emergency funds (internal) or borrowings and remittances (external) (Lusardi et al., 2011; Salignac et al., 2019). One major factor that contributes to an individual's financial resilience are remittances which refers to money earned by migrant workers in a foreign country, who then sends back some portion of that money to their home country, often with the purpose of providing financial support to their family members (Ardic et al., 2022). This is usually due to the challenging economic circumstances in the individual's home country, where finding a job capable of sustaining an entire family is exceedingly difficult. According to the 2022 UNICEF Social Impact Assessment of COVID-19 in Bosnia & Herzegovina, there has been a significant decrease in remittances going to Bosnia, particularly for the poorest people in the region (Khan et al., 2022). The economies of the Western Balkans, particularly those of Ex-Yugoslav countries, are strongly marked by remittances received from more developed European countries. According to World Bank data from 2021, Kosovo's economy had a staggering 16.8% of its GDP made up of remittances with other developing countries such as Bosnia & Herzegovina (7.9%), Montenegro (6.6%), North Macedonia (8.5%), and Serbia (4.6%) ranging between 5-10%. It is important to point out that these are official numbers that were able to be counted because of foreign residency and migration worker registrations. The real number, after accounting for all the undocumented "under-the-table" workers, is most likely significantly higher for each country. In contrast, developed nations from all over the world such as Austria (0.4%),

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Australia (0.5%), Sweden (0.2%), and Taiwan (0.2%) merely come close to 0.5% (World Bank, 2021). As a result, more and more people from former Yugoslav economies are considering to leave their home country and work abroad to earn money. For instance, over a quarter of people aged 18-50 in Bosnia & Herzegovina were considering to leave the country due to the dire economic situation (Khan & Nedera, 2022).

Financial worry is described as the persistent and negative contemplation regarding the uncertainty surrounding an individual's current or future financial circumstances (de Bruijn & Antonides, 2020). In other words, it describes a person who has continuous and valid worries about their finances at the current moment as well as for a further moment in time. Several demographic factors can determine the level of financial worry an individual has to deal with. For instance, a recent 2023 paper, which uses cross-sectional data from the 2018 National Health Interview Survey, has illustrated how demographic and socio-economic characteristics such as age, gender, employment status, level of educational attainment and income significantly influence the association between financial worry and psychological distress among U.S. adults (Ryu & Fan, 2023). Another study which looks into aspects of financial worry revealed how socio-demographic determinants of financial worry rely on factors of financial resilience such as having enough money to make ends meet as well as the implementation of financial buffers and lower exposure to financial debt (de Bruijn & Antonides, 2020). Therefore, there is enough evidence that the demographic characteristics as well as the financial circumstances/resilience of an individual may affect their susceptibility to higher levels of financial worry.

However, there has not, yet, been a comprehensive review study of the determinants of financial worry during the COVID-19 pandemic nor an analysis of how the pandemic

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might have influenced financial worry, specifically in former Yugoslav nations. Therefore, it is worthy to provide a comprehensive review of the factors of financial worry and the role the pandemic might have played.

1.2 Objectives of this Study

At least some of the financial hardship the average individual has experienced during the pandemic can be directly or indirectly attributed to the handling of the COVID-19 pandemic in terms of economic, public health, and pandemic prevention response that governments chose to implement. Therefore, the current dire global economic state around the world is particularly relevant to this study as it provides an incentive to explore data collected during the heights of the pandemic in 2021 and to analyze how the disruptions caused by the pandemic have influenced people's financial worry at the time. Not all blame is to be assigned solely to the pandemic virus, but local governments and international institutions such as the World Health Organization should also consider taking up more responsibility for their recommended prevention measures that may have influenced the ongoing global economic downturn and aggrevated people's financial worry during the pandemic. This is important to be acknowledged, first in order to be able to learn from past mistakes and second to protect the financial well-being of marginalized individuals more effectively and decrease levels of financial anxiety and stress.

There is a gap in understanding on how different factors, including the disruptions of the COVID-19 pandemic has caused financial worry, particularly in developing former Yugoslav nations. In an attempt to provide and construct an overview of the different factors that influenced financial worry during the pandemic in former Yugoslav nations, this study will analyze different impacts socio-demographic characteristics as well as factors of

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financial inclusion and resilience had on the levels of an individual's financial worry. In this study, financial worry is defined as a psychological state of anxiety caused through different factors (i.e., not being able to pay monthly bills due to a lack of enough money) which influence a person's financial situation and well-being in a negative way and can be exacerbated through external factors such as ongoing periods of crisis on a micro and macro level. The 2021 Findex Survey Database, published by the World Bank, will be used to establish appropriate estimation models that provide insights into the different factors that correlate with having increased/decreased financial worry. Considering that most former Yugoslav nations are still developing countries and are one of the poorest in Europe, it is of great interest to understand financial worry for such countries and the different factors that may have contributed to financial worry during the pandemic. Comparing the results to developed and high-income nations around the world will give further perspectives on how the pandemic may have influenced and impacted an individual from a developing Ex-Yugoslav economy differently than from a developed economy.

The main aim of this study is to provide a better understanding of different factors that may have an effect on people's financial worry during uncertain periods in history such as the COVID-19 pandemic by using ordered logit regression model. The rationale for choosing the ordered logistic model is due to ordinal categorical dependent variables this study will be using as its outcome variables (Mphekgwana, 2022; Agresti, 2007). Hence, through the use of this model it can be accurately examined how the explanatory variables influence the likelihood of respondents falling into higher categories of financial worry.

The countries of interest are the former Yugoslav nations Bosnia & Herzegovina, Croatia, Republic of Kosovo, Northern Macedonia and finally Serbia which are situated in

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the Balkan region of South Eastern Europe. In order to better understand the implications of the output for these developing lower-income nations the study will also compare the results to a same number of developed high-income economies around the world. These economies include, Australia, Austria, Israel, Taiwan, and Sweden which results in a representative sample of developed economies from four distinct continents around the globe. Data obtained from the 2021 Global Findex Database provided by the World Bank will be utilized.

Specifically, there are three main objectives to be achieved through this research:

1. Understanding which factors positively/negatively influence an individual's financial worry and to what extent.
2. Understanding if, how and why the pandemic had an influence on the factors that explain financial worry.
3. Identifying and putting into perspective the distinctions of different variables between developing Ex-Yugoslav economies and global developed economies.

The structure of this study consists of several key components. This includes a comprehensive literature review with gathered knowledge on factors that explain financial inclusion, resilience and worry. Next, a methodology chapter that lists and explains the key variables of this paper as well as the different statistical tools used to construct to analyze the dataset and construct the empirical models. Then, the results of the ordered logistic regressions for each constructed model are presented in Chapter IV. Next, a comprehensive discussion about the findings is provided in Chapter V. Finally, a concise conclusion with a reflection of this study and the confirmation of the hypotheses is given in Chapter VI.

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CHAPTER II LITERATURE REVIEW

Socio-demographic factors such as gender, age, education, income, employment, etc., all influence the outcomes of financial inclusion and insecurity for individuals particularly from developing countries (Amari & Anis, 2021). Previous research has shown that gender is a major socio-demographic factor that may affect financial inclusion and insecurity. Women, especially in emerging economies, often have to deal with unique barriers that prevent them from accessing financial services and resources at equal quality to men (Benyacoub, 2021).

Such barriers may include limited access to education, employment opportunities, and ownership rights, which all contribute to the gender gap in financial inclusion (Demirguc-Kunt et al., 2013; World Bank, 2020). Studies have found that women tend to have lower levels of financial literacy and confidence compared to men, which can further limit their ability to engage with and benefit from financial services (He & Ahunov, 2022). Additionally, cultural and social norms may restrict women's mobility and decision-making power, limiting their financial autonomy and access to formal financial institutions (Kabeer, 2012). Discrimination and bias within financial systems can also disproportionately affect women, leading to exclusion from credit markets and limited opportunities for entrepreneurship (Demirgüç-Kunt et al., 2013; Diehl et al., 2022). As these studies indicate, gender has proven to have a significant impact on an individual’s financial inclusion due to unequal access and exposure (Saluja et al. 2023). In order to address such gender disparities, it is necessary to utilize diverse approaches and strategies, therefore. Particularly within developing economies, the focus should be on tackling women's financial illiteracy,

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promoting equal employment opportunities, and presenting policies that ensure women's access to financial resources (Saluja et al. 2023; World Bank, 2020).

In the countries of interest, there are various results from the 2021 Global Findex Dataset provided by the World Bank that illustrate the gender gap in financial inclusion for Bosnia & Herzegovina. For instance, account ownership grew from 2017 to 2021 by about 20% for Bosnia and Herzegovina, however, it must also be noted that the gender gap more than doubled at the same time (Demirgüç-Kunt et al, 2022). This means that men have opened bank accounts at a higher rate than women in Bosnia & Herzegovina which suggests that even though financial inclusion is improving overall it is improving much faster for men than for women. Hence, the existing literature points towards a gender gap in financial inclusion and worry in former Yugoslav nations.

Another socio-demographic factor which plays a crucial role in financial inclusion is age. Studies have found that younger individuals often encounter difficulties in accessing credit and financial services due to their limited credit history and financial experience which may make banks less willing to offer such services to those age groups (Demirgüç-Kunt et al., 2015). This is understandable as banks try to minimize their risk and with no credit history it is a challenge to assess the risk of such customers. On the other hand, older adults usually inquire about distinct financial needs, particularly in terms of retirement planning because as they approach retirement age, they may require specialized services that cater to their unique circumstances (Klapper & Panos, 2011). This might include different needs such as estate planning and inheritance, retirement income planning, asset management and preservation, and health care and long-term care planning (Klapper & Panos, 2011). It is crucial, therefore, to offer services that consider the special needs of older age groups in order to have a more

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inclusive financial infrastructure. Such findings highlight the importance of considering age in the analysis as it seems to be determining factor for an individual's inclusion and security within the financial system.

Current literature has established that education is a key determinant of financial inclusion and literacy. One study by the World bank revealed that education level is associated with financial literacy and understanding of financial products, with higher education levels correlating with better financial knowledge and inclusion (Demirgüç-Kunt et al., 2015). For instance, the 2021 Global Findex Survey revealed that less educated adults are 32% less likely to own a bank account in Bosnia & Herzegovina than their more education peers (Demirgüç-Kunt et al., 2022). However, when it comes to financial worry it appears to be less of a determinant compared to other socio-demographic characteristics such as age and income (de Bruijn & Antonides, 2020). Hence, based on that research, it shall be expected to find less significant correlations between education and financial worry compared to other factors.

Income level is a key determinant of financial inclusion and security, with higher incomes generally providing greater access to financial services, while lower-income individuals are more likely to struggle to access affordable credit and savings accounts (Demirgüç-Kunt et al., 2017). One study found that people from lower income groups are far more likelyl to worry about their financial situation than people of higher incomes (Mccarthy, 2017). The findings from these studies collectively highlight the significance of income as a determinant of financial inclusion and worry. Higher incomes provide individuals with greater access to financial services, including affordable credit and savings accounts. Conversely, lower-income individuals as well as small business may have the greatest

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benefits from an inclusive financial system for all, which emphasizes the importance of enabling such marginalized groups (Demirgüç-Kunt et al., 2008).

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CHAPTER III RESEARCH METHODOLGY & DATA

In order to further explore the subject of financial inclusion and worry in former Yugoslav economies during the COVID-19 pandemic, this chapter will focus on the research methodology of this paper. This includes the composition of the main research objectives, elaboration on the source, maintenance and utilization of the dataset and finally the rationalization of the methods used to illustrate the variables of concern and obtain sound empirical outputs.

3.1 Testing Hypotheses and Ordered Logit Model

The main hypotheses of this study are as follows:

H_1: The presence of financial inclusion and resilience factors significantly influences the extent of financial worry experienced by individuals in developing former Yugoslav nations.

H_2: The level of worry for severe financial hardship due to the COVID-19 pandemic varies significantly based on socio-demographic factors in former Yugoslav nations.

H_3: The impact of various factors on financial worry differs significantly between developing former Yugoslav nations and developed economies worldwide.

To test these hypotheses, the ordered logit model can be applied in this study (Mphekgwana, 2022; Agresti, 2007). The ordered logit model is selected as the most appropriate model for this study due to the fact that financial worry is an ordinal categorical response variable with three levels of worry. The general model can be stated as follows:

Defining the probability of odds of being lower or equal to a certain category of worry "j" as

$$\frac{P(Y \leq j)}{1-P(Y \leq j)} \quad \textbf{(3-1)}$$

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Where category j = 1, 2 or 3 (not worried at all, somewhat worried, or very worried respectively) and $1 - P(Y \leq j)$ does not equal 0. Next, taking the natural logarithm of the probability of odds provides us with

$$log \frac{P(Y \leq j)}{1-P(Y \leq j)} = logit(P(Y \leq j)) \quad \textbf{(3-2)}$$

Lastly, formulating a linear predictor to the probabilities defined above which represents the cumulative log-odds of being in or below each category of worry as

$$\alpha_j + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i \quad \textbf{(3-3)}$$

where α_j represents the intercept of each of the probabilities β_i represents the coefficients of explanatory variables X_i. Finally, simplifying the equation to

$$logit[P(Y \leq j)] = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i \quad \textbf{(3-4)}$$

Where $\boldsymbol{P(Y \leq j \mid Xi)}$ represents the probability of the outcome variable Y being less than or equal to a specific category j based on the values of variables X_i and their corresponding coefficients β_i, and α_j represents each intercept parameter associated with each category j.

3.2 Data Description

The 2021 Global Findex Dataset, provided by the World Bank, will be used in this research project. This Dataset has been published by the World Bank every 3 years since 2011 with the aim to record and track financial inclusion indicators that will help improve financial inclusion around the world by giving perspectives of the current situation. Due to the COVID-19 pandemic the 2020 Survey was delayed for a year and therefore conducted and published in 2021 when the epidemic situation allowed it. It is, therefore, very relevant to the objectives mentioned earlier as it provides insights to financial inclusion and financial

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worry during the time of the COVID-19 pandemic for each of the countries that were selected in this study.

3.2.1 Interview Process and Data Sourcing

The data is sourced from a survey conducted in 123 economies with around 128,000 participants around the world throughout the year of 2021. For each country around 1000 interviewees were randomly selected to provide nationally representative samples of the civilian population (15 years old and above). The survey includes basic demographic questions and 45 specific questions that focus on factors of financial inclusion, financial resilience, and financial worry of the participant.

The interviews were conducted randomly to achieve a representative national sample and conducted either face-to-face or over the phone. In face-to-face interviews, primary sampling units were selected based on population size and geography, where households are chosen using random route procedures. The respondent in each household was randomly selected. In phone-based interviews, random digit dialing or representative phone number lists were utilized in economies with high mobile phone and landline penetration. For economies with limited landline presence, mobile phone random digit dialing was used. In order to reach an individual from each household the interviewer rang the interviewees phone at least 3 times at different times. Finally, corrective weights were provided for each observation in the 2021 Global Findex Dataset which account for the varying likelihood of selection based on household size, and corrects for both sampling and nonresponse errors taking into account economy-level population statistics such as age, gender, education and other available socio-demographic factors. Table 3.1 shows a summary of the data collection.

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Table 3. 1 Data Selection Process: Key Information for each Economy

Economy	Income Group	Data Collection Date	Number of interviews	Mode of Interview	Language
Bosnia & Herzegovina	Upper-Middle	Oct 2 – Nov 8, 2021	1000	Landline and mobile telephone	Bosnian
Croatia	High Income*	Sep 30 – Nov 9, 2021	1001	Landline and mobile telephone	Croatian
Kosovo	Upper-Middle	Jul 3 – Oct 4, 2021	1000	Face-to-face	Albanian, Serbian
North Macedonia	Upper-Middle	Oct 22 – Dec 12, 2021	1003	Landline and mobile telephone	Macedonia, Albanian
Serbia	Upper-Middle	Sep 29 – Dec 3, 2021	1001	Landline and mobile telephone	Serbian
Australia	High Income	Oct 4– Nov 14, 2021	1000	Landline and mobile telephone	English
Austria	High Income	Oct 18– Nov 12, 2021	1000	Landline and mobile telephone	German
Israel	High Income	Aug 15– Nov 26, 2021	1000	Face-to-face	Hebrew, Arabic
Sweden	High Income	Sep 29 – Nov 9, 2021	1006	Landline and mobile telephone	Swedish
Taiwan	High Income	Aug 16 – Sep 14, 2021	1000	Landline and mobile telephone	Chinese

Note: "*" for Croatia the 2021 Global Findex Database classifies it as a high-income country but in this research, it is treated as a developing economy.

Source: Global Findex Database 2021, World Bank.

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3.2.2 Variables and Data Structure

Due to the large number of questions included in the survey, the 2021 Global Findex Dataset includes an extensive range of variables that can be utilized for statistical analysis. Besides the socio-demographic questions, the Survey can be further divided into three main sections which consist of different variables:

1. Information about **Financial Inclusion** (bank account, unbanked, digital payments, etc.)
2. Information about **Financial Resilience** (savings, borrowings, remittances, etc.)
3. Information about **Financial Worry** (worry to pay expenses, worry due to COVID-19, etc.)

The objectives of this study focus on how certain variables from section 1 and 2 of the survey affect specific variables from section 3 in the selected economies. Therefore, the variables chosen for the empirical analysis are structured as follows:

Dependent Variables:

Financial Worry

- **worryBILLS**, derived from variable **fin44c**, represents the level of worry about not having enough money to pay monthly expenses/bills. The variable has three distinct values: “1” = "Not worried at all”, “2” = “Somewhat worried”, “3” = “Very worried”. These values indicate different levels of worry; however, they do not have a quantitative relationship or a fixed numerical distance between them. Therefore, it is appropriate to treat this variable as an ordinal categorical variable.

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- **worryCOVID**, derived from variable **fin45_1**, represents the level of worry of severe financial hardship due to disruptions caused by the COVID-19 pandemic. The variable has three distinct values: "1" = "Not worried at all", "2" = "Somewhat worried", "3" = "Very worried".

  These values indicate different levels of worry; however, they do not have a quantitative relationship or a fixed numerical distance between them. Therefore, it is appropriate to treat this variable as an ordinal categorical variable.

Independent Variables:

Financial Inclusion

- **account** is treated as a binary variable with YES representing the respondent has a bank account, assigned with value "1" and NO representing the respondent does not have a bank account, assigned with value "0". It is denoted as **"Account."**
- **onlinePurchase**, derived from variable **fin14b**, is treated as a binary variable with YES representing the respondent bought something online using the internet in the past 12 months, assigned with value "1" and NO representing the respondent did not buy something online using the internet in the past 12 months, assigned with value "0". It is denoted as **"OnlinePurchase."**
- **phonePay**, derived from variable **fin14_1**, is treated as a binary variable with YES representing the respondent used a mobile phone to pay for a purchase in-store, assigned with value "1" and NO representing the respondent did not use a mobile phone to pay for a purchase in-store, assigned with value "0". It is denoted as **"PhonePay."**

doi:10.6342/NTU202301413

Financial resilience

- **sent**, derived from variable **fin26**, is treated as a binary variable with YES representing the respondent has given/sent money to friends or family from another place in the past 12 months, assigned with value "1" and NO representing the respondent has not given/sent money to friends or family from another place in the past 12 months. It is denoted as **"SentRemittance."**
- **received** is treated as a binary variable with YES representing the respondent has received money from friends or family from another place in the past 12 months, assigned with value "1" and NO representing the respondent has not received money from friends or family from another place in the past 12 months. It is denoted as **"ReceivedRemittance."**
- **saved** is treated as a binary variable with YES representing the respondent has saved money in the past year, assigned with value "1" and NO representing the respondent has not saved money in the past year. It is denoted as **"Saved."**
- **borrowed** is treated as a binary variable with YES representing the respondent has borrowed money in the past year, assigned with value "1" and NO representing the respondent has not borrowed money in the past year. It is denoted as **"Borrowed."**

Socio-Demographic

- **age** represents the age of the respondent and is treated as a continuous numerical variable. It is denoted as **"Age."**
- **female** is treated as a binary variable with YES representing the respondent is a woman, assigned with value "1" and NO representing the respondent is a man, assigned with value "0". It is denoted as **"Female."**

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- **educ** represents the highest level of education achieved by the respondent. The variable consists of the reference group which is Primary Schooling and the two dummy variables which are secondary schooling and tertiary schooling or higher and take value "1" if the respondent belongs to that educational level and "0" if not. These values indicate different levels of education; however, they do not have a quantitative relationship or a fixed numerical distance between them. Therefore, it is appropriate to treat this variable as an ordinal categorical variable as well as a dummy variable. It is denoted as **"Education."**
- **inc_q** represents the different levels of household income quintile for each respondent. The reference group is "Poorest 20%", while "Second 20%", "Middle 20%", "Fourth 20%", and "Richest 20%" are dummy variables that take the value "1" if the respondent belongs to the income group and "0" if not. These values indicate different quintile incomes within the corresponding economy; however, they do not have a quantitative relationship or a fixed numerical distance between them. Therefore, it is appropriate to treat this variable as an ordinal categorical variable as well as a dummy variable. It is denoted as **"Income."**
- **employed** is treated as a binary variable with YES representing the respondent is in the work force, assigned with value "1" and NO representing the respondent is out of the workforce, assigned with value "0."
- **economies** represents economy of origin of the respondent. Bosnia & Herzegovina is chosen as the reference group, while the other nine economies (Croatia, North Macedonia, Serbia, Kosovo, Australia, Austria, Israel, Taiwan, Sweden) are treated

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as dummy variables with values "1" if the respondent comes from this economy or "0" when the respondent does not come from this economy.

Therefore, it is appropriate to treat this variable as a simple categorical variable as well as a dummy variable as they do not have a quantitative relationship or a fixed numerical distance between them. It is denoted as **"Economy."**

- **fin42** is treated as a binary variable with YES representing the respondent has received money for farming, assigned with value "1" and NO representing the respondent has not received money for farming, assigned with value "0". It is denoted as **"Farming."**

Other Variables:

- **Wgt**, is the weight variable which carries a specific value for each observation in order to account for factors such as sampling design, population demographics, and selection probability. This variable is used for the methods and models in order to produce less biased, more accurate and representative outcomes. It is denoted as **"Weight."**

3.3 Empirical Models Description

In order to assess how different explanatory factors ranging from socio-demographic, financial inclusion to financial resilience influence the outcome variables, an ordered logistic regression model has been applied in each model. This is due to the fact that the outcome variables "worryBILLS" and "worryCOVID" represent a multi-class variable that follows a natural order of how worried the respondent is (i.e., "Not worried at all", "Somewhat worried", "Very worried"). Additionally, as mentioned in the previous section due to the

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survey design and the unequal probability of selection, corrective weights, given by the variable "wgt", were accounted for in each model.

Four empirical models were, therefore, constructed for this study using the different variables provided by the 2021 Global Findex Dataset which are as follows.

Model 1: Predictors of Financial Worry due to COVID-19 in Ex-Yugoslavia

Model 1 is used to examine the impact of various explanatory variables on the likelihood of experiencing higher or lower levels of worry regarding severe financial hardship resulting from the disruptions of the COVID-19 pandemic. The analysis focuses specifically on former Yugoslav economies, as worryCOVID data for the selected developed economies was not available for this study.

$$logit[P(worryCOVID \leq j)] = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} \quad (3\text{-}5)$$

Where X_1 represents Female; X_2 represents Age; X_3 represents Secondary Education; X_4 represents Tertiary Education; X_5 represents Second 20% Poorest Income; X_6 represents Middle 20% Income; X_7 represents Fourth 20% Poorest Income; X_8 represents Richest 20% Income; X_9 represents Employed; X_{10} represents Account; X_{11} OnlinePurchase; X_{12} represents PhonePay; X_{13} represents SentRemittance; X_{14} represents ReceivedRemittance; X_{15} represents Saved; X_{16} represents Borrowed; X_{17} represents Farming.

Model 2: Predictors of Financial Worry about Paying Monthly Bills in Ex-Yugoslavia

The objective of this model is to examine the impact of various explanatory variables on the likelihood of experiencing higher or lower levels of worry regarding not being able to pay for monthly bills. The analysis focuses specifically on former Yugoslav economies,

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firstly because data for the selected developed economies of variables X_9, X_{10} and X_{11} was not collected. Secondly, it provides the opportunity to compare the results of this model to Model 1 as all explanatory variables are equal and only the outcome variable differs.

$$logit[P(worryBILLS \leq j)] = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} \quad (3\text{-}6)$$

Where X_1 represents Female; X_2 represents Age; X_3 represents Secondary Education; X_4 represents Tertiary Education; X_5 represents Second 20% Poorest Income; X_6 represents Middle 20% Income; X_7 represents Fourth 20% Poorest Income; X_8 represents Richest 20% Income; X_9 represents Employed; X_{10} represents Account; X_{11} OnlinePurchase; X_{12} represents PhonePay; X_{13} represents SentRemittance; X_{14} represents ReceivedRemittance; X_{15} represents Saved; X_{16} represents Borrowed; X_{17} represents Farming.

Model 3: Cross-Economy Analysis of Financial Worry about Paying Monthly Bills

The objective of this model is to examine the impact of various explanatory variables on the likelihood of experiencing higher or lower levels of worry regarding not being able to pay for monthly bills. The analysis focuses on quantifying the impact of each explanatory variable while accounting for economy-specific variations, thereby, also providing insights into the relative levels of financial worry across different economies.

$$logit[P(worryBILLS \leq j)] = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16} X_{16} + \beta_{17} X_{17} + \beta_{18} X_{18} + \beta_{19} X_{19} + \beta_{20} X_{20} + \beta_{21} X_{21} + \beta_{22} X_{22} + \beta_{23} X_{23} \quad (3\text{-}7)$$

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Where X_1 represents Female; X_2 represents Age; X_3 represents Secondary Education; X_4 represents Tertiary Education; X_5 represents Second 20% Poorest Income; X_6 represents Middle 20% Income; X_7 represents Fourth 20% Poorest Income; X_8 represents Richest 20% Income; X_9 represents Employed; X_{10} represents Account; X_{11} OnlinePurchase; X_{12} represents PhonePay; X_{13} represents Saved; X_{14} represents Borrowed; X_{15} represents Kosovo; X_{16} represents Macedonia; X_{17} represents Serbia; X_{18} represents Croatia; X_{19} represents Taiwan; X_{20} represents Israel; X_{21} represents Australia; X_{22} represents Austria; X_{23} represents Sweden.

Model 4: Developing Former Yugoslav Economies vs. Developed Global Economies

The objective of this model is to examine the impact of various explanatory variables on the likelihood of experiencing higher or lower levels of worry regarding not being able to pay for monthly bills. The analysis focuses on comparing two groups of economies which are developing former Yugoslav economies and developed global economies while keeping all explanatory variables same. Therefore, the model is run once for each group of economies which only takes into account the observations from each group of economies, respectively.

$$logit[P(worryBILLS \leq j)] = \alpha_j + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} \quad (3\text{-}6)$$

Where X_1 represents Female; X_2 represents Age; X_3 represents Secondary Education; X_4 represents Tertiary Education; X_5 represents Second 20% Poorest Income; X_6 represents Middle 20% Income; X_7 represents Fourth 20% Poorest Income; X_8 represents Richest 20% Income; X_9 represents Employed; X_{10} represents Account; X_{11} OnlinePurchase; X_{12} represents PhonePay; X_{13} represents Saved; X_{14} represents Borrowed.

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3.4 Data Processing Procedures

In the following section the data processing procedures will be laid out and justified in consecutive steps. The procedures were done in order to prepare, cleanse and configure several datasets into one comprehensive and useable dataset free from incomplete or confusing values that would create inaccurate or biased outcomes, for the models. Hence, Stata was utilized as the primary software for the following justified steps:

1. Data files of the 2021 Global Findex Dataset for each country of interest were downloaded from the official World Bank catalog and merged together using the append command in Stata.
2. The existing variable "economy" was assigned as a string variable which restricted the use of it for the desired model. Hence, due to analytical requirements of the methods in this research paper a new categorical variable called "economies" was generated with numerical values 1-10 for each economy.
3. The values of some binary variables were possibly confusing for interpretation of the final output due to differing values for YES/NO labels. Hence, all variables that didn't have YES = "1" and NO = "0" were assigned the consistent values in a newly derived variable from the original variable accordingly. These variables include: employed, onlinePurchase, phonePay, SentRemittances and ReceivedRemittances.
4. Some variables had nonresponse labels such dk = "don't know" or ref = "refrained from answering" of which each may have had an assigned numerical value such as "3" or "4". To correct for any bias and error that the model may generate, the small number of observations that consisted of such values have been removed so that only real response is accounted for. These variables include: Education, SentRemittance,

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ReceivedRemittance, Farming, OnlinePurchase, PhonePay, worryBILLS, worryCOVID.

5. Some observations had missing values for one or more variables and were, therefore, dropped from the dataset in order to remove any biases and ensure validity and accuracy of a representative sample for the analysis.
6. Finally, the data has been validated through internal consistency checks to identify and correct any error, illogical or missing values within the dataset that might have occurred during the previous preparation and cleansing steps.

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3.5 Descriptive statistics

Figure 3.1 illustrates the distribution of the outcome variable worryCOVID across all countries of interest from former Yugoslavia. The countries with most people choosing "Very worried" are Kosovo followed by North Macedonia, while the countries with most people responding "Not Worried at All" are Croatia followed by Serbia. Bosnia & Herzegovina had most respondents choose "Somewhat worried" while "Very worried" outweighed "Not Worried at All" which puts in the middle between the extremes.

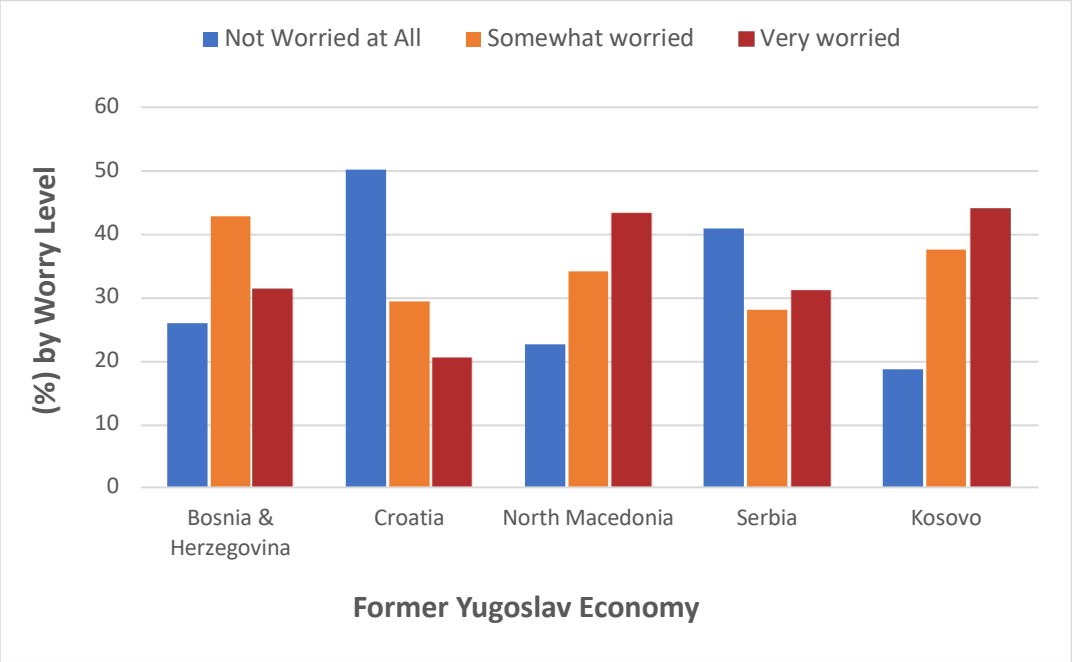

Figure 3. 1 Proportions of Each Level of Worry due to COVID-19

Source: 2021 Global Findex Dataset, World Bank

Figure 3.2, on the next page, shows the level of worry for not being able to pay monthly bills based on each economy of this study (i.e., developing and developed Economies). The red bars for each economy in the stacked bar chart illustrate how all former

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Yugoslav nations have a higher proportion of respondents selecting "Very worried" compared to global developed Economies. Particularly Sweden stands out as having more than 90% of people being "Not Worried at All". Taiwan and Croatia show similar proportions across each category of worry as well as Kosovo and Macedonia.

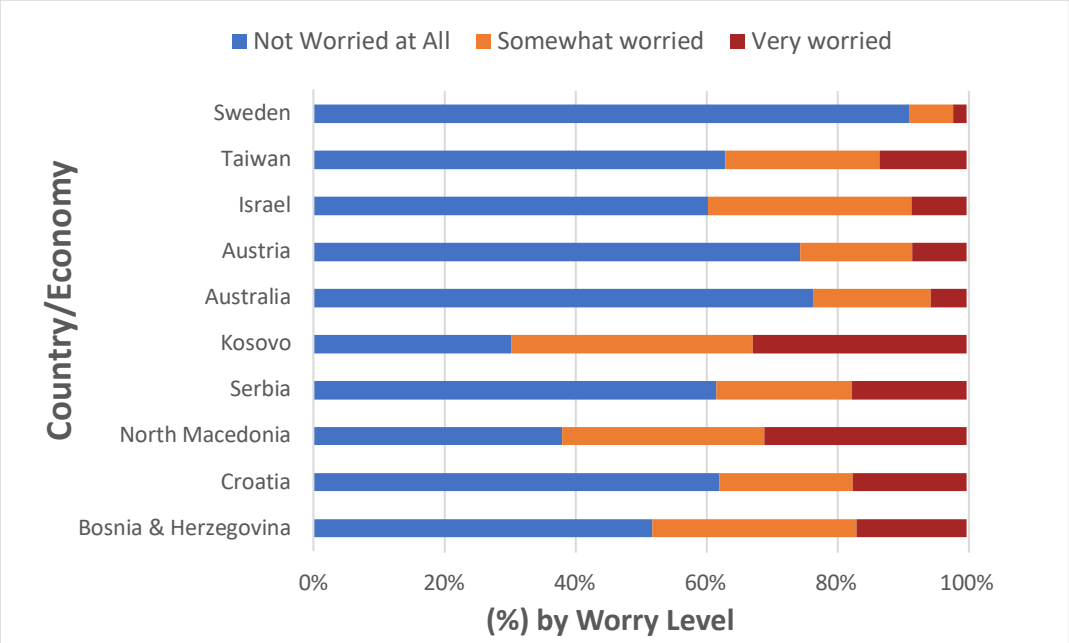

Figure 3. 2 Proportions for Level of Worry about Monthly Bill Payments

Source: 2021 Global Findex Dataset, World Bank.

3.6 Data Limitations and Constraints

There are several limitations that affected the final dataset and the corresponding variables that were used for this study.

3.6.1 Selection Limitations of Former Yugoslav Economies

One limitation is regarding the economy's selection process. As the main concern of this study are determinants of financial worry in former Yugoslav countries it would be

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assumed that Slovenia and Montenegro would be included considering those are former Yugoslav nations. Nevertheless, as this paper focuses exclusively on developing countries from former Yugoslavia, Slovenia is not included as it is considered a developed nation with a 2021 GDP of about 30,000 USD and has been in the Euro Zone since 2007. Even though Croatia is treated as a High-Income nation by the World Bank and is a member of the EU since 2013, it has only joined the Eurozone in 2023 which is 2 years after the data of this survey was collected. Additionally, the GDP per capita for Croatia in 2021 was at around 17,000 USD ranked as 4th lowest of the 27 EU member states and which is far closer to the GDP of Serbia of around 10,000 USD than the EU average of around 38,000 USD at the time. Hence, Croatia is treated as a developing former Yugoslav nation in this study. Finally, Montenegro has not been included in this dataset because the World Bank, as of the time of constructing this study, has not published any dataset for this developing former Yugoslav nation. As stated in the 2021 Global Findex Report the data of some countries where face-to-face interviews are conducted and who have been included in the past (including Montenegro) would have been collected in 2022 and only published later in 2023.

3.6.2 Selection Process of Developed Economies

When it comes to the selection of the developed economies, whose main purpose serves as a comparable, the first aim was to have two representative countries from Europe with deferring pandemic prevention policies. Sweden, famous for its non-interventionist policy and little travel restrictions compared to other nations (Neumayer et al., 2021), was therefore chosen as one extreme. Austria was chosen as the other extreme as it was the only country in Europe that planned to implement a law mandating all adult citizens of full immunization with the novel COVID-19 vaccines, which was ultimately withdrawn shortly

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before it came into effect. Developed economies from different regions than Europe were chosen in order to represent the sample on a more global scale. For Southeast Asia, Taiwan was chosen due to its unique pandemic situation by the end of 2021 where out of 23.57 million people only about 17,000 confirmed cases were identified. This means that in the first two years of the pandemic the authorities of Taiwan have had the most successful contamination rate through the use of pandemic policy compared to other developed Asian nations. Hence, this economy was chosen for Asia. Australia represents a developed economy from the continent Oceania and has had unique and noteworthy pandemic prevention policies, too. Australia adopted a zero-tolerance policy throughout most of the pandemic and had many restrictive policies in place that affected its populace one of which was the record-breaking duration of the Melbourne lockdown of 262 days (Jose, 2021). The last developed economy selected is Israel due to the fact that it is the only developed country from the Middle East North Africa (MENA) region. As highlighted in a 2021 article by University of New South Wales, Sydney, Israel, too, had a notable COVID-19 pandemic policy such as the country's aggressive COVID-19 vaccination campaign that already made vaccines available to all adults by early 2021 and resulted in an overall immunization rate of 80% by August 2021 (Macintyre, 2021). Responses for all the developed economies listed come with unique pandemic prevention policies which may have affected or influenced the responses of the participants to a certain degree. Therefore, the reasons for the selection of these economies shares the purpose of this paper to investigate how the COVID-19 pandemic situation may have affected levels of financial worry in countries with differing pandemic situations and prevention strategies at the time.

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3.6.3 Time Periods Constraint

Finally, the last limitations were in terms of constraints to compare the outcomes of 2021 to previous years such as 2017, 2014, and 2011. This is due to the fact that the main outcome variables of this paper (worryBILLS, worryCOVID) are introduced for the first time in the 2021 Global Findex Dataset. Hence, data from previous years are not relevant to the objectives and scope of this study and will not be utilized. One reason for including developed economies, therefore, was to make up for the ability to compare results between different years. Instead, this paper may serve as a pioneer study of former Yugoslav economies for future Global Findex Datasets published in case the financial worry section of the survey is still applied.

doi:10.6342/NTU202301413

CHAPTER IV RESULTS

This chapter provides and presents the results obtained from each of the four ordered logistic models and reveals the significant independent variables and their relationships to the dependent variable in each model. This is a crucial chapter of this paper as it provides the basis for accepting/rejecting the set hypotheses and provides valuable insights which can help in the discussions of the Discussions chapter and the reflection process in the Conclusion chapter.

4.1 Ordered Logistic Regression Models Findings

This section summarizes each model's results, including which variables have a significant negative/positive effect on the likelihood of an individual experiencing higher levels of worry. It is important to note that the interpretation of these results focus on the odds ratios rather than the coefficients. This is because the ordered logistic model reveals the likelihood of being in a higher category of the dependent variable when the independent variable increases by one unit, rather than the specific unit increase itself as would be with coefficients. The odds ratios were computed using the statistical software Stata. After implementing the model with the ordered logistic regression command "ologit" and the corresponding variables. The results for each model are as follows.

4.1.1 Findings for Model 1: Predictors of Financial Worry due to COVID-19 in Ex-Yugoslavia

As seen in Table 4.1 on page 33, significant variables that have a positive relationship to levels of worry for severe financial hardship due to the disruptions of COVID-19 include: Female, Employed, Borrowed and Farming. The odds ratio for "Female" is 1.494 and

doi:10.6342/NTU202301413

significant at the 1% level. This indicates that, when holding all other variables constant, being female increases the odds of experiencing worry by approximately 49.4%. For Employed it is 1.373 at the 1% significance level, meaning, when all other variables are held constant, being employed implies an increase of 37.3% in odds of experiencing worry. Borrowed has an odds ratio of 1.678 at a 1% significance level which is also the highest odds ratio out of all variables. This means that the probability of an individual to worry more due to COVID-19 is exacerbated by 67.8% if that person borrowed money in the past year. Finally, Farming is significant at the 5% level with an odds ratio of 1.283 to 1. This means that people who received payments for farming, supposedly farmers, are 28.3% more likely to experience higher levels of worries than people who haven't received money for farming, supposedly non-farmers.

doi:10.6342/NTU202301413

Table 4. 1 Model 1: Predictors of Financial Worry COVID-19 in Ex-Yugoslavia

Variable	Coefficient	Std. Error	Odds Ratio	Std. Error
Female	0.401***	(0.057)	1.494***	(0.085)
Age (15-96)	0.001	(0.002)	1.001	(0.002)
Education (*reference: Primary*)				
Secondary	-0.231***	(0.066)	0.794***	(0.052)
Tertiary	-0.485***	(0.098)	0.616***	(0.060)
Income (*reference: Poorest 20%*)				
Second 20%	-0.091	(0.090)	0.913	(0.082)
Middle 20%	-0.391***	(0.090)	0.676***	(0.061)
Fourth 20%	-0.551***	(0.090)	0.576***	(0.052)
Richest 20%	-0.807***	(0.094)	0.446***	(0.042)
Employed	0.317***	(0.063)	1.373***	(0.086)
Account	-0.258***	(0.079)	0.773***	(0.061)
OnlinePurchase	-0.251***	(0.068)	0.778***	(0.053)
PhonePay	-0.045	(0.081)	0.956	(0.077)
SentRemittance	-0.181**	(0.076)	0.835**	(0.064)
ReceivedRemittance	-0.073	(0.074)	0.930	(0.069)
Saved	-0.412***	(0.058)	0.662***	(0.038)
Borrowed	0.518***	(0.058)	1.678***	(0.097)
Farming	0.250**	(0.101)	1.283**	(0.130)
LR chi-square (17)				493.970***
p-value chi-square				0.000
Pseudo R-squared				0.047
Observations				4,839

Note: Standard errors clustered at the scenic spot level are in parentheses. ***, **, * indicates statistical significance at the 1%, 5% and 10% level accordingly.

doi:10.6342/NTU202301413

The likelihood ratio chi squared test statistic is 493.97 for the above model with p-value of 0.000, suggesting highly significant findings in terms of goodness of fit for the model. Further, the Pseudo R-squared statistic reveals that the variables included in the model explain 4.7% of the variation in the outcome variable.

Significant variables that have a negative relationship with levels of worry are: Education, Income, Account, Online Purchase, SentRemittance and Saved. The odds ratio for Secondary Education is 0.794 at the 1% significance level. In other words an individual that has finished secondary education is 20.6% (calculation = (1-0.794)*100) less likely to be worried compared to an individual from the reference group which are people who finished Primary Education. For Tertiary Education it is 0.616 also at a significance level of 1%. Meaning in comparison to an individual who only finished primary education, a person that finished tertiary education or higher is 38.4% less likely to worry. Next, Income is significant at a 1% significance level for all quintiles except Second 20% when compared to the Poorest 20% with odds ratios of Middle 20% = 0.676, Fourth 20% = 0.576 and Richest 20% = 0.446. This means that compared to the Poorest 20% the three highest Income quintiles are respectively 32.4%, 42.4% and 55.4% less likely to worry. Account has an odds ratio of 0.773 at 1% significance level which means that compared to people who do not own a bank account, people with a bank account are 22.7% less likely to be in a higher category of worry. OnlinePurchase is significant at 1% with an odds ratio of 0.778 meaning people who bought something online in the past year are 22.2% less likely to be in a higher category than people who did not. Individuals who sent remittances in the past year are 16.5% less likely to worry with an odds ratio of 0.835 at 5% significance. Lastly, people who saved

doi:10.6342/NTU202301413

money in the past year are, with an odds ratio of 0.662 at 1% significance, 33.8% less likely to be in a higher category of worry compared to people who didn't save.

Finally, the following variables had no significant effect on worry of severe financial hardship due to the disruptions of COVID-19: Age, Income (Second 20% compared to Poorest 20%), PhonePay and ReceivedRemittance.

4.1.2 Findings for Model 2: Predictors of Worry Monthly Bills in Ex-Yugoslavia

On the next page, in Table 4.2, various significant relationships can be noted between the independent variables and worry of not being able to pay monthly bills.

doi:10.6342/NTU202301413

Table 4. 2 Model 2: Predictors of Worry Monthly Bills in Ex-Yugoslavia

Variable	Coefficient	Std. Error	Odds Ratio	Std. Error
Female	0.191***	(0.058)	1.210***	(0.070)
Age (15-96)	0.006***	(0.002)	1.006***	(0.002)
Education (*reference: Primary*)				
Secondary	-0.448***	(0.066)	0.639***	(0.042)
Tertiary	-0.770***	(0.104)	0.463***	(0.048)
Income (*reference: Poorest 20%*)				
Second 20%	-0.378***	(0.089)	0.685***	(0.061)
Middle 20%	-0.677***	(0.089)	0.508***	(0.045)
Fourth 20%	-0.923***	(0.091)	0.397***	(0.036)
Richest 20%	-1.208***	(0.097)	0.299***	(0.029)
Employed	0.159**	(0.064)	1.172**	(0.075)
Account	-0.193**	(0.078)	0.825**	(0.064)
OnlinePurchase	-0.375***	(0.071)	0.687***	(0.049)
PhonePay	0.044	(0.085)	1.045	(0.089)
SentRemittance	-0.323***	(0.082)	0.724***	(0.060)
ReceivedRemittance	0.268***	(0.076)	1.308***	(0.100)
Saved	-0.689***	(0.060)	0.502***	(0.030)
Borrowed	0.649***	(0.059)	1.913***	(0.114)
Farming	-0.198*	(0.105)	0.820*	(0.086)
LR chi-square (17)				977.040***
p-value chi-square				0.000
Pseudo R-squared				0.093
Observations				4,893

Note: Standard errors clustered at the scenic spot level are in parentheses. ***, **, * indicates statistical significance at the 1%, 5% and 10% level accordingly.

doi:10.6342/NTU202301413

The likelihood ratio chi squared test statistic is 977.04 for the above model with p-value of 0.000, suggesting highly significant findings in terms of goodness of fit for the model. Further, the Pseudo R-squared statistic reveals that the variables included in the model explain 9.3% of the variation in the outcome variable.

This model exclusively takes into account former Yugoslav countries. The following explanatory variables account for a positive relationship with the likelihood of higher levels of worry: Women, Age, Employed, ReceivedRemittance, and Borrowed. As the odds ratio for Female is 1.210, at significance of 1%, it can be concluded that when holding all other variables constant, being female increases the odds of experiencing worry by approximately 21%. When holding Age constant, according to the 1% significant odds ratio of 1.006, a one-year increase in age yields to a 0.6% higher likelihood to fall under a higher category of financial worry. Being in the workforce makes people 17.3% more likely to be in a higher category of worry compared to not being in the workforce, as derived from the odds ratio of 1.173 at 5% significance when all other variables are held constant. With an odds ratio of 1.308 at the 1% significance level it can be inferred that people who received remittances in the past year are more likely to worry than people who haven't received any. Accordingly, Borrowed turns out to have an odds ratio of 1.913 at 1% significance, which is also the highest value attained when holding all other explanatory variables constant. This means that people who borrowed money in the past year are 91.3% or in other words almost two times more likely to fall under a higher level of financial worry compared to people who didn't borrow any money.

The significant explanatory covariates which share a negative relationship with financial worry of not being able to pay monthly bills are: Education (all), Income (all),

doi:10.6342/NTU202301413

Account, OnlinePurchase, SentRemittance, Saved, and Farming. Education has 0.639 and 0.463 odds ratios at 1% respectively for secondary and tertiary, when all other variables are held constant. Therefore, respondents who completed secondary / tertiary education are accordingly 36.1% / 53.7% less likely to be in a higher category of worry compared to respondents who only finished primary schooling. Income, holding all other variables constant, has 1% level significant odds ratios of 0.685, 0.508, 0.397, 0.299 for Second 20%, Middle 20%, Fourth 20% and Richest 20% respectively. Meaning as people move up in income quintile, they are accordingly 31.5%, 49.2%, 60.3%, and 70.1% less likely to worry about paying monthly bills compared to the Poorest 20%. The variable account has an odds ratio of 0.825 at the 5% significance level when all other variables are held constant, meaning people who own a bank account are 17.5% less likely to be in a higher category of worry than those who do not own a bank account. OnlinePurchase is significant at 1% with an odds ratio of 0.687, meaning people who bought something online in the past year are .2% less likely to be in a higher category than people who did not. SentRemittance and Saved have odds ratios of 0.724 and 0.502, meaning that sending money and saving money lowers the likelihood of being worried by 27.6% and 49.8% accordingly. Last, Farming has an odds ratio of 0.820 at a weak significance level of 10%. Hence, people who received money for farming are 18% less likely to be in a higher category of worrying for monthly bills.

The only explanatory variables that has no significant influence on the outcome variable is PhonePay, meaning that having purchased something in-store in the past year using a mobile phone has no effect on the likelihood of worry for paying one's monthly bills.

doi:10.6342/NTU202301413

4.1.3 Findings for Model 3: Cross-Economy Analysis of Financial Worry Monthly Bills

The results for the third model can be found in Table 4.3 below. This model reveals several significant relationships between the explanatory variables and financial worry of not being able to pay monthly bills while accounting for all the specific economies selected in this study. Hence, the significant independent variables with positive influence on the likelihood of being in a higher category of worry are: Female and Borrowed.

Table 4. 3 Model 3: Cross-Economy Analysis of Financial Worry Monthly Bills

Variable	Coefficient	Std. Error	Odds Ratio	Std. Error
Female	0.243***	(0.044)	1.275***	(0.056)
Age (15-96)	0.002	(0.001)	1.002	(0.001)
Education (*reference: Primary*)				
Secondary	-0.301***	(0.057)	0.740***	(0.042)
Tertiary	-0.606***	(0.078)	0.545***	(0.042)
Income (*reference: Poorest 20%*)				
Second 20%	-0.472***	(0.065)	0.624***	(0.041)
Middle 20%	-0.668***	(0.066)	0.513***	(0.034)
Fourth 20%	-1.002***	(0.069)	0.367***	(0.025)
Richest 20%	-1.307***	(0.074)	0.271***	(0.020)
Employed	0.056	(0.049)	1.058	(0.052)
Account	0.046	(0.074)	1.047	(0.077)
OnlinePurchase	-0.115**	(0.054)	0.891**	(0.048)
PhonePay	-0.017	(0.059)	0.984	(0.058)
Saved	-0.754***	(0.048)	0.471***	(0.023)
Borrowed	0.599***	(0.047)	1.821***	(0.086)
Economies (*reference: Bosnia & Herzegovina*)				
Kosovo	0.540***	(0.088)	1.716***	(0.150)
Macedonia	0.415***	(0.086)	1.514***	(0.131)

doi:10.6342/NTU202301413

(Continuation of Table 4.3)

Variable	Coefficient	Std. Error	Odds Ratio	Std. Error
Serbia	-0.231**	(0.089)	0.794**	(0.071)
Croatia	-0.538***	(0.092)	0.584***	(0.054)
Taiwan	-0.582***	(0.094)	0.559***	(0.053)
Israel	-0.804***	(0.095)	0.448***	(0.042)
Australia	-0.938***	(0.101)	0.391***	(0.040)
Austria	-1.074***	(0.105)	0.342***	(0.036)
Sweden	-2.097***	(0.128)	0.123***	(0.016)
LR chi-square (23)				2519.780***
p-value chi-square				0.000
Pseudo R-squared				0.134
Observations				9,732

Note: Standard errors clustered at the scenic spot level are in parentheses. ***, **, * indicates statistical significance at the 1%, 5% and 10% level accordingly.

The likelihood ratio chi squared test statistic is 2519.78 for the above model with p-value of 0.000, suggesting highly significant findings in terms of goodness of fit for the model. Further, the Pseudo R-squared statistic reveals that the variables included in the model explain 13.4% of the variation in the outcome variable.

Female resulted in an odds ratio of 1.275 at a 1% significance level and Borrowed had a 1.821 odds ratio also at a 1% significance level when holding all other variables constant for each. This means that being female or borrowing money will increase the likelihood of being in a higher category of worry by 27.5% and 82.1% respectively.

Variables that have a significant negative relationship with the outcome variable are: Education (all), Income (all), OnlinePurchase, and Saved. Education has 0.740 and 0.545

doi:10.6342/NTU202301413

odds ratios at 1% respectively for secondary and tertiary, when all other variables are held constant. Therefore, respondents who completed secondary / tertiary education are accordingly 26% / 45.5% less likely to be in a higher category of worry compared to respondents who only finished primary schooling. Income, holding all other variables constant, has 1% level significant odds ratios of 0.624, 0.513, 0.367, 0.271 for Second 20%, Middle 20%, Fourth 20% and Richest 20% respectively. Meaning as people move up in income quintile, they are accordingly 37.6%, 48.7%, 63.3%, and 72.9% less likely to worry about paying monthly bills compared to the Poorest 20%. OnlinePurchase has an odds ratio of 0.891 at 5% significance level, holding all variables constant. This illustrates a 10.9% lower likelihood of being in a higher category of financial worry compared to people who haven't made an online purchase in the past year. Lastly, Saved has a odds ratio of 0.471 at 1% significance level when holding all variables constant, meaning people who saved in the past year are 52.9% less likely be in a higher category of worry than people who didn't save money.

The explanatory variables that have no significant influence in this economies-specific model when all other variables remain constant, include Age, Employed, Account, and PhonePay. As this model specifically focuses on revealing how individuals from different economies differ in terms of worry of not being able to pay monthly bills it is, therefore, noteworthy to point out the specific results for each economy.

When holding Bosnia & Herzegovina (BiH) as a reference group, the following economies are more likely to be in a higher category of worry than BiH: North Macedonia and Kosovo. For Macedonia, holding all other variables constant, the odds ratio is 1.514 at a significance level of 1%. This infers that a respondent from North Macedonia is 51.5% more

doi:10.6342/NTU202301413

likely to be in a higher category of worry than a respondent from Bosnia & Herzegovina. Kosovo has an odds ratio of 1.716 at a 1% significance level, when all variables are constant. Meaning respondents from Kosovo have the highest likelihood of worry among all countries in this study and are, therefore 71.6% more likely to have higher levels of worry than BiH.

The economies that that are less likely to worry compared to Bosnia are: Croatia, Serbia, Australia, Austria, Israel, Taiwan, and Sweden. The odds ratios are all significant at the 1% level when all variables are held constant. Croatia and Serbia have odds ratios of 0.584 and 0.794 accordingly, meaning individuals from Croatia are 41.6% and Serbia are 20.6% less likely to be in a higher category of worry in retrospect to Bosnia & Herzegovina. Australia, Austria, Sweden have odds ratios of 0.391, 0.342, and 0.123 respectively at a significance level of 1% when all other variables are held constant for each. This means that people from Australia are 60.9%, Austria 65.8%, and Sweden 87.7% less likely to be in a higher category of worry compared to BiH.

4.1.4 Findings for Model 4: Developing Former Yugoslav Economies vs. Developed Global Economies

The last and final Model is divided into two separate models in order to see how developing former Yugoslav economies compare to developed global economies selected when it comes to the outcome variable of being worried to not be able to pay monthly bills. As all the explanatory variables are kept the same for each model the focus will be on comparing each variable between the two groups of economies. For the purpose of a more convenient and cohesive interpretation, developing former Yugoslav economies are denoted as “Group A” whereas developed global economies are “Group B”. The estimation results are shown in Table 4.4 on page 44.

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In Table 4.4, it can be seen that for Female, when all other variables are held constant, the odds ratios are 1.227 and 1.234 at a 1% significance, respectively for each Group. This means that being female from an economy in Group A has a 22.7% and Group B a 23.4% higher likelihood of falling into a higher category of worry compared to being male. Accounting for Age, when all other variables are constant, the odds ratio for Group A is 1.005 at a 5% significance level, meaning a one-year increase in age increases the likelihood to fall under a higher level of worry by 0.5% in former Yugoslav countries. For Group B, the odds ratio is 0.988 at 1% significance when all other variables are held constant. This means that respondents from global developed economies are 1.2% less likely to fall under a higher category of worry with each year of older age. The results of education are partially different between Group A and B.

doi:10.6342/NTU202301413

Table 4. 4 Model 4: Ex-Yugoslav vs. Global Developed Economies.

Variable	Odds Ratio	Std. Error	Odds Ratio	Std. Error
Female	1.227***	(0.071)	1.234***	(0.082)
Age (15-96)	1.005**	(0.002)	0.988***	(0.002)
Education (*reference: Primary*)				
Secondary	0.630***	(0.041)	0.868	(0.103)
Tertiary	0.456***	(0.047)	0.647***	(0.088)
Income (*reference: Poorest 20%*)				
Second 20%	0.673***	(0.059)	0.648***	(0.063)
Middle 20%	0.497***	(0.044)	0.623***	(0.061)
Fourth 20%	0.393***	(0.036)	0.420***	(0.044)
Richest 20%	0.291***	(0.028)	0.355***	(0.040)
Employed	1.155**	(0.073)	0.977	(0.075)
Account	0.803***	(0.062)	1.537**	(0.325)
OnlinePurchase	0.677***	(0.047)	0.942	(0.075)
PhonePay	1.011	(0.085)	0.886	(0.067)
Saved	0.499***	(0.029)	0.391***	(0.032)
Borrowed	1.944***	(0.113)	1.697***	(0.131)
LR chi-square (14)	372.060***		935.930***	
p-value chi-square	0.000		0.000	
Pseudo R-squared	0.051		0.089	
Observations	4,926		4,806	

Note: Ex-Yugoslav on left side and Global Developed on the right. Standard errors clustered at the scenic spot level are in parentheses. ***, **, * indicates statistical significance at the 1%, 5% and 10% level accordingly.

doi:10.6342/NTU202301413

The likelihood ratio chi squared test statistic is 372.06 for the Ex-Yugoslav specific model and 953.93 for the global economies model with p-value of 0.000 for both, suggesting highly significant findings in terms of goodness of fit for the model. Further, the Pseudo R-squared statistic shows that the variables of the Ex-Yugoslav model explain 5.1% while for the global economies model explains 8.9% of the variation in the outcome variable.

For secondary education Group A has a 1% significant odds ratio of 0.630 meaning respondents who completed secondary education have a 37% lower likelihood of worrying at higher levels than people who only completed primary schooling. Holding all variables constant, Group B shows an insignificant relationship between secondary schooling and higher levels of worry.

However, when it comes to tertiary education both Gourp A and B, holding all other variables constant, have respective odds ratios of 0.456 and 0.647, significant at the 1% level. This means, respondents from Group A have 54.4% and Group B 35.3% lower odds of falling under a higher category of worry compared to respondents who only completed primary schooling. In terms of Income, when holding all other variables constant, all quintiles are significant at the 1% level for both Group A and B. The odds ratios of Group A are 0.673, 0.497, 0.393, and 0.291 meaning as respondents move up in income quintile from the Poorest 20% their odds of experiencing higher levels of worry decrease by 32.7%, 50.3%, 60.7%, and 70.9%, respectively. The odds ratios of Group B are 0.648, 0.623, 0.420, and 0.355 meaning as respondents from this group of economies move up in income quintile their odds of experiencing higher levels of worry are decreasing by 32.7%, 50.3%, 60.7%, and 70.9% respectively. The variable Employed, when holding all other variables constant, is only significant for Group A with an odds ratio of 1.155 at the 5% significance level. This suggests

doi:10.6342/NTU202301413

that respondents from developing former Yugoslav nations who are in the workforce are 15.5% more likely to end up in a higher category of financial worry. The variable Account is significant for both Group A with an odds ratio of 0.803 at the 1% significance level and Group B with an odds ratio of 1.537 at the 5% significance level. Hence, these results suggest that people who have a bank account from Group A are 19.7% less likely to worry at higher levels whereas people from Group B are 53.7% more likely to worry at higher levels compared to people who don't have a bank account. The variable OnlinePurchase, when holding all other variables constant, is only significant for Group A with an odds ratio of 0.677 at the 1% significance level. This suggests that respondents from developing former Yugoslav nations who have purchased something online in the past year are 32.3% less likely to end up in a higher category of financial worry compared to people who have not made any online purchase.

PhonePay has no significant relationship with levels of financial worry in either group, meaning, when holding all variables constant, respondents who purchased something in-store in the past year using their mobile phone are neither more or less likely to worry at higher levels. Finally, each of the variables Saved and Borrowed, when holding all other variables constant, are significant at the 1% level. The odds ratios for Saved and Borrowed in Group A are 0.499 and 1.944 respectively, meaning people who saved are 50.1% or more than half as likely and people who borrowed are 94.4% or almost twice as likely to end up in a higher level of worry. Group B's odds ratios of 0.391 for Saved and 1.697 for Borrowed translate to 60.9% lower and 69.7% higher odds of worrying at higher levels compared to not saving and borrowing money, respectively.

doi:10.6342/NTU202301413

CHAPTER V DISCUSSION

5.1 Determinants of Financial Worry: worryCOVID vs. worryBILLS

In the first section of this chapter the focus will be to discuss the results and corresponding inferences that can be made for Model 1 which looks at determinants of financial worry caused by the COVID-19 pandemic and Model 2 which looks at the determinants of worry about not being able to pay monthly bills.

5.1.1 Determinants of Worry for Severe Financial Hardship due to the Disruptions of the COVID-19 Pandemic in Former Yugoslav Nations

One of the main objectives in this study was to understand how different socio-demographic, financial inclusion and financial resilience factors influence an individual's level of worry for severe financial hardship caused by the disruptions of the COVID-19 pandemic. Model 1 has revealed that several factors from all three categories contribute to the level of worry of an individual from a developing former Yugoslav nation. Even though this model has robust goodness of fit statistics, it is the model with the lowest LR chi-square and Pseudo R-squared value suggesting that the outcome variable worryCOVID is not as well explained by the explanatory variables as worryBILLS is.

It can be seen that gender plays a substantial role in the likelihood of a person having higher levels of worry together with people who have received money for farming, borrowed money, and are part of the work force. Additionally, individuals from the poorest income quintile, who have not completed tertiary education or higher, do not own a bank account, did not make any online purchase, did not send remittances and did not save money in the past 12 months, will also find themselves at higher levels of worry. Hence, according to the results of the model, respondents who fulfill all of the aforementioned criteria will find

doi:10.6342/NTU202301413

themselves at the highest odds of being in a upper category of worry levels compared to all other respondents. In contrast, with opposite characteristics (i.e., being male, obtained tertiary education or higher, being in the richest income quintile, not having borrowed money, owning a bank account, etc.) will have the lowest odds of being worried at a higher level compared to the rest of the sample.

It should be notice that several factors will have no significant influence on levels of worry about severe financial hardship due to the disruptions caused by the COVID-19 pandemic in former Yugoslav countries. For instance, being in the second poorest income quintile makes no difference compared to being in the poorest. This may be due to the fact that the first two poorest income quintiles are very close to each other which would, therefore, explain why an individual would be indifferent about their financial worry due to the pandemic. Another reason could be because individual at the lowest two income quintiles might already deal such financial hardship where the disruptions of COVID-19 would make little difference to their situation. Other factors that have no significant influence on worry levels is age as well as whether the respondent has received any remittances or not.

5.1.2 Comparing Financial Worry due to COVID-19 (Model 1) with Worry of Covering Monthly Bills (Model 2) for Former Yugoslav Countries

Another aim of this study was to understand what factors have a significant effect on an individual's worry of not being able to pay their monthly bills in former Yugoslav economies. Therefore, this model differs only based on the dependent variable compared to the first model discussed earlier, meaning all explanatory variables are the same.

As seen in the results of the second model in this study. gender, again, plays a significant role suggesting that women are more likely to worry than men. However, compared to the first model women are much less likely to worry about being able to pay

doi:10.6342/NTU202301413

monthly bills compared to worrying about financial hardship due to the disruptions of the COVID-19 pandemic. This suggests that during the pandemic in 2021 women perceived financial consequences due to the pandemic as a greater concern than having to pay for monthly expenses. Age had a significant effect on financial worry due to COVID-19 in former Yugoslav nations in 2021. As one year of age makes a person 0.6% more likely to be in a higher category this would mean that the oldest respondents of 96 years of age will have (1+(0.006x81year)) 1.486 the odds or be 48.6% more likely of being in a higher category of financial worry compared to the youngest respondents who are 15 years of age in former Yugoslav economies. In the first model of this paper, age has no significant effect on worry of severe financial hardship due to the disruptions of the COVID-19 pandemic. Therefore, it is plausible to assume that as people get older, monthly bills become a more significant worry than the worry of severe financial hardship that might be caused by the pandemic. Educational level has a greater effect on financial worry in Model 2 than in Model 1. Hence, even though being more educated makes people less worried, worrying at higher levels due to COVID-19 was more likely to occur than worrying for paying monthly bills. This may be due to the fact that a pandemic is something more uncertain compared to paying one's monthly expenses. The same is true when it comes to income where the odds ratios are much lower in Model 2 compared to the already lower odds in Model 1. Further, compared to Model 1, Model 2 actually has a significant value for the second poorest quintile. This may explain why that variable is insignificant in Model 1 as well, because the uncertainty of the COVID-19 pandemic has a greater effect on levels of financial worry compared to paying bills, meaning that moving up to the second poorest quintile will have no significant effect on lowering odds of being in a higher category of worry related to the COVID-19 pandemic.

doi:10.6342/NTU202301413

For Model 2, being employed has a lower degree of significance at the 5% significance level as well as lower odds to be in a higher category of worry compared to Model 1, again indicating that COVID-19 caused people to worry more than being able to pay monthly bills.

When it comes to factors of financial inclusion, the same pattern can be found for individuals who bought something online in the past year, suggesting that people worried more of the implications the COVID-19 pandemic had on their financial situation than worrying to pay monthly bills. Nevertheless, it cannot be assumed that all factors of financial inclusion have the similar outcome, as owning a bank account, for instance, falls into the opposite direction. The other factor of financial inclusion, which is PhonePay was insignificant. Hence, it can be concluded that only certain characteristics of financial inclusion lower the odds of being more worried about one's financial situation but no factors of financial inclusion in this model would increase the odds of being in higher category of worry for either model. What this analysis is not able to illustrate is which type of worry (COVID-19 or monthly bills) lower odds of decreasing the chance to be in a higher category of worry.

Characteristics of financial resilience that were included in this model all show results that are expected from a logical stance. Having received remittances or borrowed money all yield to higher odds of being more worried, whereas having sent remittances and or saved money leads to lower odds. The difference between this model and Model 1 can be found in both remittances' variables. In Model 1 received remittances have no significant effect and sent remittances have a lower significance level of 5% compared to 1% in Model 1 as well as lower odds ratios. This means that factors of financial resilience in Yugoslav economies differ between the two different reasons for worrying. As remittances are usually sent from

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another place back to home in order to support or help family members, it makes sense that these factors would be more significant when it comes to the worry of paying bills rather than the financial threats that may incur due to COVID-19. On the other hand, one may also assume that pandemic prevention policies such as imposed travel restrictions to control the spread of the pandemic, would affect people's ability to work abroad and therefore lead to (more) significant outcomes in Model 1. As this is not the case and the fact that borrowed and saved have much higher effects on the odds in the second model than the first, it can be concluded with confidence that financial resilience has a more profound influence on worry to pay monthly bills compared to worry of severe financial hardship caused by the COVID-19 pandemic.

In conclusion, when it comes to comparing the two models as a whole, it is clear how uncertainty yields higher levels of worry, which may explain the several factors in Model 1 that tend to have higher odds making a respondent more worried. Additionally, at the time of this survey the health emergency situation in the Balkans was still not completely over where the deadliest variant of the virus (delta) just passed and vaccines were still not widely available. Because of the situation at the time people's perception of the virus due to how the pandemic was still unfolding may have, therefore, caused a much more worrisome view of COVID-19 and the financial impact it may bring along.

doi:10.6342/NTU202301413

5.2 Determinants of Financial Worry to Pay Bills across Different Economies

This section provides a clearer understanding in terms of how financial worry not just compares across all the economies but also the two different groups of economies established for the objectives and hypotheses of this paper. Comprehensive interpretations of the results and the inferences that can be made about country specific factors are laid out in each subsection for Model 3 which focuses on comparing individual economies and Model 4 which focuses on comparing Developing Ex-Yugoslav Economies with Global Developed ones.

5.2.1 Analyzing Financial Worry between Developing Yugoslav Economies and Developed Global Economies

Model 3 and 4 provide cross-country analyses that explore and understand the similarities, differences and relationships between the explanatory variables that affect financial worry. Model 3 reveals both, how each country differs in terms of likelihood of being more worried about paying monthly bills and how each variable differs when the variable country is accounted for in the model. Model 3 has the most favorable goodness of fit statistics with the highest values of LR chi-square test and Pseudo R-squared statistic, suggesting that including countries as an explanatory variable as well as more observations in general may help to explain the variation in the outcome variable better.

With Bosnia & Herzegovina as the reference group, all developed global nations have much lower odds of being in a higher category of worry. In terms of former Yugoslav nations Bosnia is in the middle between higher odds of worrying for Kosovo and North Macedonia and lower odds of worrying for Serbia and Croatia. The ranking of these findings coincides with the ranking of the respective GDP per capita for each former Yugoslav country in 2021,

doi:10.6342/NTU202301413

which suggests that including macroeconomic factors like GDP per capita as an additional variable for studies like these may be considered in the future. Another interesting finding is, when country is accounted for, therefore, providing the model observations from all 10 countries (=9,732), factors such as Age, Employed, Account, and OnlinePurchase seem to become not significant or less significant compared to the previous model with the same outcome variable. This may be due to two reasons:

1.The variable country allows the model to account for any variations in the outcome variable that may be related to the specific countries and 2. By including the variable country, the model may be capturing some omitted variables that are country specific which consequently influence the variations of the outcome variable.

Multicollinearity seems to be the least likely reason for this difference in findings with the previous model as multicollinearity would cause inflated results rather than less significant ones. However, it may also be due to the fact that variables such as Sent/Received Remittances and Farming have been excluded, compared to Model 2 which may have influenced the model in such a way that it delivered less significant coefficients/odds for the other explanatory variables.

5.2.2 Comparing Financial Worry between Developing Yugoslav Economies and Developed Global Economies

In order to analyze the variations in how the explanatory variables might influence the outcome variable differently between the economies of interest and the economies for comparison, Model 4 is run separately for each group of economies. This model differs from Model 3 in the way that it doesn't include all countries together nor does it include the variable "country". It also differs from Model 1 as it doesn't include variables such as Sent/Received Remittances and Farming. This is because, as mentioned earlier, the

doi:10.6342/NTU202301413

developed global economies do not have any available data on these factors. Hence, this study uses Model 4 with the same explanatory variables and outcome variables and compare 2 distinct groups of observations. As a result, there are some noteworthy results that yield various insights and considerations for the objectives of this.

5.2.3 Comparative Trends between the two Groups of Economies

Nevertheless, it is worth to first consider the similar outcomes between each group of economies. In terms of socio-demographic factors, for both groups, being a woman as well as being in a higher income quintile yields similar degrees of higher and lower odds to worrying respectively. When it comes to financial inclusion factors, PhonePay is still insignificant for both groups in this model. Finally, financial resilience factors such as having borrowed or saved money are significant for both groups and also share the same direction. However, there is a subtle distinction which is that for developed global economies “Saved” seems to have a larger effect on the odds of worrying at higher levels whereas “Borrowed” has a larger effect in developing former Yugoslav nations. One way of interpreting this finding could be that people from developing former Yugoslav economies still have higher odds of worrying when they save or borrow money because their financial situation as well as the economic situation in these countries at the time which caused more vulnerability and uncertainty in contrast to developed economies.

5.2.4 Divergent Trends Distinguishing the two Groups of Economies

After examining the variations in significance and direction of influence for each independent variable, it becomes evident that certain socio-demographic and financial inclusion characteristics may have different effects on the likelihood of being in a higher category of worry about paying monthly bills within the two groups of economies. For

doi:10.6342/NTU202301413

instance, referring to Table 4.4 “Age” in former Yugoslav economies seems to have a significant positive relationship with higher levels of worrying, whereas in developed global economies “Age” seems to have the opposite effect. This would mean that being an older individual from Kosovo or Serbia and being a younger individual from Taiwan or Austria will both increase the odds of landing in a higher category of worry about paying monthly bills. Furthermore, this finding may explain why “Age” is an insignificant factor when all economies are considered together in one model such as in Model 3, as there’d be more variation for the variable “Age” where the model would not be able to give a significant outcome in one or either direction, therefore. One reason why an increase in age may yield less worry in global developed economies while the opposite is true for developing Yugoslav countries is because of the implementation of more comprehensive social welfare and pension programs, especially during the COVID-19 pandemic (Antolin & Despalins, 2020).

Another differentiating socio-demographic factor between the two groups is education, specifically the impact of completing secondary education. In developed economies, the odds of worrying at higher levels do not significantly differ for individuals with secondary education. However, in the case of developing Yugoslav countries examined in this study, it can be observed that there is a significant decrease in the odds of falling into a higher category of worry about monthly bill payments for individuals with secondary education. This suggests that the attainment in former Yugoslav countries becomes a critical factor to alleviate financial concerns, whereas in developed economies, maybe due to the favorable socio-economic conditions people benefit from, it doesn’t particularly matter. Another reason could be the difference in educational attainment rates where a higher proportion of individuals from developed economies have achieved secondary education

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compared to individuals from developing former Yugoslav economies where attainment of secondary education is relatively lower (Altinok et al., 2018). The final socio-demographic factor that differs between the two groups of economies is employment status. In developed economies being employed yields no significant effect on worry about being able to pay financial bills, whereas in developing economies it does. This variation could be due to several factors. For instance, according to official 2021 World Bank data, the Ex-Yugoslav countries in this study ranged from a low of 7.6% for Croatia to a high of 20.7% for Kosovo whereas in the developed economies of this paper the range was from a low of 3.95% for Taiwan to a high of 8.72% for Sweden. Hence a higher unemployment rate as well as weaker safety nets as discussed earlier may all yield to the significant effect employment status has on worry levels. This may also explain why in Model 3 insignificant findings for "Employment" are found, as when all economies are accounted for together in one model, the diverse effects of each country-specific factor will weaken the overall effect this independent variable has on worry levels. Therefore, it is crucial to consider the individual characteristics of each economy and their unique socio-economic contexts in order to better understand the relationship between employment status and financial worry. It seems counter-intuitive that for each model where "Employment" for Ex-Yugoslav economies is significant that it always leads to increased odds of falling under a higher worry category, as one would assume that employed individuals have a stable income should, therefore, worry less rather than more about being able to pay their monthly expenses. However, this interesting phenomenon can be explained in various ways. For instance, factors such as more financial obligations, job-related deadlines, career expectations, or economic uncertainty such as job security and potential layoffs, will all contribute to increased stress and

doi:10.6342/NTU202301413

uncertainty and therefore translate to higher levels of overall worry which may spill over into worrying about being able to pay monthly bills. In contrast, a person who is not employed may be more less likely to deal with a lot of responsibilities and stress which would cause them to worry less. There was no factor of financial resilience that didn't have an effect in the same direction for both groups of economies. Hence, the last variable that had a different effect on worry between the two groups was "OnlinePurchase" which can be categorized as a factor of financial inclusion. The findings indicate a significant decreasing effect in the likelihood of experiencing higher levels of worry among respondents from developing former Yugoslav nations who made online purchases within the past 12 months, compared to those who did not, whereas for global developed economies, there is no significant effect. This difference could be explained by considering that making online purchases is much more prevalent in the developed economies selected as opposed to the developing Yugoslav economies. As a 2021 report on financial inclusion from the UN has revealed the use of digital money services is 94% in developed economies compared to 63% in developing economies. If almost all respondents from the developed economies in this paper have made online purchases it makes sense that the model would be less likely to generate a significant outcome compared to the developing economies where there is more variation in whether a person purchased something online. Therefore, it can be assumed that factors of financial inclusion such as digital payment methods and owning a bank account have a greater benefit to respondents when it comes to the level of worry about monthly bills.

doi:10.6342/NTU202301413

CHAPTER VI CONCLUSIONS

This study aimed to explore aspects of financial inclusion and worry in former Yugoslav nations during the COVID-19 pandemic. Through an analysis of the Global Findex Database 2021, the various factors impacting financial worry in these countries were examined and compared to developed economies worldwide. Therefore, the findings of this study provide several important insights and significant implications for policymakers and researchers to consider.

The three main research objectives were to understand the factors influencing an individual's financial worry, to investigate the impact of the COVID-19 pandemic on these factors, and to provide a cross-country comparison for the different variables that may influence financial worry. Through rigorous data analysis and the multiple statistical models, this study achieved the aforementioned objectives and provided valuable perspectives into the dynamics of financial inclusion and worry in former Yugoslav nations.

Regarding the hypotheses tested in this study, the results across all four empirical models implemented, provide sufficient evidence to support H_1, indicating that the presence of financial inclusion and resilience factors significantly influences the levels of financial worry experienced by individuals in former Yugoslav nations. Furthermore, the results and implications from Model 1 and Model 2 of this paper support Hypothesis 2 (H_2), as they showcase how the level of worry for severe financial hardship due to the COVID-19 pandemic varies significantly based on socio-demographic factors in these countries. Finally, the findings and analysis of Models 3 and 4 provide sufficient evidence to support H_3, suggesting that the impact of various factors on financial worry differ significantly between former Yugoslav nations and developed global economies.

doi:10.6342/NTU202301413

The findings of this study contribute to the existing body of knowledge on financial inclusion and worry, particularly in the context of former Yugoslav nations during uncertain periods such as the COVID-19 pandemic. By identifying the factors that influence financial worry, policymakers can develop targeted interventions to protect marginalized socio-demographic groups from the unconsidered consequences of certain pandemic prevention policies such as travel restrictions or lockdowns and instead promote long-term financial stability and resilience among all demographic groups.

While the results of this study have revealed several valuable insights and shed light on various aspects on financial inclusion, resilience and worry, it is important to acknowledge several limitations that could be addressed in future research pursuits. First, is the issue that the data is only from a snapshot of a specific period (2021) which therefore gives little to no understanding on how different variables may change in their effects over time. Further, by not being able to include several years of data for comparison it is also not possible to capture the dynamic nature of financial inclusion and worry, especially as the COVID-19 pandemic has contributed to long-term economic consequences that have affected the average individual negatively in terms of cost of living and financial worry. Hence, if possible, it is advised for researchers to attempt a dataset that provides multiple time periods in order to compare the outcomes and dynamics of each factor.

Another limitation, derived from the 2021 Global Findex dataset, is the use of self-reported data. As none of the responses can be officially verified to be true, this study relies on the trust in the authenticity of the responses from each person being interviewed. Instead, future research may try to incorporate a combination of self-reported data as well as objective measures such as money transaction data or other financial data.

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Further, the scope of this study was limited to a few selected former Yugoslav as well as developed economies. This may have contributed to some distortions, particularly because countries such as Montenegro should have been included, if the data would have been available, in order to paint a more accurate picture of the overall situation in former Yugoslav nations. Further, the inclusion of more developing and developed economies in each continent may have painted a clearer image in terms of regional differences and yielded more interesting country-specific insights for the effects of each independent variable on the outcome variable. Hence, it is recommended that more economies are included allowing for more accurate cross-country comparisons and a broader understanding of how socio-demographic factors, financial inclusion, and financial resilience influence financial worry. On the other hand, it would also be insightful if future studies would include models that specifically focus on only one country at a time and comparing the results between each country instead. This would also give more insights in terms of country specific characteristics for each variable and through the additional inclusion of multiple years of data it would help capture and explain the dynamics and trends of different financial factors.

The number of independent variables seems to also have provided some limitations as revealed in the discussions for each model. These variables may include psychological factors such as financial literacy or macroeconomic indicators such as GDP per capita, educational attainment rates and unemployment rates. Including more covariates would, therefore, help the model to account for increased complexity between the relationships of each variable and paint a more reliable, accurate and comprehensive picture by uncovering hidden relationships, controlling for confounding variables and incorporating more dimensions for the studied phenomenon.

doi:10.6342/NTU202301413

By acknowledging these limitations future research pursuits may fill in the knowledge gaps with which this paper was constraint and consequently provide a more nuanced understanding of financial worry in former Yugoslav countries which would give a basis for crucial considerations of financial policies as well as pandemic prevention measures.

doi:10.6342/NTU202301413

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